Digitalization and Cost Efficiency in the Ogun State Public Sector, Nigeria

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ABSTRACT

This study examined the effect of Digitalization on Cost Efficiency (CE) in the Ogun State public sector, Nigeria. Specifically, it evaluated the influence of key digital financial management systems, Government Integrated Financial Management Information System (GIFMIS), Integrated Personnel and Payroll Information System (IPPIS), Treasury Single Account (TSA), and Digital Infrastructure (DI) on CE. Data were collected from 396 employees across nineteen (19) ministries using a structured five-point Likert scale questionnaire, out of which 389 responses were obtained for analysis. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0.

The findings revealed that digitalization had a statistically significant effect on CE in Ogun State ($p = 0.046 < 0.05$). However, the model's explanatory power is relatively low ($R^2 = 0.169$), indicating that digitalization accounted for only a limited proportion of the variation in CE and suggesting that other relevant factors not included in the model may also influence outcomes. DI exhibited a statistically significant and positive effect on CE ($\beta = 0.275$, $p = 0000$), indicating that infrastructure improvements contributed to enhanced CE. Conversely, GIFMIS ($\beta = -0.405$) and IPPIS ($\beta = -0.301$) exhibited negative, statistically insignificant effects. This may be attributed to implementation challenges such as inadequate technical capacity, poor system integration, resistance to change, and institutional inefficiencies, which limit their effectiveness despite their theoretical importance in public financial management. TSA ($\beta = 0.460$) demonstrated a positive but statistically insignificant relationship with CE, suggesting that its potential benefits may not yet be fully realized.

The study concluded that digitalization significantly influenced CE. However, its impact varies across different digital systems and depends largely on implementation effectiveness and institutional context. It recommends strengthening user capacity, improving system integration, and enhancing governance frameworks to ensure effective utilization of digital systems. Additionally, policymakers should complement infrastructure investments with institutional reforms and performance monitoring mechanisms.

Keywords: Cost Efficiency, Digitalization, Public sector Financial Management

INTRODUCTION

Background to the Study

Digitalization has become a key driver of efficiency and transformation in both private and public sectors worldwide, with e-governance reshaping how governments operate, deliver services, and manage resources. In Nigeria, it is increasingly seen as a strategic solution to persistent challenges such as bureaucratic inefficiencies, corruption, poor service delivery, and high operational costs.

Historically, the Nigerian public sector relied on manual processes and excessive paperwork, resulting in inefficiency and high administrative costs. However, the adoption of digital technologies has improved governance by automating processes, enhancing data management, and facilitating better decision-making.

Globally, digital transformation has been linked to improved cost efficiency through reduced operational expenses, increased productivity, and enhanced transparency and accountability (Adenuga & Babawale, 2025).

In Ogun State, digitalization, particularly in budgeting and financial management—has shown potential in reducing financial leakages, improving revenue generation, and enhancing service delivery. Initiatives such as electronic tax systems and digital land administration have contributed to operational efficiency. Despite these efforts, challenges such as inadequate ICT infrastructure, poor internet connectivity, limited digital literacy, and weak policy implementation continue to hinder full digital transformation (Nwinyokpugi, 2020; Olabimitan et al., 2025).

Although digitalization in Nigeria has gained momentum in recent years, its overall adoption remains below global standards, limiting its potential benefits. These constraints highlight the need for more comprehensive digital reforms, especially at the State level. Therefore, strengthening digital systems in Ogun State is essential for improving cost efficiency, enhancing fiscal management, and achieving better public sector performance (Oyedokun et al., 2022).

Cost efficiency in the public sector refers to the ability of government institutions to deliver services at the lowest possible cost without compromising quality. It involves minimizing waste, optimizing resource allocation, and improving productivity. Digitalization plays a crucial role in achieving cost efficiency by automating routine tasks, reducing human errors, and eliminating unnecessary administrative procedures. Furthermore, digital systems enable better monitoring and evaluation of government activities, ensuring that resources are used effectively.

Digitalization plays a vital role in enhancing transparency and reducing corruption in the public sector by introducing traceable and auditable systems that limit human interference in financial transactions, thereby reducing fraud and improving accountability (Nwozor et al., 2022). It also improves service delivery by increasing accessibility, enabling remote access to government services, and reducing operational costs, which enhances public trust and satisfaction.

However, the effectiveness of digitalization is constrained by challenges such as high initial investment costs, cybersecurity risks, resistance to change, and inadequate technical expertise, particularly in developing countries. Empirical evidence from Nigeria indicates that digitalization improves administrative efficiency, transparency, accountability, and overall public sector performance (Chiekezie & Aniekwe, 2024; Ezeamama et al., 2024).

Despite these benefits, there is limited state-specific research, especially in Ogun State, creating a gap in the literature. Therefore, this study seeks to examine the impact of digitalization on cost efficiency in Ogun State's public sector, with the aim of providing insights into how digital transformation can enhance efficiency and reduce costs.

Statement of the Problem

The increasing demand for efficient, transparent, and cost-effective public service delivery has placed significant pressure on governments at all levels to adopt innovative approaches to administration. In Nigeria, and particularly in Ogun State, the public sector continues to face persistent challenges such as high operational costs, bureaucratic inefficiencies, duplication of functions, revenue leakages, and poor service delivery. These challenges have raised concerns about the ability of government institutions to optimally utilize limited resources while meeting the growing needs of citizens.

Public sector operations in Ogun State have historically relied on manual processes leading to inefficiencies, delays, and excessive costs. Digitalization through Information and Communication Technology (ICT) aims to modernize these operations, evidenced by initiatives like electronic tax systems. However, the effectiveness of digitalization in achieving cost efficiency is uncertain due to inadequate infrastructure, funding issues, and resistance to change. Initial investments in technology and concerns over cybersecurity and corruption further complicate impacts on efficiency. Additionally, there is a lack of localized studies on the effects of digitalization on cost efficiency in Ogun State's public sector, emphasizing the need for empirical research to identify challenges and assess outcomes of digital initiatives. This study seeks to fill this gap by examining the

relationship between digitalization and cost efficiency, providing insights for improving public resource management.

Objective of the Study

The main objective of this study is to investigate the impact of the digitalization on cost efficiency in Ogun State, Nigeria. To achieve the study main objective, the following specific objective is designed to:

examine the effect of the digitalization (Government Integrated Financial Management Information System, Integrated Personnel Payroll Information System, Treasury Single Account, Digital Infrastructure) on cost efficiency of Ogun State;

Scope of the Study.

This study focuses on the impact of digitalization on cost efficiency in the public sector of Ogun State, Nigeria. It covers selected Ministries, Departments, and Agencies (MDAs) within the state that have adopted digital technologies in their operations, such as electronic tax systems, digital record management, and e-governance platforms. The study examines key variables including digitalization (independent variable) and cost efficiency (dependent variable), with specific attention to operational costs, resource utilization, service delivery efficiency, and transparency.

Geographically, the study is limited to Ogun State. Temporally, it considers the period of increased digital adoption in the state, particularly from recent years when ICT integration became more prominent in public administration.

Significance of the Study

This research investigates the impact of the digital revolution on cost efficiency (CE) in Ogun State, Nigeria, specifically analyzing tools like GIFMIS, TSA, and IPPIS and their roles in enhancing fiscal discipline and transparency. The study aims to fill gaps in existing literature and policy, evaluating whether these digital systems are true transformative tools or just procedural upgrades. It offers insights for policymakers and public administrators to inform digital reform strategies, improve cash management, payroll accuracy, and budget execution, ultimately enhancing PFM and service delivery across government levels. The findings will benefit Ministries, Departments, and Agencies (MDAs) by identifying performance gaps in digital tools and recommending improvements. It also serves as a foundational resource for scholars and academic institutions, contributing to the discourse on digitalization and public sector reform. Moreover, it provides valuable insights for civil society organizations and international development entities by highlighting the efficacy of digital systems in promoting transparency and fiscal accountability in public finance processes.

LITERATURE REVIEW

Conceptual Review

Cost Efficiency

Cost efficiency is a key concept in economics, public administration, and public financial management, referring to how effectively limited resources are used to achieve desired outputs (Bisogno & Cuadrado-Ballesteros, 2021; Fainboim Yaker & Pattanayak, 2021). In the public sector, it focuses on delivering services at the lowest possible cost while maintaining quality, accountability, and fiscal discipline, making it especially important in resource-constrained developing countries like Nigeria (Zhuk, 2022). Its theoretical foundation is traced to Farrell (1957), who defined it as producing a given output at minimum cost, a view later expanded through modern approaches such as stochastic frontier analysis, which measures deviations from an optimal cost frontier (Cristina, 2024).

In public sector applications, cost efficiency includes optimal budget allocation and minimizing financial waste in achieving government goals (Ghaderi et al., 2023; Fagbemi & Adeoye, 2020). Contemporary perspectives extend beyond cost minimization to include service quality, transparency, and value creation, emphasizing a

balance between resource use and output quality (Heena & Nidhi, 2022; Gauthier et al., 2020). Within the context of digitalization, cost efficiency is increasingly linked to automated systems that reduce administrative costs, eliminate redundancies, and improve operational processes (Demir, 2021; Onofrei et al., 2021).

However, traditional models such as Farrell's framework are often limited as they are rooted in manufacturing contexts and do not fully capture the complexities of public sector operations (Wei, 2020). Some definitions also focus narrowly on financial inputs, ignoring qualitative aspects such as service delivery and accountability, while others lack clear integration of quality considerations (Heena & Nidhi, 2022). To address these gaps, newer approaches incorporate governance factors such as transparency and accountability into efficiency measurement (Zhuk, 2022).

Empirically, cost efficiency is commonly measured using methods such as Data Envelopment Analysis (DEA) and stochastic frontier models (Croom & Brandon-Jones, 2019; Di Vaio et al., 2021), although these are criticized for overlooking institutional inefficiencies like corruption and data manipulation. As a result, alternative approaches such as governance-weighted indices and time-based efficiency measures have been proposed for more comprehensive assessment (Farrag & Ezzat, 2020; Zhuk, 2022). In Nigeria, research has largely focused on reforms like the Treasury Single Account (TSA), using indicators such as audit traceability and fund reconciliation (Egbide et al., 2021), but remains limited in addressing sub-national contexts and digital tools such as GIFMIS and IPPIS.

Given these gaps, this study adopts a broader definition of cost efficiency as the ability of public sector institutions to deliver services using minimal resources while ensuring transparency, accountability, and high-quality outcomes, aligning with the role of digitalization in improving public sector performance in Ogun State.

Digitalization

Digitalization involves the integration of digital technologies such as e-governance platforms, cloud systems, and automated processes into government operations to improve efficiency, service delivery, and decision-making (Adenuga & Babawale, 2025; Farrag & Ezzat, 2020). It represents a broader transformation that enhances transparency, accountability, and citizen engagement. In Nigeria, digitalization is seen as a vital tool for addressing governance challenges like inefficiency and corruption, although its implementation is hindered by weak infrastructure, low digital literacy, and institutional resistance (Mu et al., 2022; Ojo, 2019; Afadzinu et al., 2024).

Empirical studies show that digital tools improve accessibility, service delivery, and transparency in public administration (Olaoye & Talabi, 2019; Oyedele, 2023; Ivungu et al., 2020). However, their effectiveness depends on factors such as political will, institutional capacity, and supporting reforms, as technology alone cannot solve structural governance issues (Patriarca et al., 2020; Shenkoya, 2023; Borja-Vasquez et al., 2024).

In resource-constrained economies like Nigeria, cost efficiency is crucial and involves minimizing costs, reducing duplication, and limiting financial leakages while maintaining service quality (Fagbemi & Adeoye, 2020). Digitalization supports this by automating processes, improving transparency, and strengthening expenditure monitoring (Demir, 2021; Onofrei et al., 2021).

However, measuring cost efficiency remains complex, as traditional models often overlook governance factors such as corruption and institutional quality (Wei, 2020; Zhuk, 2022). Therefore, this study adopts a holistic view of cost efficiency as the ability of Ogun State's public sector to use minimal resources while delivering transparent, accountable, and high-quality services through digital technologies. Thus digitalization involves Government Information Financial Management Information System (GIFMIS), The Integrated Personnel and Payroll Information System (IPPIS), The Treasury Single Account (TSA) and Digital infrastructure (DIF)

Government Information Financial Management Information System (GIFMIS)

GIFMIS is a major public financial management reform in Nigeria aimed at improving efficiency, transparency, and accountability through the automation of budgeting, procurement, and financial reporting processes. It

enhances data accuracy, streamlines government operations, and supports fiscal discipline by integrating financial systems across MDAs (Holt et al., 2023; Antwi et al., 2024).

However, the effectiveness of GIFMIS depends largely on institutional and political factors such as political will, user adoption, and organizational support (Irani et al., 2022; USAID, 2008). While it has strong potential to reduce corruption and improve transparency (Apeti & Edoh, 2023; Barroy et al., 2022), its performance is often constrained by poor data quality, weak ICT infrastructure, and limited technical capacity (Demir, 2021; Dumay et al., 2019).

In Ogun State, GIFMIS has improved financial management through data consolidation, enhanced procurement processes, and real-time transaction tracking, alongside faster e-payment systems (Ogun State Ministry of Finance, 2022; Akande, 2019). Nevertheless, challenges such as resistance to change and low digital literacy persist.

Overall, GIFMIS contributes to improved transparency, accountability, and procurement efficiency, but its ability to achieve cost efficiency depends on continuous institutional reforms, infrastructure development, and capacity building (Ikwuanusi et al., 2023; Adeoye, 2021)

Integrated Personnel Payroll Information System (IPPIS)

The Integrated Personnel and Payroll Information System (IPPIS) is an IT-driven reform designed to establish a reliable and comprehensive database for Nigeria's public service, enhance manpower planning, and eliminate payroll-related fraud (Enakirerhi & Temile, 2017). It facilitates efficient storage, updating, and retrieval of personnel records, while streamlining salary payments and reducing wastage and financial leakages. The system has significantly contributed to cost savings by identifying and removing ghost workers through verification processes.

IPPIS, supported by the World Bank under public sector reform initiatives, also improves decision-making, promotes transparency, and prevents issues such as double salary payments and credential falsification (Farajimakin & Anichebe, 2019). Since its establishment in 2006, it has centralized payroll operations, automated salary administration, and enhanced accountability through biometric verification and audit trails (Effiong & Obun, 2020).

Overall, IPPIS has strengthened payroll management, improved financial transparency, ensured timely salary payments, and enhanced efficiency in public sector workforce administration.

Treasury Single Account (TSA)

The Treasury Single Account (TSA) is a unified public financial management system that consolidates all government revenues and payments into a single account or a set of linked accounts, typically maintained by the Central Bank (Nwaorgu & Ezenwaka, 2017; Adeolu, 2015). It is designed to enhance transparency, accountability, and effective cash management by bringing all government funds under the direct control of the Treasury. TSA eliminates the inefficiencies associated with maintaining multiple bank accounts across different institutions, thereby reducing operational costs, blocking revenue leakages, and improving liquidity management.

TSA also facilitates efficient resource utilization by ensuring that idle funds are optimally invested and available for government operations when needed. It supports better fiscal discipline by promoting centralized revenue collection and improving budget implementation processes (Adebisi & Okike, 2016). According to the International Monetary Fund (2010), TSA provides a consolidated framework for managing government cash resources, offering a clear and comprehensive view of the government's financial position (Onyekpere, 2015).

Furthermore, TSA enhances coordination between fiscal and monetary policies and improves the accuracy and reliability of financial data. It has been widely recognized as a critical tool for reducing corruption, preventing fund mismanagement, and strengthening overall public financial management systems (Eme et al., 2015).

Overall, TSA plays a significant role in improving efficiency, accountability, and cost effectiveness in government financial operations.

Digital Infrastructure

Digital infrastructure has increasingly become a critical focus in academic literature across various fields, particularly within discussions on the digital revolution, e-governance, and public sector reform. Scholars have consistently linked digital infrastructure to national development, digital transformation, and institutional efficiency (Ugwu et al., 2022; World Bank, 2019). Within the context of public financial management (PFM), digital infrastructure is viewed not merely as a set of technologies but as an enabler of transparency, accountability, and operational efficiency (IMF, 2023). Despite its widespread usage, the term "digital infrastructure" remains loosely defined, which has created challenges in both academic conceptualisation and empirical application.

Several definitions of digital infrastructure have emerged. Ugwu et al. (2022) describe it as the shared technological foundation supporting digital capabilities, but this definition lacks focus on policy and interoperability. Ugwu et al., 2022 broadens the concept, defining it as digital public goods and governance protocols for effective service delivery by governments. The World Bank (2019) views it as a system enabling the digital economy, though it leans towards national transformation and may not apply to sub-national contexts. OECD (2025) defines Digital Public Infrastructure (DPI) as foundational platforms essential for governance, but its assumptions may not hold in regions with underdeveloped infrastructure, such as Ogun in Nigeria. Overall, the lack of consensus highlights the necessity for a contextual understanding of digital infrastructure that incorporates both technological and institutional realities. Additionally, dimensions of digital infrastructure, including connectivity, platform integration, and data accessibility, have been explored by various scholars to evaluate its effectiveness in different contexts (Eze & Olufemi, 2021).

THEORETICAL REVIEW

This subsection discusses various theories that gave a critical insight about what digital transformation entails. Five theories were reviewed in this section which are Technology Acceptance Model (TAM) Theory, New Public Management (NPM) Theory, Resource-Based Theory (RBT) and E-Government theory.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Fred Davis (1989), explains how users come to accept and use new technologies. The model posits that two key factors perceived usefulness and perceived ease of use determine the adoption of digital systems. In the Ogun State's public sector, TAM is relevant because the success of digitalization initiatives such as e-governance platforms and electronic financial systems depends largely on the willingness of public servants to adopt them. If employees perceive digital systems as useful in improving their job performance and easy to operate, adoption rates will increase. This has direct implications for cost efficiency. High adoption leads to reduced reliance on manual processes, Lower administrative costs, improved productivity

However, resistance to technology or lack of digital skills can limit these benefits, thereby reducing the expected cost efficiency gains

New Public Management (NPM) Theory

New Public Management (NPM) Theory, developed in the late 1970s and popularized by Christopher Hood (1991), explains public sector reform by advocating the adoption of private-sector management principles such as efficiency, performance measurement, decentralization, and accountability. It shifts emphasis from inputs and procedures to outputs and results, promoting a more results-oriented and efficiency-driven public administration model.

In the context of Ogun State, NPM provides a useful framework for understanding digital transformation in public financial management, where systems such as IPPIS, IFMIS, and electronic budgeting are introduced to

reduce waste, improve accountability, and enhance efficiency. These digital tools strengthen fiscal monitoring, reduce human errors, and improve resource allocation in line with NPM principles (Pollitt & Bouckaert, 2011). NPM also supports decentralization by empowering agencies to manage resources more efficiently, thereby reducing bureaucratic delays and improving service delivery.

However, despite these advantages, scholars such as Lapuente and Van de Walle (2020) argue that NPM often overlooks the practical difficulties of implementing reforms in complex political and administrative environments. Similarly, Bleiklie (2020) highlights challenges such as weak ICT infrastructure and inadequate technical capacity in developing countries like Nigeria, which limit the effectiveness of systems such as GIFMIS.

Overall, NPM remains highly relevant to digital public financial management reforms in Ogun State, as it links digitalisation with improved efficiency, transparency, and accountability, while also acknowledging implementation constraints in developing governance systems.

Resource-Based Theory (RBT)

Resource-Based Theory (RBT), developed by Penrose (1959) and later formalized by Barney (1991), explains that organizational performance and sustained advantage depend on the effective use of valuable, rare, and inimitable internal resources. In the context of Ogun State's public sector, RBT highlights how investments in digital technologies such as IFMIS, IPPIS, and e-procurement systems serve as strategic resources that enhance institutional capacity, transparency, and efficiency in public financial management (Akinyemi & Omotayo, 2022). These digital tools enable better planning, monitoring, and execution of government expenditures, thereby improving overall performance.

Furthermore, RBT emphasizes the importance of human capital and organizational capabilities in maximizing the benefits of digitalization. Ogun State's investments in ICT infrastructure, staff training, and capacity building have strengthened its ability to adapt to fiscal and technological changes, promoting accountability and operational effectiveness (Adetunji & Adegbite, 2023). Supported by an enabling policy environment, the strategic acquisition and utilization of these resources underpin the success of digital transformation efforts, ultimately enhancing administrative efficiency and cost effectiveness in the public sector.

THEORETICAL FRAMEWORK

This study underpin the New Public Management (NPM) Theory, and Resource-based Theory (RBT). NPM Theory underscores the role of digital tools in fostering efficiency and accountability but is criticized for its reliance on market principles that may not suit weak institutional contexts. It supports digitalisation because ICT systems streamline public administration, reduce bureaucratic delays, enhance performance monitoring and minimize cost wastage. Thus, digital reforms like TSA and GIFMIS align with NPM's goal of achieving "more output with less cost RBT posits that digital infrastructure and skilled personnel are crucial internal resources but is seen as neglecting external factors like political issues. By integrating these theories, the study offers a comprehensive perspective on the interplay of technology, management reform, and institutional capability in enhancing digital public financial management within a developing context.

Empirical Review

This section explains various studies that several studies have examined the impact of digitalization (especially e-governance) on public sector performance in Nigeria and globally.

Farrag and Ezzat (2020) examined the challenges and opportunities of digital transformation in Nigeria's public service, which faces issues like inefficiency and corruption. Using a qualitative approach and the Technology Acceptance Model (TAM), the study emphasized the benefits of digital technologies, including improved service delivery, transparency, and citizen engagement. However, barriers such as inadequate infrastructure, lack of digital skills, power outages, and political resistance hinder progress. Recommendations for advancement include prioritizing telecommunications infrastructure, establishing training programs, and enhancing security for digital initiatives.

Fagbemi and Adeoye (2020) investigated the impact of digital transformation on public sector accountability and transparency in Nigeria, focusing on federal government MDAs in Anambra State. Using a survey design and Friedman's 2WaysANOVA for analysis, the study found that the adoption of the Integrated Payroll and Personnel Information System (IPPIS) and the Treasury Single Account (TSA) significantly enhances accountability and transparency in these organizations. The results indicated a reduction in financial irregularities in the federal payroll due to IPPIS and improved financial record transparency due to TSA. The study recommends mandatory adoption of IPPIS and TSA across all MDAs and suggests expanding IPPIS legislation to encompass state and local government levels.

Bayliss et al. (2020) examined the use of digital technologies by Nigerian Ministries, Departments, and Agencies (MDAs) using secondary data from government sources and published works, analyzed through an analytical approach. The study found that service delivery in Nigeria's public sector was previously inefficient and ineffective before the adoption of digital technologies. It concluded that digitalization has significantly improved public service delivery and should be sustained, while recommending supportive policies, expansion of digital infrastructure, and public–private partnerships to enhance digital access and training, especially for rural populations.

Similarly, Amarachi et al. (2024), examined the impact of digital government on Productivity in the Nigerian Public Sector. The study gives much accentuation to the practice in INEC and FRSC. The study used non-experimental research and as such, Mixed Method Research Design was employed. Krejcie and Morgan Table was used to determine the: sample size of the study. The data of the study were generated from array of both published and unpublished documents (Textbooks, Newspaper, Magazines, internet materials, etc.).The study found that digital technology has significant benefits in the Nigerian Public Service. The study also found that factors such as insufficient tools, poor usage, maintenance, network, among others affect the application of digital technology in Nigerian Public Sector.

A study by Chiekezie and Aniekwe (2024) investigated the relationship between e-governance and public sector management performance in Nigeria. Using survey data and statistical analysis, the study found that digital infrastructure significantly improves administrative efficiency, transparency, and service delivery. The study concluded that the absence of modern technology contributes to bureaucratic inefficiencies and poor performance in the Nigerian public sector

Rousseau and Have (2022) examined the implication of Treasury Single Account on cost of governance with specific reference to Buhari civilian administration in Nigeria. The study was qualitative in nature, relying on secondary sources. It was anchored on Stakeholder Theory. The study found that increase in the cost of governance is not basically as a result of over-bloated bureaucracy rather corruption can be considered major cause of the increase. TSA therefore is primarily to ensure accountability of government revenue, enhance transparency and avoid misappropriation of public funds.

Ola et al. (2023) examine the use of digital technologies by Nigerian Ministries, Departments, and Agencies in service delivery. Utilizing secondary data, the study found that prior to digitalization, service delivery was poor and ineffective. The authors conclude that while digital processes in public service should be continued, efforts are needed to bridge the digital divide through policies for enhancing public network access and fostering public-private partnerships to train citizens, particularly in rural areas, on digital technology use.

The study by Ríos and Picazo-Tadeo (2021) explores the impact of digital government on productivity within the Nigerian Public Sector, focusing on INEC and FRSC. Utilizing a Mixed Method Research Design and determining sample size via Krejcie and Morgan Table, it assesses data from various sources. The findings indicate significant benefits of digital technology in the Nigerian Public Service, though challenges like lack of resources, poor usage, and maintenance issues hinder its application. The study urges the Nigerian government, particularly INEC and FRSC, to implement comprehensive training for employees on technology use, emphasizing the importance of resource adequacy and maintenance.

Appiah et al. (2024) investigated the limitations of GIFMIS implementation in the Anloga District Assembly, Ghana, using a survey design with 20 purposively selected respondents. Data were analyzed using descriptive

statistics such as frequencies and percentages. The study found that GIFMIS is essential for improving revenue collection, transparency, accountability, timely information dissemination, and financial control. However, its effectiveness is constrained by challenges including inadequate ICT infrastructure, poor network connectivity, limited staff ICT skills, and funding constraints.

Demir (2021) examined the impact of International Public Sector Accounting Standards (IPSAS) on financial reporting in Edo State, Nigeria. The study aimed to assess how IPSAS affects financial information disclosure, transparency and accountability, and the timeliness of financial reporting. Utilizing a survey design with primary data collected from 208 chartered accountants, various statistical methods were employed, including Pearson Chi Square for hypothesis testing. Findings indicated that IPSAS significantly enhances the disclosure of financial information, improves transparency and accountability, and influences the timeliness and comparability of financial reports. The study concluded that continued adoption of IPSAS is crucial and recommended timely online publication of annual financial reports alongside increased disclosure by reporting entities.

Dzikriansyah et al. (2023) reviewed the critical success factors that impacted theoretically, over integrated financial management information system (IFMIS) implementation with an intention of detecting a suitable factor(s) between technical, organizational, environmental, cultural and ethical behaviour which ultimately, could improve efficiency and transparency through direct payments to suppliers and contractors, reduced prices due to gains based on the time value of money for Migori County of Kenya. Theories were focused directly to full compliant with application of advanced technology within the public sector IFMIS.

Yang (2024) examined digitalization in Chinese state governments and found that the adoption of digital platforms significantly reduced administrative costs and improved service delivery efficiency. However, the study noted that maintenance costs of digital systems must be considered when evaluating long-term efficiency.

METHODOLOGY

Research Design

The study adopts a descriptive survey research design to examine the effects of digitalization on cost efficiency in Ogun State's public sector. This design enables the description of phenomena and analysis of relationships between variables without manipulation (Chen & Zhang, 2024). Using a quantitative approach, data were collected through structured questionnaires to assess variables such as transparency, efficiency, and accountability influenced by digital tools like TSA, IPPIS, and GIFMIS (Bryman, 2016; Fink, 2019).

The study is both descriptive and correlational, as it not only evaluates the level of digital transformation but also investigates the relationship between digital innovation and financial performance indicators. This approach enhances the reliability and generalization of findings, supporting evidence-based recommendations for public sector reforms.

Population of the Study

Population of the study consists of 3,552 employees from nineteen ministries in Ogun State, selected for their engagement with digital public financial management tools like GIFMIS, IPPIS, and TSA. Ogun State is noted for its proactive stance in implementing digital reforms in financial workflows, making it an important context for examining the relationship between technology and fiscal governance. The chosen ministries, responsible for budgeting, payroll, and expenditure control, are critical in revealing how digital infrastructure impacts accountability, transparency, and efficiency in state-level public financial management.

Sample Size and Sampling Procedure

This study employs a two-stage sampling approach combining purposive and census sampling. Initially, purposive sampling identified 19 relevant ministries in Ogun State using three digital financial tools such as GIFMIS, IPPIS, TSA, focusing on their roles in budgeting and public policy. Subsequently, census sampling included all finance and audit department employees in these ministries to gather data from experienced individuals. This method enhances the study's validity by selecting relevant institutions and knowledgeable

participants. Taro Yamane's model will be applied to ascertain the sample size. Taro Yamane's (1967) model will be used:

$$n = \frac{N}{1 + N(e^2)}$$

Where $n = Sample\ Size$

$N = Population = 3{,}552$ $\quad n = \frac{3{,}552}{1+3552(0.05^2)} = 360$

$e = Error\ term\ (5\%)$

In this study, 396 employees from 19 ministries in Ogun State was participated, accounting for a 10% increase to address potential non-response or incomplete data. This sample size is sufficient to represent the usage of digital tools in Ogun State, Nigeria, ensuring statistical validity for analyzing factors affecting public sector financial management. Each ministry will receive an equal share of the sample, and a specific formula will be applied to determine the allocation per ministry.$n = \frac{Employees\ in\ each\ Ministry}{Total\ Number\ of\ Employees} \times Sample\ Size$

Table 3.1 List of Employees in the 19 Ministries in Ogun state.

S/N	Institutions	Number of Staffs	Sample Size
1	Ministry of Budget and Planning	283	32
2	Ministry of Finance	391	44
3	Ministry of Commerce and Industry	177	20
4	Ministry of Culture and Tourism	162	18
5	Ministry of Agriculture	169	19
6	Ministry of Community Development and Cooperatives	193	22
7	Ministry of Education Science and Technology	422	47
8	Ministry of Environment	78	9
9	Ministry of Forestry	54	6
10	Ministry of Health	186	21
11	Ministry of Housing	93	10
12	Ministry of Information and Strategy	67	7
13	Ministry of Justice	285	32
14	Ministry of Local government and Chieftaincy Affairs	192	21
15	Ministry of Regional Integration	92	10
16	Ministry of Special Duties and Inter-governmental affairs	76	8
17	Ministry of Urban and Physical Planning	135	15
18	Ministry of Women Affairs and Social Development	209	23
19	Ministry of Works and Infrastructure	288	32
	TOTAL	**3,552**	**396**

Source: Ogun State Database (2025)

Method of Data Collection

This study utilizes a structured questionnaire designed by the researcher to collect primary data. The questionnaire, contains closed-ended items for quantitative data elicitation, focusing on the independent variable of digital revolution measured through GIFMIS, IPPIS, and TSA. The dependent variable of public financial management, operationalized via infrastructural development, government revenue, procurement efficiency, and budget transparency. Responses will be quantified using a five-point Likert scale, which, while ordinal, is commonly treated as interval-level data for statistical analysis due to its reliability in social science research. (Chen & Zhang, 2024).

Description of Research Instrument(s)

The data gathering instrument employed for this study was a structured questionnaire. The study uses a questionnaire divided into three sections: A, B, and C. Section A gathers respondents' biodata, including gender, age, marital status, education, and experience in beach resort management. Section B comprises five subsections focusing on the Digital Revolution (GIFMIS, IPPIS, TSA), while Section C addresses constructs of cost efficiency. A five-point rating scale is employed for responses, aiding reliability and cognitive ease, deemed superior to broader or narrower scales according to psychometric best practices, thus enhancing response quality of cost. (Phair & Warren, 2021; Siedlecki, 2020). This approach also aligns with psychometric best practices in survey-based studies.

Method of Data Analysis

Data analysis for this study will occur in two stages: descriptive and inferential analysis. The descriptive analysis will depict variations in participant responses using frequencies, percentage distribution tables, bar charts, means, and standard deviations, also capturing views on Digital Revolution and Public Sector Financial Management. The inferential analysis evaluated quantitative responses and relationships through multiple regression analysis using SMARTPLS 4.1.2, focusing on the effects of Digital Revolution on Public Sector Financial Management outcomes. Hypotheses one to four will utilize multiple regression, while Hierarchical Regression will be applied for hypothesis five, preceded by Average Variance Extract and Construct Reliability assessment.

Model Specification

The following Model will be used in line with the stated hypothesis
General model

$Y = f(X)$..... (1)

Y= Dependent variable

X= Independent Variable

Y= Cost Efficiency (CE)

X= Digitalisation (DG)

x_1= Government Integrated Financial Management Information System (GIFMIS)

x_2= Integrated Personal and Payroll Information System (IPPIS)

x_3= Treasury Single Account (TSA)

x_4= Digital Infrastructure

$y_1 = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon it$

$CE = \beta_0 + \beta_1 GIFMIS + \beta_2 IPPIS + \beta_3 TSA + \beta_4 DI + \varepsilon it$……. (1)

Where

β_0= Constant Parameter

β_1- β_5= Predictors

ε= Error Term

DATA ANALYSIS, PRESENTATION AND DISCUSSION OF FINDINGS

This chapter discussed the data analysis results, emphasizing their significance in relation to the study's main objectives. Using statistical software, the analysis explored relationships among variables, yielding insights relevant to the research questions. A total of 396 questionnaires were distributed to staff in Ogun State, Nigeria, with 389 completed responses returned, representing a 98% response rate. This high participation indicates strong interest and enhances the credibility of the findings, suggesting that the data accurately reflects the broader population, thus improving the study's validity and reliability.

Demographic Characteristics of Respondent

The demographic overview of respondents reveals notable characteristics: 62% are male and 38% female, indicating a gender imbalance. Most respondents (34.2%) are aged 36-45 years, with 27.8% aged 26-35 years, suggesting they are in mid-career stages. The majority (73.8%) are married, which may affect their business decisions. Educationally, 28% have a secondary school certificate, 27% hold a degree, and 11.1% possess postgraduate qualifications. In terms of business experience, 52.4% have been in business for 8-13 years, with a predominance of mid-stage enterprises, as only 9.8% have over 16 years of experience.

Descriptive Analysis of Questionnaire Responses

Table 4.1: Cost Efficiency

Statements	**SD Freq (%)**	**D Freq (%)**	**UN Freq (%)**	**A Freq (%)**	**SA Freq (%)**	**Mean (X)**
The adoption of digital technologies has reduced the overall cost of public financial management in Ogun State.	20 (5.1%)	18 (4.6%)	27 (6.9%)	92 (23.7%)	232 (59.6%)	4.2802
Automation of financial processes has minimized administrative expenses in government institutions.	11 (2.8%)	18 (4.6%)	28 (7.2%)	216 (55.5%)	116 (29.8%)	4.0488
The use of digital platforms reduces duplication of work and enhances cost savings.	8 (2.1%)	14 (3.6%)	48 (12.3%)	180 (46.3%)	139 (35.7%)	4.1003
High maintenance costs of digital systems limit the cost efficiency of public financial management.	`10 (2.6%)	17 (4.4%)	47 (12.1%)	161 (41.4%)	154 (39.6%)	4.1105
Digital financial management systems have improved value for money in government operations.	16 (4.1%)	11 (2.8%)	39 (10.0%)	144 (37.0%)	179 (46.0%)	4.1799
OVERALL						4.1440

Source: Author's Computation using SPSS 23

The table analyzes the impact of digital technologies on the cost-effectiveness of public financial management in Ogun State. It highlights cost reduction, administrative expenses, and value for money, using a five-point Likert scale for responses. Findings show that 59.6% of respondents strongly agree that digital technologies reduce overall costs (mean score: 4.28, SD: 1.11). Additionally, 55.5% agree that automation minimizes administrative expenses (mean score: 4.05, SD: 0.90), indicating effectiveness but with slightly less enthusiasm.

In terms of reducing duplication of work and enhancing cost savings, 46.3% of respondents agree (A) and 35.7% SA, with a mean of 4.10 and a standard deviation of 0.90, indicating that digital platforms are seen as effective in streamlining operations and saving costs. Conversely, when asked about the high maintenance costs of digital systems limiting cost efficiency, 39.6% SA, with a mean of 4.11 and a standard deviation of 0.96, reflecting concerns that high maintenance costs are a barrier to cost efficiency. Finally, the statement on digital financial management systems improving value for money in government operations shows 46% SA and 37% agree (A),

with a mean score of 4.18 and a standard deviation of 1.01, suggesting that digital systems have positively impacted value for money in government operations. The respondents generally agree that digital technologies have contributed to cost savings and efficiency in public financial management, with an overall mean score of 4.14 and a standard deviation of 0.60, indicating a broad consensus on the positive financial impact of digital systems in Ogun State.

Test of Hypothesis

This study involved predicting structural and measurement models through data analysis. The study utilised path coefficients and a bootstrapping method with 5000 samples to assess the Digital revolution, in accordance with scholarly recommendations[1]. All constructs and items used in the measurement model were reflective, with loading factors surpassing 0.70, consistent with recommendations from certain scholars. The study involved the assessment of path coefficients, R-squared (R^2), and the evaluation of significant values. Additionally, the bootstrapping method was identified as the most effective non-parametric technique for evaluating the model's influence in PLS-SEM. Research has employed bootstrapping estimates to enhance the accuracy of results regarding the relationship between the Digital revolution and cost efficiency in Ogun State, Nigeria. The formulated hypothesis was tested as follows:

Ho_1: There is no significant effect of digitalization on cost efficiency in Ogun State.

The hypothesis focuses on the Digitalization as an independent variable which has four dimensions (Government Integrated Financial Management Information System, Integrated Personnel Payroll Information System, Treasury Single Account, Digital Infrastructure) and cost efficiency in Ogun State, Nigeria as the dependent variable. A standardised questionnaire with a six-point Likert scale was used to gather data for all study variables. The four measures used for digitalization were part of a twenty set of questions to assess the cost efficiency in Ogun State.

Measurement Model

Measurement models assess the suitability of selected variables to represent specific constructs, requiring validation and reliability verification before structural model analysis. Outer loading factors indicate how well indicator variables measure their corresponding constructs, with effective factors ranging from 0.4 to 0.7. Additionally, for confirming convergent validity, the average variance extracted (AVE) should exceed 0.5, while composite reliability and Cronbach's Alpha must both stay above 0.7 to ensure internal consistency and reliability of the measurement model. The Measurement Model of the Hypothesis are stated in Table 4.11 below:

Table 4.2: PLS-SEM Assessment Results of Reflective Measurement Models for Hypothesis

	Convergent validity				**Internal consistency reliability**	
		Outer loadings (0.4 to 0.7)	**Bootstrapped p-value (< 0.05)**	**AVE (> 0.50)**	**Cronbach's alpha (> 0.7)**	**Composite reliability (> 0.7)**
Latent Variable	Indicator Item	Estimate	Estimate	Estimate	Estimate	Estimate
GIFMIS				**0.809**	**0.945**	**0.938**
	GIFMIS 1	0.476	0.000			
	GIFMIS 2	0.973	0.000			
	GIFMIS 3	0.978	0.000			
	GIFMIS 4	0.973	0.000			
	GIFMIS 5	0.984	0.000			
IPPIS				**0.877**	**0.965**	**0.974**
	IPPIS 1	0.978	0.000			
	IPPIS 2	0.885	0.000			
	IPPIS 3	0.960	0.000			
	IPPIS 4	0.915	0.000			
	IPPIS 5	0.943	0.000			

TSA				**0.922**	**0.979**	**0.985**
	TSA1	0.971	0.000			
	TSA 2	0.989	0.000			
	TSA 3	0.926	0.000			
	TSA 4	0.939	0.000			
	TSA 5	0.975	0.000			
Digital Infrastructure				**0.775**	**0.878**	**0.792**
	DINF 1	0.815	0.000			
	DINF 2	0.829	0.000			
	DINF 3	0.428	0.000			
	DINF 4	0.411	0.000			
	DINF 5	0.413	0.000			
Cost Efficiency				**0.577**	**0.896**	**0.921**
	CE 1	0.749	0.000			
	CE 2	0.743	0.000			
	CE 3	0.500	0.000			
	CE 4	0.484	0.000			
	CE 5	0.538	0.000			

Source: Author's Computation (2025) using SMART_PLS 4.4.1

The result in Table 4.2 above shows that all the outer loadings of the latent constructs are above 0.70 and the p value shows a value 0.000 which is below the threshold of 0.05. This shows that all the latent constructs and strong in explaining each of the main constructs, which is desirable. The AVE for Government Integrated Financial Management Information System, IPPIS, TSA, Digital Infrastructure and cost efficiency are all above the benchmark of 0.5 confirming that the model has good convergent validity. From the internal consistency, the result shows a Cronbach alpha and composite validity which are both above 0.7 indicating that Digitization and cost efficiency in Ogun State are reliable constructs in the model. Hence, the statistical analysis indicates that the relationship between Government Integrated Financial Management Information System, IPPIS, TSA, Digital Infrastructure and cost efficiency is significant and robust, providing strong support for the research hypothesis.

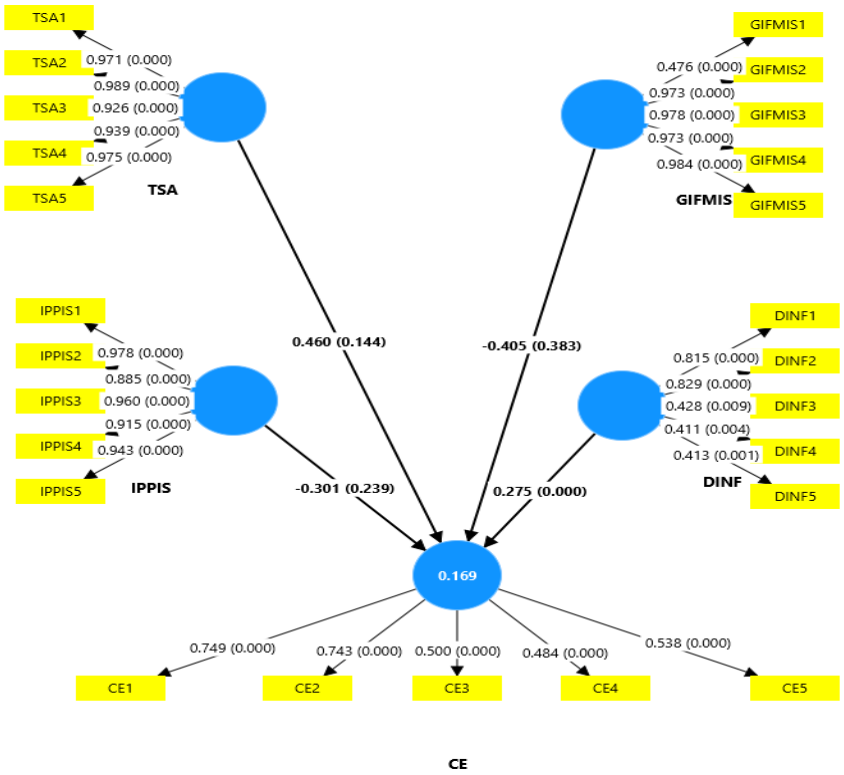

Figure 4.1: Path coefficient and P values of Digitalization and cost efficiency.

The result in figure 4.1 shows that bootstrapping value of digitalization (Government Integrated Financial Management Information System, IPPIS, TSA, Digital Infrastructure) and cost efficiency in Ogun State, Nigeria. The result shows that most of the outer loading that are between 0.4 and 0.70 confirming the latent variables are a good constructs of both Digitalization and cost efficiency. The figure also shows that majority of the latent constructs show a p value that is less than 0.05 which is highly significant. This shows a high level of confidence in the results obtained from the data analysis. This shows that the results are statistically significant and provide further evidence of the relationship between Digitalization and cost efficiency in Ogun State, Nigeria.

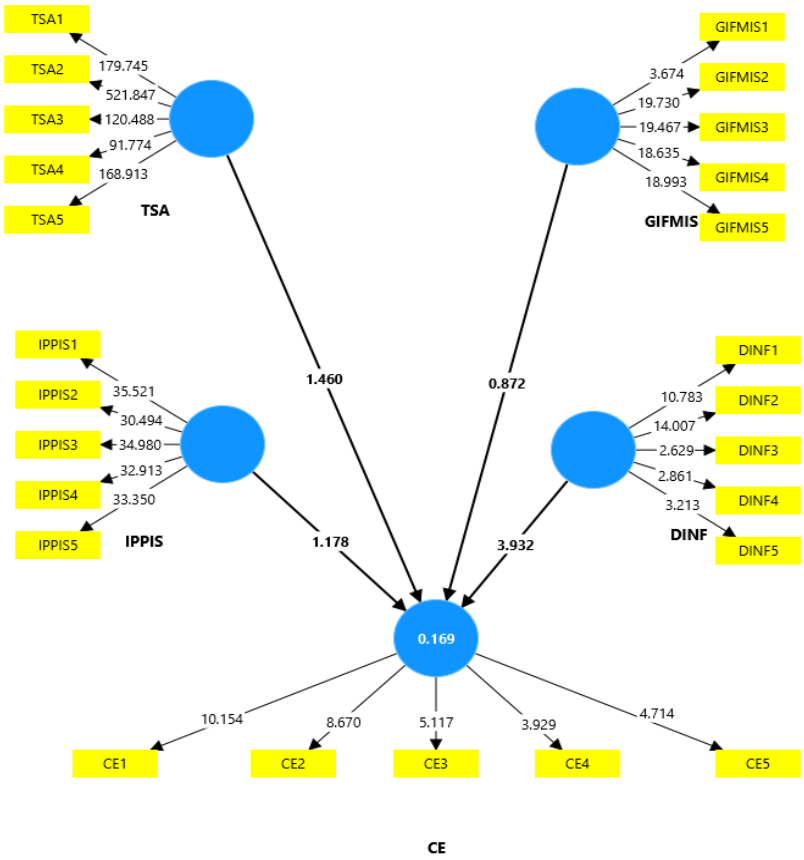

Figure 4.2: T Statistics of the Path Coefficient of Digitalization and Cost Efficiency.

The result in Figure 4.2 shows the T-statistics establishing the relationship between Digitalization and cost efficiency. The above figure shows that all latent constructs are above threshold of 1.96. This confirms the level of significance the constructs are in contributing to the significance of the study.

Table 4.3 Discriminant Validity (Heterotrait-Monotrait ratio (HTMT) for Hypothesis

	CE	DINF	GIFMIS	IPPIS	TSA
CE					
DINF	0.508				
GIFMIS	0.360	0.247			
IPPIS	0.376	0.241	0.991		
TSA	0.359	0.237	1	1.007	

Source: Author's Computation (2025) using SMART_PLS 4.4.1

The correlations' Heterotrait-Monotrait (HTMT) ratio was used to assess the discriminant validity. The upper confidence intervals are below the one value, and all the HTMT values were found to be significantly different from 1. Furthermore, the analysis results show that all the values are less than the HTMT 0.85 critical value. Besides, the average heterotrait-heteromethod correlation is lower than the average monotrait-heteromethod correlation. As a result, discriminant validity is established. The heterotrait-monotrait discriminant value is depicted in Table 4.3.

The Common Method Bias (CMB)

Common Method Bias (CMB) was evaluated by considering the structural and measurement models using collinearity statistics in the SEM-PLS tool. A VIF value of more than 3.3 indicates that the model contains common method bias[5]. However, suppose all VIF values at the factor level, as established by a maximum collinearity test, are equal to or less than 3, in that case, common method bias may not affect the model. The variance for all variables in this study was 59.90%, as Table 4.13 indicates, while the variance for CMB was within the range of 2.698 and 0.547.

Table 4.4: Common Method Bias for Digitalization and Cost Efficiency of selected ministries in Ogun state, Nigeria.

S/N	Variables	VIF [<3]	Decision	Variance Factor in % [> 50%]
1	Digitalization	1.438	Free of CMB	72.40
2	Cost Efficiency	2.467	Free of CMB	

Source: Author's Computation (2025) using SMART_PLS 4.4.1

Table 4.4 depicts that all VIF values for each measuring item and construct are subsequently less than 3 for Digitalization and Cost Efficiency of selected ministries in Ogun state, Nigeria**.** This shows that the hypothesis does not contain any common method bias.

Table 4.5: Summary of the PLS-SEM for the effect of Digitalization and Cost Efficiency of selected ministries in Ogun state, Nigeria.

Path Description	**Original sample (o) Unstandardized Beta**	**T Statistics**	**Prob.**	**R^2**	**ΔR^2**	**Q^2**	**F^2**	**Remarks**
			0.046	0.169	0.160	0.812	0.060	Significant
DINF------>CE	0.275	3.932	0.000				Positive/Significant	
GIFMIS ----->CE	-0.405	0.872	0.383				Negative/Insignificant	
IPPIS----> CE	-0.301	1.178	0.239				Negative/Insignificant	
TSA -----> CE	0.460	1.460	0.144				Positive/Insignificant	

Source: Author's Computation (2025) using SMART_PLS 4.4.1

From the analysis, the coefficient of determination (R2) of 0.169 indicates that Digitalization initiatives (Government Integrated Financial Management Information System, IPPIS, TSA, Digital Infrastructure) account for 16.9% of cost efficiency in selected ministries in Ogun state, Nigeria. The remaining 83.1% is attributed to other unmodeled factors, significant at a 95% confidence interval ($p < 0.05$). The adjusted R2 of 0.160 further confirms that approximately 16.0% of cost efficiency variations are due to Digitalization after accounting for errors.

Additionally, the PLS-SEM predictive significance was ascertained using the Q^2 value. Q2 refers to the predictive relevance of the model, with values above 0 indicating better predictive accuracy[6]. The result shows that Digitalization has a Q^2 value of 0.812, which is more than zero. This suggests that the predictive significance of the PLS path model is present for both Digitalization and Cost Efficiency of selected ministries in Ogun state, Nigeria. The effect size was also established using the F-square. F-square refers to the magnitude of the effect of the model on the dependent variable, with higher values indicating stronger effects. In this study, Digitalization was found to have an F-square value of 0.060, suggesting a moderate to strong effect on the Cost Efficiency of selected ministries in Ogun state, Nigeria. This confirmed that the relationship between Digitalization and the Cost Efficiency of selected ministries has a strong predictive power, thus confirming the level of significance of the study hypotheses.

The path coefficient shows -0.405 indicating that Government Integrated Financial Management Information System has a negative effect on the Cost Efficiency of selected ministries in Ogun State, Nigeria. The p value

shows 0.383> 0.05 indicating a significant relationship between Government Integrated Financial Management Information System and Cost Efficiency of selected ministries in Ogun State, Nigeria. This means that Government Integrated Financial Management Information System shows a negative effect on Cost Efficiency of selected ministries in Ogun State, Nigeria. Also, IPPIS has a negative effect on Cost Efficiency of selected ministries in Ogun State, Nigeria, as revealed from the coefficient of -0.301. The result also shows an insignificant effect (p= 0.239>0.05) between IPPIS and Cost Efficiency of selected ministries in Ogun State, Nigeria.

TSA has a coefficient of 0.460 confirming a positive relationship between it and Cost Efficiency of selected ministries in Ogun State, Nigeria. The p value which shows 0.144 which indicate a insignificant relationship between Digitalization and Cost Efficiency of selected ministries in Ogun State, Nigeria. Additionally, Digital Infrastructure has a positive effect on Cost Efficiency of selected ministries in Ogun State, Nigeria, as revealed from the coefficient of 0.275. The result also shows a significant effect (p= 0.000<0.05) between Digitalization and Cost Efficiency of selected ministries in Ogun State, Nigeria.

CE= 0.000 - 0.405GIFMIS - 0.301IPPIS+ 0.460TSA+ 0.275DINF---------- (i)

The results indicate that Digital Infrastructure has a positive and statistically significant impact on cost efficiency in selected ministries in Ogun State, with a coefficient ($\beta_1 = 0.275$), p-value ($0.000 < 0.05$), and t-statistic ($3.932 > 1.96$). This implies that increased investment in digital infrastructure significantly improves cost efficiency and operational performance. In contrast, the Treasury Single Account (TSA) shows a positive but statistically insignificant effect on cost efficiency ($\beta_4 = 0.460$; p-value = $0.144 > 0.05$; t-statistic = $1.460 < 1.96$), suggesting that although TSA may contribute to efficiency, its impact is not strong enough to be considered significant in this study. Similarly, the Government Integrated Financial Management Information System (GIFMIS) exhibits a negative and statistically insignificant relationship with cost efficiency ($\beta_2 = -0.405$; p-value = $0.383 > 0.05$; t-statistic = $0.872 < 1.96$), indicating that its implementation has not significantly improved cost efficiency in the selected ministries. Likewise, the Integrated Payroll and Personnel Information System (IPPIS) shows a negative and insignificant effect on cost efficiency ($\beta_3 = -0.301$; p-value = $0.239 > 0.05$; t-statistic = $1.178 < 1.96$), suggesting that it has not contributed meaningfully to efficiency improvements.

Overall, the findings reveal that while digital infrastructure significantly enhances cost efficiency, other digital financial management tools such as TSA, GIFMIS, and IPPIS do not show statistically significant effects within the context of this study

DISCUSSION OF FINDINGS

The findings reveal that digitalization significantly improves cost efficiency in Ogun State, mainly through strong digital infrastructure, which enhances resource allocation, transparency, and reduces operational costs. However, broader digital financial reforms such as TSA, GIFMIS, and IPPIS show limited or negative impacts due to poor implementation, technical challenges, and weak institutional capacity, with IPPIS particularly undermining accountability. This indicates that the effectiveness of digital reforms depends largely on the quality of implementation and supporting institutional frameworks.

These results are consistent with existing literature. Studies such as Farrag and Ezzat (2020) and Bayliss et al. (2020) affirm that digital technologies enhance efficiency and service delivery but require adequate infrastructure, skills, and policy support for optimal outcomes. Similarly, Boniface Amarachi et al. (2024) and Afadzinu et al. (2024) emphasize that insufficient training and weak project management limit the benefits of digital reforms, explaining the gap between expected and actual outcomes in Ogun State. While Fagbemi and Adeoye (2020) found TSA and IPPIS effective in improving accountability, the contrasting findings in Ogun State highlight the role of weak adoption frameworks and implementation challenges.

Furthermore, the positive impact of digital infrastructure aligns with studies such as Ola et al. (2023) and Ríos and Picazo-Tadeo (2021), which show that digitalization improves service delivery and productivity but may be undermined by poor usage and maintenance. The negative or insignificant effects of systems like IPPIS and GIFMIS also support arguments by Rousseau and Have (2022) that implementation barriers, resistance to change, and institutional constraints can limit the success of digital governance initiatives.

Overall, the study concludes that while digitalization has strong potential to enhance cost efficiency, its success in Ogun State is contingent on effective implementation, institutional capacity, adequate infrastructure, and continuous capacity building.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study examined the impact of the digitalization and cost efficiency in Ogun State, Nigeria.
Digitalization has a significant influence on cost efficiency in Ogun State, Nigeria. Specifically, Digital Infrastructure has a positive and significant impact on Cost Efficiency of selected ministries in Ogun State, Nigeria. GIFMIS has the most insignificant negative effect on Cost Efficiency of selected ministries in Ogun State, Nigeria. Also, IPPIS show a negative and insignificant impact on Cost Efficiency of selected ministries in Ogun State, Nigeria. However, TSA demonstrate a positive but statistically insignificant effect on Cost Efficiency of selected ministries in Ogun State, Nigeria. The analysis revealed that digital infrastructure plays a critical role, significantly improving cost efficiency when adopted effectively. This suggests that investments in modern technological systems can help reduce operational costs and enhance financial performance. However, other digitalization tools such as the TSA, GIFMIS, and IPPIS did not produce significant improvements in cost efficiency. This outcome highlights the need to address implementation challenges and ensure these systems are fully optimized to achieve cost-saving benefits.

The study concludes that the digitalisation offers great potential for strengthening public financial management in Ogun State. However, its success depends on adequate infrastructure investment, proper implementation of digital systems, continuous staff training, staff readiness and effective change management practices to overcome organizational and technical barriers.

Recommendations

To enhance cost efficiency in Ogun State through digitalization, the study recommends that the government invest in digital infrastructure to improve accountability and financial operations. Key steps include strengthening internet connectivity, data storage, and security measures. Comprehensive training for public sector employees on digital tools like TSA, GIFMIS, and IPPIS is essential to mitigate resistance and improve system adoption. Change management practices, including stakeholder engagement and communication, are necessary for smooth transitions. Establishing monitoring frameworks will help track digital tool performance, while public-private partnerships can foster innovation and technical expertise for sustainable digital reforms.

However, the study is subject to limitations, including reliance on self-reported data, which may introduce response bias, and the use of a cross-sectional research design, which limits causal inference. In addition, contextual factors such as infrastructure gaps and policy implementation challenges may influence the outcomes of digitalization. Future studies should adopt longitudinal designs and incorporate additional variables to improve explanatory power and provide deeper insights.

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