
Leveraging Information Technology for Transparent, Accurate, Accessible and Accountable Public Sector Finance Reports for Sustainable Development

By

Adedotun Joshua ADEWUMI¹

Abdulwasih Olaniyi ABDULGANIYY²

Department of Urban & Regional Planning, Faculty of Environmental Design & Management, Lead City University, Ibadan

Correspondent Author: mysalem91@gmail.com

Abstract

The use of information technology (IT) by public service is critical to achieving the Sustainable Development Goals (SDGs). The recognition of the Nigerian government to adopt the modern financial reporting system had initiated efforts to leverage on IT for improved financial management. The concepts of IT and Sustainable Development drive the study. This study explored the impact of information technology (IT) on financial reporting in the Federal Inland Revenue Service (FIRS) and the Ministry of Finance in Ibadan, Oyo State. The study population comprised 60 accounting staff from the Federal Inland Revenue Service (FIRS) and the Ministry of Finance in Ibadan. The mixed-methods by Creswell 2014 were adopted. Thirty (30) staff members were sampled from each ministry, totaling sixty (60) participants. This sample size was chosen to ensure appropriate representation of the study population within the selected ministries. In-depth interviews with 20 key stakeholders from the two organizations supplemented the survey, offering qualitative perspectives on the benefits and challenges of IT-enabled financial reporting. The study reveals that IT improves financial reporting accuracy, timeliness, and accessibility, thereby promoting transparency, accountability, and informed decision-making. However, IT adoption is hindered by infrastructure constraints, limited technical expertise, and inadequate regulatory frameworks. The findings inform policy recommendations for enhancing IT-enabled financial reporting in the public sector for sustainable development.

Keywords: Information Technology, Sustainable development, Transparency, Accountability, Decision- Making.

1 Introduction

The advent of information technology (IT) has transformed the landscape of financial reporting in the public sector. Leveraging IT can significantly enhance the accuracy, timeliness, and accessibility of financial reports, thereby promoting transparency, accountability, and informed decision-making. However, the adoption and implementation of IT-enabled financial reporting systems in the public sector pose significant challenges. In Nigeria, the public sector has struggled with manual and inefficient financial reporting systems, leading to delays, inaccuracies, and limited transparency. The Nigerian government has recognized the need to modernize its financial reporting systems and has initiated efforts to leverage IT for improved financial management.

An information system comprises structured procedures for gathering, processing, and delivering data in usable formats to relevant users. This system provides information via reports, supporting decision-making by both internal and external stakeholders. Across various sectors public and private, profit-oriented and nonprofit accounting information is crucial for decision-making, with information requirements varying depending on user needs. Initially, accounting information was manually generated by accountants, a method that was labor-intensive and prone to error. However, advancements in computer technology have equipped accountants with digital tools that streamline processes and deliver high-quality information essential for strategic decisions. Organizational success or failure often hinges on the effective management and utilization of accounting information, underscoring the significance of accurate financial data. Over the past two decades, rapid developments in science and technology have revolutionized various sectors, including accounting and information systems, shaping national progress in socio-cultural, socioeconomic, and political dimensions. Sustainable development aligns with societal values and ambitions, enhancing national prosperity, particularly through science and technology advancements. Nigeria, to progress into a modern, well-organized, and technologically proficient society, must adopt high standards of science and technology across public and private sectors. Although science and technology have permeated Nigerian society, questions remain about the sophistication and progressive enhancement of these systems.

This study aims to investigate the impact of IT on financial reporting in the Nigerian public sector, exploring the benefits, challenges, and opportunities associated with IT adoption. By examining the experiences of public sector organizations in Nigeria, this research seeks to contribute to the existing body of knowledge on IT-enabled financial reporting and inform policy recommendations for enhancing transparency, accountability, and financial management in the public sector.

2. Conceptual Review

2.1 Information Technology

Information Technology (IT) encompasses a wide range of technologies that facilitate the creation, storage, exchange, and use of information in various forms, including business data, voice communications, still images, video, multimedia presentations, and other evolving formats.

The IT sector spans multiple industries, including computer hardware, software, electronics, the internet, e-commerce, and computer services¹. The emergence and advancements in IT have significantly transformed various industries, including accounting. Specifically, IT has changed how accounting professionals manage and track assets. As technology progresses, the accounting profession has adapted accordingly. According to Top Accounting Degrees, twelve major technological advancements have been pivotal in shaping accounting practices. These advancements include the invention of money, the abacus, the slide rule, electricity, the cathode ray tube, adding machines, the comptometer, handheld calculators, computers, data storage devices, microchips, and accounting software.

Inline with the Bureau of Labor Statistics (BLS), technology will continue to influence the role of accountants, especially with the rise of automation in routine accounting tasks. With the growth of cloud computing, certain accounting tasks such as data entry and invoice processing may become automated. However, this automation is not expected to reduce the demand for accountants. Instead, it will shift the focus of accountants to more advisory and analytical tasks. The BLS states that "with the automation of routine tasks, such as data entry, the advisory and analytical duties of accountants will become more prominent².

The IT industry is divided into four sub-sectors: custom computer programming, computer systems design, computer facilities management, and other computer-related services. Custom programming businesses write, test, and modify software for clients, while computer systems design firms plan, design, and integrate hardware, software, and communication systems. These firms also install new systems and provide training and support post-installation. Computer facilities management services handle the operation and management of computer systems and data processing facilities, while other computer-related services offer specialized services, including disaster recovery and software installation. IT jobs can be demanding and stressful, but they are often financially rewarding³. During the 1970s, many people entered the IT field due to the limited availability of computer science programs, which required technical skills and problem-solving abilities. Today, IT professionals are expected to specialize in various domains such as computer software, networking, and data management. In the early 21st century, 63% of chief information officers (CIOs) reported difficulty finding skilled IT professionals, underscoring the high demand for these workers⁴.

2.1.2 The Influence of Information Technology on Accounting/ Accuracy

Accounting has been significantly impacted by the proliferation of information technology (IT).

With the advent of accounting software, traditional paper ledgers and accounting books have been replaced, allowing for greater efficiency in financial management. These software systems come in various forms, including specialized applications and customizable generic programs tailored to the unique needs of businesses. The choice of accounting software is often determined by the size of the company and the number of users who will interact with the system. Large corporations typically implement enterprise resource planning (ERP) systems, which offer a comprehensive suite of functions, while smaller businesses may opt for standalone accounting software packages designed to handle essential accounting tasks.

IT has transformed the role of accounting departments, reducing the time required for accountants to prepare and present financial information. The traditional manual systems of accounting have been replaced with digital solutions that offer rapid processing of data, enabling timely reporting to management and other stakeholders. Information technology has not only reduced lead times but also enhanced the overall efficiency, accuracy, and accessibility of financial data¹⁸. Computerized accounting systems are equipped with internal checks and balances that help ensure that all transactions are recorded accurately. Most systems automatically verify that debits and credits are balanced during the posting process, preventing discrepancies that could affect the accuracy of financial records. Additionally, access control measures within these systems limit adjustments to qualified personnel, further ensuring the accuracy and integrity of financial data.

Automated transaction processing has reduced the time required to complete accounting tasks, such as closing monthly or yearly financial periods. In the past, these tasks were time-consuming and required substantial manual effort, but with computerized systems, accountants can close periods more swiftly and with fewer errors. This improvement in speed contributes to cost control and allows businesses to focus on other areas of operation, improving overall company efficiency.

2.2 Sustainable Development

Sustainable development (SD) is an umbrella concept that encapsulates issues bordering on economics, ecology, and society. It aims to proffer solutions to the world's most vital problems such as social inequity which directly affects economic development, global warming, resource depletion, and environmental degradation. It is a structure intended to fulfil present-day requirements for survival without jeopardizing the opportunities of the future generations to fulfil their own existential requirements¹⁶. The equity and prosperity of all people in the future depends largely on our being able to achieve SD. The relevance of SD is critical when considering the way out of the global challenges of the modern time. SD involves achievement of harmonious balance between social equality, economic viability, social equality and environmental preservation – the three central pillars of SD. The first two of the fundamental

pillars are relevant to this study¹⁶.

2.2.1 Influence of Sustainable Development Goals on Public Sector Accurate and Transparent Reporting

Businesses are progressively expected to divulge their progress in relation to SD via commitment to the United Nations Sustainable Development Goals (SDGs). Although, increasing trend towards disclosure is recorded, variations in quality and content exist in corporate reporting on (SDGs)²⁰.

The adoption of the United Nations' Sustainable Development Goals (SDGs) in 2015 has significantly impacted the public sector's approach to governance, accountability, and reporting (UN, 2015)¹⁸.

2.2.1.1. The SDGs and Public Sector Accountability

The SDGs provide a universal framework for addressing global challenges, including poverty, inequality, climate change, and environmental degradation¹⁸. They have significantly increased the demand for transparency and accountability from public sector entities.

The SDGs have influenced public sector accounting in several ways:

- **Integration of Environmental and Social Factors:** The SDGs have broadened the scope of public sector accounting to include environmental and social factors, such as climate change mitigation, resource conservation, and social equity²⁴. This has necessitated the development of new accounting standards and metrics to capture and report on these non-financial aspects of performance.
- **Improved Data Collection and Analysis:** The need to track progress towards the SDGs has driven improvements in data collection and analysis methodologies. This has led to the development of more robust and reliable data sources for public sector accounting, enhancing the accuracy and credibility of financial reporting²¹.
- **Increased Focus on Long-Term Sustainability:** The SDGs emphasize the importance of long-term sustainability. This has encouraged public sector entities to adopt a long-term perspective in their financial reporting, considering the environmental, social, and economic impacts of their decisions over time²².

3. Theoretical Review

3.1 Accounting Information System Quality and Accounting Information

The primary objective of an information system in an organization is to effectively process data, converting it into meaningful information that aids in supporting organizational transactions. Information systems generate reports that are valuable for both internal and external stakeholders, helping managers, employees, and external parties make informed decisions. The

ability of an information system to process and organize information forms a critical foundation for decision-making within the organization, providing essential insights that drive strategy and operational effectiveness⁵.

An information system is fundamentally composed of various elements: human resources, hardware, software, data, and communication networks. Together, these components function to collect, process, store, and distribute data, transforming it into usable information. This synergy between components not only supports decision-making but also enables streamlined workflows, data accuracy, and efficient information flow within an organization⁶.

The structure of an information system relies on interconnected subsystems, both physical and non-physical, that work harmoniously to achieve a unified objective. These subsystems integrate with each other to ensure that data processing and communication are optimized, ultimately producing useful information that supports organizational goals. An effective information system also enhances an organization's ability to respond to market changes, manage resources, and improve overall productivity by offering timely, accurate, and relevant information⁷.

Accounting information systems (AIS) serve as a specialized subset of information systems, specifically designed to manage and process accounting data. An AIS consists of structured components that gather, store, process, and report accounting information to aid users in decision-making and financial management⁸. This system is critical for ensuring that financial transactions are accurately recorded, organized, and reported, which is essential for maintaining compliance with financial regulations and standards.

Accounting information system is known to be a specialized subsystem within the broader organizational information system. The core purpose of an AIS is to collect, process, and report information that pertains to the financial aspects of business activities. This includes tracking revenues, expenses, assets, liabilities, and equity to provide a clear picture of an organization's financial health. By ensuring the accuracy and accessibility of financial information, an AIS supports internal decision-making processes and satisfies external reporting requirements. This level of detail and accuracy is instrumental in driving organizational efficiency, supporting financial planning, and maintaining transparency with stakeholders⁹.

2.6 Empirical Review

The advent of artificial intelligence (AI) has catalyzed significant progress in developing technological tools and services, transforming how people interact with technology. AI, which can be traced back to the 1940s, gained prominence through works like Isaac Asimov's *Runaround*, which conceptualized the ethical principles governing robot interactions. The subsequent introduction of deep learning technologies has been a pivotal step, fundamentally altering numerous industries, including accounting. Technological advancements have

revolutionized information-sharing capabilities, boosting mobility and efficiency in fields such as finance and accounting. For example, computerized accounting systems now enable accountants to monitor financial performance remotely, streamlining client interactions and allowing more focus on value-added tasks¹⁰.

Blockchain technology has further redefined the accounting sector by enhancing data integrity and security. Schmitz discusses how blockchain allows accountants to securely store transaction records across a decentralized network, fostering greater transparency and automation in financial reporting and bookkeeping. Moreover, cloud accounting a major technological leap has enhanced internal and external auditing processes, as Moll illustrates. Cloud-based platforms allow real-time access to financial data, facilitating decision-making and accuracy in financial planning. Additionally, blockchain technology enables cost-effective and decentralized bookkeeping processes, while cloud add-ons have increased functional efficiency, bridging the gap between traditional and modern accounting methodologies¹¹.

These technologies, particularly blockchain, have shifted the accounting landscape, with digital tools replacing manual operations. Today, accounting professionals depend on customized software for tasks like tax calculation, thereby minimizing the margin for error and enhancing efficiency. This study delve into how these innovations have reshaped the accounting profession by analyzing previous research and empirical data, addressing the role of technology in reducing errors, improving access to data, and creating innovative practices¹².

4. Methodology

4.1 Population

The population for this study consists of staff members from the Audit and Accounts departments of two key ministries in Ibadan that are relevant to the research focus: the Federal Inland Revenue Service (FIRS) and the Ministry of Finance in Ibadan, Oyo State. These ministries were selected due to their significant roles in the application of information technology within the accounting profession in Nigeria. The choice of these institutions is grounded in their prominence and influence on accounting practices at the national and regional levels. As such, the research population is expected to provide valuable insights into the impact of information technology on accounting processes in public sector organizations.

The study population is specific to the staff working in departments directly involved in financial management and accounting activities, making them well-positioned to provide the necessary data on how IT is integrated into their daily operations. The focus on the FIRS and Ministry of Finance ensures the research addresses the challenges and successes of IT application in prominent governmental agencies that play a central role in financial oversight and policy implementation¹³.

The total sample size for this study was sixty (60) respondents, with thirty (30) participants selected from each ministry. This sample size was deemed adequate to provide a meaningful representation of the staff within these departments while ensuring that the sample was manageable for analysis. The sample size was also chosen to maintain a balance between obtaining sufficient data and the resource constraints inherent in the research process. Convenience sampling, though non-random, allows for the collection of relevant data within the given time and resource limits, making it a pragmatic approach for this study.

Also, In-depth interviews with 20 key stakeholders from the two organizations supplemented the survey, offering qualitative perspectives on the benefits and challenges of IT-enabled financial reporting.

5. Findings

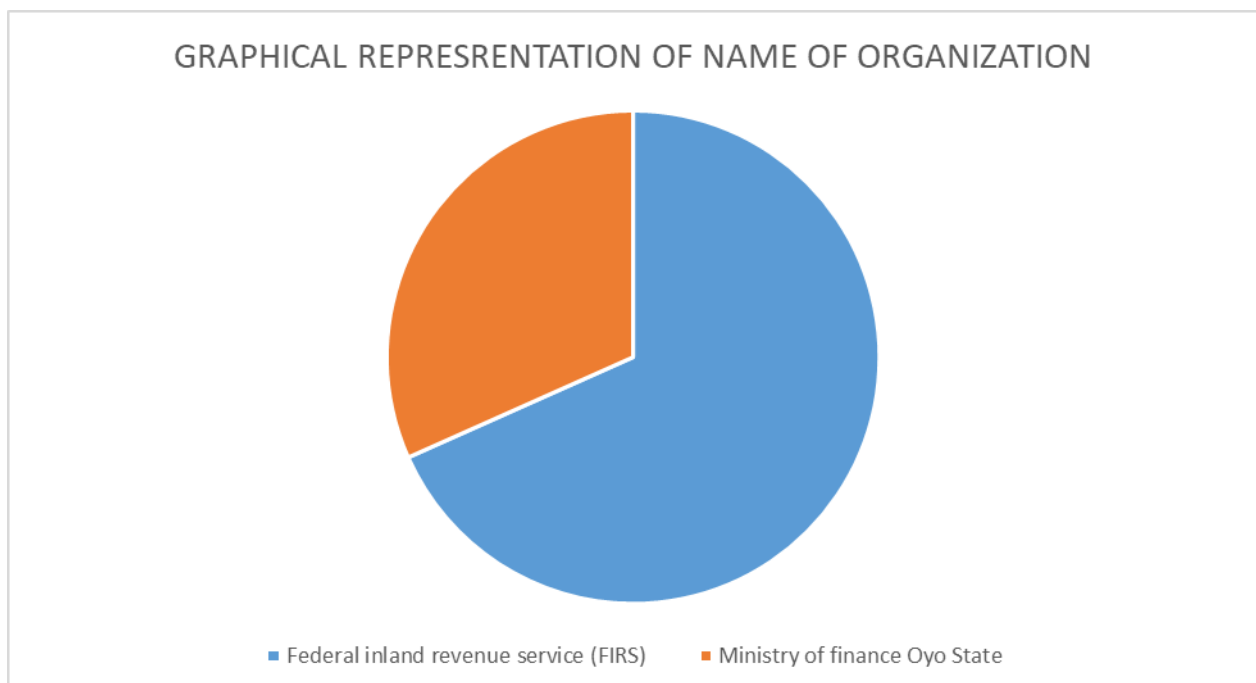


Figure 4.1: Graphical Representation of Name of Organization

Table 4.1: Gender

Gender	Frequency	Percent	Cumulative percent
Male	29	48.3	48.3
Female	31	51.7	100.00
Total	60	100	

Table 2 presents the gender distribution of the participants, with 48.3% identifying as male and 51.7% as female. This data indicates a nearly equal representation of both genders within the selected organization. The slight difference in percentages reflects a relatively balanced gender composition, suggesting that neither gender is significantly underrepresented or overrepresented in the sample. This equitable distribution may provide a more comprehensive perspective on the experiences and views of both male and female participants within the organization, ensuring that the findings are not biased toward one gender.

Table 4.2: Age

Age	Frequency	Percent	Cumulative percent
20 – 29	14	23.3	23.3
30 – 39	21	35.00	58.3
40 – 49	18	30.00	88.3
50 – above	7	11.67	100
Total	60	100	

The table above provides a detailed breakdown of the age distribution of the respondents in the study. It indicates that 23.3% of the participants are between the ages of 20 and 29, suggesting a notable portion of younger individuals in the workforce. The largest group, 35.0%, falls within the 30 to 39 age range, indicating a strong representation of individuals in the early to mid-career stage. Additionally, 30.0% of the respondents are aged 40 to 49, highlighting the presence of a significant proportion of experienced professionals. Finally, 11.67% of the respondents are aged 50 and above, suggesting that the organization retains a diverse age demographic, including individuals in the later stages of their careers. This age distribution implies that the organization has a robust employment base with a good mix of both younger and more experienced personnel, which likely contributes to a dynamic and active workforce.

Table 4.3: The organization uses ICT for its financial transaction

	Frequency	Percent	Cumulative percent
Strongly agreed	41	68.33	68.33
Agreed	18	30.00	98.33
Neutral	1	1.67	100
Total	60	100	

According to the data presented in the table above, a significant portion of respondents, 68.33%, strongly agreed that the organization employs Information and Communication Technology (ICT) for its financial transactions. Additionally, 30.00% of respondents agreed with this statement, while a smaller group, 1.67%, expressed uncertainty, indicating they were unsure whether the organization utilizes ICT in its financial operations. Given that the overwhelming majority of respondents (98.33%) either strongly agreed or agreed with the statement, it is reasonable to conclude that the organization indeed incorporates ICT into its financial transaction processes. This suggests that ICT plays a key role in streamlining and managing the organization's financial activities, enhancing efficiency and possibly supporting greater accuracy and security in these operations.

Table 4.4: The implementation of Information technology has helped to improve financial transaction report of the organization

	Frequency	Percent	Cumulative percent
Strongly agreed	31	51.67	51.67
Agreed	24	40.00	91.67
Neutral	3	5.00	96.67
Disagreed	2	3.33	100
Total	60	100	

Based on the data presented in the table above, a majority of respondents, 51.67%, strongly agreed that the implementation of Information Technology (IT) has significantly contributed to the improvement of financial transaction reporting within the organization. This indicates a positive reception towards the integration of IT systems in enhancing financial processes. In addition, 40.00% of respondents agreed with the statement, further supporting the view that IT has played a beneficial role in improving the accuracy and efficiency of financial transaction reports. On the other hand, 5.00% of the respondents were unsure or did not have a clear opinion on whether the implementation of IT has led to improvements in financial reporting. This group represents those who may lack sufficient knowledge or experience with the IT systems in place, leading to ambiguity in their responses. Furthermore, a small minority, 3.33%,

disagreed with the assertion that IT has helped improve the financial transaction reporting of the organization, suggesting that a few individuals may perceive the IT implementation as ineffective or potentially disruptive to the financial reporting process.

This distribution of responses reflects a generally positive outlook on the impact of Information Technology on the organization’s financial transaction reporting, though there remains some uncertainty and disagreement among a small segment of the respondents.

Table 4.5 : The use of Information technology has enhanced the financial transaction process of the organization

	Frequency	Percent	Cumulative percent
Strongly agreed	29	48.33	48.33
Agreed	27	45.00	93.33
Neutral	2	3.33	96.67
Disagreed	2	3.33	100
Total	60	100	

The data presented in the table reveals that a significant majority, 93.33%, of respondents affirm that the integration of computer technology has positively impacted and improved the financial transaction process within the organization. This suggests that the adoption of technological tools has streamlined, accelerated, or otherwise enhanced financial operations. On the other hand, a small proportion, 3.33%, remain undecided about the effectiveness of technology in improving these processes, while another 3.33% disagree with the notion that information technology has had a positive influence on the organization's financial transactions. Despite the small number of dissenting opinions, the overwhelming consensus points to the conclusion that computer technology has indeed played a crucial role in enhancing the efficiency and effectiveness of the financial transaction process in the organization.

Theme 1: Benefits of IT-Enabled Financial Reporting

1. Improved Accuracy: Stakeholders highlighted the reduction in errors and inaccuracies in financial reports due to automation and electronic data processing.
2. Enhanced Transparency: IT-enabled financial reporting was seen as promoting transparency and accountability, enabling stakeholders to access financial information easily.
3. Increased Efficiency: Stakeholders noted the significant reduction in processing time and manual labor required for financial reporting.

Theme 2: Challenges to IT Adoption

1. Infrastructure Constraints: Stakeholders cited inadequate IT infrastructure, including hardware, software, and internet connectivity, as a major challenge.
2. Limited Technical Expertise: The lack of skilled personnel to manage and maintain IT systems was identified as a significant obstacle.

3. Resistance to Change: Some stakeholders noted that employees were resistant to adopting new IT-enabled financial reporting systems

Theme 3: Opportunities for Improvement

1. Capacity Building: Stakeholders emphasized the need for training and capacity-building programs to enhance employees' technical skills.

2. Infrastructure Development: The need for investments in IT infrastructure, including hardware, software, and internet connectivity, was highlighted.

3. Regulatory Frameworks: Stakeholders called for the development of clear regulatory frameworks to guide IT-enabled financial reporting in the public sector.

Theme 4: Impact on Decision-Making

1. Informed Decision-Making: Stakeholders noted that IT-enabled financial reporting enabled more informed decision-making, as financial data was more accurate and readily available.

2. Data-Driven Decision-Making: The use of data analytics and business intelligence tools was seen as enhancing decision-making processes.

This thematic analysis provides a rich understanding of the benefits, challenges, and opportunities associated with IT-enabled financial reporting in the Nigerian public sector.

6. Discussion

The findings from the data analysis, which are aligned with the objectives set out in the study, are as follows:

(a) Information technology significantly affects the financial transaction reporting process within the selected companies, as indicated by the empirical results obtained during the study. This suggests that the automation of accounting processes through computer technology leads to more accurate and efficient reporting, reducing human error and improving the timeliness of financial reports.

(b) In-line with the qualitative and quantitative methods, results showed that the integration of information technology has had a profound and positive impact on the financial performance of these organizations. This finding highlights the crucial role that technology plays in streamlining financial operations, improving decision-making processes, and driving overall performance within these organizations.

(c) The study also reveals that there are significant challenges associated with Information Technology to Improve the Accuracy, Timeliness, and Accessibility of Financial Reports in the Public Sector in Promoting Transparency, Accountability, and Informed Decision-Making. These challenges may include resistance to change, high costs of implementation, lack of adequate technical support, and insufficient training for accounting personnel. Despite these hurdles, the overall benefits of information technology outweigh the difficulties, as it enhances the capacity for data management and accuracy in financial reporting.

5.2 Conclusion/Recommendation

This study has investigated the impact of information technology (IT) on financial reporting in the Federal Inland Revenue Service (FIRS) and the Ministry of Finance in Ibadan. The findings reveal that IT has improved the accuracy, timeliness, and accessibility of financial reports, thereby promoting transparency, accountability, and informed decision-making. However, the study also highlights significant challenges to IT adoption, including infrastructure constraints, limited technical expertise, and resistance to change. To address these challenges, the study recommends investments in IT infrastructure, capacity-building programs for employees, and the development of clear regulatory frameworks.

The study's findings have implications for policymakers, practitioners, and researchers seeking to enhance financial management and governance in the public sector. By leveraging IT, the Nigerian government can promote transparency, accountability, and informed decision-making, ultimately contributing to improved governance and sustainable development.

Future research should focus on exploring the impact of emerging technologies, such as blockchain and artificial intelligence, on financial reporting in the public sector. Additionally, studies should examine the effectiveness of IT-enabled financial reporting systems in promoting transparency and accountability in other developing countries.

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