



BULLION

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Fiscal Discipline and Transparency: Rethinking Accountability in the Nigeria's Public Sector

By: Emmanuel A. Onwioduokit, Ph.D.

Economic Implications of Generator Dependence Amid Nigeria's Energy Crisis: Impact on Production Costs and SME Sustainability

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The Role Of Information Systems Controls In Fraud Risk Prevention in Financial Institutions: A Study of Quoted Deposit Money Banks (DMBs) in Nigeria.

By: Ohwo Kensington Onajero

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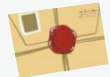
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Introduction

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The BULLION is committed to the dissemination of research findings and information about its research interests.

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We look forward to receiving your submissions.

CBN BULLION: AUTHORS' PROFILES

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Fiscal Discipline and Transparency: Rethinking Accountability in the Nigeria's Public Sector



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ABSTRACT

This paper examines the interaction between fiscal discipline and transparency as key pillars of accountability within Nigeria's public sector. The specific objective is to assess the impact of transparency on fiscal discipline and to propose mechanisms for strengthening fiscal accountability. Utilizing a mixed-methods approach, the research analyzes recent fiscal policies and accountability frameworks, highlighting the detrimental effects of inadequate transparency on budgetary integrity and public trust. The study recommends the integration of technological innovations for real-time financial monitoring and initiatives to enhance citizen engagement in budgetary processes. The Paper calls for structural reforms to foster improved governance and economic resilience.

Keywords: Fiscal Discipline, Transparency, Accountability, Public Sector, Governance

JEL Classification: H1, H2 H3 D73 O10

1.0 Introduction

Fiscal discipline and transparency are essential pillars for the sustainable management of public resources and the advancement of good governance. They are not merely theoretical constructs but practical imperatives that ensure that governments remain accountable to their citizens and that public resources are allocated efficiently and fairly. In Nigeria, however, the lack of fiscal prudence and transparency has been a recurring issue, often manifesting in widespread corruption, misallocation of resources, and inefficiencies that have impeded the country's development trajectory (Adeyemi & Olowu, 2019). Over the years, the Nigerian public sector has been plagued by several instances of fiscal mismanagement, a situation that has undermined economic growth and eroded public trust in governance institutions (Amadi & Eke, 2020).

One of the central issues is the weak enforcement of fiscal policies and the opacity surrounding public financial management. As global standards for fiscal governance evolve, Nigeria remains significantly behind in terms of accountability measures and transparency, despite its efforts at reforming public financial systems (Ojo, 2020). The public sector's failure to practice fiscal discipline and transparency has led to increased debt levels, reduced public sector efficiency, and heightened public skepticism regarding the government's commitment to improving living standards (Suleiman, 2021). As the push for greater fiscal accountability continues to grow, it is vital to reassess and strengthen the mechanisms through which public financial management is monitored, reported, and audited.

Nigeria's history of fiscal mismanagement is littered with numerous examples of financial indiscipline. These cases highlight the scale of the problem and underscore the need for greater transparency and accountability:

One of the most prominent examples of fiscal misconduct in Nigeria involves the sale of Oil Prospecting License (OPL) 245 to Malabu Oil and Gas in 1998. This controversial deal, which resurfaced in 2011, saw Nigeria lose billions of dollars in revenue due to opaque agreements and underhanded dealings between government officials and private actors (Global Witness, 2017). The lack of transparency in the transaction process, coupled with corruption allegations, exposed serious lapses in fiscal oversight within the public sector.

In 2012, an investigation into Nigeria's fuel subsidy

programme revealed massive fraud and financial misappropriation. The Nigerian government had allocated over \$6.8 billion for fuel subsidies, but it was discovered that much of this money had been diverted into private pockets through fake subsidy claims and inflated costs (Lawal, 2013). This scandal not only demonstrated the magnitude of fiscal waste but also pointed to significant weaknesses in the country's fiscal monitoring systems.

Excess Crude Account (ECA) Mismanagement: Nigeria established the Excess Crude Account (ECA) in 2004 to save surplus oil revenues and stabilize the economy in times of oil price fluctuations. However, in practice, the ECA has been subject to fiscal profligacy. Several administrations have reportedly dipped into the account without proper legislative oversight, and between 2007 and 2015, over \$18 billion was withdrawn from the ECA with little to no explanation or accountability (Bello, 2018). This misuse of national savings has further highlighted the country's persistent lack of fiscal discipline.

Nigeria has taken several steps toward improving fiscal transparency and public financial management, notably through reforms like the Public Procurement Act of 2007, the Fiscal Responsibility Act (FRA) of 2007, and the introduction of the Treasury Single Account (TSA) in 2015. The FRA, for instance, mandates that all levels of government maintain fiscal discipline by establishing annual budgetary limits and controlling borrowing practices (Ogbu, 2020). Meanwhile, the TSA aims to consolidate all government accounts into a single treasury, reducing leakages and enhancing the monitoring of public finances (Abdullahi & Ilesanmi, 2017).

Despite these reforms, however, enforcement remains weak, and the culture of impunity continues to prevail in many aspects of public financial management. Government agencies often flout these regulations with minimal consequences, and the institutional capacity for monitoring and auditing remains limited (Aliyu & Lawal, 2021). Additionally, the reporting mechanisms for public finances remain opaque, with little public access to comprehensive data on government spending and revenue collection.

The objective of this paper is to examine the existing frameworks governing fiscal discipline and transparency in Nigeria, with a focus on identifying gaps in public accountability and proposing reforms to enhance fiscal governance. This paper analyzes key instances of fiscal irresponsibility and compares

Nigeria's approach with international best practices, highlighting the necessary changes to strengthen fiscal oversight and accountability for more effective governance.

The remaining sections of this paper is organized as follows. Section 2 provides a theoretical overview of fiscal discipline and transparency. The current state of fiscal management in Nigeria and its consequences are contained in Section 3. Section 4 discusses international best practices in fiscal accountability and transparency as well as comparative analysis with Nigeria experience. Section 5 proposes policy reforms to enhance fiscal discipline and transparency in the Nigerian public sector as well as conclusion.

II. Theoretical Overview of Fiscal Discipline and Transparency

2.1 Conceptual Review

Fiscal responsibility and openness are pivotal components in ensuring effective public sector governance. Fiscal responsibility refers to the government's ability to manage public finances within set boundaries, promoting resource efficiency, curbing inefficiencies, and fostering accountability. This responsibility is crucial in preventing budget deficits and unsustainable debt levels (Alesina & Perotti, 1996). The concept is intertwined with sound fiscal policy, which entails exercising restraint in public expenditure, borrowing responsibly, and generating sufficient revenue for public service delivery. Fiscal transparency, on the other hand, emphasizes openness in government financial dealings, particularly concerning budgeting, taxation, and expenditures (Kopits & Craig, 1998). It involves providing stakeholders—citizens, financial institutions, and oversight bodies—access to clear, relevant, and accurate information regarding government financial operations.

2.2 Theoretical Review

Theoretical underpinnings of fiscal responsibility and transparency are rooted in classical economic theories and modern governance frameworks. One such theory is the Ricardian Equivalence (Barro, 1979), which posits that governments should avoid excessive borrowing, as future generations will be burdened by the resulting debt. Excessive fiscal deficits lead to negative economic consequences, including inflation and higher interest rates, which undermine long-term stability.

The Intertemporal Budget Constraint theory complements this by stressing that governments should manage their finances sustainably over time to avoid fiscal crises (Barro, 1979). This theory advocates for responsible fiscal practices to ensure balanced budgets and avoid excessive public debt accumulation, thus contributing to economic stability. The Agency Theory (Jensen & Meckling, 1976) offers valuable insights into fiscal transparency. It emphasizes the importance of reducing information asymmetry between the government (agents) and the public (principals). Transparent financial management systems enable effective oversight by entities like parliaments and civil society organizations, which play an essential role in preventing corruption and ensuring accountability in the use of public resources.

Additionally, the Public Choice Theory (Buchanan & Tullock, 1962) asserts that lack of transparency in government financial operations often encourages rent-seeking behaviours, where politicians prioritize personal interests over public welfare. Transparent fiscal operations help curb such behaviour by providing clear, accessible information for scrutiny, which leads to better policy decisions and greater accountability.

2.2.1 Theoretical Framework

The theoretical framework is based on Public Choice Theory, Agency Theory, and the Fiscal Transparency and Accountability Framework. These theories highlight self-interest in public office, principal-agent dynamics, and the role of transparent institutions in mitigating rent-seeking, reducing information asymmetry, and enhancing fiscal discipline in Nigeria's public sector.

2.3 Empirical Review

Fiscal discipline and transparency are crucial factors in achieving economic stability and sustainable development. Several studies have examined these themes, linking them to improved governance, reduced corruption, and long-term economic growth.

Alesina and Perotti (1996) investigate the relationship between fiscal discipline and economic stability. They argue that governments that responsibly manage public finances—through sound taxation and expenditure policies—are less likely to encounter fiscal crises. Their analysis highlights how fiscal responsibility minimizes inefficiencies in public administration by ensuring resources are allocated to essential public goods.

Kopits and Craig (1998) emphasize the importance of fiscal transparency in governance. Their study demonstrates that transparency in budgeting, taxation, and government spending enhances accountability and trust in public institutions. Moreover, transparency enables better fiscal management by allowing both policymakers and the public to assess government performance effectively. Expanding on the role of transparency, Alt and Lassen (2006) explore its impact on corruption and economic growth. They find that countries with higher levels of fiscal transparency tend to experience lower levels of corruption and improved economic performance. This finding aligns with the principles of Public Choice Theory, which suggests that transparency discourages self-serving political behaviour while promoting actions in the public interest.

Eyraud et al. (2018) examine the implications of fiscal discipline for sustainable development. Their study highlights that maintaining fiscal discipline enables governments to invest strategically in critical sectors such as infrastructure, education, and healthcare, fostering long-term economic growth. Additionally, fiscal discipline helps prevent excessive debt accumulation and ensures efficient use of public funds, supporting broader developmental objectives. De Renzio and Wehner (2017) focus on the interplay between fiscal transparency and discipline. Their research underscores that transparent fiscal environments facilitate the enforcement of fiscal rules and adherence to budgets. By making financial operations more visible, transparency equips governments to adapt their fiscal practices effectively, thereby improving overall fiscal health.

A case study by Sarr (2019) illustrates the consequences of fiscal opacity in Nigeria. The study reveals that a lack of fiscal transparency has contributed to persistent fiscal mismanagement and recurrent financial crises in the country. Sarr links Nigeria's fiscal challenges to opaque financial operations, which have enabled corruption and the misallocation of public resources.

Together, these studies provide compelling evidence that fiscal discipline and transparency are indispensable for economic stability, governance, and sustainable development. They collectively highlight the need for governments to prioritize transparency and responsible fiscal practices to foster trust, reduce corruption, and ensure effective allocation of resources.

3.0 Methodology

The methodology employed adopts a comprehensive macroeconomic framework to assess fiscal sustainability, economic stability, and policy effectiveness. It leverages key indicators such as Budget Deficit/GDP, Debt/GDP, Primary Balance, Inflation, Expenditure Growth, Interest Payments/Revenue, Tax Revenue/GDP, Social Spending/GDP, Current Account Balance, and Economic Growth to capture fiscal health, macroeconomic volatility, and policy outcomes.

i. Fiscal Sustainability: Indicators like Budget Deficit/GDP, Debt/GDP, and Primary Balance measure fiscal solvency, debt management capacity, and fiscal imbalance control.

ii. Economic Stability: Variables such as Inflation, Expenditure Growth, and Interest Payments/Revenue reflect macroeconomic fluctuations and fiscal pressures, providing insights into price stability and debt sustainability.

iii. Policy Effectiveness: Metrics like Tax Revenue/GDP, Social Spending/GDP, and Current Account Balance evaluate fiscal policy efficiency in revenue generation, social investment, and external balance management.

iv. Empirical Robustness: The methodology aligns with globally recognized standards, including the IMF's FSA and World Bank's PEFA, enhancing data credibility.

v. Nigeria's Fiscal Context: This approach addresses Nigeria's fiscal vulnerabilities—revenue volatility, debt dynamics, and expenditure inefficiencies—supporting evidence-based policy recommendations.

3.1 Current State of Fiscal Management in Nigeria

Nigeria's fiscal management has long been hindered by several deep-rooted challenges, including widespread corruption, inefficient resource use, and weak regulatory frameworks. Despite multiple attempts at reform, these problems persist, curtailing the country's economic growth, escalating budget deficits, and reducing the impact of government expenditures. Addressing these challenges provides a clearer understanding of the fiscal governance issues affecting Nigeria's development.

Corruption in Fiscal Governance

Corruption remains a pervasive issue that significantly undermines Nigeria's fiscal governance.

Nigeria regularly receives low scores on Transparency International's Corruption Perceptions Index, signifying rampant corruption at various levels of government (Transparency International, 2023). Nigeria's performance on Transparency International's Corruption Perceptions Index (CPI) over the past 25 years has consistently been poor, reflecting the country's deep-seated challenges with corruption. The index, which ranks countries based on perceived levels of public sector corruption, has regularly placed Nigeria in the lower tiers.

In the late 1990s and early 2000s, Nigeria was ranked among the most corrupt countries in the world, often appearing near the bottom of the CPI rankings. For example, in 1999, Nigeria was ranked 98th out of 99 countries, illustrating the severity of corruption at the time.

Despite anti-corruption initiatives, such as the establishment of the Economic and Financial Crimes Commission (EFCC) in 2003, Nigeria's CPI rankings showed slow and limited improvement. The country continued to struggle with high levels of corruption across various sectors, ranking around 130th to 150th globally.

In 2010s, the trend of marginal improvement persisted, with Nigeria generally ranked in the lower half of the index. By 2015, under the administration of President Muhammadu Buhari, who pledged to tackle corruption, Nigeria saw slight gains but remained far from achieving significant change. During this period, the country hovered between ranks 130 and 140 out of over 180 countries.

In 2020s, corruption remains a major issue in Nigeria, and despite ongoing reforms, the country's ranking has not seen substantial improvement. As of 2023, Nigeria was ranked 150th out of 180 countries, indicating persistent corruption in public administration and governance.

Overall, Nigeria's position on the Corruption Perceptions Index over the past 25 years highlights the enduring challenge of tackling corruption, which continues to affect governance, economic development, and public trust.

This corruption diverts funds meant for public projects like infrastructure, healthcare, and education, thus hampering efficient resource management. Examples include the misappropriation of oil revenues and inflated government contracts, both of which are notorious for draining fiscal resources (Amundsen, 2010).

Nigeria's heavy dependence on oil revenue exacerbates this issue by creating an environment conducive to corruption. The complex and often opaque revenue-sharing formulas between federal, state, and local governments have opened up loopholes that elite groups exploit, leading to the loss of significant public funds (Oluwole, 2020). The result is incomplete or substandard public works and a tendency for government officials to misuse funds, which in turn fuels persistent fiscal deficits and bloating debt levels.

3.1.2 Inefficient Allocation of Public Resources

The mismanagement of public resources is another critical obstacle to effective fiscal management in Nigeria. The inefficient allocation of funds, driven by poor strategic planning and execution, means that critical sectors are often starved of necessary resources. Nigeria's budgeting process frequently fails to align with its broader development objectives, creating a disconnect between public spending and developmental outcomes (Nwokolo & Agbugba, 2020).

A significant share of the problem lies in the public procurement system, which is plagued by a lack of transparency and competition. According to a World Bank report (2017), these inefficiencies cost the government a large sum in wasted resources. Nigeria consistently experiences low rates of budget execution, where capital projects are either delayed or left incomplete due to inefficient fund management. Delays in disbursing funds further exacerbate the issue, leading to underutilization of allocated budgets and stunted economic development.

3.1.3 Weaknesses in Regulatory Oversight

The fragility of Nigeria's regulatory and institutional frameworks exacerbates the country's fiscal woes. While efforts including the Fiscal Responsibility Act (2007) and Public Procurement Act (2007) were implemented to improve transparency and accountability in public financial management, their enforcement has been inadequate. Compliance with these laws has been erratic, and the agencies responsible for enforcement often lack the necessary capacity to regulate effectively (Uche & Chukwuemeka, 2020).

One major flaw in Nigeria's regulatory system is the poor coordination between different levels of government. The relationship between federal, state, and local governments is often flawed by a lack of fiscal discipline, which leads to overspending without

adequate oversight. For example, state governments frequently exceed their budgetary limits without facing any repercussions, which encourages continued fiscal indiscipline (Adeyemi & Fagbemi, 2019). Furthermore, the overlap in responsibilities between regulatory bodies creates confusion, further weakening the enforcement of fiscal policies and making it difficult to hold officials accountable for misuse of funds.

3.1.4 Economic Consequences

The combined effects of corruption, inefficiency, and regulatory gaps have dire consequences for Nigeria's economy. These issues have contributed to a sharp rise in fiscal deficits and an ever-increasing debt burden. Nigeria's total public debt by mid-2023 rose to approximately ₦87.38 trillion, with external debt amounting to ₦33.24 trillion and domestic debt at ₦54.13 trillion. Thus, by 2023, Nigeria's debt-to-GDP ratio had mounted to around 37.1%, up from 30% in 2019 (World Bank, 2023). Although this figure might seem manageable in relation to the country's GDP, the costs associated with servicing this debt have become overwhelming. Servicing the debt consumes a significant portion of government revenues, leaving fewer funds available for critical investments in sectors like infrastructure and social services.

Moreover, the continued mismanagement of fiscal policies has exacerbated Nigeria's macroeconomic instability. High levels of inflation, currency devaluation, and declining investor confidence are all symptoms of weak fiscal governance (Agu, 2021). If the country's fiscal policies remain unchecked, the situation could worsen, further threatening Nigeria's economic future.

3.1.5 Other Consequences

Increased National Debt

Nigeria's fiscal irresponsibility has led to a significant rise in national debt. From 1999 to 2023, the country's debt rose sharply, with government borrowing often used to finance budget deficits rather than productive investments. As of 2023, Nigeria's debt reached over \$100 billion, raising concerns about debt sustainability and fiscal space for future expenditures (World Bank, 2023).

3.1.6 Inflation and Currency Depreciation

The reliance on borrowing and unproductive expenditure has contributed to rising inflation rates. Fiscal mismanagement has weakened the naira, exacerbating inflationary pressures. For instance, Nigeria has experienced double-digit inflation for

several years, impacting the purchasing power of citizens and leading to increased poverty levels (Central Bank of Nigeria, 2023).

3.1.7 Deterioration of Public Services

Fiscal profligacy has led to inadequate funding for essential services such as healthcare, education, and infrastructure. Many Nigerians face challenges accessing quality healthcare and education, contributing to a decline in human capital development. The World Health Organization reported significant gaps in healthcare access, affecting overall quality of life (WHO, 2022).

3.1.8 Increased Unemployment and Poverty Rates

The lack of investment in job creation and productive sectors has resulted in soaring unemployment rates. With youth unemployment rates reaching above 30%, Nigeria faces a critical challenge in harnessing its demographic dividend. The poverty rate remains high, with over 40% of the population living below the poverty line (National Bureau of Statistics, 2023).

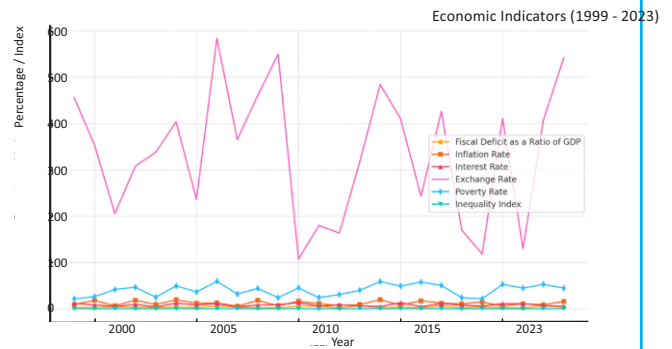
3.1.9 Weak Institutional Frameworks

Fiscal irresponsibility has weakened institutional frameworks and governance structures. Corruption and lack of accountability in public spending have become rampant, undermining trust in government institutions. The Transparency International Corruption Perceptions Index consistently ranks Nigeria low, indicating pervasive corruption in public finance management (Transparency International, 2023).

While I can't create or display graphs directly, I can guide you through how to construct a comprehensive graph showing fiscal deficit as a ratio of GDP, inflation, interest rates, exchange rates, poverty, and inequality in Nigeria from 1999 to 2023. Here's how you can approach this task and the explanations you might include.

The analytical consequences of Nigeria's fiscal profligacy since 1999 have been profound, affecting national debt levels, inflation, public service delivery, employment, and institutional integrity. Addressing these issues requires comprehensive fiscal reforms aimed at improving accountability, enhancing revenue generation, and ensuring sustainable economic growth.

Figure 1: trends of six key economic variables over the period from 1999 to 2023



From 1999 to 2022, Nigeria's fiscal deficit-to-GDP ratio exhibited fluctuations, reflecting inconsistent fiscal discipline. Persistent deficits led to rising public debt, partially exacerbated by oil price volatility. While Keynesian economics suggests deficits can boost growth during downturns, Nigeria's deficits often funded recurrent expenditure rather than productive investments, limiting their stimulatory impact.

Inflation, fluctuated between 5% and 20%, was driven by cost-push factors such as fuel price hikes and import dependency, alongside demand-pull pressures. The Central Bank of Nigeria (CBN) implemented monetary tightening, but external shocks, such as global oil prices and exchange rate volatility, caused inflation spikes.

Interest rates remained relatively stable, influenced by the CBN's monetary policy aimed at balancing inflation control with investment stimulation. The Fisher effect applied as higher inflation led to raised nominal interest rates.

The exchange rate displayed significant volatility, particularly after the 2016 oil price crash, which caused a sharp naira depreciation. While this made exports cheaper, import costs soared, contributing to inflation and worsening poverty.

Poverty rates deteriorated, reflecting Nigeria's uneven economic growth and high unemployment. Income inequality remained high, constraining opportunities for lower-income groups. Policies addressing inequality, such as social welfare programmes, were often insufficient to bridge the gap.

Overall, these indicators reveal Nigeria's struggle to achieve macroeconomic stability and inclusive growth during this period.

The performance of the various regimes in Nigeria as well as their rating using indicators of fiscal discipline is presented in Appendix 1-3.

3.2 International Best Practices in Fiscal Accountability and Transparency

This section, reviews international best practices in fiscal accountability and transparency, drawing from successful frameworks implemented across various economies.

3.2.1 Legal and Institutional Frameworks

Effective fiscal accountability begins with a strong legal and institutional framework. Leading economies including New Zealand and Sweden have established comprehensive legal requirements that mandate fiscal transparency. These include:

Fiscal Responsibility Acts (FRA): These laws establish clear fiscal rules and obligations for governments, including debt and deficit targets. In New Zealand, for instance, the FRA requires the government to operate within a defined debt-to-GDP ratio and publish annual fiscal strategy reports.

Independent Fiscal Institutions (IFIs): Many countries, such as the United Kingdom with its Office for Budget Responsibility (OBR), have set up independent bodies tasked with monitoring fiscal policies, ensuring budget discipline, and providing objective analysis on fiscal sustainability. IFIs enhance transparency by offering non-partisan evaluations of government finances.

3.2.2 Public Access to Budget Information

Transparency requires that governments provide the public with easy access to comprehensive, timely, and accurate fiscal data. The Open Budget Index (OBI), which ranks countries based on their level of budget transparency, highlights several best practices:

Citizen Budgets: Governments in countries like South Africa and Brazil have implemented simplified versions of national budgets to make fiscal information more accessible to the general public. These documents outline the key budget allocations, revenue sources, and government priorities in a user-friendly format.

Online Portals: The proliferation of digital platforms has enabled countries like Estonia and Chile to offer real-time access to government financial transactions. Through online portals, citizens can track how public funds are allocated and spent, increasing accountability and limiting opportunities for corruption.

3.2.3 Comprehensive and Timely Reporting

Best practices in fiscal reporting stress the importance of timely and comprehensive data dissemination. International standards, such as the International Public Sector Accounting Standards (IPSAS) and the Government Finance Statistics Manual (GFSM) from

the International Monetary Fund (IMF), provide guidelines for consistent reporting. Adopting these standards allows countries to produce reliable, comparable, and transparent fiscal reports.

Performance-Based Budgeting: Countries such as Canada and France have adopted performance-based budgeting systems, which link budget allocations to specific outcomes. This framework ensures that government programmes are not only monitored financially but also evaluated in terms of their effectiveness and efficiency.

Medium-Term Expenditure Frameworks (MTEF): International best practice recommends multi-year budgeting as a tool to align short-term fiscal decisions with long-term objectives. Countries like South Korea and Ghana use MTEFs to project fiscal outcomes over several years, improving fiscal planning and stability.

3.2.4 External Auditing and Oversight Mechanisms

Strong external audit institutions are vital to ensuring that public funds are managed with integrity. The Supreme Audit Institutions (SAIs), such as the US Government Accountability Office (GAO) and the UK's National Audit Office (NAO), play a crucial role in reviewing public accounts and government performance. Best practices in external auditing include:

Annual Audit Reports: Many countries require the publication of independent audit reports on public accounts. For instance, the NAO in the UK reviews government spending annually, ensuring that any misuse or inefficiency of funds is brought to light.

Legislative Oversight: The role of parliament in scrutinizing public finances is essential. Countries like Norway and Germany have established strong parliamentary committees that regularly review budget execution and audit reports, holding the executive branch accountable for any fiscal discrepancies.

3.2.5 Public Participation in Budgeting

Incorporating public input into fiscal decision-making is increasingly recognized as a best practice for enhancing accountability. Countries such as South Korea and Kenya have pioneered participatory budgeting programmes that involve citizens directly in the allocation of resources at the local and national levels. This practice has strengthened democratic engagement and improved the alignment of

government spending with citizen needs.

3.2.6 Lessons from Developing Countries

Several developing countries have made significant strides in fiscal transparency through the adoption of international best practices:

Mexico's Budget Transparency Portal provides detailed information on public spending, including a breakdown by sector and region, setting a regional benchmark for fiscal openness in Latin America.

Rwanda's Fiscal Decentralization has promoted greater fiscal accountability at the local level by empowering municipalities to manage their own budgets while adhering to national transparency guidelines.

3.2.7 Nigeria versus International Best Practices in Fiscal Accountability and Transparency

Although Nigeria has made efforts to enhance its fiscal management, gaps remain when compared to international best practices.

Table 1: Comparison of Nigeria's Experience with International Best Practices in Fiscal Accountability and Transparency

Aspect	International Best Practice	Nigeria's Experience	Identified Gap
1 Legal and Institutional Frameworks	Countries like New Zealand and Sweden have Fiscal Responsibility Acts (FRAs) with clear fiscal rules, debt-to-GDP targets, and independent fiscal institutions like the UK's Office for Budget Responsibility (OBR).	Nigeria's Fiscal Responsibility Act (FRAs) of 2007 mandates fiscal transparency but faces weak enforcement. The Fiscal Responsibility Commission (FRC) lacks the capacity and authority to fully enforce compliance, especially at the state level.	- Weak enforcement of fiscal rules. - Lack of fully independent institutions to monitor fiscal sustainability.
2 Public Access to Budget Information	Countries like South Africa and Brazil provide budget transparency through simplified Citizen Budgets and real-time tracking of financial transactions via online portals.	Nigeria has improved budget transparency by publishing budgets online through platforms like the Budget Office. However, public access remains inconsistent across states, and Nigeria ranks below the global average on the Open Budget Index (OBI).	- Inconsistent access to comprehensive fiscal data. - Limited use of citizen-friendly budget formats.
3 Comprehensive and Timely Reporting	Countries like Canada and France link budget allocations to performance outcomes and use Medium-Term Expenditure Frameworks (MTEFs) to align short-term decisions with long-term objectives.	Nigeria uses MTEF for multi-year budgeting but faces delays in passing national budgets, and there is no robust performance-based budgeting system in place to measure effectiveness.	- Delays in budget reporting. - Lack of a performance-based budgeting system.
4 External Auditing and Oversight Mechanisms	Strong Supreme Audit Institutions (SAIs) like the US GAO and the UK's NAO audit public accounts and ensure accountability through annual reports and legislative oversight.	Nigeria's Office for the Auditor-General faces challenges, including limited autonomy, underfunding, and delays in submitting audit reports. Legislative oversight is also weakened by political interference.	- Weak enforcement of audit recommendations. - Delayed legislative oversight.
5 Public Participation in Budgeting	Countries like South Korea and Kenya engage citizens directly in resource allocation through participatory budgeting.	Nigeria has limited public participation in budgeting. Civil society is involved in pre-budget consultations, but broader citizen participation is lacking.	- Lack of formal participatory budgeting. - Limited opportunities for public engagement in budget decision-making.
6 International Cooperation and Peer Reviews	Countries engage in peer reviews through organizations like the OECD and IMF's Fiscal Transparency Code, benefiting from fiscal policy benchmarking and international cooperation.	Nigeria participates in IMF Article IV consultations but does not fully align with the IMF Fiscal Transparency Code or engage in comprehensive peer reviews under OECD frameworks.	- Limited participation in international peer review processes to enhance fiscal transparency.
7 Lessons from Developing Countries	Developing countries like Mexico and Rwanda have improved fiscal transparency through initiatives like budget portals and fiscal decentralization.	Nigeria's fiscal decentralization has not fully enhanced transparency at state and local government levels, and there is limited accountability.	- Inadequate fiscal decentralization frameworks. - Limited transparency at the subnational level.

Source: Onwioduokit (2024)

Table 1 highlights Nigeria's strides in fiscal accountability through reforms but reveals gaps in enforcing fiscal rules, public participation, performance-based budgeting, and auditing. Bridging these requires political commitment, institutional capacity building, and alignment with global fiscal transparency standards.

4.0 Policy Recommendations for Enhancing Fiscal Responsibility and Public Engagement

4.1 Implementing Fiscal Responsibility Laws

Governments should establish and enforce robust fiscal responsibility laws with clear fiscal rules and penalties for non-compliance. A dedicated fiscal oversight body, such as a Fiscal Responsibility Commission, should be established to monitor adherence to these laws. Regular audits of budgets and expenditures must be conducted, with findings published in public reports to promote transparency. Additionally, automatic penalties for public officials who violate fiscal limits should be instituted to ensure accountability and deter fiscal indiscipline.

4.2 Strengthening Institutions and Regulatory Frameworks

To improve public financial management, institutional capacity must be enhanced through targeted training programs and resource allocation for key entities such as the Ministry of Finance and the Central Bank. Legal frameworks for procurement and debt management should be strengthened to foster efficiency and accountability. International collaboration can support the adoption of best practices in fiscal governance. Furthermore, fostering inter-agency collaboration between anti-corruption bodies and the judiciary is crucial to combat financial mismanagement effectively.

4.3 Promoting Public Financial Literacy and Participation

Improving public financial literacy is essential for fostering transparency and accountability. Public awareness campaigns, seminars, and social media outreach can educate citizens on fiscal matters. Financial literacy programs should be developed in collaboration with schools and civil society organizations to ensure widespread impact. Governments should create online platforms to provide easy access to expenditure information and enable public feedback. Initiatives such as community forums and participatory budgeting processes can involve citizens directly in budget preparation and implementation, strengthening public trust and engagement.

4.4 Leveraging Technology and Innovation for Accountability

Governments can harness technology to enhance transparency and accountability in public financial management. E-government platforms, such as the Integrated Financial Management Information

System (IFMIS), can digitize budgeting and financial reporting, allowing real-time tracking of expenditures. Blockchain technology can be adopted to secure public contracts and reduce corruption risks, while artificial intelligence (AI) and big data tools can identify anomalies in public spending and detect potential fraud. Open data platforms should be developed to encourage citizen engagement by making financial information more accessible. Mobile-based systems can collect feedback and reports on the misuse of public funds, while satellite and remote sensing technology can monitor infrastructure projects in real-time to ensure they stay on schedule and within budget.

4.5 Active Participation of Civil Society in Monitoring Public Spending

Civil society organizations (CSOs) play a crucial role in ensuring fiscal accountability. CSOs should actively engage in monitoring government spending by forming independent teams to track budget implementation at national and local levels. Leveraging technology, such as mobile apps or websites, can provide real-time access to budget data and facilitate reporting of irregularities. Community-based social audits can evaluate specific projects, with reports submitted for government review. Regularly publishing monitoring reports can highlight successes, inefficiencies, or misuses in budget execution. Workshops and training programs should be organized to empower communities with the skills necessary for public spending oversight.

4.6 Partnering with Government Institutions

Collaboration between CSOs and government institutions is vital for promoting transparency. Formal agreements, such as Memorandums of Understanding (MoUs), can define roles and responsibilities in transparency initiatives. Joint public awareness campaigns and budget forums can foster dialogue between CSOs and government officials. CSOs should also contribute to open data projects by developing visual tools to explain financial trends and improve public understanding. Appointing CSO leaders to advisory positions within fiscal bodies can help represent public interests in decision-making processes. Additionally, CSOs can engage in legislative advocacy to champion reforms that enhance fiscal transparency and accountability. By implementing these recommendations, governments and civil society can collectively promote fiscal responsibility, reduce corruption, and ensure the equitable distribution of public resources, ultimately enhancing economic stability and public

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Appendix 1: Indicators Of Fiscal Indicipline

Indicator	Description	Implications
1. Budget Deficit/GDP Ratio	Measures the difference between government expenditures and revenues as a percentage of GDP.	A consistently high ratio may indicate fiscal indiscipline, suggesting reliance on borrowing rather than maintaining balanced budgets.
2. Public Debt to GDP Ratio	Reflects the total amount of public debt as a percentage of GDP.	A high or rapidly increasing ratio may signal fiscal irresponsibility, especially if the debts grows faster than the economy.
3. Primary Balance	Measures the government's fiscal position excluding interest payments on existing debt.	A sustained primary deficit indicates ongoing fiscal indiscipline as it shows the government is not generating enough revenue to cover current expenditures.
4. Tax Revenue as a Percentage of GDP	Assesses the efficiency and effectiveness of tax collection.	Low tax revenues relative to GDP may suggest issues with tax policy, compliance, or administration, leading to fiscal indiscipline.
5. Expenditure Growth Rate	Analyzes the growth rate of government expenditures.	If expenditures grow faster than GDP or revenue growth, it can lead to unsustainable fiscal policies, indicating potential fiscal indiscipline.
6. Inflation Rate	Measures the rate at which the general level of prices for goods and services is rising.	High inflation can erode the real value of government debt and distort fiscal policy, indicating poor monetary and fiscal management and leading to a lack of fiscal discipline.
7. Interest Payments to Revenue Ratio	Compares the government's interest payments on debt to it's total revenue.	A high ratio indicates that a significant portion of revenue is consumed by interest payments, limiting fiscal flexibility and reflecting poor fiscal management.
8. Current Account Balance	Assesses the balance of trade and net income flows.	A persistent current account of deficit may indicate reliance on foreign borrowing to finance domestic consumption, reflecting fiscal indiscipline.
9. Social Spending as a Percentage of GDP	Evaluates government spending on social programs (e.g., education, healthcare) as a percentage of GDP.	Low investment in social sectors relative to GDP may signal misallocation of resources and fiscal irresponsibility, indicating poor prioritization.
10. Social Spending as a Percentage of GDP	Measures the rate of growth of an economy.	A low or negative growth are relative to debt accumulation may indicate that fiscal policies are not conducive to long- term economic stability, suggesting potential fiscal indiscipline.

Appendix 2 Comparative Analysis Of Various Regime On Fiscal Profligacy

Administration	Tax-to-GDP Ratio (%)	Capital Expenditure Quality	Budget Allocation to Education (%)	Budget Allocation to Health (%)	Recurrent vs. Capital Expenditure (%)	Number of Ministries	Number of Ministers
Obasanjo (1999-2007)	5-6%	Effective in some sectors (e.g., telecommunications), but overall inefficiencies and corruption marred results	6%	3-5%	Recurrent: 70%, Capital: 30%	Streamlined to 28	30-35
Yar'Adua (2007-2010)	Around 6%	Capital spending showed little improvement	8-10%	5-6%	Recurrent: 70-75%, Capital: 25-30%	31-33	~40
Jonathan (2010-2015)	Around 6%	Numerous capital investments but poor management, especially in the power sector	8-10%	5-6%	Recurrent: 70-75%, Capital: 25-30%	31-33	~40
Buhari (2015-2023)	Initially 6-7%, improved to 10.86% by 2021	Focus on infrastructure, but delays and cost overruns were common	6-7%	4-5%	Recurrent: 65-70%, Capital: 30-35%	24-28	~36-40
Tinubu (2023-Present)	Ongoing efforts to increase tax-to-GDP ratio to >15%	Too early to assess fully, but early efforts indicate a commitment to better governance	~7% (early projections)	~5% (early projections)	Early projections: Recurrent: 70%, Capital: 30%	46	45

1. Education and Health Allocations:
Across all administrations, budget allocations to education and health have been below international standards. The Abuja Declaration (15%) and UNESCO's 26% for education were not met.
2. Recurrent vs. Capital Expenditure:
Recurrent expenditure has dominated across all administrations. Buhari's administration made notable efforts to increase capital spending to about 30-35%.
3. Number of Ministries and Ministers:
Tinubu's administration has the largest number of ministries (46) and ministers (45), raising concerns about increased recurrent spending.

Appendix 3: Comparative Analysis Of Deficit Financing Arrangements By Various Regimes In Nigeria From 1999 To The Present:

Regime	Key Features	Deficit Financing	Debt Dynamics	Fiscal Prudence	Ranking
Olusegun Obasanjo (1999–2007)	- Inherited a struggling economy with significant debt. - Achieved debt relief of \$18 billion from the Paris Club in 2005. - Focused on fiscal consolidation.	- Fiscal deficit-to-GDP ratio averaged ~1.5%. - Reduced external borrowing. - Cautious domestic borrowing via bond market.	- Total public debt at end of tenure: N2.2 trillion. - Debt-to-GDP ratio decreased substantially.	- Conservative fiscal management, reducing external debt, and controlling fiscal deficits.	1st: Best Performer
Yar'Adua/Goodluck Jonathan (2007–2015)	- Characterized by oil price volatility. - Faced challenges with subsidies and fiscal transparency.	- Average fiscal deficit-to-GDP ratio ~2.7%. - Increased domestic borrowing; low external borrowing.	- Total public debt rose from N2.2 trillion to N12.1 trillion. - Reliance on borrowing increased as oil prices fell.	- Weaker fiscal discipline compared to Obasanjo, increased borrowing led to fiscal sustainability issues.	2nd: Moderate Performer
Muhammadu Buhari (2015–2023)	- Faced falling oil prices and economic recession. - COVID-19 pandemic exacerbated fiscal challenges.	- Average fiscal deficit-to-GDP ratio ~4%. - Heavy reliance on domestic and external borrowing.	- Total public debt exceeded N46.25 trillion. - Debt-to-GDP ratio rose to over 25%.	- Expansionary fiscal policies led to heavy borrowing. - Debt-servicing costs rose significantly.	4th: Worst Performer
Bola Ahmed Tinubu (2023–Present)	- Inherited high debt and fiscal deficits. - Focused on revenue mobilization and tax reforms.	- Projected fiscal deficit-to-GDP ratio ~4.78%. - Emphasis on limiting debt growth.	- Total public debt remains high; projections for further increases. - Challenges in debt management.	- Faces fiscal constraints; early reforms may improve fiscal management in the long term.	3rd: Early Stage, Potential for Improvement

Economic Implications of Generator Dependence Amid Nigeria's Energy Crisis: Impact on Production Costs and SME Sustainability



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ABSTRACT

Nigeria's persistent energy crisis challenges the sustainability of SMEs by forcing heavy reliance on generators, driving high operational costs and stifling growth (Olujobi et al., 2023). This study, based on semi-structured interviews with 10 SME owners and managers across three regions of Nigeria, explores the impact of generator dependence on production costs, profitability, and long-term sustainability. Thematic analysis revealed four key themes: high operational costs, constrained growth and innovation, limited relief from partial energy solutions, and inadequate government policies. These findings underscore the urgent need for infrastructure reforms, improved renewable energy access, and targeted government support to empower SMEs and drive economic development.

Keywords

Energy Crisis, Generator Dependence, Production costs, SME sustainability, Profitability, Sustainability.

1.0 Introduction

Nigeria's persistent energy crisis poses significant challenges to the economic stability and sustainability of small and medium-sized enterprises (SMEs), which are vital for job creation and overall economic growth (Olujobi et al., 2023). Despite Nigeria's capacity to produce 29 billion kWh of electricity annually, 119% of its consumption of 24.61 billion kWh (Worlddata, 2023) the national grid remains unstable, forcing many SMEs to rely heavily on diesel-powered generators. This heavy dependence leads to substantial financial burdens, as many SMEs and households collectively spend billions on fuel. In fact, estimates show that 86% of businesses own or share a generator, contributing to 46% of the nation's electricity production (Ozoegwu & Akpan, 2021; Ijeoma et al., 2024).

The economic implications of generator dependence are profound. High operational costs, driven by excessive fuel and maintenance expenses, erode profit margins and hinder long-term growth and innovation. Frequent power outages force businesses to pass on increased costs to customers, ultimately reducing their competitiveness. For instance, manufacturing firms face extra expenses to maintain continuous production with generators, leading to higher prices for goods and services (Adenikinju, 2003). These challenges are particularly severe for SMEs, which play a critical role in Nigeria's GDP, employment, and overall business activity (Eneh, 2011; Nneze et al., 2024). Moreover, generator reliance contributes to environmental degradation and increased carbon emissions.

Nigeria's national grid currently operates at a fraction of its potential, with an installed generation capacity of 13 GW against a peak demand of 20 GW, while the highest recorded generation is only 5.8 GW (Williams et al., 2024). This gap results in significant economic losses, estimated at 5-7% of GDP annually (World Bank, 2019), and in 2019, the shortfall in the electricity sector was valued at \$1.9 billion, exceeding even the federal health budget (Roy et al., 2023). Additionally, fuel expenses for generators are estimated at \$22 billion annually, with overall economic losses due to power shortages reaching \$26 billion (Williams et al., 2024). High production costs also contribute to job losses, increased poverty, and diminished overall economic growth (Babatunde et al., 2020; Anaba & Olubusoye, 2021).

Furthermore, over 80% of SMEs rely on generators or self-generated power, with many receiving only one to five hours of reliable grid electricity daily, forcing them to depend on generators for 85% of their energy needs (Scott et al., 2014). This reliance limits their ability to reinvest in innovation and expansion, thereby increasing the likelihood of business closures. Many SMEs face high mortality rates, with numerous firms failing to survive beyond five years due to factors such as managerial incompetence (Etim et al., 2022) and inadequate power supply (Mandah, 2010).

This study examines the economic implications of generator dependence on Nigerian SMEs, focusing on its impact on production costs, profitability, and long-term sustainability. By investigating these challenges and exploring stakeholder-driven solutions, the research aims to inform policy and business strategies that can mitigate the adverse effects of generator reliance. Addressing these issues is essential for fostering SME growth, creating jobs, and ensuring sustainable economic development in Nigeria. The study's findings are intended to provide practical insights for future policy reforms and business strategies that will reduce operational costs, enhance competitiveness, and drive long-term economic growth.

1.1 Problem Statement

Nigeria's persistent energy crisis imposes severe economic and political consequences, with SMEs heavily relying on costly generators to sustain operations (Babatunde et al., 2020; Scott et al., 2014). The SMEs contribute approximately 50% of Nigeria's GDP and 77% of employment, yet over 80% rely on generators due to unreliable grid-based electricity (PricewaterhouseCoopers, 2020; Roy et al., 2023).

The general economic problem is Nigeria's unreliable electricity supply, which exacerbates economic instability by increasing SME operational costs and hindering their contribution to economic growth (National Bureau of Statistics & SME Development Agency of Nigeria, 2013). The specific economic problem is that SME owners and managers in Nigeria face significant challenges in addressing the high production costs associated with generator dependence, jeopardizing their sustainability and growth amid the country's persistent energy crisis.

1.2 Research Question

The overarching research question is: How does generator dependence affect the ability of SMEs in

Nigeria to manage high production costs, and what strategies can mitigate the impact on their sustainability and growth?

Following Agee's (2009) recommendation that an initial generative question lays the foundation for the development of related sub-questions; the sub-research questions are:

1. What economic challenges do SMEs in Nigeria face in managing the high production costs associated with generator dependence amidst the persistent energy crisis?
2. In what ways does reliance on generators influence the operational costs, profitability, and long-term sustainability of SMEs in Nigeria?
3. What strategies do SME stakeholders identify as effective in reducing the financial burden of generator dependence and enhancing business sustainability?

1.3 Purpose of the Study

This study aims to investigate the economic challenges faced by SME owners and managers in Nigeria due to their dependence on generators in the face of the country's persistent energy crisis. The study focuses on how generator reliance escalates production costs, mainly through expenses such as fuel procurement, generator maintenance, and equipment acquisition. These challenges significantly impact SMEs' operational sustainability and growth prospects, constituting a critical component of Nigeria's economy. Basheda et al. (2006) assert that the rise in fuel and purchased power costs is the primary driver behind the increased operating expenses for electric utilities. Furthermore, the study seeks to examine how these economic burdens contribute to broader issues, including poverty, unemployment, and diminished national economic productivity. By exploring SME stakeholders' perceptions, the research aims to identify practical and stakeholder-driven strategies to alleviate the economic strain caused by generator dependence, thereby fostering a more sustainable and productive business environment in Nigeria.

1.4 Research Gap/Significance

Nigeria's ongoing energy crisis and associated power supply inconsistencies have long been recognized as obstacles to economic development. Although previous studies acknowledge that SMEs rely heavily on generators to compensate for unreliable grid electricity (Scott et al., 2014), a critical gap remains in understanding the direct economic implications of this dependence on SME production costs, pricing strategies, and long-term sustainability.

While SMEs are widely recognized for their role in job creation, poverty alleviation, and economic diversification (PricewaterhouseCoopers, 2020; Roy et al., 2023), few investigations have examined how generator reliance specifically constrains competitiveness and limits growth potential.

Addressing this gap is essential because SMEs are the backbone of the Nigerian economy, contributing significantly to the nation's resilience and progress (Babatunde et al., 2020; National Bureau of Statistics & SME Development Agency of Nigeria, 2013). By exploring how generator dependence escalates production costs and undermines SME sustainability, this study enhances our understanding of the interplay between energy infrastructure and economic stability (Scott et al., 2014). Uncovering these financial and operational strains will clarify how the energy crisis affects enterprise-level decision-making and illuminate broader trends, such as reduced national productivity, rising unemployment, and diminished economic resilience.

Moreover, with over 80% of SMEs relying on costly generators due to unreliable grid power (Scott et al., 2014), the study is imperative for informing stakeholders, policymakers, and development organizations about viable strategies to mitigate the financial burden on SMEs. Empirical evidence on how generator reliance stifles SME sustainability can guide the development of targeted policy measures. Tangible, accessible support—such as low-interest financing for renewable energy solutions, simplified subsidy processes, and infrastructure reforms—could empower SMEs to break free from the cycle of elevated production costs and low profitability. Ultimately, by providing actionable insights into effective policy and infrastructural interventions, this research will help foster a more sustainable, resilient, and productive SME sector, enabling the Nigerian economy to thrive despite its persistent energy constraints. In order to achieve the objectives of this study, the paper is structured as follows. Section two discusses literature review including theoretical, empirical, and methodological literature. Data analysis is presented in section three. Section four presents the result of the study. The study concludes the paper with a summary of findings, conclusion, and policy recommendation.

2.0 Literature Review

2.1 Conceptual Framework

The suitable framework for this study integrates elements from Resource Dependence Theory (RDT),

and the Resource-Based View (RBV) of the firm. The combination of RDT and RBV is particularly suitable because they jointly capture the problem's external and internal dimensions. While RDT illuminates the challenges posed by the external energy environment—showing how SME decisions are shaped by their dependence on unreliable electricity—the RBV highlights how SMEs' internal strengths and resourcefulness influence their ability to cope with these challenges. Together, these frameworks offer a comprehensive understanding of the economic implications of generator dependence, encompassing both the constraints imposed by external resource conditions and the potential for internal resource management to enable more sustainable and innovative responses. These perspectives help explain how external energy constraints shape SMEs' strategic choices, financial performance, and capacity for innovation.

Resource Dependence Theory (RDT):

Resource dependence theory (RDT) states that organizations need resources to sustain their existence in the long term. The RDT (Pfeffer, 1972; Pfeffer & Salancik, 1978) describe how external forces shape organizations and identify strategies they can use to navigate and influence these external conditions. Within resource dependence theory, power is understood as an actor's ability to gain control over resources that others require (Harris & Holden, 2001). According to Emerson (1962), managing these “relationships of dependence on power is essential.” The RDT developed by Jeffrey Pfeffer and Gerald R. Salancik posits that firms depend on external resources often controlled by other entities. Access to these critical inputs influences strategic decisions (Hillman et al., 2009). In this context, SMEs are heavily reliant on externally supplied electricity. The frequent power outages and unreliable grid supply push them toward generator use as a compensatory resource. Applying RDT highlights how SMEs' performance and strategic direction are shaped by their dependence on an unstable energy supply environment and the need to secure more reliable resources (e.g., alternative energy solutions).

Resource Dependence Theory

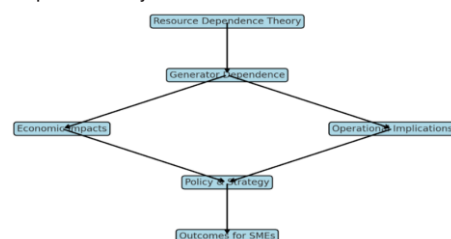


Fig.1 Diagram illustrating the alignment of Resource Dependence Theory with the study Resource-Based View (RBV):

The RBV focuses on how a firm's internal resources and capabilities confer competitive advantages. The RBV deals with firms' competitive business environment but takes an inside-out approach. According to the theory, internal resources and capabilities determine firms' strategic choices when competing in their external business environment (Madhani, 2010). The RBV looks at a firm from the inside out, focusing on its unique internal resources to explain why some businesses succeed while others do not (Dicksen, 1996). According to RBV, valuable resources, rare, hard to copy, and difficult to replace (Barney, 1991), help firms build and maintain competitive advantages, leading to better performance over time (Collis & Montgomery, 1995; Grant, 1991).

In this perspective, a company can be seen as a collection of physical, human, and organizational resources (Barney, 1991; Amit & Shoemaker, 1993). When valuable, rare, imperfectly imitable, and non-substitutable, such resources form the basis for achieving and sustaining a long-term competitive edge (Barney, 1991). For SMEs grappling with generator dependence, efficiently managing fuel costs, maintaining equipment, and adopting partial renewable energy solutions become critical internal capabilities. The RBV framework explains variations in SME responses and performance outcomes by examining how effectively each firm allocates resources, adapts its operational processes, and invests in energy-efficient innovations to maintain profitability and competitiveness.

Integrating these frameworks provides a comprehensive understanding of SMEs' challenges due to their generator dependence. From the RBV perspective, SMEs' internal capabilities and resource management strategies determine how effectively they handle increased operational costs and leverage

innovation opportunities. On the other hand, the RDT framework highlights that SMEs' heavy reliance on generators as an external energy source exposes them to fuel price fluctuations, frequent maintenance needs, and ongoing uncertainties regarding stable supply. These perspectives illuminate both the internal and external factors shaping SMEs' strategic responses to energy constraints.

2.2 Methods

2.2.1 Research Design

This sub-section outlines the basic qualitative design employed in this study and justifies its suitability for addressing the research questions and objectives (Bailey, 2018; Creswell, 2014). The Basic Qualitative Design was selected because it facilitates an in-depth exploration of participants' experiences, allowing for a comprehensive understanding of the economic implications of generator dependence amid Nigeria's energy crises. This design is particularly effective for investigating complex, real-world challenges, such as the impacts of unreliable electricity supply on production costs and the sustainability of SMEs. Unlike more rigid research designs, the Basic Qualitative Design offers the flexibility to adapt data collection and analysis methods as new insights emerge.

This adaptability is crucial for capturing the diverse perspectives of SME owners and operators, who face varying challenges depending on industry, location, and scale of operations. By systematically examining these experiences, this design supports the identification of strategies to mitigate the financial burdens of generator reliance and promote sustainable business practices in the context of Nigeria's ongoing energy crisis. The study employed a purposive sampling technique to select participants based on their attributes and relevance to the research objectives (Bernard, 2002). Specifically, 10 SME owners and managers were chosen to provide detailed insights into how generator dependence affects production costs, profitability, and business resilience. This purposeful selection ensures that the study comprehensively addresses the research questions and generates actionable recommendations for policy interventions and energy reforms to support SME sustainability in Nigeria.

2.2.2 Target Respondents/Sample

The respondents for this study were selected to provide detailed insights into the economic implications of generator dependence amid Nigeria's energy crisis, particularly its impacts on

Resource-Based View Diagram

alignment of resource-Based view with Generator Dependence Study

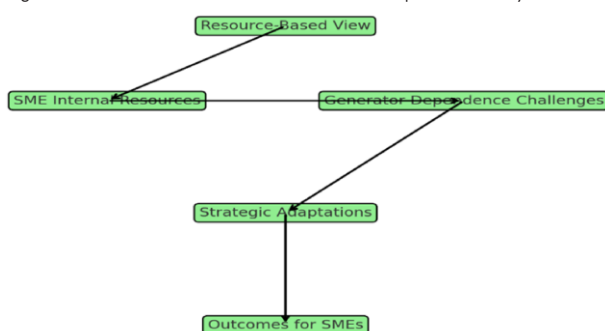


Fig.2 Diagram illustrating the alignment of the Resource-Based View (RBV) with the study

production costs and SME sustainability. The study employed a purposive sampling method, a strategy well-suited for identifying individuals with specific experiences and expertise relevant to the research objectives (Bryman, 2016; Patton, 2015).

The sample comprised 10 participants, including SME owners and managers operating in diverse sectors such as manufacturing, retail, and services. Inclusion criteria required participants to have been in business for at least three years, rely on generators as a primary or secondary power source due to electricity supply challenges, and operate in urban or semi-urban areas of Nigeria where energy infrastructure limitations are most acute. Exclusion criteria excluded individuals whose businesses were entirely off-grid or dependent exclusively on renewable energy solutions. Demographically, the participants represented a mix of genders, ages, and business sizes to ensure varied perspectives. The purposive sampling method ensured that the participants' experiences were relevant to the study's focus, enabling a comprehensive exploration of how generator reliance affects production costs, business sustainability, and broader economic outcomes.

2.2.3 Data Collection Methods

This study employs qualitative data collection methods to explore the economic implications of generator dependence amid Nigeria's energy crisis, with a specific focus on its impacts on production costs and SME sustainability. Data was collected through semi-structured interviews and supported by a review of relevant documents provided by participants, such as utility bills, generator maintenance records, and production cost statements. The semi-structured interviews were conducted using an interview guide developed based on key themes identified in the literature, including energy costs, business operations, and sustainability challenges (Denzin & Lincoln, 2011).

The guide ensured consistency across interviews while allowing flexibility for participants to elaborate on their unique experiences and perspectives. Depending on respondents' locations and preferences, interviews were conducted in person or via virtual platforms. Each interview lasted approximately 45–60 minutes and was audio-recorded with participants' consent to ensure accurate transcription and analysis. To complement the interview data, relevant documents provided by participants were examined to triangulate findings and gain deeper insights into the economic effects of generator reliance. These methods provided a

detailed understanding of the challenges faced by SMEs in navigating Nigeria's energy crisis.

3.0 Data Analysis

The data collected for this study were analyzed using thematic analysis, a widely used method for identifying, analyzing, and reporting patterns (themes) within qualitative data (Braun & Clarke, 2006). The thematic analysis provides a structured yet flexible approach to distill meaningful patterns from qualitative data, offering actionable insights into the challenges and strategies of SMEs operating under Nigeria's energy constraints. This approach was selected for its ability to provide a rich, detailed understanding of the economic implications of generator dependence for SMEs amid Nigeria's energy crises.

The analysis followed a systematic process to ensure a thorough and credible understanding of the data. Initially, all audio recordings from the semi-structured interviews were transcribed verbatim. The researcher then reviewed the transcripts and supplementary documents, including utility bills and production cost statements, to comprehensively grasp the data set. Subsequently, open coding was conducted using qualitative analysis software, such as NVivo. Each transcript was examined line by line, and text segments were assigned descriptive codes that captured recurring ideas or issues. During this phase, codes such as "generator costs," "business disruptions," and "sustainability strategies" emerged, reflecting key concerns raised by respondents.

In addition, the initial codes were organized into broader categories, and overarching themes were developed through iterative comparisons. Themes including "the financial burden of generator dependence," "operational inefficiencies," and "adaptive strategies for SME sustainability" were identified. These themes were then carefully reviewed to ensure they accurately represented the data and aligned with the study's objectives. Sub-themes were refined to highlight the subtle variations in perspectives within each major theme. After reviewing and refining, each theme was clearly defined and named. For example, the theme "financial burden of generator dependence" captured the essence of high operational costs relating to fuel and maintenance. In the final interpretation stage, the researcher contextualized these themes within the existing literature and Nigeria's socio-economic conditions. This interpretive step allowed the researcher to draw

meaningful insights into how generator reliance influences production costs and affects the long-term sustainability of SMEs.

3.1 Ethical Considerations

This study adheres to rigorous ethical standards to ensure the integrity of the research process and the protection of participants' rights, which was in line with the guidelines set forth by the American Psychological Association (2017). The key ethical considerations in this study encompass several important principles; each carefully addressed to ensure a trustworthy and respectful research process. Before data collection began, participants were fully informed about the study's purpose, procedures, and rights, including the right to withdraw without repercussion. Written consent was obtained from every respondent, emphasizing the voluntary nature of their involvement.

To protect privacy, all identifying details were removed during transcription and analysis. Pseudonyms replaced real names, and all data were secured on password-protected devices. Throughout the study, the researcher-maintained transparency and honesty by clearly explaining the use of collected data, including the possibility of future publication. No deceptive practices were employed, and the researcher avoided causing psychological, emotional, or professional harm to respondents. The interview questions were designed to be respectful and non-intrusive, allowing participants to share their experiences comfortably. Any potential conflicts of interest were disclosed, and steps were taken to preserve impartiality. By adhering to these ethical standards—respect, beneficence, and justice—the study ensured mutual trust between researchers and target respondents and bolstered the credibility and reliability of its findings.

3.2 Limitations

This study acknowledges several limitations that may influence the interpretation and generalization of its findings while presenting opportunities for future research to expand on these insights. The first limitation relates to the study of sample size and scope. The study focuses on a small sample of SME owners and operators, which limits the generalization of the findings to the broader population of Nigerian SMEs (Yang & Berdine, 2023). Although the purposive sampling method ensured the inclusion of respondents with relevant experiences, the results may not fully represent the diversity of experiences across various sectors or geographic regions.

Another limitation of the study involves qualitative design. According to Foley and Timonen (2015), at its core, "qualitative data is searching for themes and patterns that are difficult to quantify. The qualitative nature of the study provides in-depth insights into the economic implications of generator dependence. However, this approach inherently restricts the ability to quantify these impacts.

Consequently, the findings are context-specific and may not be directly extrapolated to other economic environments or energy crises on a global scale. An additional limitation relates to the focus on SMEs. By concentrating exclusively on SMEs, the study excluded larger corporations and informal businesses, which were also significantly affected by the Nigeria's energy crisis. This selective focus narrows the applicability of the findings to other organizational types and limits a more comprehensive understanding of the crisis's broader economic implications. These limitations underscore areas where caution is necessary when interpreting the results. They also highlight potential directions for future research, including studies with more extensive and diverse samples and the integration of mixed-method approaches to enhance the validity and generalization of findings.

3.3 Procedure

The study was conducted systematically to ensure good representative data collection and analysis.

3.3.1 Preparatory Phase

In the preparatory phase, all participants reviewed and completed an informed consent form, documenting their understanding of the study's procedures, potential risks, and anticipated benefits. As emphasized by Xu et al. (2020), protecting against coercion during the recruitment process is critical. We also provided a clear rationale for the study population, considering whether it included or excluded vulnerable populations.

Ethical conduct extended to storing participant data, where confidentiality and anonymity were rigorously maintained. Respondents were identified through purposive sampling, focusing on SME owners and operators in Nigeria who were directly impacted by the energy crisis. Invitations were sent to potential respondents, and informed consent was obtained before their inclusion in the study.

3.3.2 Data Collection Phase

Data collection serves as an initial phase in the process of data analysis. A well-structured data collection phase involves carefully planning who will

perform specific tasks and determining where, when, and how these tasks will be carried out at various stages of the research (Paradis et al., 2016). For this study, semi-structured interviews were scheduled and conducted over four weeks to accommodate respondents' availability. Depending on participants' preferences and access, interviews were conducted virtually or in person using a secure Zoom video conferencing platform. An interview guide was developed based on existing literature and aligned with the research objectives to maintain consistency while allowing for exploratory discussions. Each interview lasted approximately 45–60 minutes and focused on respondents' experiences with generator dependence, its economic implications, and the sustainability of their businesses. With participants' consent, interviews were recorded to ensure accurate transcription and analysis. Additionally, field notes were taken to capture non-verbal cues and contextual details.

3.3.3 Data Management Phase

Data management is a multi-step process encompassing obtaining, cleaning, and storing data to ensure accurate analysis and generate meaningful results (Dhudasia et al., 2023). This process can be broken down into three key stages: data collection, cleaning and transformation, and storage. This study transcribed audio recordings verbatim, and the transcripts were reviewed for accuracy. To protect participants' privacy, all identifiers were anonymized. Analysis Phase.

Once data is collected, it is prepared for analysis. Qualitative data often involves verifying accuracy by comparing audiotapes with their transcriptions. During the analysis phase, patterns and relationships within the data are identified, and the research question is addressed by synthesizing numerical and/or narrative data. Qualitative analysis typically begins with reviewing transcripts or field notes entered into a database. While specific qualitative methodologies may employ different analysis techniques, the general process involves reducing the data by coding significant statements, identifying recurring themes, and drawing conclusions (Miles & Huberman, 1994). Additionally, codes are compared within and across participants to observe patterns and discrepancies. Conceptual maps may also be created to explore relationships between themes (Polit & Beck, 2004). This study analyzes data using thematic analysis to identify recurring patterns and themes relevant to the research objectives. This process involves open coding, categorization, and theme development. Emerging insights were cross-

referenced to ensure reliability and robustness in interpretation.

3.3.4 Validation and Reporting Phase

A preliminary summary of findings was shared with a subset of respondents for member checking, ensuring the accuracy and credibility of interpretations. The results were synthesized into themes and presented in the journal article, supported by direct quotations from participants to illustrate key points. This procedural approach ensures a rigorous and transparent process, comprehensively exploring the economic implications of generator dependence on SMEs amid Nigeria's energy crises.

4.0 Results of the Study

This study investigates the economic implications of generator dependence in the face of Nigeria's ongoing energy crisis, focusing on its effects on production costs, operational decisions, and the long-term sustainability of SMEs. The central research question examines how persistent reliance on generators influences SMEs' financial health and decision-making, particularly in managing high production costs and maintaining business viability in the context of unreliable energy sources. Guided by three sub-research questions, the study addresses the following key areas:

1. **Economic Challenges:** What economic challenges do SMEs in Nigeria face in managing the high production costs associated with generator dependence amidst the persistent energy crisis?
 2. **Operational Impacts:** In what ways does reliance on generators influence the operational decisions, profitability, and long-term sustainability of SMEs in Nigeria?
 3. **Strategic Solutions:** What strategies do SME stakeholders identify as effective in reducing the financial burden of generator dependence and enhancing business viability and sustainability?
- The results provide a detailed analysis of these questions, offering insights into the realities of SMEs navigating Nigeria's energy crisis.

The study highlights the multifaceted impacts of generator reliance on SMEs, particularly in their efforts to manage production costs, make informed operational decisions, and sustain profitability and growth. Interviews with 10 SME owners and managers across diverse sectors, including manufacturing, retail, and services, revealed key themes related to the challenges and strategies for mitigating the financial burdens of generator dependence.

These findings illustrate how generator reliance imposes significant economic and operational constraints on SMEs while shedding light on businesses' creative strategies to navigate these challenges. The study establishes a foundation for understanding the broader economic and operational impacts of energy insecurity on SMEs by connecting the results to the research objectives. It also provides valuable implications for policy and business practices to reduce energy-related financial burdens and promote sustainability in the face of Nigeria's ongoing energy challenges.

4.1 Findings

Guided by qualitative approaches that emphasize detailed, narrative descriptions (Braun & Clarke, 2006), this section presents the study's findings, drawing on the perspectives of 10 SME owners and managers from Nigeria's three major regions. Their accounts reveal how generator dependence influences operational decisions, profitability, and long-term sustainability. Variations in viewpoints are highlighted throughout the findings, illustrating how different respondents navigate the persistent energy crisis. Additionally, emergent findings beyond initial expectations are integrated, offering more profound insight into SMEs' strategic responses to high production costs.

The findings are organized according to the research questions, major themes, and sub-themes, with thematic analysis conducted using NVivo 14. Participant quotes are included to provide depth and credibility to the results, capturing the lived experiences of SME owners and managers.

This qualitative design enables an in-depth exploration of generator dependence's economic challenges and operational impacts amid Nigeria's ongoing energy crisis. Participants' responses underscore the substantial financial burden generator reliance places on SMEs, shedding light on how these challenges influence production costs, business profitability, and long-term sustainability. The findings are structured around four major themes supported by relevant literature and theoretical frameworks to contextualize and interpret the participants' experiences. Including participant quotes strengthens the narrative, making the results more engaging and relatable.

4.1.1 Themes

In qualitative research, findings are typically organized into themes, categories, or patterns that show the emerging main concepts from the data

(Braun & Clarke, 2006). Four major themes emerged from the analysis of the semi-structured interview responses provided by 10 participants—SME owners and managers operating in Nigeria's three major regions. These themes elucidate how dependence on generators affects SMEs' ability to manage high production costs and identify strategies that may mitigate the impact on their sustainability and growth. Although participants reported adopting various coping measures, the persistent energy crisis and generator reliance remained pervasive challenges shaping their operational decisions, financial performance, and long-term viability. According to Silverman (2016), findings are often supported by direct participant quotes, case examples, or descriptive accounts that illustrate emergent themes.

4.1.1.1 Theme 1: High Operational Costs and Profitability Challenges

In Nigeria, unreliable grid power has forced businesses to rely heavily on generators for electricity, imposing significant economic burdens. Operational costs are drastically increased due to high fuel expenses, frequent maintenance, and production disruptions caused by power outages. These challenges often compel businesses to pass increased costs onto customers or reduce output to maintain slim profit margins, ultimately limiting their competitiveness in the market. Reliable electricity is essential for industrial productivity as it reduces costs and supports competitive market pricing. In contrast, frequent outages and reliance on costly alternatives like generators inflate operational expenses, hinder business growth, and deter potential investors (IEA, 2021; Nneze et al., 2024). The International Energy Agency (IEA, 2021) reports that electricity shortages in Nigeria frequently disrupt industrial operations and production processes. These disruptions escalate operational costs and discourage investors from establishing or expanding industrial facilities, which is a significant constraint on Nigeria's industrial development (World Bank, 2019).

For example, manufacturing firms incur additional expenses to maintain continuous production using generators, ultimately raising the cost of goods and services (Adenikinju, 2003). These challenges disproportionately affect the SMEs, which are critical for economic inclusivity and job creation. The high costs of unreliable electricity limit their ability to grow, innovate, and hire more employees. With stable power, SMEs could foster a more dynamic and inclusive job market, driving economic growth (Eneh, 2011; Nneze et al., 2024). However, the reliance on

generators remains deeply entrenched. Erratic power supply and rising operational expenses (OPEX) have increased the urgency to harness local renewable energy sources (Oviroh & Jen, 2018). End-users of gasoline generators spend approximately 48% (USD 99 or 35,727) of their monthly income (USD 207 or 74,702) on electricity (Jacal et al., 2022). Participants consistently emphasized how generator dependence inflates operational expenses. Across regions, SMEs reported substantial expenditure on fuel and maintenance, creating a financial strain that constrains profit margins and reinvestment opportunities:

- “The costs of using a generator significantly increase my overall production expenses... we rely on a generator for about 12–15 hours daily. I spend about 30,000– 50,000 weekly on diesel or petrol.”

- “These high costs force me to raise product prices to cover expenses, but that can drive customers away... it is a delicate balance that makes it very hard to sustain the business.”

- “By the end of the project, our profit margin was cut almost in half because of the fuel costs. This makes it challenging to price our services competitively while covering our expenses.”

The SMEs in Nigeria shared a common struggle to maintain profitability as generator-related costs eroded their financial flexibility. Beyond affecting daily operations, these high costs forced many SMEs to forgo improvements and hindered their long-term growth. For example, participants' inability to invest in technological upgrades or expansion was a recurring theme, demonstrating the pervasive impact of generator dependence on business sustainability.

4.1.1.2 Theme 2: Constraints on Long-Term Growth and Innovation

An unreliable power supply significantly disrupts industrial development by impeding production processes, raising operational costs, and diminishing regional competitiveness (Onyido & Aroh, 2020). This instability stifles the growth of existing industries and deters potential investors, thereby limiting job creation opportunities (Amadi et al., 2021). Consequently, Nigerian businesses increasingly rely on diesel generators, which incur high operational and maintenance expenses, diverting funds from sustainable development and technological advancement. The fluctuating cost of diesel, which increased by 4.27% in September 2023 compared to August 2023 (Statista, 2023), further exacerbates an unpredictable energy landscape. Additionally, local entrepreneurs have capitalized on these conditions by setting up mini-gas stations, selling generators, and offering maintenance services, inadvertently

reinforcing dependence on diesel and diverting attention from renewable alternatives. This entrenched reliance results in economic inefficiencies, environmental degradation, and hindered growth (Ijeoma et al., 2024). Respondents highlighted that the financial burden imposed by generator dependency delays strategic expansion and modernization, as businesses postpone opening new branches or adopting advanced machinery due to prohibitive fueling and maintenance costs. These findings underscore the urgency for developing alternative, resilient energy solutions. Some excerpts of participant's quotes that support the theme from the three regions include:

- “I've had to delay plans to expand my business because the costs of fueling and maintaining generators already take up a significant portion of my budget.”

- “I considered investing in automated equipment for faster production, but the risk of frequent generator breakdowns... made me rethink that decision.”

- “Ultimately, the generator reliance has forced me to prioritize survival over growth, which limits my ability to make bold strategic moves.”

In Nigeria, the reliance on diesel-powered generators due to an underdeveloped power sector has led to increased operational costs and a forced adoption of higher pricing strategies, undermining business competitiveness (U.S. Department of State, 2024). These challenges are compounded by regulatory uncertainty, inadequate infrastructure, persistent government subsidies, and limited domestic natural gas, which further erode investor confidence and stifle innovation, expansion, and sustainable growth. Participants noted that this dependence shifts priorities from proactive development to defensive survival, effectively limiting innovation and competitiveness. While anticipated, these findings underscore the urgent need for sustainable energy solutions that can support strategic growth and bolster economic stability. Ultimately, these issues require comprehensive policy reforms.

4.1.1.3 Theme 3: Partial Solutions and Mitigation Strategies

The extent of tank autonomy significantly influences the flexibility of scheduling policies for fuel supply to generators (Krishnamurthy & Kwasinski, 2019). The government's inability to provide fundamental public utilities and services has compelled residents and businesses to rely heavily on electric generators as a primary energy source (Akindele & Oyinlade, 2016). The SMEs have responded to these challenges by

employing various coping measures. These include scheduling operations to coincide with limited grid power availability, investing in energy-efficient equipment, and exploring partial solar solutions. However, while these strategies provide some relief, their impact remains incremental and incomplete. Participants across different regions shared similar approaches, highlighting both the potential and the limitations of these mitigation strategies:

- "I've started exploring energy-saving equipment, like LED lighting and more efficient machines... it helps me cut fuel costs over time."
- "We now schedule production during the hours when there's electricity supply... to minimize running the generator all day."
- "I've considered investing in solar panels... The solar system can handle most of the lighting and basic operations, reducing our fuel costs, but it's not a perfect solution."

Renewable energy solutions such as solar home systems and mini grids offer a promising alternative to mitigate the impacts of generator reliance in Nigeria (Heinemann et al., 2022). These systems can reduce operational costs and promote environmental sustainability, providing a more reliable backup to fossil fuel generators amidst an unreliable national grid. However, participants highlighted significant financial and infrastructural barriers to adopting solar energy solutions. High initial costs and grid unreliability have tempered optimism regarding their feasibility. While solar power is viewed as a hopeful option, the need for systemic support remains critical to making renewable energy accessible and viable for SMEs. This situation reflects a dual reality: cautious optimism coexists with persistent challenges in transitioning to sustainable energy practices.

4.1.1.4 Theme 4: Limited Impact of Government Policies and Local Initiatives

Policymakers are urged to support sustainable energy generation and use among Nigerian SMEs, as advocated by Jacal et al. (2022). Prior research highlights the value of cost-effective, consumer-focused policies, noting their success depends on factors such as natural gas prices and the operational efficiency of generators within the dispatch stack (Moore & Apt, 2014). Deregulation policies may further stimulate growth in the power industry (Necoechea-Porras et al., 2021), and current recommendations call for energy policy revisions to better support sustainable sources (Nafisi et al., 2022). However, study respondents expressed disappointment with government support mechanisms and local initiatives, describing them as

overly complex, inaccessible, and oriented toward larger enterprises rather than SMEs. Many small businesses have struggled to secure meaningful relief or reduce reliance on generators, revealing a significant disconnect between policy intentions and practical applicability, which remains a major barrier in addressing their energy challenges. Some examples of the participants' comments which illustrate their frustrations from the three regions include:

- "I've heard about some government schemes that provide subsidies or incentives for renewable energy, but they're often difficult to access or are more suited to bigger companies."
 - "Government policies and local initiatives don't seem to have had much of an impact on helping SMEs like ours reduce reliance on generators."
 - "If there were more direct, tangible support from the government—like grants, low-interest loans, or simplified access to renewable energy technologies—it could make a real difference."
- These findings highlight the need for more accessible and SME-focused government interventions. Simplified processes for accessing renewable energy subsidies, low-interest financing options such as the CBN intervention, and tailored support programs could bridge this gap, enabling SMEs to transition toward sustainable energy use and reduce their dependence on costly and inefficient generators.

5.0 Summary of Findings, Conclusion and Recommendation.

5.1 Summary of Findings

The study investigates the economic challenges confronting SMEs in Nigeria as a result of their heavy reliance on diesel-powered generators amid a persistent energy crisis. Using a qualitative research design, the study involved in-depth interviews with 10 experienced SME owners and managers from different regions of Nigeria—3 from the north, 3 from the south, and 4 from the west—to capture a broad range of perspectives (Smith et al., 1999, as cited in Vasileiou et al., 2018). Initially, open coding of interview transcripts generated 303 code segments, which were then refined through axial coding into 12 sub-themes and further synthesized into four overarching themes. These themes were contextualized within relevant theoretical frameworks and supported by a comprehensive review of empirical and methodological literature. The findings reveal that dependence on generators substantially increases operational costs for SMEs. Frequent power outages and an unreliable public

electricity supply force businesses to allocate significant portions of their budgets to fuel, maintenance, and repair costs associated with diesel generators. This heavy financial burden constrains profit margins and restricts the capital available for reinvestment in strategic areas such as technology, expansion, and workforce development. Consequently, many SMEs are compelled to prioritize immediate survival over long-term growth and innovation.

Additionally, the study shows that while SMEs have adopted several coping strategies—such as scheduling production to coincide with periods of limited grid power, investing in energy-efficient equipment, and experimenting with partial solar solutions—these measures provide only incremental relief and do not resolve the fundamental issues related to energy insecurity. Furthermore, government policies and local initiatives have proven insufficient, often being too complex or tailored to larger enterprises, leaving SMEs with inadequate support to transition away from generator dependency.

Overall, the study highlights that the financial and operational constraints imposed by generator reliance hinder profitability, slow technological advancement, and impede sustainable growth. Emergent findings underscore the urgent need for more accessible financing options and simplified policy frameworks that empower SMEs to mitigate external energy challenges while leveraging their internal capacities for long-term sustainability, in line with Resource Dependence Theory (RDT) and the Resource-Based View (RBV).

5.1.1 Discussion

Persistent energy challenges in Nigeria have undermined the economic stability of small and medium-sized enterprises (SMEs) due to frequent power outages and an unreliable electricity supply. Consequently, many SMEs are reliant on diesel-powered generators. While generators help maintain daily operations and meet customer demands, they also increase production costs through fuel expenses, maintenance, and repairs, which in turn reduce profit margins and impede long-term growth. High operating costs force business owners to prioritize short-term survival over investments in technology, expansion, or workforce development, thereby limiting competitiveness and innovation. Although SMEs have tried mitigation measures such as adopting energy-efficient equipment, adjusting production schedules to match grid availability, and integrating solar energy, these efforts have offered

only limited relief because of high costs and complex renewable options. Moreover, government policies and local initiatives have often failed to provide accessible support or renewable energy subsidies. These findings align with broader literature that inadequate energy infrastructure hampers economic development and business competitiveness in emerging markets (Mbiankeu Nguea, 2020; Du et al., 2022), ultimately restricting SMEs' contributions to national growth and entrepreneurship. The challenge persists.

5.2 Conclusion

This study reveals that the widespread reliance on generators among SMEs in Nigeria stems from persistent and systemic energy supply challenges, resulting in high production costs, squeezed profit margins, and constrained strategic growth. The findings highlight the delicate balance SMEs must strike to remain competitive while managing generator dependence's financial and operational challenges. The study points to the need for governmental and infrastructural reforms to break this cycle. By improving grid reliability, offering tangible incentives for renewable energy adoption, and simplifying access to financial instruments that support clean energy investments, policymakers can help SMEs transition away from intensive generator reliance.

The proposed reforms would alleviate the immediate pressures on SMEs and enable them to invest in innovation, training, and market development, ultimately fueling a more robust and inclusive economic landscape. In essence, the path to sustainable growth for Nigerian SMEs lies in reducing their dependence on costly, polluting, and inefficient generator use. With collaborative efforts between government, industry stakeholders, and financial institutions like the CBN intervention in power sector., SMEs could gain the stable energy foundation needed to thrive, compete, and contribute meaningfully to the nation's economic progress.

5.3 Policy Recommendation

Judging from the findings of this study, the paper recommends that the Nigerian government prioritize initiatives to reduce SME reliance on diesel-powered generators by improving grid reliability and promoting renewable energy adoption. Specifically, the government should invest in modernizing the national grid to ensure a stable and affordable electricity supply, thereby minimizing the need for costly backup generators. Additionally, targeted incentives such as grants, low-interest loans, and subsidies should be introduced to encourage SMEs to

adopt renewable energy solutions like solar power. These measures should be supported by a streamlined and accessible policy framework that fosters public-private partnerships and simplifies access to clean energy financing. By taking these steps, Nigeria can lower production costs, enhance SME competitiveness, and stimulate long-term

economic growth. This approach not only addresses immediate energy challenges but also sets the stage for a more sustainable and all-inclusive industrial future. Overall, these practical measures promise lasting benefits.

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Assessment of the Impact of SUKUK Financing on Infrastructural Development in Nigeria



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ABSTRACT

This study is focused on addressing the uncertainties surrounding fiscal policy on the Nigerian economy, specifically exploring Sukuk as a sustainable financing alternative for infrastructure projects. The challenges related to fiscal sustainability in Nigeria stem from a combination of factors, including corresponding revenue growth, resulting in significant deficits, inflationary pressures, and fluctuations in oil prices. Additionally, unexpected interventions by the monetary authorities, along with high interest and inflation rates, contribute to the policy uncertainties. Data was source from secondary sources to assess the impact of SUKUK financing on infrastructural development in Nigeria, drawing insights from various studies, articles and reports. Descriptive statistics was used to analyze trends using Python programming tools Findings revealed that Sukuk remains a smaller, specialized financing instrument that state plays a pivotal role in maximizing the benefits for sustainable economic development. The government's preference for Multilateral External Debt suggests a strategy to fund long-term projects or manage budget deficits through both domestic and international borrowing. The heavy increase in debt levels, particularly through External Debt, could put upward pressure on future debt servicing costs. The study therefore recommends that government should build a one-of-a-kind model, and everlasting fiscal instruments that are in line with financial market boost infrastructure in Nigeria by concentrating on awareness and regulatory levels to increase the growth of FGN Sukuk as well as policymakers should evaluate the balance between various debt instruments and explore sustainable financing options in Nigeria.

KEYWORDS: SUKUK, FGN, Financing, Development

1.0 Introduction

The federal government of Nigeria has taken out loans from domestic financial markets using a range of debt instruments. This category includes a variety of financial instruments, such as development stock, bonds, and Treasury bills certificates issued by the government. Between 1970 and 1980, the government borrowed a total of N8.216 billion from domestic sources, with treasury bills and development stock competing for investors' dollars. Nonetheless, following the introduction of Treasury bonds in 1989, the most popular market instrument from 1981 to 1990 was Treasury bills. Following that, from 1991–2001, the government's internal borrowing increased rapidly and steadily from N116.198 billion to N1, 016.97 billion (Raymond et al., 2022). Federal Government Bonds, which were first offered to the public in 2003, did better than Treasury bonds. It became increasingly apparent that the government's domestic borrowing had significantly increased beginning in 2006; after Nigeria's external debt obligations had been resolved. From 2007 onward, the FGN bond became one of the most prominent financial products in the market. The dominance of FGN bonds was further reinforced by the fact that the total domestic borrowing of the government increased from N1, 753.26 billion in 2007 to N11, 058.20 billion in 2016. Various Federal Government Nigeria (FGN) bond types were introduced by the government in 2017, including FGN Sukuk, FGN Green Bonds, and FGN Savings Bonds.

These instruments, along with the more traditional FGN bonds, became the country's primary means of borrowing money from within. With a total value of N10,762.52 billion, FGN bonds accounted for 75% of the N14,272.64 billion in domestic borrowings made by the government in fiscal year 2019 (Raymond, Justin & Adolphus, 2022). There are a number of obstacles that must be overcome before Sukuk can be fully utilized as a financing source for public subscription. These include regulatory frameworks, market acceptance, high costs associated with infrastructure development implementation, limited financing options, and strict loan criteria imposed by the IMF and the World Bank. As a potential source of funding for infrastructure projects in Nigeria, this study seeks to navigate Sukuk as an alternative and sustainable financing option as a result of the limitations of conventional financial instruments, numerous countries have turned to Sukuk, which bodes well for its future and the expansion of financial inclusion and sustainability.

2.0 Literature Review And Theoretical Framework

Danijel & Vladislav (2019) investigate the implications of monetary and fiscal policy on developmental outcomes under contemporary conditions. The study adopts a structured methodological framework to scrutinize the implications of monetary and fiscal policy on economic development. Utilizing multiple regression analysis, the study seeks to ascertain the contribution of each independent variable (monetary and fiscal policy measures) to the dependent variable (GDP-Unemployment rate). The findings elucidate that monetary policy measures necessitate complementary actions within fiscal policy, and conversely. This coordination is critical for effectively impacting living standards and attaining desired economic results, with the central finding underscoring the imperative for synchronized monetary and fiscal policies.

Goshit & JHL (2013) conducted an analytical study concerning the interactions and limitations of monetary and fiscal policies: the necessity for policy coordination to achieve macroeconomic outcomes in Nigeria. This manuscript employs theoretical methodologies to scrutinize the interplay between monetary and fiscal policies within the Nigerian context. Furthermore, the study investigates the constraints faced by both monetary and fiscal policies in a developing economy, particularly in Nigeria. The research underscores the notion that in developing nations such as Nigeria, reliance on monetary policy alone is inadequate for accomplishing macroeconomic objectives, including output growth, price stability, and elevated employment levels. This underscores the necessity for a more cohesive approach to economic management. The disjunction of Monetary and Debt Management is examined, revealing how the separation of monetary policy from public debt management has engendered inefficiencies. This "divorce" implies that, in the absence of coordination, both policies may falter in optimizing economic performance. A pivotal conclusion of the study is the critical need for effective coordination between monetary and fiscal policies. The authors contend that such coordination can bolster overall macroeconomic performance without undermining the autonomy of policymakers.

Rugea (2018) study the interplay between fiscal and monetary policies in developing nations: The Case of Romania, this investigation integrates aspects from both theoretical frameworks and empirical analyses. The empirical component, in particular, possesses a qualitative character augmented with quantitative

facets. The econometric techniques employed were executed within the RStudio environment utilizing time series data pertinent to the chosen indicators. Initially, ADF, PP, and KPSS unit root tests were performed on the indicators to ascertain the stationarity of the data. The principal conclusions, derived from the STA methodology, typically suggest a feeble level of policy coordination, approximated at 30%. A contributing factor to the inadequate coordination of fiscal and monetary policies in Romania may be attributed to the absence of institutions that facilitate effective communication and collaboration among authorities. It is imperative to emphasize that in the contemporary context of Romania, any proposed solutions must originate from a robust economic vision, predicated on principles of sound economic governance. Furthermore, bolstering confidence in public institutions and economic policies constitutes the foundation for subsequent development.

Kaushik (2012) conducted a study on Fiscal and Monetary on Indian Economy. The study accentuates the significance of monetary policy in the regulation of inflation. It deliberates on how India has reacted to inflationary pressures through fiscal contraction and liquidity constraints, signifying a methodical approach aimed at stabilizing the economy. Central Bank Interventions: An important finding underscored is the efficacy of central bank interventions in modulating exchange rates. The document introduces a strategic methodology termed 'schedule intervention,' which empowers the central bank to influence the exchange rate without depleting foreign currency reserves. This approach is vital for preserving economic stability while navigating external influences. The findings advocate that an integrated strategy encompassing both fiscal and monetary measures is imperative for confronting the economic adversities faced in India.

The paper promotes a balanced paradigm that acknowledges the interrelationships among diverse economic factors to cultivate sustainable growth.

Philip (2021) conducted a study on Monetary and Fiscal Policy Challenges Induced by South Africa's Intensifying Economic Crisis and the COVID-19 Pandemic. Time series data was employed. It illustrated that fiscal policy subsequent to 2009 has manifestly failed to produce the anticipated outcomes. Macroeconomic stability, as reflected in output growth and employment growth, has remained elusive notwithstanding the ongoing expansion of the budget deficit, increasing government debt, and the rising debt-to-GDP ratio.

The highly accommodating countercyclical fiscal policy has coexisted with a continually widening negative output gap, a declining investment-to-GDP ratio, and nominal GDP growth. The determinants of fiscal sustainability have also exhibited poor performance. The chapter posits that since R and G are central to fiscal sustainability, a synthesis of structural reforms aimed at enhancing G , along with tighter coordination between monetary and fiscal policy that contributes to a reduction in R , are essential policy interventions moving forward. For successful tighter coordination between monetary and fiscal policy, a low and stable inflationary environment is requisite.

Lekha & Emmanuel (2020) conducted an investigation into the interplay between Covid-19 and macroeconomic uncertainty: Fiscal and monetary policy responses. An explorative research design was implemented. The findings suggest that the economic repercussions of the pandemic may yield enduring effects; therefore, the policies enacted during this period must be meticulously crafted to facilitate sustainable recovery in the future. The study underscores the necessity for concurrent policy interventions that concurrently address both public health infrastructure and individual livelihoods. The authors contend that in the absence of coordinated efforts, the efficacy of the response may be significantly compromised.

Mouhamadou (2011) authored a treatise concerning the ramifications of fiscal policy within developing nations. Employing a structural VAR methodology, the study explores whether unforeseen budgetary interventions can effectively invigorate an ailing economy and identifies the myriad challenges and threats this approach poses to governmental authorities. The analysis explains the existence of a "global" crowding-out phenomenon affecting investment in emerging markets, with the most significant finding being that the global economy is transitioning into a novel paradigm. The empirical framework has enabled the characterization of the cyclical dynamics of fiscal policies annually across both sets of nations. It has been demonstrated that developing nations, particularly those in Africa, are progressively adopting more prudent and disciplined fiscal strategies. The application of fiscal policy as a mechanism for stabilization and stimulus has garnered renewed attention from analysts and policymakers alike. Following nearly three decades of neo-classical dominance, the recent financial crisis has heralded the resurgence of Keynesian principles accentuating the significance of state budgets during

economic contractions. This dissertation centers on this pertinent issue and presents stylized empirical observations regarding fiscal policies in developing economies, with the primary objective of assessing the efficacy of fiscal policy as an instrument of political economy.

James (2014) analyses the implications of Fiscal Policy Uncertainty and its Macroeconomic Repercussions. Utilizing time series data and autoregressive distributed lag (ARDL) models; the research estimates the influence of fiscal uncertainty on macroeconomic indicators such as real GDP, consumption, investment, and unemployment. The findings indicate that the overarching component of fiscal policy uncertainty exerts detrimental effects on real GDP, consumption, and investment, and it is further established that the accumulation of fiscal policy uncertainty from 2005 to 2009 culminates in a reduction in real GDP growth by approximately 2 percentage points.

Raju, Ayhan & Franziska (2016) conducted an empirical investigation regarding the challenges inherent in fiscal policy within emerging and developing economies. This manuscript provides a comprehensive examination of the accessibility and application of fiscal space in these economies. Prior to the onset of the Great Recession of 2008-09, these economies successfully created fiscal space, which was subsequently utilized for economic stimulus purposes. This phenomenon illustrates a broader trend observed over the preceding three decades, wherein the availability of fiscal space has been linked to increasingly countercyclical (or diminished procyclical) fiscal policies. Nonetheless, fiscal space has contracted since the Great Recession and has yet to revert to the levels observed prior to the crisis. Emerging and developing economies are currently confronted with declining growth prospects and the likelihood of escalating financing costs. Should these factors precipitate a pronounced cyclical downturn, it may become imperative for policymakers to leverage fiscal policy as a potential stimulus instrument. An essential prerequisite for the efficacy of fiscal policy is the availability of adequate fiscal space within these economies to facilitate the implementation of countercyclical policies. In the medium term, credible and meticulously designed institutional frameworks, including fiscal regulations, stabilization funds, and medium-term expenditure strategies, can contribute to the augmentation of fiscal space and the enhancement of policy outcomes.

Duku (2023) investigated the possibility of using Sukuk Murabah to fix the infrastructure problems plaguing Nigerian universities. Among the various

methods that this study emphasized for financing education were private donations, bank loans, and public-private partnerships (PPP). Using a qualitative research methodology, the study found that federal academic institutions have utilized a wider range of funding sources than state-level academic institutions. Therefore, utilizing creative financial solutions such as Sukuk Murabah is essential as well as awareness of the issue and offer support to the relevant regulatory institutions to ensure a good execution.

Sagiyeva, Mahfudz & Oteshova (2023) study Sukuk as an Islamic financing option for infrastructure investment actors in Kazakhstan. The significance of considering the issuance of Sukuk and other forms of Islamic financing within regulatory frameworks as a solution to Kazakhstan's infrastructure development issues was stressed. There has been an effort to establish a more favourable regulatory framework for Sukuk since they are not sufficiently covered by the laws of Kazakhstan and the Astana International Financial Centre (AIFC). The findings revealed that Sukuk can facilitate the funding of infrastructure projects independent of public funds, to enhance financial services, and to encourage the growth of the country's capital market.

Khabib & Elman (2023) Study Green Sukuk as an instrument of Islamic finance for investment purposes. The methodology used for qualitative research was an analytical framework and a comprehensive literature review. The results show that green Sukuk have a lot of promise for Indonesia; they can help the country become more climate resilient by funding eco-friendly initiatives that deal with food security, flood prevention, and drought control, among other things.

Lim, Rimi & Putri (2022) conducted an extensive study on the possibility of Green Sukuk to advance Green Infrastructure In Bekasi City, Indonesia. This study used descriptive statistics, interviews, and primary and secondary data gathered from the Bekasi municipal administration to create a qualitative descriptive methodology. The study revealed that Presidential Regulation of the Republic of Indonesia Number 35 of 2018 was just recently issued by the local government and people of Bekasi and the rest of Indonesia need to learn more about Sukuk.

Abdul Aziz et al (2014) undertook an investigation to evaluate the risks connected with using Sukuk, or Islamic bonds to finance infrastructure projects. The results show that Sukuk, which are also called Islamic bonds, are a growing trend in the funding of

infrastructure projects. Major in comparison to more traditional obligations, but less expensive. The article suggests that the government should facilitate a process whereby interested parties can evaluate the risks of issuing Sukuk for financial infrastructure and work together to resolve any resulting financial issues.

Tijjani & Haruna (2021) look into the potential of Sukuk funding for Nigeria's oil and gas sector. A quantitative analytical method was used to assess the relative importance of upstream, intermediate, and downstream petroleum industry funding priorities. The results indicate that there are approximately 37.2 billion barrels of confirmed oil reserves and 182 trillion cubic feet of natural gas reserves in the upstream sector, three oil refineries in Nigeria can handle 438,750 barrels of oil daily at present. Refineries like these are probably old, poorly managed, and in need of turnaround maintenance because of the lack of funding and the government should think about finding new ways to attract investors' attention in Sukuk financing and broadening its funding sources. The effective implementation of sukuk financing has the potential to enhance a nation's refinery efficiency and address issues affecting the oil and gas industry both upstream and downstream.

Ima (2022) looked into the role of Sukuk as a key tool for Indonesian macroeconomic policy. Examining the short- and long-term growth of government Sukuk and the research employs a dynamic linear error correction model (ECM). The findings demonstrate that, in the long run, government sukuk issuance is positively affected by infrastructure financing and budget reduction. This study recommends further support for government Sukuk as a viable alternative to international debt for infrastructure construction. If the government is serious about the Sukuk market growing and becoming a major source of capital for economic development, especially in the realm of infrastructure development, it should promote government Sukuk as a trustworthy investment instrument.

Ahliddin (2020), analyses Sukuk as a financing mechanism for infrastructure investment projects. The study used a purposive sampling method to enhance the quality of the data after extensive interviews with a diverse group of Islamic finance experts to analyses data. The study's author lays out the most important signs of major Sukuk problems and offers helpful information that could lead to more foreign investors diversifying their Sukuk

structures through the use of a maximum variation and snowball sampling technique.

Houcem, Karim, & Ines (2021) investigate the impact of Sukuk on infrastructure. The generalized least squares (GLS) programme was employed. A serial correlation and heteroscedasticity in the residuals method was incorporated to robust standard errors and random effects. The findings demonstrate that the highly developed Sukuk market contributes to the expansion of the nation's infrastructure. The findings demonstrate that the highly developed Sukuk market contributes to the expansion of the nation's infrastructure. Sukuk markets are crucial for the long-term funding of large-scale projects. This groundbreaking discovery has been completely missing from the annals of academic literature.

2.1 Conceptual Review

Concept of Sukuk

According to Accounting and Auditing Organisation of Islamic Financial Institutions (AAOIFI) Sharia standard number 17(2), Sukuk are defined as financial instruments representing undivided ownership interests in tangible assets, usufructs, services, or in the ownership of assets related to specific projects or specialised investments. A Sukuk is a certificate that indicates the holder's proportionate ownership in an undivided portion of the underlying asset, with the holder assuming all rights and responsibilities associated with that asset, according to the Islamic Financial Services Board (IFSB) (Adam & Nuradeen, 2020).

According to the definition provided by the Islamic Financial Services Board (IFSB) in Adam (2020), sukuk are financial instruments that represent the owners' percentage of ownership in a specific portion of the core asset. The owner bears all liability and rights pertaining to that benefit. The emergence of Sukuk on Islamic capital markets is a significant development that provides businesses, government agencies, and financial institutions with an alternative means of financing.

According to the definition provided by the Accounting and Auditing Organisation of Islamic Financial Institutions in 2004, Sukuk refers to certificates of equal value representing individual shares in ownership of real estate, investment opportunities, services, or assets relevant to specific projects or activities. Moreover, the Islamic Financial Services Board (2004) defines Sukuk as "a certificate that represents the holder's proportionate ownership in an undivided portion of the underlying assets,

where the holder assumes all rights and responsibilities relevant to such assets".

2.2 Concept of Infrastructure

Grigg (1988) defines infrastructure as a physical system that enables the movement of goods, irrigation, drainage, constructions, and other vital facilities required by the public to fulfill the needs of material, social, and economic activities (cited in Jajang and Rais, 2022).

2.3 Theoretical Review

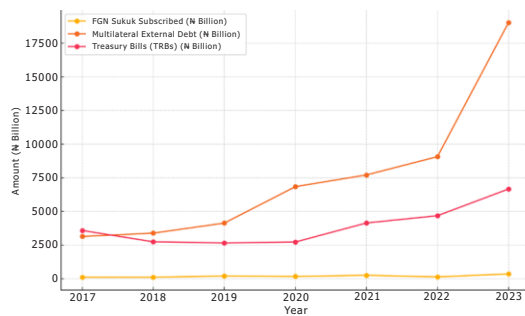
For studying the dynamics of real investments, the most popular theoretical model is Tobin's (1969) Q-theory of investment. According to this hypothesis, there is a positive relationship between investment and Q, which is the market value divided by the cost to replace the capital. In particular, with regard to the FGN Sukuk, one may implement a tweak to the investment Q theory, which centres on the correlation between acquisition costs and an asset's market value. The massive growth of the Federal Government Sukuk, an Islamic financial instrument based on the principles of profit sharing, has greatly benefited the Nigerian economy. It has improved economic conditions by increasing investments, speeding up economic growth, and facilitating the development of infrastructure. In addition, both obligors and investors are involved in the issuance of Sukuk. The emphasis placed by theory Q on asset valuation and investment decision-making corresponds to the fact that investors gain from debt management office of Nigeria.

3.0 Methodology

Using secondary data, this study investigates the feasibility of FGN Sukuk as a long-term funding tool for infrastructure development in Nigeria. A thorough reviewed of existing literatures and relevant publications were carried out in order to carry out this study. Data was sourced from the Nigerian Debt Management Office over the course of six years of the implementation of FGN Sukuk for the development of infrastructure in Nigeria in comparison with other financial instruments, this allows for an extensive evaluation of Sukuk as a sustainable and an alternative financing option using trend analysis and Python programming software.

4.0 Discussion Of Results And Implication Of Findings

Figure 4.1: FGN Sukuk Subscribed, Multilateral External Debt and Treasury Bills



Source: Author's Compilation from DMO (2017, 2018, 2020, 2021, 2022 & 2023)

FGN Sukuk Subscribed:

FGN Sukuk Subscriptions have minimal fluctuations and remain relatively low compared to the other indicators. Sukuk funding has not seen the same level of increase as other debt types, indicating it is still a niche financing option. The growth in Sukuk in 2023 could be attributed to a renewed interest in Sharia-compliant investment instruments or efforts to diversify funding sources, but the overall impact remains limited in scale.

Multilateral External Debt:

Multilateral External Debt exhibits steady growth over the years, with a marked increase from 2020 onwards. The rise in 2020 could be linked to the global economic impact of the COVID-19 pandemic, where many countries, including Nigeria, sought financial assistance from international organizations. Continued growth in multilateral debt might imply a dependency on international lending institutions or funding from multilateral organizations to finance development projects or fill budgetary gaps.

Treasury Bills (TRBs):

Treasury Bills remain relatively stable from 2017 to 2021, with slight increases. However, from 2021 to 2023, there is a gradual upward trend, suggesting that the government has been issuing more treasury bills, possibly as a short-term funding mechanism to manage liquidity and meet financing needs. This trend could reflect an attempt to use treasury bills as a tool for monetary policy, especially as market conditions change.

Figure 4.2: Trend of FGN Sukuk Subscribe

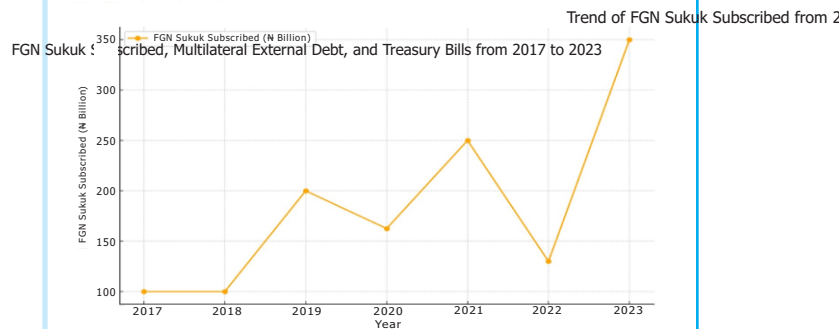


Figure 4.2 above shows that FGN's Sukuk stand out because of its unique beneficial features and presents itself as a sustainable and evergreen investment choice, to be subscribed based on the outcomes with substantial increases year in year out especially in 2023, 2021, 2019, and a marginal declined year 2020 which could be linked to the covid-19 pandemic, as well as a sharp declined in the year 2022.

Implication of the Findings

Government Bonds and Multilateral External Debt have been the primary sources of financing over the period, with substantial increases in recent years, especially in 2023. The government's preference for Government Bonds and Multilateral External Debt suggests a strategy to fund long-term projects or manage budget deficits through both domestic and international borrowing.

The modest growth in Treasury Bills indicates reliance on short-term debt instruments, potentially for liquidity management, while Sukuk remains a smaller, specialized financing instrument. These trends could have implications for the country's debt sustainability and interest rate environment. The heavy increase in debt levels, particularly through Government Bonds and External Debt, could put upward pressure on future debt servicing costs. This increase may prompt policymakers to evaluate the balance between various debt instruments and explore options for sustainable financing.

Government Bonds and Multilateral External Debt have constituted the predominant financing avenues during the analyzed timeframe, with marked escalations observed in recent years, particularly in the year 2023.

The government's inclination towards Government Bonds and Multilateral External Debt implies a deliberate approach to financing long-term initiatives or addressing fiscal deficits via both domestic and international borrowing mechanisms. The moderate increase in Treasury Bills reflects a

reliance on short-term debt instruments, likely employed for liquidity management purposes, whereas Sukuk remains a relatively minor and specialized financing instrument.

These observed trends may bear significant implications for the nation's debt sustainability and the prevailing interest rate landscape. The pronounced escalation in debt levels, especially through Government Bonds and External Debt, may exert upward pressure on forthcoming debt servicing expenditures. This increase could necessitate policymakers to reassess the equilibrium between diverse debt instruments and investigate avenues for sustainable financing solutions.

5.0 Summary, conclusion and Recommendations

Based on the findings, Sukuk remains a smaller, specialized financing instrument that state plays a pivotal role in maximizing the benefits for sustainable economic development. The government's preference for Government Bonds and Multilateral External Debt suggests a strategy to fund long-term

projects or manage budget deficits through both domestic and international borrowing. These trends could have implications for the country's debt sustainability and interest rate environment. The heavy increase in debt levels, particularly through Government Bonds and External Debt, could put upward pressure on future debt servicing costs and therefore recommend as:

Government should build a one-of-a-kind model, and everlasting fiscal and monetary instruments that are in line with Islamic Sharia to boost infrastructure in Nigeria by concentrating on awareness and regulatory levels to increase the growth of FGN Sukuk.

Policymakers should evaluate the balance between various debt instruments and explore options for sustainable financing.

The government should incorporate other economic areas such as education, communications, transportation, and manufacturing.

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An Analysis of Corporate Challenges of Micro-finance Banks in Nigeria, 2007 - 2021.



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ABSTRACT

In this study, major corporate challenges of Micro-Finance Banks (MFBs) in Nigeria from 2007 – 2021, are identified and analysed to broaden knowledge on the challenges, to facilitate solutions and preventive measures. The data for the study are mainly from Annual Reports of Nigeria Deposit Insurance Corporation (NDIC). Descriptive analytical methods are adopted. The 28 different types of challenges found are grouped into: Corporate Governance (14), Credit/Loans (5), Human Resources (3), Internal Control (3), and Risk (3). The commonest type of the challenges is "Poor Internal Control" while the seven (7) least common include: "Low Financial Literacy Level" and "Poor Fund Management". 50% of the 28 challenges fall under Corporate Governance; 17.9% is under Credit/Loans while 10.7% each is for Human Resources, Internal Control and Risk Management. A major implication of the Challenges is the threat to the survival of the banks. Among the 13 recommendations is for MFBs to embark on resolution of the challenges with special focus on Compliance with the "Codes of Corporate Governance for Other Financial Institutions in Nigeria". The study concludes that, the types of challenges, their implications and the recommendations advanced, challenge MFBs, their Regulators/Supervisors to discover the causes, solutions and preventive measures.

KEYWORDS: Micro-finance Banks, Corporate Challenges, Implications, Recommendations.

1.0 Introduction

Microfinance Banking (MFB) was formally introduced into the Nigerian Banking Industry on December 15, 2005 when the Central Bank of Nigeria (CBN) officially launched the Microfinance Policy, Regulatory and Supervisory Framework for Nigeria. The specific Policy Objectives are to:-

- i. Make financial services accessible to a large segment of the potentially productive Nigerian population which otherwise would have little or no access to financial services;
- ii. Promote synergy and mainstreaming of the informal sub-sector into the national financial system;
- iii. Enhance service delivery by microfinance institutions to micro, small and medium entrepreneurs;
- iv. Contribute to rural transformation; and
- v. Promote linkage programmes between universal/development banks, specialized institutions and microfinance banks.

In 2011, the Microfinance Policy was revised to provide a platform for the achievement of the following specific Objectives:

- i. Provision of diversified, affordable and dependable financial services to the economically active poor, which otherwise would have been excluded, in a timely and competitive manner, to enable them undertake and develop long-term, sustainable entrepreneurial activities;
- ii. Creation of employment opportunities and increase in the productivity of the active poor in the country, thereby enhancing their individual household income and uplifting their standard of living;
- iii. Promotion of synergy and mainstreaming of the informal Microfinance sub-sector into the formal financial system, thereby ensuring effective, systematic and focused participation of the poor in socio-economic development and resource allocation;
- iv. Enhancement of service delivery by all microfinance institutions to MSMEs and rendering of specialised services such as payment of salaries, gratuities, and pensions by those licensed by the CBN;
- v. Mobilisation of savings for intermediation and contribution to rural transformation;
- vi. Promotion of linkage programmes between MFIs on one hand, and DMBs, DFIs and specialized funding institutions on the other;
- vii. Provision of sustainable avenues for the administration of the microcredit programmes of

government and high net worth individuals on a non-recourse basis; and

viii. Promotion of an enabling platform for microfinance service providers to network and exchange views and experiences on their products and processes.

Since the commencement of Licensing of Microfinance Banks (MFBs) in Nigeria in 2005, by the Central Bank of Nigeria (CBN), operations of the banks have increased and expanded the provisions and delivery of banking and financial services across the country. This is essentially because a large number of such banks have not only been licensed but are operating in all the six Geo-Political Zones of the country i.e. South-East, South-South, South-West, North-East, North-West and North-Central. As at the end of December 2021, the number of MFBs in operation in the country was 866 (NDIC 2021 Annual Report and Statement of Accounts).

Each year, since the debut of MFB operations in Nigeria, the Central Bank of Nigeria (CBN) and the Nigeria Deposit Insurance Corporation (NDIC), (the Regulatory and Supervisory Authorities of banks in Nigeria), in line with their Mandates, examine and supervise the banks in order to ensure of their ongoing health status. For many years, such examinations and supervisions have always revealed some of the challenges that the MFBs are faced with annually. Unfortunately, crystallisation of the unresolved Challenges in the banks had led to the failure of some of them leading to the revocation of their licenses by CBN and subsequent liquidations. Indeed, reports from CBN/NDIC indicate that the major and critical factors that had led to the revocation of licenses and liquidations of affected MFBs included the crystallisation of the unresolved Challenges in them.

Having thus credited the Challenges with the capacity to jeopardise or threaten the soundness and stability of the banks and of course, the entire national banking and financial system, the importance and significance of the Challenges that MFBs are faced with in the Nigerian Banking Industry, cannot be overemphasised.

This is perhaps, one of the leading rationales or reasons for the CBN/NDIC making "recommendations" to the Board of Directors/Management of any MFB that was examined and/or supervised, for the resolution of identified Challenges. Furthermore, at the end of each year, a Summary of the major Challenges

discovered in all the examined and supervised MFBs are reflected in some publications (for instance, the NDIC's Annual Report and Statement of Accounts) of the Regulatory and Supervisory Bodies - CBN/NDIC.

Given the ascribed critical negative impact of the Challenges in the MFBs, it has become important and indeed, very necessary that due attention should be given to understanding their scope, nature and type as well as any other characteristics they had manifested, in order that solutions and preventive measures can be considered, developed, adopted and put into use for a healthy, sound and sustainable Microfinance Banking Sub-sector in Nigeria.

This study is therefore, intended to bring about a broader knowledge and understanding of the Challenges that MFBs in the Nigerian Banking Industry were officially reported to have faced within the 15-year period, 2007-2021.

The main issues that are of immense interest in the study, have been crafted to form the substance of the hereunder articulated Objectives of this Study. Finding data-supported answers to the subject issues in the Objectives will enable the Owners, Operators, Regulators and Supervisors as well as other interested Stakeholders in MFBs, to deepen their knowledge and understanding in order to find out the causes and viable solutions for the existing Challenges as well as the measures for the prevention of emerging forms of Challenges in MFBs in Nigeria.

1.1 Objectives of this Study

This study, which dwells on the major types of Challenges reported to have been faced by MFBs in the Nigerian Banking Industry, in the period 2007-2021, has multiple Objectives which are to:

- i. gather together and prepare a Comprehensive List of all the major types of Challenges of MFBs as reported by the NDIC from 2007 - 2021;
- ii. classify the Challenges into their related respective Groups;
- iii. find out the number of different types of Challenges that were reported;
- iv. find out the frequency of occurrence of the different types of Challenges reported in the 15 years under study;
- v. find out the most and least reported types of Challenges;
- vi. find out the trend in the incidence of Challenges in MFBs;
- vii. highlight the findings from the study and the

implications, if any; and
viii. make well considered recommendation(s) based on findings from the study and the implications.

1.2 Source(s) and Nature of Data For the Study

The main source of data for this study is the Annual Report and Statement of Accounts of Nigeria Deposit Insurance Corporation (NDIC). The Reports covered a 15-year period, 2007-2021. Additional source of data is, the Annual Banking Supervision Report of the Central Bank of Nigeria. Thus, data are sourced from publications of the Supervisory and Regulatory Authorities of banks in Nigeria (NDIC & CBN). All the data are collected, aggregated and deployed towards finding answers to the issues raised in the Objectives of the study.

1.3 Limitations of the Study

This study is limited to the extent that it deals with the specific issue - Challenges faced by MFBs that operated in the Nigerian Banking industry within the one and a half decades, 2007-2021. The second limitation is that the Challenges focused on were only those that were reported annually by NDIC in its Annual Report and Statement of Accounts after the Examination/Supervision of some, and not all, the MFBs in operation in the years. Thirdly, the study has nothing to do with the Challenges that might have been faced by other forms or categories of banks (for instance, Deposit Money/Commercial, Mortgage, etc) in the Nigerian Banking System.

1.4 Methodology for the Study

Descriptive research methodology is adopted for this study. We consider it a simple and easy to understand method. It is considered appropriate for this type of exercise because of the multiplicity of the target audiences. Consequently, all the Challenges of MFBs annually reported by NDIC, within the 15 years covered by the study, have been collated, compartmentalised into groups of related Challenges and aggregated. The studies performed are based on data for each of the different Challenges, groupings and all the groups put together. In the minimum, mathematical aggregates, per cent ages and averages are used to seek answers to the issues that form the specific concerns as amplified in the Objectives of the study.

2.0 Study of the Data

2.1 The Number of MFBs in Operation, 2007-2021

In the one and a half decades covered by this study (2007-2021), the total number of Microfinance

Banks (MFB) that operated in Nigeria was 13,251. On annual basis, the number fluctuated between the lowest of 716 in 2007 and the highest of 1008 in 2017 as evidenced in Table 1 below. In each of the years 2010 and 2021, the number was 866 while in each of years 2011 and 2012, the number was 880. Aside from the highlighted years when the number was the same, in all other years, the number was different which suggests some degree of dynamism in the opening and closing of MFBs. This means that, while new MFBs were being opened some of the existing ones were as well being closed. However, the average number of MFBs that operated in the one and a half decades was 883, a figure that is more than the 716 and 866 in 2007 and 2021, the commencement and terminal years, respectively covered by this study. As is noticeable in Table 1, whereas in the first three years (2007-2009) covered by the study, the number of MFBs in Operation increased annually from 716 to 910, there was a steady decline of the numbers in the last three years (2019-2021) from 907 to 866.

TABLE 1: NUMBER OF MFBs IN OPERATION, NUMBER OF MFBs EXAMINED AND NUMBER OF CHALLENGES DISCOVERED IN EXAMINED MFBs, 2007 – 2021

YEARS	A		B		C		B/A% (No. of Examined MFBs as % Of No. in Operation P.A.)	C/B% (No. of Challenges Discovered % of No. of Examined MFBs P.A.)
	MFBs in Operation Per Annum		MFBs Examined Per Annum		Challenges Discovered in Examined MFBs Per Annum			
	Number	Rank**	Number	Rank**	Number	Rank**		
2007	716*	15	95*	14	5	15	13.3	5.3
2008	840	13	68	15	7	13	8.1	10.3
2009	910	4	124	13	7	13	13.6	5.6
2010	866	10	2	302	2	8	34.9	2.6
2011	880	7	195	10	8	9	22.2	4.1
2012	880	7	246	8	10	5	28.0	4.1
2013	832	14	260	5	12	2	31.3	4.6
2014	882	6	250	6	14	1	28.3	5.6
2015	951	3	205	9	8	9	21.6	3.9
2016	978	2	350	1	8	9	35.8	2.3
2017	1008	1	300	3	9	10	29.8	3.3
2018	861	12	294	4	12	2	34.1	4.1
2019	907	5	249	7	10	5	27.5	4.0
2020	874	9	195	10	11	4	22.3	5.6
2021	866	10	192	12	9	8	22.2	4.7
TOTAL	13251		3325		139		25.1	4.2
AVERAGE PER ANNUM	883		222		9			

** Community Banks/ Microfinance Banks ** Author's Compilations/Computations.
Sources: 1) NDIC, Annual Report and Statement of Accounts, 2007 – 2021
2) CBN, Banking Supervision Annual Report 2007

Besides the above highlights, it is also noticeable from Table 1 that, in ten (10) years out of the fifteen (15) understudy, the average number per annum 883, was higher than the annual numbers while it was lower than the ones in five years. The years with their annual numbers higher than the average were 2009, 2015, 2016, 2017 and 2019.

On the other hand the average was higher than the annual numbers in years 2007, 2008, 2010, 2011, 2012, 2013, 2014, 2018, 2020 and 2021.

2.2 Number of MFBs Examined By The Authorities, 2007-2021

In the 15 years, 2007 – 2021 under study, the total number of MFBs examined by the Authorities as shown in Table I, was 3,325. This gives an annual average of about 222 and 25.1% of the 13,251 MFBs in operation. Thus, 74.9% or 9,926 MFBs were

not examined. This is a very huge gap that needed to have been covered or significantly reduced.

The average falls below the number of MFBs examined in 8 of the 15 years (2007 – 2021) and above the number in 7 of the years. In other words, the number of MFBs that were examined in each of the following 7 years – 2007, 2008, 2009, 2011, 2015, 2020 and 2021 – was below the 15 – year average of 222. On the reverse, the number of MFBs that were examined in each of the following 8 years – 2010, 2012, 2013, 2014, 2016, 2017, 2018 and 2019 – was above the 15 – year average of 222.

Out of the 15 years studied, there were decreases in the number of MFBs examined in nine (9) years or 60% of the period. The decreases occurred in the following years – 2008, 2011, 2014, 2015, 2017 – 2021. On the other hand, there were increases in the number of MFBs examined in the following six (6) years – 2007, 2009, 2010, 2012, 2013 and 2016. This means that in only 40% of the 15 – year period were increases recorded in the number of MFBs examined by the Authorities. As can be noticed from Table I, the year the highest number of 350 MFBs were examined was 2016. In the second and third place positions were years 2010 and 2017 when 302 and 300 respectively, were examined.

On the reverse, the lowest number of MFBs examined was 68 in year 2008. The next two to 68 were 95 and 124 in years 2007 and 2009, respectively.

It is observed that in none of the 15 years studied was the number of examined MFBs per annum upto the average number of MFBs in operation per annum. Indeed, there is a huge difference of 533 between the average number of MFBs in Operation (883) in the 15 – year period and the highest number of examined MFBs (350) within the same period.

From the period averages of MFBs in operation and MFBs examined, that is, 883 and 222, respectively, it is obvious that the number of MFBs in operation was about 4 times that of examined MFBs. This evidences the serious lag in examination of MFBs within the 15 – year period.

2.3 The Number of Different Types of Challenges Found in Examined MFBs in Nigeria, 2007-2021

The number of different types of Challenges, reported by NDIC, to have been faced by MFBs in Nigeria from 2007-2021, are shown in the Appendix to this study. On the whole, they are 28.

As further shown in the Appendix, we have grouped the types and number of the Challenges into five (5) groups, viz: Corporate Governance, Credit/Loans, Human Resources Management, Internal Control Management and Risk Management. The number and types of the Challenges in their respective groups are as follows:

2.3.1 Corporate Governance Group: Under the Corporate Governance Group, fourteen (14) different types of Challenges that MFBs in Nigeria faced within the period covered by this study, were reported by the Nigeria Deposit Insurance Corporation (NDIC). They constitute 50% of all the 28 different types of Challenges uncovered within the 15 years and ranked as the group with the highest number of different types of Challenges. Some of the types include - "Weak Corporate Governance Practices", "Weak/Inadequate Capital Base", "Lack of Proper Understanding of MFB Business", "Weak Board Oversight and Weak Earnings", among others (as shown in the Appendix).

2.3.2 Credits/Loans Group: The number of different types of Challenges reported to have been discovered, under this group, were five (5) as shown in the Appendix. They account for 17.9% of the 28 different types of Challenges the MFBs faced within the period under study. Indeed, the group came second, among the five groups, in the number of Challenges. The five types of Challenges are - "Poor/Low Asset Quality and Insider Abuse", "Non-performing Insider-related Credits", "Poor Loan Underwriting", "Rising Non-performing Loans" and "Avoidance of MFB Credits in Preference of Commercial Loans".

2.3.3 Human Resource Management Group: the number of different types of Challenges reported under this group were three (3). They constitute 10.7% of the 28 different types of Challenges reported in the period under study. Together with the Risk Management group and Internal Control Management group, they recorded the least number of three (3) Challenges each and occupy the last position among the five groups. The three (3) types of Challenges in this particular group are "Dearth of Experienced/Skilled Staff", "Inappropriate Staffing" and "Weak Capacity Building Practices".

2.3.4 Internal Control Management Group: the different types of Challenges reported under this group were three (3) in number. They are "Poor Internal Control and Record Keeping Practices", "Poor Implementation of Recommendations in Previous

Examination Reports", and "High/Huge and Increasing Operating Expenses". They account for 10.7% of the 28 Challenges in all the five groups together. This group, together with the Human Resources Management group and the Risk Management group that also recorded three (3) Challenges each, occupy the last position among the five (5) groups of Challenges.

2.3.5 Risk Management Group: the number of reported different types of Challenges under this group were three (3). The three types are: "Placement of Loanable Funds with Deposit Money Banks (DMBs)/Scarcity of Loanable Funds", "Poor Risk Management Practices" and "Risk Aversion by Investing in Treasury Bills (TBs) and Keeping Huge Balances in Current Accounts (C/As)". The three Challenges account for 10.7% of the 28 Challenges by all the five groups. The group, together with Internal Control Management group and Human Resources Management group is ranked the last among the five groups of Challenges.

2.4 Frequency of Occurrence of the Challenges: It is worth emphasising that within the 15 years studied, the 28 different types of Challenges of MFBs, as reported by NDIC, featured quite a number of times. However, the number of times each single Challenge and each Group of Challenges were spot-lighted differed. These can be appreciated from Table 2 below and the Appendix:

2.4.1 Frequency of Occurrence Per Group:

For all the 28 different types of Challenges in the five (5) Groups, the total number of times they occurred in the 15 years studied was 139. The 139 was contributed as follows by each of the five (5) Groups - Corporate Governance Group (77) or about 55.4%; Credit/Loans Management Group (22) or 15.8%; Human Resources Management Group (4) or 2.9%; Internal Control Management Group (28) or 20.1%; and Risk Management Group (8) or 5.8%.

Table 2: Groups of Mfbs' Challenges, Number of Types of Challenges Per Group and Frequency Occurrence of Challenges Per Group

		Number of Challenges Per Group	% of Total	Rank	Frequency Occurrence Per Group of Challenges	% of Total	Rank
A	Corporate Governance	14	50.0	1	77	55.4	1
B	Credit/Loans Management	5	17.9	2	22	15.8	3
C	Human Resources Management	3	10.7	3	4	2.9	5
D	Internal Control Management	3	10.7	3	28	20.1	2
E	Risk Management	3	10.7	3	8	5.8	4
	Total	28	100		139	100.0	

Source: Extracted from the Appendix

The above indicates that, among the Groups of Challenges, Corporate Governance Group ranked

first in the frequency occurrence of Challenges within the period studied. It was followed in the second position by Internal Control Management Group. The third place position was occupied by Credit/Loans Management Group. The fourth and fifth positions were by Risk Management Group and Human Resources Management Group, respectively.

2.4.2 Frequency Occurrence Per Challenge:

Under the Corporate Governance Group that 77 occurrence frequencies of Challenges of MFBs were recorded in the 15 years, 14 different types of Challenges contributed the 77. Of the 14 Challenges, the two that made the highest number of contributions of 13 each were "Weak/Poor Corporate Governance Practices" and "Weak/Inadequate Capital Base". "Weak Board Oversight" contributed 9 while 4 other Challenges- "Weak Earnings", "Adoption of Inappropriate Business Models", "Insider Abuses", and "Lack of Proper Understanding of MFB Business" contributed 8, 7, 6 and 5, respectively.

However, in the 15 years covered by the study, the lowest number of one (1) frequency occurrence was contributed by each of these three following Challenges under this Group - "Low Financial Literacy Level particularly in the rural areas", "Absence of Enterprise Risk Management (ERM) Framework" and "Poor Fund Management Practices". As shown in the Appendix, the number of occurrences of the remaining four other Challenges in this group - "Lack of/Poor Succession and Strategic Plans", "Non-Compliance with Laws and Regulations", "Illiquidity/Liquidity Challenges", and "Huge Expenses on Fixed Assets" were: 4, 4, 3 and 2, respectively.

The occurrence frequencies of the Credit/Loans Group were 22 which were accounted for by the five (5) different types of Challenges in the Group. In the 15 years, the highest and lowest contributions of 14 and 1, respectively were by the Challenges "Poor/Low Asset Quality and Insider Abuse" and "Avoidance of Micro-Credit in preference for Commercial Loans". The remaining three Challenges in this Group, that is, "Huge and Rising Non-Performing Loans", "Non-Performing Insider-related Credits", and "Poor Loan Underwriting Process", as shown in the Appendix, contributed 3, 2 and 2 occurrences, respectively.

The total frequency occurrences of the Human Resources Management Group of Challenges were only four (4). The highest occurrence of two (2) was recorded by "Inappropriate Staffing". Each of the other two Challenges - "Dearth of

Experienced/Skilled Staff" and "Weak Capacity Building Practices" - in this Group, recorded the lowest occurrence of one (1) only in the period covered by the study.

With regard to Internal Control Management related Group of Challenges, the total number of occurrences in the Group were 28, contributed by the three (3) different types of Challenges in the Group. Among the three Challenges, the one with the highest frequency occurrence was "Poor Internal Control and Record Keeping" that was reported in all the 15 years covered by the study. The other two Challenges - "High/Huge and Increasing Operating Expenses" and "Poor Implementation of Recommendations in Previous Examination Reports" had frequency occurrences of 7 and 6, respectively. Thus, "Poor Implementation of Recommendations in Previous Examination Reports" had the lowest number of occurrence in this Group.

In the fifth and last Group of the Challenges, that is, Risk Management related Group of Challenges, the total number of frequency occurrences were 8, accounted for by the three (3) different types of Challenges in the Group. The highest number of occurrence by a single Challenge in the Group was four (4), and that was recorded by "Placement of Loanable Funds with DMBs/Scarcity of Loanable Funds". The remaining 4 occurrences were contributed in the ratio of 3:1 by the Challenges- "Poor Risk Management Practices" and "Risk Aversion by Investing in TBs and Keeping Huge Balances in Current Account (C/A)". (Ref. The Appendix).

2.5 The Most Commonly Reported Type(s) of Challenges In MFBs

Within the 15-year period covered by this study, the Challenge that was the most prevalent or commonly reported by NDIC was "Poor Internal Control and Record Keeping" that belongs to the Internal Control Management Group. It was reported in all the 15 years covered by the study (that is, 100%). Consequently, among all the 28 different types of Challenges experienced by the MFBs from 2007-2021, it ranked as the number one in the number of occurrences.

Following the above most prevalent Challenge was the one that was reported in 14 or 93.3% of the 15 years covered by the study. The Challenge was "Poor/Low Asset Quality and Insider Abuse" that belongs to the Credit/Loans Management Group.

The third most reoccurring types of Challenges were

two. They were "Weak/Poor Corporate Governance Practices" and "Weak/Inadequate Capital Base" that were each reported in 13 or 86.7% of the 15 years covered by the study. Both Challenges belong to the Corporate Governance Group.

2.6 The Least Reported Type(s) Of Challenges In MFBs

The Challenges in MFBs that were reported only in one year out of the 15 years covered by the study were the least reported. As apparent in the Appendix, such Challenges were seven (7) in number. They cut-across 4 out of the 5 Groups of Challenges as follows: Corporate Governance Group (3); Credit/Loans Group (1), Human Resources Group (2) and Risk Management Group (1). The Group that did not have a Challenge reported in only one year out of the 15 years was Internal Control Management Group.

The seven (7) types of Challenges that constituted the least reported are shown in the Appendix. Specifically, they were: "Absence of Enterprise Risk Management (ERM) Framework", "Low Financial Literacy Level particularly in the Rural Areas", "Poor Fund Management Practices", "Avoidance of Micro-Credit in Preference for Commercial Loans", "Dearth of Experienced/Skilled Staff", "Weak Capacity Building" and "Risk Aversion by Investing in Treasury Bills and Keeping Huge Balances in Current Account".

2.7 The Year(s) With the Highest and Lowest Number of Reported Challenges In MFBs

An examination of Table 1 and the Appendix shows clearly that, Challenges of MFBs were reported by the Regulatory and Supervisory Authorities in all the 15 years covered by the study. In other words, in all the 15 years, MFBs were found to have witnessed various forms of Challenges. As evident in Table 1 and the Appendix, the number of Challenges reported per annum ranged from 5 to 14.

The year with the highest reported number of Challenges, within the 15 years covered by the study, was 2014 when 14 Challenges were reported.

On the other hand, the year when the lowest number of Challenges were reported, within the 15 years covered by the study, was 2007 when 5 Challenges were reported.

2.8 Trend In Incidence of Challenges, 2007-2021.

Observation of the data on Table 1 and the Appendix reveals that incidence of reported number of Challenges annually was between the lowest of 5 and the highest of 14 in years 2007 and 2014,

respectively. Year 2014 is the year at the middle of the 15-year period (2007-2021) covered by the study. Thus, the 7 years from 2007-2013 recorded a total of 57 occurrences of Challenges while the 7 years from 2015-2021 recorded a total of 68 occurrences of Challenges. This signifies that there was an increase of 11 occurrences of Challenges between the two half periods of the 15 years under study.

Aside from the above, the other noticeable trend in the incidence of Challenges is that, the number of Challenges discovered per annum progressively rose from 5 to 7, 8, 10 and 12 from 2007-2013., the first half of the period. So, there was no decline at all, within the period. However, in the second half of the period, 2015-2021, the number of challenges discovered per annum rose from 8 to 10 and 12 but then reduced to 10, increased to 11 before reducing to 9. Unlike in the first 7 years that the numbers were annually on the upward trend, but in the second 7 years, there was a mixture of decreases and increases, a kind of zig-zag trend.

Another noticeable incidence of Challenges is that the number of reported Challenges opened up with 5 in 2007 and closed up in 2021 with 9, thus evidencing a difference of 4 between the opening and closing years. Finally, for the 15-year period, the number of Challenges discovered was, on the average, nine (9) per annum, a figure that was higher than the 5 reported in 2007, the opening year for the study but the same with the 9 reported in 2021, the closing year for the study.

Given the foregoing, the obvious result indicates that there was an increase in the number of reported Challenges within the period covered by the study, although there is no conclusive evidence that the reported Challenges trended holistically either upwards or downwards. Indeed, evidence indicates that the trend is in a zig-zag manner.

3.0 Findings from the Study

The answers to the issues raised as Objectives in this study have been made reasonably clear. We therefore, hereunder provide the findings as follows:

1. A total of twenty eight (28) different types of Challenges were found reported by NDIC to have confronted Microfinance Banks (MFBs) in Nigeria in the 15-year period (2007-2021) covered by the study.

2. The types of Challenges found were classified into five (5) groups of: Corporate

Governance (14), Credit/Loans (5), Human Resources (3), Internal Control (3) and Risk Management (3).

3. The different types of the Challenges found from the study are listed in the Appendix and include - "Weak/Poor Corporate Governance Practices", "Poor/Low Asset Quality and Insider Abuse", "Dearth of Experienced/Skilled Staff", "Poor Internal Control and Record Keeping", and "Placement of Loanable Funds with Deposit Money Banks (DMBs)/Scarcity of Loanable Funds".

4. The total number of times (frequency of occurrences) that the 28 different Challenges were reported within the 15-year period was 139.

5. The most reported type of Challenge was "Poor Internal Control and Record Keeping" that was reported in all the 15 years covered by the study. The second to this was "Poor/Low Asset Quality and Insider Abuse", reported in 14 out of the 15 years. The third place position was taken by two different Challenges, viz: "Weak/Poor Corporate Governance Practices" and "Weak/Inadequate Capital Base" that were both reported in 13 out of the 15 years covered by the study.

6. The least reported types of Challenges were seven (7) in number. They were: "Absence of Enterprise Risk Management (ERM) Framework", "Low Financial Literacy Level particularly in the Rural Areas", "Poor Fund Management Practices", "Avoidance of Micro-Credit in Preference for Commercial Loans", "Dearth of Experienced/Skilled Staff", "Weak Capacity Building", and "Risk Aversion by Investing in Treasury Bills and Keeping Huge Balances in Current Account (C/A)".

7. The incidence of Challenges in the MFBs trended upwards from 2007-2014 as the annual number of reported Challenges rose steadily from 5 in 2007 to 14 in 2014; but from 2015-2021, the trend was in a zig-zag manner as the annual number of Challenges was neither steadily decreasing nor increasing. Consequently, there was a kind of zig-zag pattern. However, a compartmentalisation of the 15 years into two halves (2007-2013 and 2015-2021) of 7 years each (with 2014, the mid-point of the 15-year period, being discounted) indicates that the incidence of Challenges which was 68 times in the second half was more than the 57 in the first half by 11. Thus, on the whole, there was increase in the incidence of Challenges in MFBs within the period studied.

8. The year that the highest number of Challenges were reported was found to be 2014 when a total of 14 Challenges were reported.

9. The year that the Lowest number of Challenges were found was 2007 when only five (5) Challenges were reported.

4.0 Implications of the Outcome of the Study

There are implications that can be associated with the findings from this study. Such implications are, the obvious need for:-

Recognising that the Challenges portend serious threats to the continued existence/survival of the MFBs as going-concerns, the health of the Nigerian banking industry and economic performance of the country;

Solutions to be sought, found and implemented, for the resolution of all the twenty eight (28) different Challenges;

Enhancement in the Capital Base of the MFBs that have become inadequate;

Proper Strategies to be urgently developed and put to use to deal with and stop the featuring of the following Challenges in MFBs - "Poor Internal Control and Record Keeping", "Poor/Low Asset Quality and Insider Abuse"; "Weak/Poor Corporate Governance Practices"; and "Inadequate Capital Base";

MFBs to develop and put to use Enterprise Risk Management (ERM) Framework and adopt Proper Fund Management Practices, concentrate and focus on Micro-Credits and avoid Commercial Lending, and recruit more experienced/skilled staff;

A review and upgrade of Internal Control/Record Keeping and Risk Management functions and practices of MFBs to ensure that they are professionally handled in order that the existing Challenges within these functions are not only eliminated but that new ones will not occur;

Closer and more oversight of MFBs via Monitoring, Examination and Supervision by CBN and NDIC to ensure that they know and focus on their responsibilities in accordance with the laws, rules, regulations and guidelines;

A review of existing sanctions and penalties against MFBs as institutions and the staff as individuals for non-compliance with established laws, rules and regulations; and Imposition of deterrent sanctions against those involved in causing and sustaining Challenges in MFBs.

5.0 Recommendations

With benefits of the findings from the Study and their implications, a number of issues commend themselves for necessary remedial actions to be taken to prevent the MFBs from entering into troubled waters that they may not be able to swim out from without serious harms and damages. Consequently, the following recommendations are hereby made:

1). While all the 28 identified different types of Challenges should be resolved quickly, it is however, specially recommended that immediate attention should be given to the resolution of the four (4) that not only featured most frequently within the period covered by the study but will also have the greatest negative impact on the MFBs, the Banking System and the National Economy. The four Challenges are:- "Poor Internal Control and Record Keeping", "Poor/Low Asset Quality and Insider Abuse", "Weak/Poor Corporate Governance Practices", and "Weak/Inadequate Capital Base".

2). The Corporate Governance Challenges account for 50% of all the Challenges in MFBs within the period covered by the study. So, there is the glaring case of governance failure in MFBs. The CBN and NDIC should take it as a serious responsibility to introduce the CODES OF CORPORATE GOVERNANCE IN THE BANKING INDUSTRY to the banks and Sponsor periodic training on it for the Board, Management and Staff of MFBs. Serious exception should be taken and sanctions imposed on those who jeopardise the effectiveness of Good Corporate Governance in the MFBs.

3). Aggressive Debt Recovery activities should be embarked on by the MFBs to make good or better the Poor Quality of their Risk Assets that have not only plagued them but also hampered their making the type of expected contributions to the economy, especially in their immediate environment.

4). The Share Capital of the MFBs should, by regulation, be increased not only because the Capital has become inadequate and the banks have become illiquid but also because of the current weakness of Naira against major international currencies such as the USA Dollar and the British Pounds Sterling.

5). MFBs should analyse their available Human Capital Resources/Stock and take immediate steps to substantially infuse it with relevant experienced and skilled persons that will effectively and efficiently drive their operations.

6). Besides hiring of experienced and skilled staff, the

banks should develop and implement necessary and relevant training and development programmes for the benefit of their personnel. If they are unable or ill-equipped to undertake such responsibility, then they should outsource it to accredited and recognised institutions.

7). Further from 5 and 6 above, the banks should encourage and ensure that their staff enrol with relevant Professional Bodies, such as the Chartered Institute of Bankers of Nigeria (CIBN) to acquire professional knowledge and Certifications and to participate in relevant Conferences, Seminars and Workshops where they can share experiences with others in order to improve their knowledge for the practice of micro-finance banking.

8). There is no-gainsaying that each MFB should have its ENTERPRISE RISK MANAGEMENT (ERM) Framework to guide it in ensuring the prevention, control and management of risks. Absence of such a framework is a serious vacuum in MFBs and should therefore, be covered. If the MFBs are unable or incapable of developing this important document, the Regulatory and Supervisory Bodies (CBN/NDIC) should develop a sample that each of the banks can suitably modify for use. The alternative is for each of the banks to employ the services of a suitable Consultant to prepare the document. It is imperative that ERMs of MFBs should be subjected to review and approval by the Authorities prior to deployment.

9). The CBN and NDIC that make "recommendations" to MFBs for the correction of the Challenges observed in the MFBs during Bank Examinations and Supervisions, need to adopt a new approach by giving clear and firm instructions or directives on what the MFBs must do within a specific time frame failing which specified sanctions will be imposed. This will assist in MFBs not closing their eyes and mind to the directives of the Authorities and thus, bring about quick resolution of identified Challenges.

10). The Authorities need to review and update the types and scope of sanctions deployable against non-compliance with laws, rules and regulations by MFBs as institutions and the staff as individuals or groups. Such sanctions should cover the entire spectrum of operations of MFBs and must be seen to be deterrent enough.

11). The MFBs are relatively young in the Nigerian Banking System and are meant to deal with the rural, less informed consumers. They thus, need exceptional assistance from the Authorities to

perform creditably. It is recommended that the Authorities should provide closer and consistent monitoring and oversight activities to ensure the banks are doing the right things and for early detection and correction of anomalies before things get out of control.

12). There can hardly be any doubt that most of the Promoters, Directors, Managers and other members of MFBs are those without any background in Microfinance banking. At best, their background will mainly be on Commercial banking that has dominated the Nigerian Banking System. That MFBs focused more on commercial lending instead of micro-credit might be a fall out of the background of members of the Board, Management and Staff of the MFBs. To take care of this Challenge, there is the need for reorientation of the Directors, Management and Staff of the banks. It is recommended to the Authorities to consider very strongly the necessity of organising orientation programmes on Microfinance Banking for MFBs. Such a programme should take into account and cover all that may need to be put in place and practice to either completely avoid or reduce the Challenges of MFBs in Nigeria.

13). An Annual Award, should be instituted by the Authorities (CBN and NDIC) in collaboration with the Bankers Committee and the Chartered Institute of Bankers of Nigeria (CIBN), to be given to MFB(s) found to have operated within any year without being associated with any form of Challenge. This will bring about some measure of seriousness among the MFBs in ensuring they conduct their businesses and operations carefully and without challenges.

6.0 Conclusion

This Study has evidently shown that MFBs in the Nigerian Banking industry, within the period 2007-2021, faced multiples of challenges. The challenges were of different types and cut across various operational areas of the banks such as Corporate Governance, Credit/Loans, Human Resources, Internal Control and Record Keeping as well as Risk Management. Although the number of times the challenges were reported by the Authorities within the 15-year period studied was as many as 139 but the number of contributing different types of challenges was 28. That means, on average, each of the 28 challenges was reported about 5 times within the period.

Prior to this Study, the Challenges of MFBs were scattered in the records and books of the Regulatory and Supervisory Authorities (CBN/NDIC) but this

Study has been able to bring about a comprehensive list of all of them together, indicating the number of different types, the most and the least prevalent or prominent of the Challenges.

Available data made it feasible for all the issues that form the Objectives of the Study to be clearly attended to with as much precision as possible.

Although the Study is acknowledged to be limited in some respects, especially with regard to, among others, being restricted to the Challenges reported by NDIC in its Annual Report and Statement of Accounts, such limitations should be seen as areas for further exploration for further knowledge.

As observed in the Study, CBN and NDIC acknowledge the existence of unresolved challenges in banks as the main sources and causes of bank distress and failure. It is therefore, expected that having thrown some light on the various types of challenges in MFBs within the period studied, the Board of Directors and Managements of MFBs should become proactive in the search for and identification

of the causes of the challenges and to develop appropriate preventive measures for each type or group of challenges.

Essentially, this Study was embarked on with a view to broadening and enriching the body of knowledge and understanding on the Challenges MFBs in the Nigerian Banking Industry were reported to have faced within the 15-year period, 2007-2021. The essence is to enable the Boards and Managements of the banks as well as CBN and NDIC to have a comprehensive understanding of the challenges in order to be able to search for the causes as well as to develop solution options and preventive measures.

With the findings, implications and recommendations that have been made in the text, there is hardly any doubt that, the highlighted categories of Stakeholders above are now challenged, more than ever before, to ascertain the causes of the challenges, develop suitable solutions and preventive measures.

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APPENDIX:

GROUPS, TYPES OF CHALLENGES AND YEAR (S) EACH CHALLENGE OCCURRED, 2007-2021.

GROUP A: CORPORATE GOVERNANCE RELATED CHALLENGES:

S/N	Types of Challenges	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total No. of Occurrences	% of Total	Rank
1	Weak/Poor Corporate Governance Practices	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	13	9.4	3
2	Weak/Inadequate Capital Base	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13	9.4	3
3	Lack of Proper Understanding of MFB Business	-	-	-	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	5	3.6	11
4	Weak Board Oversight	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	-	9	6.5	5
5	Weak Earnings	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	8	5.8	6
6	Lack of Proper Succession and Strategic Plans	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓	4	2.9	12
7	Adoption of Inappropriate Business Model	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	7	5.0	7
8	Low Financial Literacy Levels Particularly in Rural Areas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	21
9	Illiquidity/Liquidity Challenges	-	-	✓	-	-	-	✓	✓	-	-	-	-	-	-	-	3	2.2	15
10	Non-Compliance with Laws and Regulations	-	-	-	-	-	-	✓	✓	-	-	-	✓	-	✓	-	4	2.9	12
11	Absence of Enterprise Risk Management (ERM) Framework	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	1	0.7	21
12	Poor Fund Management Practices	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	21
13	Huge Exp. On fixed Assets	-	-	-	-	-	-	-	✓	✓	-	-	-	-	-	-	2	1.4	18
14	Insider Abuses	-	-	-	✓	✓	✓	-	✓	-	✓	✓	-	-	-	-	6	4.3	9
Sub-Total = 14;		3	2	4	6	5	6	7	9	4	5	5	6	5	6	4	77	55.4	

GROUP B: CREDIT/LOANS MANAGEMENT RELATED CHALLENGES

S/N	Types of Challenges	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total No. of Occurrences	% of Total	Rank
1	Poor/Low Asset Quality etc. Insider Abuse	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14	13.1	2
2	Non-Performing Insurer - Related Credits	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	2	1.4	18
3	Poor Loan Underwriting Process	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	✓	2	1.4	18
4	Huge/Rising Non-Performing Loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	3	2.2	15
5	Avoidance of Micro-Credit in Preference of Commercial Loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	21
Sub-Total = 5;		1	2	1	1	1	1	1	1	2	1	1	2	2	2	3	22	15.3	

GROUP C: HUMAN RESOURCES MANAGEMENT RELATED CHALLENGES

S/N	Types of Challenges	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total No. of Occurrences	% of Total	Rank
1	Scarcity of Experienced/Skilled Staff	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	-	1	0.7	21
2	Weak Capacity Building Practices	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-	1	0.7	21
3	Inappropriate Staffing	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	4	2.9	
Sub-Total = 3		-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	4	2.9	

GROUP D: INTERNAL CONTROL MANAGEMENT RELATED CHALLENGES

S/N	Types of Challenges	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total No. of Occurrences	% of Total	Rank
1	Poor Internal Control and Record Keeping	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15	10.8	1
2	High Fixed and Increasing Operating Expenses/Costs	-	-	-	-	-	-	-	-	✓	✓	-	✓	✓	✓	✓	7	5.0	8
3	Poor Implementation of Recommendations in Previous Examination Reports	-	-	-	-	-	✓	✓	✓	✓	-	✓	✓	-	-	-	6	4.3	9
Sub-Total = 3		1	1	1	1	2	2	2	2	2	2	3	3	2	2	2	28	20.1	

GROUP E: RISK MANAGEMENT RELATED GROUP OF CHALLENGES

No.	Types of Challenges	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total No. of Occurrences	% of Total	Rank
1	Placement of Loanable Funds with DMBs/Scarcity of Loanable Funds	-	✓	✓	-	-	-	✓	✓	-	-	-	-	-	-	-	4	2.9	12
2	Poor Risk Management Practices	-	-	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	3	2.2	15
3	Risk Aversion by Investing in IRs and Keeping Huge Balances in Current Account (C/A)	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.7	21
Sub-Total = 3		-	2	1	-	-	1	2	2	-	-	-	-	-	-	-	8.0	5.8	
Total 28		5	7	7	8	8	10	12	14	8	8	10	12	10	11	9	139	100.0	
% of Total		3.6	5.0	5.0	5.8	5.8	7.2	8.6	10.1	5.8	5.8	7.2	8.6	7.2	7.9	6.5	100		
Rank		15	13	13	9	9	5	2	1	9	9	5	2	5	4	8			

NOTE: 1) = Year(s) each type of challenge occurred

2) Grouping of types of challenges is by the Author.

Source: NDIC's Annual Report and Statement of Accounts (2007-2021)

From KYC to eKYC: Reshaping the Global Banking Landscape in a Post-COVID Era



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ABSTRACT

The global banking industry is the subject of this study and the transition to electronic KYC (eKYC) from the traditional Know Your Customer (KYC) processes. Through implementing AI, blockchain, and biometrics, eKYC offers efficiency, customer experience and financial inclusion. The research examines how COVID 19 has further accelerated eKYC adoption as well as the enabling technologies, regulatory challenges and associated privacy concerns. Findings, through surveys, interviews, and industry reports, suggest faster onboarding (a priority established by 83.3% of respondents), and significant privacy concerns (51.7%). User friendly interfaces enhanced privacy protection, enhanced cybersecurity alongside open access to underserved areas would unlock eKYC's global banking potential.

Keywords: eKYC, Know Your Customer (KYC), digital banking, artificial intelligence, customer experience, regulatory compliance.

1.0 Introduction

1.1 Background to the Study

In global banking, traditional Know Your Customer (KYC) processes have been a renowned way to maintain regulatory compliance and avoid fraudulent transactions. However, the conventional methods are nearly always criticized for their inefficiencies, such as high costs, reliance on physical documentation and long operational delays (Omarini, 2017). The global switch to electronic KYC (eKYC) is now revolutionizing the business by adopting modern technologies such as artificial intelligence (AI), blockchain, and biometrics for stronger security, higher operational efficiency, as well as better customer experience (IMARC Group, 2024).

According to the IMARC Group (2024), the global eKYC market was around \$805.8 million in 2024 and is set to grow to \$3.56 billion with a CAGR of 17.74% over the last nine years up to 2033. The growth is a result of rising uptake of this system in financial institutions in the world due to its immense ability to cut customer onboarding time by 90 percent hence lowering operational costs (ABSRBD, 2023).

This transformation was catalyzed by the COVID-19 pandemic when financial institutions have tried to keep running and reach out to customers remotely. The need for rapid and secure remote verification methods was brought to the forefront during the pandemic and has lifted eKYC from being an auxiliary tool to a primary solution in banking processes (Adel et al., 2021; Perlman and Gurung, 2019). For instance, India's eKYC examples, like India's Aadhaar (UIDAI, 2024) based identity verification system, showed the ability of eKYC to make customer onboarding simple and time efficient (Wikipedia, 2024).

1.2 Context

The COVID-19 pandemic has brought new challenges that compelled the transition to eKYC but it is just as much a reflection of changing customer preference in a global economy that is increasingly going digital. Today, customers have come to demand more convenience, speed, and flexibility in banking processes, all of which eKYC delivers with the capacity to do remote account openings and decreasing service time (Huang et al., 2023). One of the biggest challenges in KYC that traditional KYC has often been unable to address is, for instance, by way of integrating biometric authentication (facial recognition, etc.) with this method helping to increase security and reduce the incidence of fraud (Do et al., 2022; Mali et al., 2023).

Furthermore, eKYC is also an important factor for bringing about financial inclusion, particularly in under served areas. eKYC allows customers to verify identities remotely, something that lowers the obstacles to access banking services and help bringing millions of unbanked individuals to the formal financial system (Adel et al., 2021; Berger et al., 2023). For instance, the expansion of financial access to rural areas in developing countries is done through mobile based eKYC services (Pham, 2023). While, however, eKYC has faced widespread adoption, problems such as regulatory inconsistencies and data privacy concerns remain. Take, for example, the European Union's General Data Protection Regulation (GDPR) which offers strong legal protection to data, whereas various parts of the world have no fixed laws, making it difficult for global banks to maintain compliance with data protection (Li et al., 2022; Foglie et al., 2022). Furthermore, the risk of security breaches, for instance data breach and deepfake technology for exploitation of customers, necessitates there is a need for strict privacy measures such as bidding blockchain for the protection of customer information (Do et al., 2022; Mali et al., 2023).

1.3 Aim of the Study

The purpose of this research is to understand how the shift from conventional KYC to eKYC is transforming the global banking industry and the opportunities it presents in this post COVID-19 world. As such, this transformation examines the first level, the response of the managers to the operational problems caused by the pandemic; however, it encompasses broader impacts to Fintech's goals and objectives for inclusion, security, and compliance, within various countries (Adel et al., 2021; Perlman & Gurung, 2019). Given these dimensions, this study seeks to understand what key drivers, challengers and what benefits may stem from it in order to study the possible benefits of eKYC implementation in the banking sector.

1.4 Research Questions

The research was guided by the following research questions;

1. What has happened for the case of eKYC within the banking industry, how has the COVID-19 pandemic impacted this kind of change?
2. What are the key technologies underpinning eKYC and in what manner are those technologies being deployed to support banking functions?
3. What compliance and regulatory issues do

banks encounter when utilizing eKYC across the globe?

4. In what way does eKYC affect the clients and their experiences / increase financial access?
5. What are the main security and privacy concerns associated with eKYC, and how can they be effectively addressed?

1.5 Objectives of the Study

The specific objectives of the research are:

- i. To analyse the effects of COVID-19 on influencing the advancement of eKYC with larger banking entities on a global scale;
- ii. To explore AI, biometrics, and blockchain that enable eKYC as well as their adoption by banking systems;
- iii. To examine the compliance and regulatory issues that banks across the global face when adopting eKYC across the regions;
- iv. To analyze the impact of eKYC on customer experience and the potentials associated with enhancing financial inclusiveness; and
- v. To generate insights about the security threats concerning eKYC and potential privacy issues and to describe potential risk mitigation solutions, plans, and approaches.

1.6 Significance of the Study

Not only does eKYC speak to efficiency, it marks a fundamental change in the way banks operate with customers and around compliance. It is also a good chance to expand the effect of financial inclusion on the voiceless in many developing economies where the financial sector operates as a closed corporate space, in the respect that barriers, which may limit the access of such entrants to the electronic financial sector, are removed (Adel et al. 2021). For instance, mobile services can be used to adopted to implement the eKYC; which will allow citizens, particularly in the rural zones, to engage in banking businesses following the Banking regulations but not requiring physical transportation to banking halls; hence promoting financial inclusion and economic growth (Berger et al., 2023). Especially in low financial inclusion markets, digital identity solutions do the work of bringing the door of financial services to millions of people (Pham, 2023).

By real time identification and transaction supervision, eKYC strengthens the financial institutions hand when it comes to fighting fraud from a regulatory perspective (Berger et al., 2021). Therefore, the detailed example of implementing eKYC processes is that with the use of blockchain, it is possible to receive the identity check that is in

accordance with AML and CFT rules and is supplemented with block chain immutable log of checking (Perlman & Gurung, 2019).

2.0 Literature Review

2.1 Conceptual Review

Identity verification in banking has traditionally depended on the Know Your Customer (KYC) process, as a foundation for compliance, to prevent fraud. Traditional KYC processes remain, however, extremely limited, characterized by high operational costs, excessive dependence on physical documentation, and delays due to manual processes (Omarini, 2017). As a result, errors and bottlenecks have been the result of these inefficiencies, even in areas where infrastructure is not as developed.

Traditionally, conducting due diligence can be quite a nightmare, and hampers business operations for potential friction regarding KYC, such as traveling to offices for verification, waiting in long queues, etc. The use of these technologies reduces costs, increases operational efficiency, accuracy and customer convenience (Bakshi & Nandi, 2019). For example, AI powered facial recognition systems can authenticate customer's identities remotely, without the need for physical presence to cut down onboarding times (Do et al., 2022).

eKYC is an integral part of the digital transformation of financial sector. Conforming to such sentiments, a shift towards moving towards digital banking capabilities is in alignment with the changing customer preference for the seamless and secure digital banking experience coupled with a need to comply with the regulatory and compliance requirements (Kumar et al., 2020).

2.2 Theoretical Framework

Several theoretical approaches help analyze electronic Know Your Customer (eKYC) systems adoption in banks because they explain how people choose new technologies and comply with regulations and how innovation spreads across societies while promoting financial inclusivity. The following part describes essential theoretical frameworks that establish a base to comprehend eKYC drivers while examining global implementation challenges and effects.

2.2.1 Technology Acceptance Model (TAM)

According to Davis (1989) in his Technology Acceptance Model (TAM) technology adoption depends on perceived usefulness and perceived ease of use as its fundamental factors. eKYC's perceived usefulness in financial institutions and customer settings involves their recognition of security

improvements and time reductions combined with better regulatory compliance along with other benefits of the solution. Users find it easy to operate eKYC platforms without encountering technical obstacles when looking at perceived ease of use (Kumar et al., 2020).

Financial institutions choose eKYC solutions because studies show they believe these solutions will decrease both operational expenses while delivering better customer experiences (IMARC Group, 2024). The integration process of neural systems with blockchain within existing banking systems is complicated while user digital literacy remains a challenge for successful implementation according to Do et al. (2022). Investigating and enhancing perceived usefulness and perceived ease of use plays a fundamental role for eKYC to gain broad acceptance.

2.2.2 Diffusion of Innovation (DOI) Theory

Studying how new technologies reach industrial and social adoption levels through his Diffusion of Innovation (DOI) theory Rogers (2003) developed. The implementation of eKYC requires evaluation through five critical factors which include relative advantage and compatibility and complexity as well as trialability and observability.

* Relative advantage: The alternative KYC solution also offers superior fraud prevention capabilities along with expedited customer onboarding processes than traditional KYC methods according to Berger et al. (2023).

* Compatibility: The level of compatibility between regions regarding eKYC adoption differs since it matches various financial systems and legal guidelines (Li et al., 2022).

* Complexity: Banking institutions encounter challenges while integrating superior features such as AI facial recognition and blockchain encryption because they have not updated their traditional infrastructure (Gujar, 2023).

* Trialability: The implementation of eKYC faces delays from financial institutions who need to conduct trials before full adoption because of the decision to wait for testing (Foglie et al., 2022).

* Observability: The success of eKYC implementation through Aadhaar-based identity verification in India serves as an example for other nations which leads them to adopt the system (Economic Times, 2023).

2.2.3 Compliance Theory

The adoption of technology follows regulatory frameworks according to Compliance theory. eKYC operates under the influence of Anti-Money

Laundering and Countering the Financing of Terrorism requirements. The eKYC systems operated by financial institutions need to meet data protection standards including the GDPR while operating within different regulatory frameworks of numerous jurisdictions according to Li et al. (2022).

The implementation of eKYC experiences difficulties due to irregular international regulations according to Foglie et al. (2022) especially when multinational banks attempt to deploy these solutions. The establishment of standardized compliance guidelines needs policymakers along with financial institutions to work together for eKYC support but without creating unnecessary bureaucratic obstacles.

2.2.4 Financial Inclusion and Digital Identity Theory

Economic inclusion appears as an essential concept within eKYC which allows people from underprivileged regions to use banking services through digital means beyond traditional branch requirements. The mobile-based eKYC solutions developed by Pham (2023) expanded financial services access to countries with developing economies in rural regions through their exclusion from traditional KYC verification.

The Digital Identity Theory demonstrates that eKYC proves identities at a distance which decreases deceitful transactions and improves economical access (Adel et al., 2021). Mali et al. (2023) demonstrate through a global survey that 51.7% of respondents expressed concerns about their eKYC transaction data security. Blockchain encryption and strict data protection protocols need to be implemented to receive customer trust about these concerns.

2.2.5 Cybersecurity Risk Management Framework

The digital identity verification systems of eKYC face vulnerabilities to cybersecurity threats because they are prone to identity theft and deepfake attacks and unauthorized data breaches (Do et al., 2022). The Cybersecurity Risk Management Framework (Hannan et al., 2023) provides specification to manage these risks through:

- * The system applies biometric encryption alongside multi-factor authentication for blocking unauthorized access (Paul et al., 2021).
- * Users can verify their identities via blockchain technology while Blockchain ensures data security and minimizes fraudulent activity (Straits Times 2023).
- * System administrators should conduct ongoing security audits combined with penetration tests to find vulnerabilities present in the eKYC

technology (Li et al., 2022).

2.3 Empirical Review

2.3.1 Studies on eKYC Adoption

The worldwide banking industry experienced profound operational changes due to adopting electronic Know Your Customer (eKYC) systems. Aadhaar-based eKYC technology in India serves millions of customers for financial services with remote identity verification that speeds up onboarding while improving access to banking products (Economic Times, 2023). The third quarter of financial year 2022–23 recorded 848 million eKYC transactions which indicates increasing dependence on digital identity authentication according to Business Standard (2023). Academic research performed in Malaysia alongside European Union member states confirms how eKYC ensures both speedier compliance processes and reduced fraud risks (Adel et al., 2021; Perlman & Gurung, 2019).

The implementation of eKYC faces various problems with infrastructure and regulatory aspects within developing economic spheres. According to AFI (2023) as many people in Sub-Saharan Africa do not have official documents it restricts eKYC programs which hinders financial services accessibility for all. Berger et al. (2023) determined national identity systems combined with governmental backing determine the success rate of eKYC processes.

2.3.2 Technological Innovations in eKYC

Technological advancements underpin the efficiency and security of eKYC systems. Do et al. (2022) established that facial recognition systems driven by artificial intelligence deliver more precise authentication results and faster processing which decreases man-made risks during documentation verification. Blockchain presents itself as a vital technology which provides secure data storage combined with immutability functions to prevent identity theft situations (Bakshi & Nandi, 2019).

The implementation of new technology has failed to eliminate the existing challenges. The security improvements from AI and blockchain technology create higher operational expenses that effectively restrict smaller financial institutions from implementing these technologies according to Hannan et al. (2023). The connectivity problems between traditional banking systems and contemporary eKYC technologies delay adoption specifically within institution sectors that remain opposed to digital transformation according to Gujar (2023).

2.3.3 Regulatory Challenges

The present set of regulations works as a major hurdle against eKYC deployment. According to Li et al. (2022) different regions possess varied data protection laws that creates difficulties for worldwide eKYC implementation. Any fragmented eKYC adoption occurs because developing economies do not have explicit guidelines yet while the GDPR from the European Union sets strict data privacy requirements (Foglie et al., 2022).

Rathee et al. (2022) find that differences between anti-money laundering policies make the implementation of eKYC technology challenging for multinational banks. Financial institutions established in different locations need to deal with various regulatory environments which drives up their compliance expenses. Entities serving as financial institutions adopt fragmented or incomplete eKYC systems because Berger et al. (2021) observed that regions with vague regulatory platforms lead to such limited digital onboarding capabilities.

2.3.4 Impact on Financial Inclusion

The key advantage of eKYC adoption stems from its ability to enhance financial inclusion process. Surveillance by Adel et al. (2021) & Pham (2023) shows that mobile eKYC approaches boosted financial services availability to isolated populations. Mobile banking initiatives in Nigeria use eKYC functions to bring rural populations into their network by eliminating the need for physical branch access (Central Bank of Nigeria 2023).

The process of financial inclusion through eKYC comes with several obstacles to overcome. According to AFI (2023) digital literacy gaps exist that prevent older adults along with the population in low-income communities from adopting technology. Huang et al. (2023) documented that areas with limited internet connectivity face problems adopting effective eKYC processes which prompts the need to explore offline biometric authentication methods as substitutes.

2.3.5 Security and Privacy Concerns

The implementation of eKYC provides better security than KYC but simultaneously generates new security risks. The process of digital identity verification faces significant cyber threats according to Mali et al. (2023) which embrace both identity theft and deepfakes as main security risks. Research done by Do et al. (2022) shows how AI attacks using synthetic identities become a rising threat against eKYC systems.

Financial institutions reduce risks through blockchain and biometric encryption technologies as part of their risk mitigation strategy. Research by Paul et al. (2021) proved that implementing anti-spoofing face recognition methods strengthens eKYC security against identity fraud attempts. According to Straits Times (2023) the implementation of blockchain-enhanced eKYC solutions by Singapore has cut down fraud occurrences by 30% which has increased digital banking trust.

The implementation of blockchain-based security systems did not solve all security issues that prevent universal adoption. According to Li et al. (2022) consumers lack trust in eKYC systems because organizations fail to properly communicate their data handling practices. Institutions which use eKYC need to develop strong privacy policies together with enhanced cybersecurity measures to establish trust from users.

3.0 Methodology

3.1 Research Design

This study draws on mixed methods research design, a combination of quantitative and qualitative methods of research in order to provide a detailed analysis of the shift from traditional KYC to eKYC in banking industry. Through the use of both methods, they explore the advantages and disadvantages of eKYC in bank processes, corporate efficiency, customer happiness, and security problems (Kumar et al., 2020; Pham, 2023).

Qualitative Data: To identify issues related to eKYC implementation and related strategic issues, semi structured interviews and case studies were conducted. These methods allowed for insights in decision making processes and key operational considerations (Elnahass et al., 2021, Yuen et al., 2022).

Quantitative Data: The effectiveness of eKYC systems was evaluated by means of surveys capturing customer perspectives on privacy, onboarding experience, and satisfaction. A quantitative approach was used to collect measurable data to find trends and to validate the findings (Huang et al., 2023).

Combining these approaches gives a whole view of eKYC implementation and its impact on the banking industry.

3.2 Data Collection

Data collection follows a combination of primary and

secondary sources.

1. Primary Data

a) Interviews:

* Semi structured interviews were conducted to collect primary qualitative data with key banking practitioners, industry leaders, and regulators in India.

* The interviews were intended to provide insights into the strategic and operational aspects of eKYC adoption, regulatory hurdles as well as trends in the industry (Berger et al., 2021; Do et al., 2021).

b) Surveys:

* Structured questionnaires were administered to collect quantitative data among customers in the banking sector.

* Methods of the surveys were to evaluate the efficiency of eKYC processes, customer satisfaction, and privacy concerns during onboarding (Adel et al., 2021; Gujar, 2023).

2. Secondary Data

a. Industry Reports: Industry reports and case studies were used to get secondary qualitative data sources which include insight into global eKYC trends, technological advancements and legal obligations (Foglie et al., 2022; Mali et al., 2023).

b. Compliance Documentation: To learn regional admissibility standards and the bank eKYC integration challenges, reports from regulatory authorities were analyzed, including GDPR and AML compliance guidelines (Li et al., 2022; Rathee et al., 2022).

3.3 Data Analysis

The data collected was analyzed using the following methods:

a. Qualitative Analysis:

* Interview data were thematically analyzed to look for recurring patterns and themes regarding adoption, implementation strategies, and regulatory challenges to eKYC.

* Real world examples of completed eKYC adoption and the obstacles for banks were illustrated using case studies.

b. Quantitative Analysis:

* Descriptive and inferential statistical methods were applied on survey data to investigate levels of customer satisfaction, identify customer data privacy concerns, and measure customer onboarding efficiency.

* Statistical computations were done by the use of SPSS and Microsoft Excel tools.

3.4 Ethical Considerations

This research used the ethical consideration of voluntary consent by all the respondents who participated in the study, data protection laws to protect the respondents data anonymity (Mali et al., 2023; Rathod et al., 2023).

4.0 Findings

4.1 Introduction

Most of the findings reported in this chapter are based on the survey of 60 people, including both banking professionals, financial advisors and customers. Key research objectives of the analysis involve customer satisfaction with eKYC system, privacy issues, onboarding efficiency and eKYC system security. Correlation analysis and Chi Square tests are employed in order to find relationships between variables, combined with insights of open ended responses.

4.2 Findings from the Survey

4.2.1 Customer Satisfaction with eKYC Systems

We ask our respondents to rate how satisfied they are with the overall eKYC systems. The results are summarized in Table 4.1:

Table 4.1: Customer Satisfaction Ratings

Satisfaction Level	Number of Respondents	Percentage
Excellent	10	16.70%
Good	14	23.30%
Average	21	35.00%
Poor	15	25.00%

The findings show that 40% of respondents rated their experience as "good" or "excellent," but most (60%) rated it as "average" or "poor." All this suggests that there is not unanimity about user satisfaction with eKYC as much provisioning opportunity remains for making the eKYC systems more usable and reliable.

Statistical Analysis:

A Chi-square test was conducted to examine whether customer satisfaction levels were associated with respondents' age:

Variable	Chi-Square (χ^2)	p-value	Significance
Age vs. Satisfaction Level	12.78	0.012	Significant

Statistically significant differences ($p < 0.05$) exist between the likely responses of younger (18–34) and older (45+) respondents in terms of their experience with travel bans, with younger respondents rating the experience as "Good" or "Excellent," while older respondents rate the experience less favorably.

A respondent stated: "For younger users, the process is straightforward, but older people often struggle with navigating the system."

Implication: Overall satisfaction is found to depend

on these factors as well as emphasizing the need for better, less user-unfriendly interfaces and providing additional support for older demographics.

4.2.2 Privacy Concerns

Privacy was found to be crucial issue by respondents, being asked whether they worried about their personal data security in eKYC systems. The results are summarized in Table 4.2:

Table 4.2: Privacy Concerns with eKYC

Privacy Concern	Number of Respondents	Percentage
Yes	31	51.70%
No	29	48.30%

Respondents revealed that one half (51.7%) have concerns about privacy, which represents a major hurdle to remove the mistrust regarding how personal data is managed before eKYC can be adopted.

Statistical Analysis:

To study the relationship between privacy concerns and customer satisfaction level, a correlation analysis was performed:

Variable Pair	Correlation Coefficient (r)	p - value	Significance
Privacy Concern & Satisfaction	-0.38	0.022	Significant

A weak to moderate negative correlation ($r = -0.38$, $p < 0.05$) is characteristic of greater privacy concerns being related to lower customer satisfaction.

* A respondent shared: "There's a lack of transparency about how data is stored or shared, which reduces trust in eKYC systems."

Implication: Addressing this issue, financial institutions should choose to maintain transparent communication about data protection measures and work hard to put up robust cybersecurity frameworks.

4.2.3 Onboarding Efficiency

Respondents noted that eKYC is faster and more convenient than traditional KYC processes – 83.3% of respondents agreed that eKYC is speedier than traditional KYC methods. Table 4.3 summarizes the findings:

Table 4.3: Onboarding Efficiency of eKYC

Onboarding Efficiency	Number of Respondents	Percentage
Yes	50	83.30%
No	10	16.70%

Respondents also highlighted the most valued features of eKYC, summarized in Table 4.4:

Table 4.4: Most Beneficial Features of eKYC

Feature	Number of Respondents	Percentage
Enhanced Security Features	20	33.30%
Speed and Convenience	16	26.70%
Remote Access	14	23.30%
Reduction in Paperwork	10	16.70%

One participant commented: "Remote access has made onboarding much easier for people in rural areas who cannot visit branches."

4.2.4 Security Issues and Data Breaches

We asked participants about their awareness of security issues, such as data breaches and identity theft, among other things. Table 4.5 summarizes the findings:

Table 4.5: Awareness of Security Issues

Security Issues	Number of Respondents	Percentage
Yes	14	23.30%
No	46	76.70%

Almost three in four (76.7%) were clueless about the breaches, however, about one in four (23.3%) was worried highlighting the need for strong cybersecurity profiles.

* A respondent noted: "Although breaches are rare, the fear of them creates significant trust issues."

4.3 Integrated Recommendations

1. **Enhance Technical Reliability:** Solve for biometric failures and document verification errors for the sake of an easier onboarding process.
2. **Build Customer Trust:** Have clear data protection policies in place that clearly communicate data protection policies while executing GDPR like measures to increase transparency.
3. **Promote Accessibility:** Provide offline options, for example, USSD based eKYC, and extend multilingual support to serve a range of demography.
4. **Strengthen Cybersecurity:** Improve security infrastructure in order to prevent breaches as well as to mitigate existing breach, and to reassure customers that your data is safe.

4.4 Summary of Findings

1. **Satisfaction Levels:** Satisfaction levels hit and miss; younger users showed higher levels of satisfaction with the use of text messaging than older respondents.
2. **Privacy Concerns:** More than 51.7% of respondents are concerned about privacy, concern that pushes down the satisfaction level.
3. **Efficiency:** According to 83.3 per cent, eKYC is faster and more convenient than traditional methods.
4. **Security Issues:** The awareness of breaches

was critical as nearly one fourth of the respondents were aware of a breach.

5.0 Discussion

The findings of this study are interpreted in the context of the research objectives and current literature. A discussion is made with regard to customer satisfaction, privacy concern, time efficiency of the onboarding process, and security issue associated with eKYC adoption. Also outlined are broader implications for theory, practice, and policy by referencing global examples and real world data as support for the interpretations.

5.1 Key Findings and Interpretations

5.1.1 Customer Satisfaction with eKYC Systems

Analysis of the study showed that 40% (of the respondents) reported their satisfaction with eKYC systems to be Good or Excellent, while 60% reported Average or Poor. A relationship was also confirmed through Chi-square analysis which shows significantly higher satisfaction for younger respondents (18–34) than older respondents (45 and above) ($p < 0.05$).

The Technology Acceptance Model (TAM) implies that perceived ease of use and usefulness are preconditions for technology adoption (Davis, 1989), which is also found in this study. As a result, eKYC appeals to younger users who typically know and operate digital systems better. Additionally, older users tend to face limitations to use the mobile interfaces and are also confusing about the biometric systems.

Similar, Kumar et al. (2020) noted that digital banking user satisfaction is largely driven by technological literacy, and that older users often struggle while finding it difficult to keep up due to insufficient guidance.

In line with its financial inclusive strategy, the Malaysian government introduced eKYC. Yet, banks like Maybank (2023) have faced challenges when helping older users, prompting the bank to show tutorial videos as well as offer personalized support for senior citizens.

Implications for Practice

- Older users need age inclusive user interface and multilingual instructions in both visual and written form.
- Digital tools provide exceptional service, but for customers not as familiar with them, you can fill the gap with something like video onboarding or in person assistance.

5.1.2 Privacy Concerns

Almost half (51.7%) of the respondents were worried that their personal data used in the eKYC system would be compromised. Statistical analysis showed that privacy concerns are significantly negatively related ($r = -0.38, p < 0.05$) to customer satisfaction. This result agrees with global research emphasizing the significance of maintaining data privacy in digital systems. As an example, Li et al. (2022) pointed out that in regions without strong privacy regulations, like GDPR, customers are unlikely to trust eKYC platforms. But in Sub-Saharan Africa, concerns over privacy also acted as a barrier when, especially in some instances, digital adoption can far exceed the ability for regulators to catch up (AFI, 2023).

The Aadhaar based eKYC system in India, however, was slammed for its purported use of biometric data. In response, Indian government has come up with offline Aadhaar verification and strident data sharing norms (Economic Times, 2023). As is this example, transparency and regulated privacy policies are a necessity.

Implications for Policy:

- Banks need to follow the global privacy standard for data protection because without transparency and consistency in data protection, banks would not be able to sustain.
- To build trust, you must be very clear in your communication about how customer data is stored, used and secured.

5.1.3 Onboarding Efficiency

The most valued aspect of eKYC, however, appeared to be efficiency. This is something that 83.3% of respondents agreed was faster and more convenient than traditional KYC methods. Respondents especially pointed out features such as remote access (23.3%) and less paperwork (16.7%) and noted they reduce the on boarding process.

The reduction to onboarding time stipulated by this finding matches that cited by a report issued by IMARC Group (2024) which states that eKYC can reduce onboarding time by up to 90% allowing banks to onboard customers in minutes instead of days. The best example is India's Aadhaar-based eKYC system, which did over 1.96 billion authentication transactions in April 2023 (Economic Times, 2023).

Mobile eKYC systems have been instrumental in facilitating financial inclusion in Nigeria whereby rural dwelling users are able to open bank account without ever visiting a branch (Central Bank of

Nigeria, 2023). While this is true, internet access is still somewhat limited, along with the digital literacy of many.

Implications for Financial Inclusion:

Mobilizing unbanked populations into the formal financial system can be enhanced with mobilebased eKYC solutions extending to underserved areas.

In order to extend the accessibility of such service for customers who have little or no internet connectivity, it is possible to introduce offline solutions such as USSD codes or SMS based on-boarding.

Practical Implication: Hybrid onboarding systems, which combine a digital with offline approaches, as well as vendors, should be adopted by banks to ensure inclusiveness and accessibility to different user groups.

5.1.4 Security Issues and Data Breaches

A majority of respondents, 76.7%, did not know about data breaches, while 23.3% were worried about security vulnerabilities. There were also fear of identity theft and concern about cyberattacks that hinder eKYC systems' trust.

Blockchain technology has been widely discussed as a way of addressing these issues. Blockchain provides immutable, decentralized storage and has potential to improve transparency while reducing fraud risks (Do, et al., 2022). But many financial institutions still find high implementation costs and integration challenges the barriers.

Banks in Singapore have already begun adopting blockchain enabled eKYC solutions to securely keep customer data. According to the Singapore FinTech Association, this approach has lowered fraud incidents by 30%, and heightened customer trust (Straits Times, 2023).

Practical Implication:

* Advanced cybersecurity measures, these days it is highly demanded among financial institutions that should include blockchain and biometric encryption to keep customer sensitive data safe.

* Every possible vulnerability in your system needs to be identified by means of regular penetration testing and audits.

5.2 Broader Implications

5.2.1 Implications for Theory

The findings validate the applicability of established frameworks such as:

Technology Acceptance Model (TAM): Younger users depend very heavily on ease of use in formulate their satisfaction.

Compliance Theory: Trust and adoption is furthermore strongly fostered by regulatory alignment.

Diffusion of Innovation Theory: The main driver of wide adoption of eKYC is its relative advantages (speed and convenience).

However, the relative satisfaction scores of older users indicate that inclusivity and usability need to be stressed more in these models for a wider range of user populations.

5.2.2 Implications for Practice

* Financial institutions need to address user concerns about privacy, security and accessibility in order to maximize adoption. Specific strategies include:

* The multilingual support and work offline in order to be inclusive.

* To create a level of trust through the enhancement of transparency to data protection practices.

5.2.3 Implications for Policy

Consistent adherence to standardized data privacy, and security globally requires the existence of standardized global frameworks like GDPR. Banks have to implement eKYC in their financial inclusion strategies and policymakers should motivate banks to leverage eKYC.

5.3 Limitations of the Study

Sample Size: The findings are limited by the relatively small sample size of 60 respondents. More broadanging studies are required to capture regional and demographic diversity.

Geographical Context: There are many regulatory and technological factors that the study does not fully account for regional disparities of eKYC adoption.

Self-Reported Data: Surveys are based on self reporting and may be biased or imprecise. System generated metrics could be used to validate user perceptions being a future research direction.

5.4 Conclusion

This discussion discusses the prospects that eKYC systems could bring about a much needed revolution in global banking arena by enhancing the efficiency, security and financial inclusion. The challenges are too many and include privacy concerns, usability issues and security vulnerabilities. Collaboration is needed between policymakers and financial

institutions to build an ecosystem for eKYC, with involvement of all stakeholders, that is inclusive, secure and user friendly.

6.0 Conclusion and Recommendations

6.1 Conclusion

As a critical milestone in the banking sector's digital transformation, the transition from traditional Know Your Customer (KYC) processes to electronic KYC (eKYC) has seen the digital revolutionize customer onboarding with remote access, eliminate paperwork and greatly enhance efficiency. It has also had an especially big impact on underserved areas in which financial inclusion efforts have led millions of people previously outside the formal financial system to enter it. For example, India's Aadhaar-based eKYC program brought down customer onboarding times by up to 90 percent while also processing 1.96 billion monthly transactions in April 2023 (Economic Times, 2023).

However, much still needs to be done. Near half of the survey respondents (51.7%) had concerns regarding privacy, reminiscent of worldwide worry about how specific data is dealt with and put away on advanced systems (Li et al., 2022). Additionally, usability issues surfaced for the older and less tech savvy user, where younger respondents (18–34 years) reported higher satisfaction than for older age groups. Furthermore, although only 23.3 % of respondents were aware of security incidents, fear of identity theft and fraud still lowers faith in eKYC, mirrored by recent global reports detailing the shortcomings in cybersecurity (Do et al., 2022).

The results of these findings reinforce the importance of banks and policymakers tackling privacy, security, and accessibility challenges, while still employing global regulations including the GDPR. What's more, following a customer centric and collaborative approach, financial institutions can not only realise the full potential of eKYC to drive trust, but also efficiency and financial inclusion at scale globally.

6.2 Recommendations

1. Enhancing Customer Experience

Simplify User Interfaces: The development of user friendly, intuitive platforms should be at top priority for financial institutions with the wider demographic more generally, and as would be the case with older users and those who have little digital literacy. For example, a usability issue established by Maybank in Malaysia began by the introduction of interactive tutorials and personalized onboarding support (The Star, 2023). The eKYC process can be simplified for

banks by integrating the following features; the guided steps, the voice navigation and the mobile app optimization (Kumar et al., 2020).

Multilingual Accessibility: eKYC platforms will ideally support multiple languages in order to enable a diverse population, especially in the rural and underserved regions. In Nigeria, this has been successfully executed by mobile-based eKYC systems that offer support in multiple languages, reaching the multiplex ethnic groups (Central Bank of Nigeria, 2023).

Promote Digital Literacy: To improve digital literacy, educational initiatives should be launched by means of community workshops and mobile tutorials. Alternatively, training programs should be delivered in partnership with local organizations in areas of low technological adoption rates (Berger et al., 2023).

2. Strengthening Privacy Protections

Adopt Global Privacy Standards: Data protection frameworks implemented by financial institutions should be consistent with GDPR, and complete measures should be taken to ensure that the privacy accorded to client information is the same by all financial institutions. Transparency, accountability, and user consent have been successful under GDPR in nurturing trust among people in digital platforms and it has worked (Li et al, 2022). Regularly, privacy standards should be maintained by independent audits of agencies data management practices.

Promote Transparency in Data Use: Customers need to be made fully informed of how their data is stored, shared and protected, this is the responsibility of banks. Users can understand simplified terms and conditions like that imposed by GDPR (IMARC Group, 2024). Additional transparency can be realized by building user dashboards which enable individuals to track how their data is used.

Introduce Data Minimization Practices: Publish only essential data, and don't store it if you don't need to reducing potential exposure to breaches. For instance, India's Aadhaar off line verification solution has eased the privacy concerns raised at an early stage by allowing verifying the data without storing highly personal information (Economic Times, 2023).

3. Promoting Financial Inclusion

Expand Access to Underserved Areas: USSD based offline eKYC systems, for instance, help users in regions with either no or limited internet access to

confirm their identities. Mobile based financial services have in fact, increased financial inclusion by over 20% in rural SubSaharan Africa where this method has been successful (AFI, 2023).

Collaborate with Governments: It means financial institutions should collaborate with governments to mobilize eKYC systems into state national identification programs. For example, India's Aadhaar initiative helped millions rapidly get through the tedious verification process, so as to remotely open their accounts and better gain access to banking services (Economic Times, 2023).

For those governments serious about bank penetration of remote areas, they can set up a subsidy program to pay for some infrastructure costs and to allow banks to pay less tax.

Leverage Mobile Technology: Build mobile eKYC apps tailored for low spec devices, in low bandwidth environments. Scaling these solutions can be done partnerships with telecom providers.

4. Addressing Security Concerns

Leverage Advanced Technologies: Blockchain eKYC systems can make data records transparent and fraud prevention, maintaining immutable customer data . (Do et al., 2022). Biometric encryption and

multi factor authentication need to be incorporated at banks for identity verification processes.

Enhance Cybersecurity Measures: Integrate eKYC platforms with several types of analytics (Straits Times, 2023). Create in depth incident response protocols to deal with security breaches quickly and transparently. Prompt bright notification should be given to customers with clear steps on how to fix.

Educate Users on Cybersecurity Risks: User awareness campaigns should educate users on large scale cybersecurity threats including phishing and identity theft, as well as how to secure their accounts (Li et al., 2022).

5. Optimizing Regulatory Compliance

Harmonize Regional Regulations: Regional regulatory frameworks have to be harmonized together, so that governments can collaborate over consistent compliance requirements across borders. It would make operations easier for multinational financial institutions (AFI, 2023).

Develop Standardized Implementation Frameworks: Financial regulators should offer clear guidelines on eKYC implementation, so that systems are aligned with rules on anti – money laundering (AML) and combating financing of terrorism (CFT) (Li et al., 2022).

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The Role of Information Systems Controls in Fraud Risk Prevention in Financial Institutions: A Study of Quoted Deposit Money Banks (DMBS) in Nigeria.



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Abstract

Banking sector contributes to economic growth of developed, emerging and developing economies. by acting as an intermediary in facilitating the movement of funds from surplus units to deficit units. However, the Nigerian banking sector has been plagued with incessant frauds which had undermined its smooth operations leading to huge loss of money annually. Although various studies have been conducted to solve the ravaging fraud scourge, majority of these studies rely mainly on the traditional method of control in solving the fraud risk problem. Since the operations of Nigerian banks are now majorly driven by technology, the traditional control approaches may not be adequate to prevent the risk of fraud. Therefore, this study explores the impact of Information Systems Controls on Fraud Risk Prevention (FRP) in Deposit Money Banks (DMBs) in Nigeria. Using a regression model, the study analyzes the influence of three key proxies of Information Systems Control viz: Application Security Control (ASC), Access/Authentication Control (AAC), and Network Security Control (NSC) in preventing frauds. The model indicates positive relationships between these controls and FRP, with coefficients of 0.252 for ASC, 0.196 for AAC, and 0.249 for NSC, suggesting that enhancements in these controls can lead to effective fraud risk prevention. The constant term of 1.185 implies a baseline level of FRP even in the absence of these controls. The findings corroborate existing literature on the effectiveness of information systems control in preventing fraud, aligning with studies advocating for advanced technological measures, such as machine learning and blockchain, to enhance fraud detection and prevention. The study concludes that robust information systems control significantly enhance fraud risk prevention in Nigerian DMBs. The study, therefore, recommends that banks should give priority to the implementation of information systems control across all their digital platforms as this will help to prevent the risk of fraud on the platforms. The rising deployment of digital information system platforms by banks and the role of efficient information system in operational risk management and specifically fraud risk prevention is imperative to ensure healthy, stable and resilient banking system in Nigeria

Keywords: Fraud risk prevention, Information systems control, Application security control.

1.0 Introduction

Every economy depends heavily on the banking industry, which also acts as a growth stimulant (Nutanix, 2021; Ajala et al., 2013). This is because banking system acts as a middleman between households that have more money than they need to save and those that don't have enough money and need to invest. Nonetheless, fraud occurs in this industry all over the world (Desai, 2020; Mukhtaruddin et al., 2020).

In the financial industry, fraud has always existed and is defined as an attempt to deceive and exploit another person (Owolabi, 2010; Madan, 2016). The intentional misuse or misapplication of an organization's resources or assets for personal gain is defined as fraud by the Association of Certified Fraud Examiners (ACFE, 2018 & ACFE, 2020). Although various scholars have given diverse definitions of fraud, most of them include the word "deception" as a common element. Accordingly, another definition of fraud is stated as a purposeful act of deception meant to take unfair advantage of someone (Gangwani 2020; Enofe et al., 2017). Fraud is not just a problem in Nigeria; it is a global issue that has negatively affected big corporations like Enron, Worldcom, and NITEL to fail (Adetosio & Akinselure, 2016; Olaoeye & Dada, 2017).

Since the persistent occurrence of fraud has a negative impact on the DMBs, the main objective of this study, therefore, is to examine the impact of the information systems control on fraud management in quoted DMBs in Nigeria.

To achieve the main objective of this study, the specific objective is set to evaluate effects of information system control on fraud risk prevention in quoted DMBs in Nigeria.

Finally, the research questions are posed as research hypotheses such that they can be tested and answered in this study. The research hypotheses are posed in their null form below:

H01: Information Systems control does not have a significant influence on fraud risk prevention in quoted DMBs in Nigeria.

The remaining part of this study is as follows. Section two discusses literature review including conceptual, theoretical and empirical reviews. Methodology, data and model specification are identified in section three. Section four presents empirical results and discussion of findings. Section five provides conclusion, policy implications and recommendations.

2.0 Literature Review

2.1 Conceptual Review

This section shows a brief discussion of the main variables (IS control and fraud management) in this study.

2.1.1 Fraud Risk Prevention

Fraud risk prevention is one of the means of minimizing fraud occurrence. Gitau and Kahonge (2018) defined fraud risk prevention as corporate strategic measures to reduce fraud occurrence to the minimum level since outright prevention might be impossible. One of the effective and efficient fraud prevention is to institute a pragmatic apparatus and models to prevent fraud right from its beginning stage at all levels of corporate management, from the internal sources involving employees and the external involving customers, creditors, suppliers and the general public (Hidayah et al., 2018; Sukirman, 2018).

Measures to prevent losses and wastages in handling cash inflows and attending to customers are to be safeguarded appropriately (Flowerastia et al., 2021). In a bid to prevent fraud risk in an organization, studies (Alavi, 2016; Ernst & Young, 2016; COSO, 2016; Mpaata et al., 2017; Rafidah et al., 2017; Hussaini et al., 2019; Rehman & Hashim, 2020; Flowerastia et al., 2021; ACFE, 2021) have noted that risk assessment must be frequent, a new measure introduced from time to time, that companies must be up-to-date informed of the latest measures to avoid fraud, particularly the sensitive and risk environment be changed frequently (Handoko & Tandean, 2021; Haoxiang & Smys 2021).

Periodically, organizations should overhaul their internal control and IS control system and deploy experienced and qualified personnel to man high-risk areas. This requires sound operational risk management through adequate internal control. Staff in such positions should be given adequate training to be on top of the game (Hines & Youssef, 2019). Hummel (2015) noted that organizations, from the top management to the least need to understand the scope of corporate strategy and the implications of flouting such policy guidelines. Members of staff of organizations are interested to see the top management team obeying the policies of the organization and do not have any choice other than to follow suit.

However, when the top management is the one flouting these policies, it makes the rules toothless and incidents of fraud become a frequent occurrence (Hyman & Sierra, 2016). Importantly, the top

management and majority shareholders should not engage in tunnelling practices where they take unfair advantage of their position to approve huge benefits for themselves.

2.1.2 Information Systems Control

Businesses in today's dynamic world rely on technology to meet their customers' needs. Over the years, the Deposit Money Banks (DMBs) have improved service delivery times and decreased crowding in the banking halls by utilizing technology. Since the technology being used carries inherent risks, precautions are taken to mitigate or eliminate these risks. Systems controls and security measures are implemented to ensure that inherent fraud risks are minimized. To enhance the security and integrity of technological platforms, systems controls are developed and implemented within the platforms. Thus, information systems controls help a company to lower the risk involved in using technology. Implementing security codes, corporate regulations, limiting access, using automatic editing for big data analysis, and physical security are some examples of these information security and control measures (Richards et al., 2005).

Oniovosa (2015) argued that confidentiality of data transmitted across information systems is paramount as lack of confidentiality can make vital information be accessed by an unauthorized person(s) which could be used to commit fraud. Besides committing fraud with access to unauthorised information, it can cause the organization embarrassment and negatively affect its corporate image thereby portraying a message that the organization is not safe. This will also result in the loss of customers, especially in deposit money banks where the protection of customers' deposits is one of the strong selling points (Wada & Odulaja, 2012). A significant component of the Sarbanes Oxley Act of 2002, which was created in the United States to combat corporate fraud and corruption, is information systems control (Carter et al., 2012). Information systems control is proxied in this study using Application security control, Access control, and Network control.

2.2 Theoretical Review

2.2.1 Theory of Workplace Deviance

The theory was developed by Comer in 1985. It was developed because of the deviant behavior he observed in the workplace which is inimical to the organization's progress. According to Udeh and Ugwu (2018), the workplace deviance theory postulates that individual employees engage in fraudulent activities because of the condition of

workplace. They argued that if work environment is hostile, employees engage in fraudulent activities as a measure of payback against a perceived injustice by the organization. Bachok et al., (2022) supported this view and agreed that an intentional goal to harm an organization, and more especially the workplace, can be interpreted as deviant behavior in the workplace. Thus, an organization with a lower rate of employee fraud could be deemed to be due to management's effective response to the employees' affairs. This means that to prevent fraud, managers must be more sensitive to the needs of their staff members by creating a positive work atmosphere, providing fair pay that is commensurate with the nation's economic situation, and treating staff members as essential partners in the organisation.

Managers can avoid employee deviation in the workplace in several ways. According to Bennett and Marasi, (2016) to achieve this, the organization through its human resources department should adequately screen prospective applicants by ensuring they complete a personality, cognitive ability, and integrity test because these factors have been linked to workplace deviance.

The workplace deviance theory was criticized on the premise that not all employees will react in response to abuse from their supervisors (Tepper et al., 2001). This means that other factors could be responsible for retaliation from an employee and not because of abuse as presumed by the theorist.

The workplace deviation theory was advanced by Baharom et al. (2017), who used transformational leadership and behaviours linked to deviant workplaces as moderating variables to describe in detail the various elements that contribute to deviant workplace behaviour. Similarly, Agwa, (2018) in his study to support the theory used the causal-comparative approach to examine the educational leader's workplace deviance behaviour in selected primary and secondary schools in Egypt. The study, however, concluded that there is no significant difference between primary school and secondary school in terms of organizational deviance, interpersonal deviance, and workplace deviance. The two scholars above who supported the workplace deviance theory based their study on behavioural deviance but Hollinger (1986) combined behavioural deviance and acts that will damage the assets of the organization. The findings from the study provided a more background understanding of the workplace deviance theory.

The workplace deviance theory is relevant to this study as it explains why an employee may want to commit fraud to harm the bank as a form of retaliation against perceived oppression. Thus, to control fraud, controls can be put in place to guide against fraud by employees trying to retaliate for perceived oppression in the workplace.

2.3 Empirical Review

Fraud is predominant in the banking sector and has become a menace to stakeholders who have sought measures to curb the trend by implementing both traditional and information technology controls. Williams (2019) in a study 'Fighting cheque fraud in the 21st Century' found that with the use of advanced imaging technology, cheque alterations and cloned or fake cheques are easily detected thereby preventing fraud risk that could result in losses from sailing through. Similarly, Deebika et al., (2018) opined that advanced cheque scanning, screening, and transmitting tools have high capability of detecting fraudulent or forged cheques thereby preventing them from occurring. However, Sharma et al., (2018) argued that the technology control used in one jurisdiction is more sophisticated than those used in other jurisdictions. The study found that cheques used in Dubai have more advanced technology-enabled security features than those used in India and Canada and recommends that the Indian government should adopt the use of advanced technology-enabled security features for cheques to prevent cheque fraud.

However, aligning with the use of advanced technology in preventing frauds, Rafidah et al., (2017), Silaparasetty (2018) and Karanovic et al., (2019) proposed the use of machine learning algorithm combined with blockchain technology to prevent the fraud scourge in contrast to Choi and Lee (2018) who advocated the use of artificial neural network & machine learning utilizing real financial data obtained in Korea. The paper concluded that the machine learning technique has an advanced detection efficiency than the neural network technique. Since technology keeps evolving, Raj and Choudhry, (2022) and Dumont and Pateraki (2022) advocated the use of artificial intelligence in the fight against frauds, Dimitrijevic and Kalinic (2019) were particular with the use of random forest technique, Jayasinghe and Ajward (2019) affirmed that software tools are a veritable medium for preventing and detecting fraud but Manoj (2021) opined that there is no single IS control that is foolproof to prevent fraud risk rather security administrators should continuously monitor electronic banking platforms to

ensure that they are devoid of loopholes that could be used for fraud. The implication is that rather than using one technology to solve all approaches, system administrators should leverage layers of security controls available and find a way to synchronize them to achieve a compact security architecture that will prevent fraud risk in its totality.

Contrary to the use of advanced technology in preventing electronic banking frauds, Sharma et al., (2017) and Jesi and Desi (2019) reported that cheque fraud can be prevented using traditional or manual control measures like examining the handwriting of the cheque owner and passing the cheque through Ultra Violet and Infra-Red radiations. Although this security measure may be effective, it has a negative impact as it solely relies on human intervention which is subject to error in detecting fraudulent cheques. This implies that some forged cheques may be accepted for processing without being detected as fraudulent, thereby resulting in a loss of funds.

Abiola (2014), Sang (2014) and Haoxiang and Smys (2021) concurred that traditional control measures that involve effective risk assessment, testing adequacy of internal control, and control of e-banking have an impact on fraud prevention if well implemented. However, Heriniaina and Edvin (2015) argued that the use of SMS information between the bank and clients will help to authenticate cheques issued before payment. Thus, this will prevent cheque fraud as only genuine cheques will be paid after verification. Although the use of SMS to verify the authenticity of the cheque from the customer will go a long way in preventing cheque fraud, care and due diligence must be employed by the officers to ensure that the confirmation is given by the rightful owner of the account. This can be done by calling the customer and asking vital questions relating to his/her previous transactions. As such, if the customer can answer the questions correctly, the cheque is approved for further processing but a stop is made and further processing of the cheque is halted if the customer cannot provide the required answers. Nevertheless, Sanchez-Aguayo et al., (2021) contend that the use of the fraud theory incorporated with the machine learning technique is effective in fraud prevention.

Similarly, Bhasin (2016) while analyzing the challenges involved in mitigating bank fraud found that ineffective measures to prevent fraud in banks are the reasons for the increasing fraud. Thus, banks should strengthen their reporting system and fix staff

accountability but Agwu (2014) and Aladejebi and Oladimeji (2019) in their respective studies differ and argue that the knowledge gap among practitioners has created a loophole for fraud to continue undiscovered, thus recommending that a stiffer control measures should be implemented to check the fraud trend. However, Jeyanthi et al., (2020) discussed that effective customer education about schemes used by fraudsters is a convenient way of curbing fraud, but Bach et al., (2020) and Pacheco and Novoa (2017) are of the view that data mining techniques and adequate IS control measures are effective in preventing internal fraud in a project-based organization. Although data mining techniques are adequate in fraud prevention, the continuous sensitization and education of the customers about IS controls are important. This is because a compromise on the part of the customer will render the IS controls implemented ineffective and facilitate fraud occurrence (Jeyanthi et al., 2020).

3.0 Methodology

The survey research design was adopted in the study since the focus is determining the role of information systems control in managing fraud. This is because perceptions and vital facts from bankers who are central to the fraud scourge ravaging the banks were essential to the study. Consequently, the survey research design provided an accurate method of evaluating the features of the entire population through a carefully selected sample drawn from the defined population in a relatively quick manner (Hyman & Sierra, 2016). The primary data to be used for this study was extracted from the sets of the questionnaire administered to selected bank officials who are knowledgeable about information systems control and fraud management in the DMBs in Nigeria.

The sample size for the study was 288 respondents. The sample size is determined using the Taro Yamane formula $\{n = N / \{1 + N(e)^2\}$. Where n = sample size, N = population and e = margin of error.

$$n = 1030 / \{1 + 1030 (0.05)^2\}$$

$$n = 1030 / .4$$

$$n = 288$$

The research instrument used in this study is a 5-Point-Likert-scale questionnaire targeted at determining the effect of information security management in curbing fraud in DMBs in Nigeria. The 5-point Likert scale was selected for the study because of its ease of understanding, which improves both the response rate and response quality. (Keith, 2018).

To ensure the validity of the research instrument (the

questionnaire), there was an extensive literature review relating to the topic which satisfied theoretical validity. However, to further examine the evidence of content validity, the instrument was initially reviewed by a professional banker who is a member of management and an expert in managing fraud in a bank to ensure the content validity of the research instrument. Reliability of the research instrument was conducted using Cronbach's Alpha method as shown below:

Table 1: Reliability Test

SN	Construct	No of Items	Cronbach's Alpha
1	Fraud Risk Prevention (FRP)	5	0.877
2	Application Security Control (ASC)	5	0.864
3	Access/Authentication Control (AAC)	5	0.926
4	Network Security Control (NSC)	5	0.934

Source: Researcher's Computation, 2024

The model that was used in ascertaining the effects of the independent variables on the dependent variables of the study is specified in this section as:

$$Y=f(X)$$

Y = Dependent Variable = Fraud Risk Prevention (FRP)

X = Independent Variable = Information System Control (INSC)

Where

$$Y = y_{1i}, y_{2i}, y_{3i}, y_{4i}, y_{5i}$$

$$X = x_1, x_2, x_3$$

Functional Relationship

$$FRP = f(ASC, AAC, NSC) \dots\dots\dots(eqn.1)$$

Model Specification

$$FRP_i = \beta_0 + \beta_1 ASC_i + \beta_2 AAC_i + \beta_3 NSC_i + e_i$$

Where:

β_0 = Intercept e_i = R residual

e_i = Error Term

i = Cross-sectional Variable

FRP = Fraud Risk Prevention

ASC = Application security control

AAS = Access/Authentication control

NSC = Network security control

4.0 Empirical Results and Discussion of Findings

4.1 Analysis of Respondents' Responses

Table 2: Fraud Risk Prevention in DMBs in Nigeria.

	Statements	SA	A	U	D	SD	Mean	Std. Dev.
1	Background checks are conducted on prospective employees as part of the bank's recruitment process	125 (43.6)	160 (55.7)	1 (0.3)	1 (0.3)	0 (0.0)	4.425	0.523
2	There is a whistle-blowing mechanism in place to enable employees to report potential or suspected fraud	85 (29.6)	195 (67.9)	4 (1.4)	2 (0.7)	0 (0.0)	4.269	0.517
3	Biometric and firewall applications are built into applications to prevent unauthorized access and allow only genuine transactions.	130 (45.3)	154 (53.7)	0 (0.0)	0 (0.0)	1 (0.3)	4.446	0.537
4	Segregation of duties has been implemented to ensure that individuals do not have responsibility or authority for all steps in a business process	153 (53.3)	133 (46.3)	0 (0.0)	0 (0.0)	0 (0.0)	4.535	0.499
5	There is a transaction control mechanism in place to stop or prevent unusual transactions	132 (46)	152 (53)	1 (0.3)	2 (0.7)	0 (0.0)	4.443	0.544
6	Background checks are not conducted on prospective employees as part of the bank's recruitment process	5 (1.7)	4 (1.4)	1 (0.3)	161 (56.1)	116 (40.4)	1.679	0.7206
	Total Average Score						4.0	0.6

*Mean ≥ 4.0 = "Satisfied", While **Means ≤ 2.0 = "Dissatisfied"

Source: Researcher's Field Work (2024)

Table 2 shows that 43.6% of the respondents strongly agreed that background checks are conducted on prospective employees as part of the bank's recruitment process, 55.7% equally agreed, 0.3% were undecided, and 0.3% disagreed. On average, the respondents agreed ($M=4.425$, $SD= 0.523$). In addition, the next item in Table 2 shows that 29.6% of respondents strongly agreed that there is a whistleblowing mechanism in place to enable employees to report potential or suspected fraud, 67.9% agreed, and 1.4% were undecided while 0.7% disagreed. On average, respondents agreed with the question ($M=4.269$ and $SD=0.517$). Similarly, Table 2, 45.3% of respondents strongly agreed that Staff training reflects the specific fraud risks, operations, and circumstances of the bank and industry, 53.7% agreed while 0.3% disagreed. Overall, the respondents agreed that Staff training reflects the specific fraud risks, operations, and circumstances of the bank and industry with mean of 4.446 and $SD = 0.537$.

Furthermore, 53.4% of the respondents strongly agreed that segregation of duties has been implemented to ensure that individuals do not have responsibility or authority for all steps in a business process, while 46.6% agreed. On average, the respondents agreed ($M=4.535$, $SD= 0.499$).

Additionally, 46% of the respondents strongly agreed that there is a transaction control mechanism in place to stop or prevent unusual transactions, 53% agreed, 0.3% were undecided and 0.7% disagreed. This shows that on average, the respondents agreed to the question with a mean = 4.443 and SD = 0.544.

Lastly, on the reverse question; background checks are not conducted on prospective employees as part of the bank's recruitment process, 1.7% of the respondents strongly agreed, 1.4% agreed but 0.3% were undecided, 56.1% disagreed while 40.4% strongly disagreed. On average, the respondents disagreed with the question with a mean = 1.679 and SD = 0.721. Overall, Table 2 shows that the respondents agreed that information technology controls have effects on fraud risk prevention in DMBs in Nigeria. (M= 4.0, SD = 0.6). The responses and analysis above clearly indicate that the DMBs employ various techniques to ensure fraud risks are prevented. These techniques range from detailed employee background checks, whistleblowing mechanisms, transaction/account monitoring, and segregation of duties, to IS controls such as the use of biometric controls including inbuilt firewall applications to prevent unauthorized access to bank applications.

4.1 Regression Results on the Hypothesis

The hypothesis was tested using the multiple linear regression analysis. The data for information technology control (ASC, AAC and NSC) and fraud prevention were created by summing responses of all items for each of the variables. The results of the regression are presented below.

Table 3: Results of the Regression Analysis

MODEL				
Variable	Coeff	Std. Err	T-Stat	Prob
Constant	1.185	0.292	4.056	0.000
ASC	0.252	0.066	3.816	0.000
AAC	0.196	0.062	3.152	0.002
NSC	0.249	0.059	4.246	0.000
R ²	0.263			
Adj R ²	0.255			
S.E of Reg.	0.206			
F-Stat	31.39			
Prob (F-Stat)	0.000			
Df	267			

Dependent Variable: FRP

Source: Researcher's Work (2024)

Note: 5% significance level was adopted

Model

$$FRP_i = \beta_0 + \beta_1 ASC_i + \beta_2 AAC_i + \beta_3 NSC_i + e_i$$

.....eqn 1

$$FRP_i = 1.185 + 0.252ASC_i + 0.196AAC_i + 0.249NSC_i$$

Interpretation

Hypothesis of this study aimed to determine if

Information Systems Control has a significant effect on Fraud Risk Prevention (FRP) in DMBs in Nigeria. Considering the signs of the estimated parameters, there exists a positive relationship between all the proxies of the independent variable (Application security control (ASC), Access/Authentication control (AAC), and Network Security Control (NSC) and Fraud Risk Prevention in DMBs in Nigeria. This is represented by the signs of the coefficients β_1 , β_2 , and β_3 .

This shows that an improvement in the proxies (ASC, AAC and NSC) of the independent variable will lead to effective fraud risk prevention. Also, the value of the constant implies that if the independent variables employed do not exist, FRP would still be present from non -information system control measures.

The adjusted R² value of 25.5% for this model connotes the ability of all the independent variables to collectively explain about 26% variation in Fraud Risk Prevention. The remaining 74% is accounted for by other factors not included in this model. The low adjusted R² of 25.5% is consistent with the size of the constant term of the estimated model. The instrument was designed with three independent variables to capture the degree of impact on the respective independent variables.

Responses were indeed aligned to the independent variables and the result further buttresses the fact that the tested independent variables alone cannot significantly explain the variation in Fraud Risk Prevention. However, the coefficients further showed that the existence of information technology control will contribute positively to the fraud risk prevention framework.

In addition, the results indicate that application security control (ASC) has a significant effect on fraud risk prevention in DMBs in Nigeria. It showed that all the proxies of the independent variable (Application security control (ASC), Access/Authentication control (AAC), and Network Security Control (NSC)) had a significant relationship with Fraud Risk Prevention.

Decision

At the level of significance = 0.05, df = 3, 267, F-statistics = 31.39, adjusted R² = 0.255 and p-value = 0.0000 which is less than the 0.05 level of significance adopted for the study, the null hypothesis for the model which stated that "Information technology control does not significantly affect Fraud Prevention in Deposit Money Banks (DMBs) in Nigeria" was rejected. Thus, the alternate hypothesis was accepted with the conclusion that "Information

Systems Control significantly affect Fraud Risk Prevention in DMBs in Nigeria.”

4.2 Discussion of Findings

Findings in this study align with prior research that highlights the effectiveness of advanced technologies in preventing fraud. Williams (2019) demonstrated that advanced imaging technologies can detect cheque alterations and fake cheques, while Raj and Choudhry (2022) and Manoj (2021) confirmed the efficacy of IS control tools in fraud prevention. Similarly, Deebika et al. (2018) emphasized the ability of advanced cheque scanning and screening tools to detect and prevent fraudulent activities.

This study also supports findings by Silaparasetty (2018), who proposed integrating machine learning algorithms with blockchain technology, and Choi and Lee (2018), who advocated for artificial neural networks and machine learning for real-time fraud prevention. Such advanced techniques, guided by global technology standards, enhance fraud risk prevention when embedded into banking platforms, reducing fraud incidents and boosting banks' profitability.

On the contrary, the study challenges the findings of Sharma et al. (2017) and Jesi and Desi (2019), which argue for traditional fraud prevention methods like handwriting verification and ultraviolet/infrared cheque analysis. The current study concludes that reliance on traditional methods is insufficient, as evolving technologies necessitate robust information systems control to effectively mitigate fraud risks

5.0 Conclusion, Policy Implications and Recommendations

5.1 Conclusion

From the analysis conducted, the following conclusions are presented as follows.

There is a significant effect of information technology control on fraud risk management in DMBs in Nigeria with regard to fraud risk monitoring and reporting. This is manifested by the positive relationship that was found between the independent and the dependent variables through empirical investigation. In addition, the coefficient of determining the value that was obtained in the analysis affirmed the conclusion that information systems control (application security control) has a significant effect on fraud risk monitoring and reporting.

Information systems control has a significant effect on fraud risk governance in DMBs in Nigeria. Given the p-value of 0.000 for fraud risk governance that is less than the level of significance of 0.05 adopted by the

study, it can therefore be concluded that information technology control has a significant effect on fraud risk governance.

On fraud risk prevention, it was concluded that implementing adequate information systems control (application security control) in DMBs would enhance fraud risk prevention across banks and enhance customers' confidence in the banking sector. This conclusion was reached because all the independent variables came out with less than 0.05 % level of significance.

5.2 Policy Implication

Having discussed the empirical results of the study, the policy implications include:

Religious Enforcement of Information Systems Control: The CBN besides developing required IT and cybersecurity framework and mandating the banks to adopt them, should religiously drive enforcement of application control, access or authentication control and network security control. This will ensure consistency and uniformity across the banks in implementing information security controls to prevent fraud.

Regular Audits and Inspections: Besides the cybersecurity self-assessment review done by third party to access the cyber readiness of banks, the CBN should implement a policy requiring regular audits and inspections of DMBs' information systems by certified third-party auditors who will report directly to the CBN, the outcome of their reviews. This will ensure adherence to prescribed standards and identify any gaps or weaknesses in the existing controls as well as independently provide assurance to the regulator that adequate controls are implemented by the DMBs to prevent fraud.

Reporting and Transparency: Although the CBN has introduced mandatory reporting requirements for fraud incidents and control breaches, the reporting process and mechanism should be strengthened to ensure that all information systems control breaches are reported as well as fraud breaches which are required. This will promote transparency and provide the CBN with abundant data to better provide regulations to prevent fraud.

Encourage Technological Advancements and Innovation: As part of its mandate to prevent fraud in the DMBs, the CBN should encourage the adoption of advanced technologies such as machine learning and blockchain to strengthen information systems

control to enhance fraud prevention. This could be achieved by providing incentives, such as tax breaks, single interest rate or grants, for banks that invest in these technologies.

National Awareness Campaigns: The CBN should develop a policy on how it will collaborate with the banks to launch nationwide awareness campaigns to educate customers about fraud prevention techniques such as authentication or access controls and other information security controls. These campaigns should highlight the importance of using secure banking practices and recognizing common fraud tactics.

Legal Framework to Accelerate Prosecution of Suspected Fraudsters: The CBN should work with the National Assembly to establish a law that will grant accelerated court proceeding to prosecute suspected fraudsters.

The legal process from when a suspect is charged to court to completion of the case should be a maximum of one year. This will help the banks and fraud victims get quick justice and also make fraudulent act unattractive.

Policy Review and Adaptation: Existing fraud prevention and cybersecurity policies should be reviewed and updated to adapt to changing technological landscapes and emerging threats. This will ensure that the regulations remain relevant and effective in preventing fraud risks.

5.3 Recommendation

Emanating from the findings, conclusions and policy implications of the study, the following

recommendations are made:

Regular Review and Update of Information Systems: DMBs should conduct biannual audits of information systems to ensure controls are up-to-date and effective. This includes testing for vulnerabilities and immediately remediating identified gaps.

Implement Comprehensive Digital Control Measures: DMBs should ensure that all digital platforms (e.g., mobile banking apps, online banking platforms) have multifactor authentication, encryption, and real-time transaction monitoring to detect and prevent fraudulent activities.

Customer Education Programs: DMBs should launch quarterly webinars and send monthly newsletters to educate customers about the security measures implemented and how they can protect themselves from fraud. Topics like recognizing phishing attempts and using strong passwords amongst others should be included in the awareness campaign.

Continuous Monitoring and Adjustment: The banks should also set up a dedicated team to continuously monitor and adjust information system security controls based on emerging threats and technological advancements. This team should work closely with the information technology department.

Risk Management Committee and Board-Level Oversight: The Board of Directors and Risk Management Committee should review the fraud prevention strategy quarterly to ensure its relevance and effectiveness. They should also receive detailed reports on incidents and responses, ensuring accountability at the management level.

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Dr. Bala Bello	- Deputy Governor (Operations)
Mr. Muhammad Abdullahi	- Deputy Governor (Economic Policy)
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