

**FINANCIAL INCLUSION AND ECONOMIC GROWTH IN NIGERIA**

**BY**

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**DEPARTMENT OF FINANCE**

**FACULTY OF MANAGEMENT SCIENCES**

**UNIVERSITY OF BENIN**

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**BEING A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF FINANCE,  
FACULTY OF MANAGEMENT SCIENCES, UNIVERSITY OF BENIN, BENIN  
CITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD  
OF THE BACHELOR OF SCIENCE (B.SC) DEGREE IN FINANCE**

**NOVEMBER, 2025**

## **DECLARATION**

**I, Chineye Jennifer EGESI declare that:**

- i. This study is based on a study undertaken by me in the Department of Finance, Faculty of Management Sciences, University of Benin, Benin City under the supervision of Dr Osazee Frank Ogieva of Department of Finance, Management Sciences, University of Benin, Benin City, Nigeria.
- ii. This work has not been submitted for the award of degree elsewhere.
- iii. Ideas and views are product of my personal research and where the view of others has been expressed, they have been duly acknowledged.
- iv. Any liability arising from this work is to be wholly borne by me alone.

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**EGESI CHINEYE JENNIFER**

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**DATE**

## CERTIFICATION

We certify that this research project was carried out by EGESI CHINEYE JENNIFER in the Department of Finance, Faculty of Management Science, Benin City, Nigeria. It is adequate in scope and quality in partial fulfilment of the requirement for the award of Bachelor of Science (B.Sc.) degree in Finance.

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**(Head of Department)**

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**DATE**

## **DEDICATION**

I dedicate this project work to God Almighty, whose guidance and strength have been my constant companion throughout my academic journey. I will like to also dedicate this project to my family members and friends for their constant love and support throughout my academic journey.

## **ACKNOWLEDGEMENT**

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## **ABSTRACT**

This study investigates the relationship between financial inclusion and economic growth in Nigeria for the period 2000 to 2024. Financial inclusion was measured using the number of bank branches per 100,000 adults, automated teller machines (ATMs) per 100,000 adults, borrowers from commercial banks per 1,000 adults, and current account holders per 1,000 adults, while economic growth was proxied by the real gross domestic product (RGDP) growth rate. The study relied on secondary data obtained from credible sources, including the Central Bank of Nigeria, Nigeria Inter-Bank Settlement System, and World Bank Development Indicators. Data were analyzed using descriptive statistics, correlation analysis, panel unit root tests, Johansen Fisher Panel Cointegration Test, and Panel Fully Modified Least Squares (FMOLS) regression. The results indicate that the number of bank branches and bank borrowers have a significant positive impact on economic growth, whereas ATMs and current account holders exhibit a significant negative effect. These findings suggest that while expanding physical banking infrastructure and credit access supports economic growth, digital banking access and current account proliferation may not automatically translate into growth unless accompanied by targeted financial inclusion strategies. The study concludes that effective policy interventions are required to optimize the benefits of financial inclusion and recommends the strategic deployment of banking resources, particularly to underserved populations, to enhance Nigeria's economic performance.



## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

The effectiveness of Nigeria's financial sector in mobilizing savings, allocating resources, and extending inclusive access to services remains a cornerstone of sustainable economic growth. Financial inclusion, which entails ensuring that individuals and businesses have access to affordable payments, savings, credit, and insurance, has become increasingly recognized as a critical driver of inclusive development (World Bank, 2022). In developing economies such as Nigeria, where large segments of the population have traditionally been excluded from the formal financial system, financial inclusion is viewed not only as a means of fostering economic participation but also as a tool for poverty reduction, income redistribution, and long-term growth.

Over the last decade, Nigeria has recorded measurable progress in expanding access to financial services. The Enhancing Financial Innovation and Access (EFInA) 2023 Access to Finance (A2F) survey reported that formal financial inclusion grew from 56 percent in 2020 to 64 percent in 2023, while total financial inclusion, combining both formal and informal access, reached 74 percent. This progress has reduced the exclusion rate to 26 percent, meaning about 28.8 million adults remain outside the financial system (EFInA, 2023). Despite these improvements, the figure remains well above the National Financial Inclusion Strategy (NFIS) target of 20 percent exclusion by 2020 and short of the revised NFIS 3.0 vision of reducing exclusion to 25 percent by 2024 and achieving 95 percent inclusion in the long term (Central Bank of Nigeria [CBN], 2023).

The persistence of exclusion highlights deep disparities across regions, gender, and social groups. The North East and North West remain the most excluded regions, with 38 percent and 47 percent exclusion rates respectively, compared with just 5 percent in the South West and 10 percent in the South-South. Similarly, rural exclusion is more pronounced, with 37 percent of rural dwellers financially excluded compared to 17 percent of urban dwellers. Gender gaps have also widened, with the financial inclusion gap between men and women increasing from 8 percent in 2020 to 9 percent in 2023, underscoring the structural disadvantages faced by women in accessing financial services (EFInA, 2023; TheCable, 2023).

Despite these challenges, the adoption of digital financial services has accelerated rapidly in Nigeria. Electronic payment channels such as Point-of-Sale (POS) terminals, Automated Teller Machines (ATMs), mobile money, and internet banking have increasingly driven financial inclusion. Central Bank of Nigeria data show that POS transaction values rose from ₦48 billion in 2012 to over ₦10.7 trillion in 2022, while the total value of electronic payments in 2023 exceeded ₦2,240 trillion. POS transactions alone reached ₦110.3 trillion in 2023, while mobile money transaction values were recorded at ₦97.1 trillion within the same period (CBN, 2023). The first half of 2024 further demonstrated this upward trajectory, with POS transaction values rising to ₦85.9 trillion, representing a 39 percent increase compared to the second half of 2023, and mobile transfers surging to ₦159.4 trillion (CBN, 2024).

This digital transformation has been powered by the growth of Nigeria's fintech sector, which now accounts for about 28 percent of Africa's fintech enterprises and boasts over 1,200 active companies (Fintech Association of Nigeria, 2024). Companies such as Moniepoint and PalmPay exemplify this expansion, with Moniepoint processing over 800 million monthly transactions valued above \$17 billion and PalmPay reaching 35 million users across Nigeria. The rise of fintech has significantly expanded access to mobile payments and micro-credit

facilities, creating opportunities for underserved households and small businesses to participate more fully in the financial system (Reuters, 2024; Financial Times, 2024).

However, while financial inclusion indicators have grown impressively, Nigeria's overall economic performance remains fragile. Real Gross Domestic Product (GDP) growth has averaged below 3 percent in recent years, recording 2.25 percent in the third quarter of 2022, 2.51 percent in the second quarter of 2023, and 2.54 percent in the third quarter of 2023. At the same time, inflation surged to 25.8 percent in August 2023, the highest level in 17 years, eroding household purchasing power and dampening investment (National Bureau of Statistics [NBS], 2023; Guardian, 2023). This contrast between robust digital financial growth and relatively sluggish macroeconomic outcomes raises important questions about the extent to which financial inclusion translates into tangible economic growth in Nigeria. Nigeria has made commendable progress in financial inclusion through digital adoption, yet persistent exclusion, regional disparities, and gender gaps remain significant hurdles. The surge in POS transactions, mobile money transfers, and other electronic payment channels highlights the potential of financial technology to drive inclusion. Nonetheless, the country's modest GDP growth alongside rapid financial inclusion raises critical concerns about whether access to financial services is being effectively harnessed for sustainable economic development. This creates a compelling case for empirical investigation into the relationship between financial inclusion measured through specific indicators such as POS, ATM, mobile transactions, and bank credit and Nigeria's economic growth.

## **1.2 Statement of the Problem**

Despite notable progress in Nigeria's financial sector reforms and the rapid adoption of digital payment channels, a significant proportion of the population remains financially excluded. This exclusion hampers individuals' capacity to save, access credit, and engage

productively in the economy, thereby constraining inclusive growth. According to Demirgüç-Kunt et al. (2018), financial inclusion enhances economic participation by enabling households and firms to better manage resources, yet in Nigeria, about 36% of adults remained unbanked as of 2020. This raises concerns about whether digital financial services are translating into tangible macroeconomic benefits.

Scholars have examined the nexus between financial inclusion and economic growth, but their findings remain inconclusive. For instance, Adeola and Evans (2017) found that access to bank accounts and credit facilities positively influenced Nigeria's economic growth, though their study largely relied on aggregate proxies of financial inclusion such as the number of bank branches. Similarly, Efobi, Beecroft, and Osabuohien (2014) emphasized the importance of literacy and access in explaining variations in financial inclusion, but they did not consider digital financial services like POS or mobile payments. More recently, Okoye, Erin, and Modebe (2020) investigated financial inclusion and growth in Nigeria, reporting a positive relationship but limiting their scope to broad indicators such as savings and credit penetration without analyzing specific electronic transaction data.

These studies highlight three critical gaps. First, much of the existing research emphasizes traditional measures of financial inclusion such as bank account ownership and literacy while neglecting digital transactional indicators. Second, empirical evidence focusing specifically on Nigeria's expanding electronic payment systems (e.g., POS, ATM usage, and mobile money transactions) and their growth implications is scarce. Third, there is little attempt to establish whether these modern financial channels are contributing significantly to macroeconomic performance, particularly GDP growth.

This study intends to fill these gaps by employing secondary data on specific digital financial inclusion variables such as POS transaction volume, ATM transaction value, mobile money

usage, and bank credit penetration, and empirically testing their impact on Nigeria's economic growth. By doing so, the research provides a more comprehensive and contemporary understanding of the financial inclusion growth nexus in Nigeria, offering valuable insights for policymakers, regulators, and financial institutions.

### **1.3 Research Questions**

The study seeks to provide answers to the following questions:

1. To what extent do POS transaction values influence economic growth in Nigeria?
2. How do ATM transaction volumes affect economic growth in Nigeria?
3. What is the impact of mobile money transactions on Nigeria's economic growth?
4. Does bank credit to the private sector significantly influence economic growth in Nigeria?

### **1.4 Objectives of the Study**

The main objective of this study is to examine the impact of financial inclusion on economic growth in Nigeria using secondary data indicators. Specifically, the study seeks to:

1. Assess the impact of Point-of-Sale (POS) transaction values on economic growth in Nigeria.
2. Examine the relationship between Automated Teller Machine (ATM) transaction volumes and Nigeria's economic growth.
3. Investigate the effect of mobile money transactions on economic growth in Nigeria.
4. Determine the relationship between bank credit to the private sector and economic growth in Nigeria.

## **1.5 Research Hypotheses**

The following null hypotheses are formulated:

- H01: POS transaction values have no significant impact on economic growth in Nigeria.
- H02: ATM transaction volumes have no significant effect on economic growth in Nigeria.
- H03: Mobile money transactions have no significant impact on economic growth in Nigeria.
- H04: Bank credit to the private sector has no significant relationship with economic growth in Nigeria.

## **1.6 Scope of the Study**

This study focuses on Nigeria and covers the period from 2018 to 2023. This timeframe is chosen because it coincides with the implementation of the revised National Financial Inclusion Strategy (NFIS) and the rapid expansion of electronic banking channels across the country. The analysis is based on secondary data sourced from the Central Bank of Nigeria (CBN), the Nigeria Inter-Bank Settlement System (NIBSS), the World Bank, and the International Monetary Fund (IMF).

The study emphasizes specific and measurable financial inclusion indicators such as Point-of-Sale (POS) transaction volume, Automated Teller Machine (ATM) transaction value, mobile money transaction value, and bank credit to the private sector. These variables are employed to establish a link between financial inclusion and Nigeria's economic growth.

In addition to macro-level analysis, the study also adopts a case study approach by focusing on six financial institutions and FinTech firms in Nigeria, including leading banks and mobile money operators, to assess how institutional-level initiatives contribute to national financial inclusion outcomes. This dual focus allows for a comprehensive understanding of both aggregate financial inclusion trends and firm-level practices that shape economic growth.

### **1.7 Significance of the Study**

This study is significant because it contributes to the growing body of literature on financial inclusion by shifting attention from broad, general indicators to specific and measurable transactional variables such as POS transactions, ATM usage, mobile payments, and credit penetration. Many previous studies have focused on abstract measures like financial literacy or account ownership, often neglecting the operational channels through which inclusion is realized in practice. By emphasizing transactional data, this study provides a more practical and policy-relevant assessment of how financial inclusion operates as a driver of economic growth in Nigeria.

For policymakers, particularly the Central Bank of Nigeria (CBN), National Financial Inclusion Strategy (NFIS) stakeholders, and other regulatory authorities, the findings will offer evidence-based insights into the effectiveness of digital payment systems, bank branch expansions, and credit distribution mechanisms. Such insights are critical in the ongoing review of Nigeria's financial inclusion targets, which aim to reduce the proportion of financially excluded adults to below 20% by 2030 (CBN, 2023). The study's outcomes will therefore support the design of targeted policies that not only increase financial access but also enhance macroeconomic stability and growth.

For financial institutions, including commercial banks, microfinance banks, and the rapidly expanding FinTech ecosystem, the study provides strategic information on which financial

inclusion channels whether POS deployment, mobile money adoption, or ATM penetration generate the strongest linkages to GDP growth. This knowledge can guide future investments, technology adoption, and service innovations, ensuring that resources are directed towards platforms that yield higher economic returns while simultaneously deepening customer reach.

The significance of the study also extends to entrepreneurs and the informal sector, where cash-based transactions remain dominant. By demonstrating the potential of digital finance to stimulate productivity, encourage savings, and facilitate credit access, the research highlights pathways for transitioning informal activities into more formal and growth-enhancing channels. This has implications for job creation, financial stability, and poverty reduction, which are critical priorities in Nigeria's development agenda.

From an academic perspective, this research enriches the discourse on financial inclusion and economic growth by bridging the methodological gap between macroeconomic growth studies and digital finance research. It offers future researchers a reliable reference point, especially those interested in applying transaction-based financial inclusion indicators in empirical models. Students and scholars will benefit from its contribution to the empirical literature on development economics, financial systems, and digital innovation in Africa. Ultimately, the study enhances understanding of how financial inclusion can move beyond access to actual usage, thereby providing a more nuanced framework for linking finance with growth.

### **1.8 Limitations of the Study**

The study may be constrained by the accuracy and consistency of secondary data, particularly where data is aggregated across financial institutions. Additionally, informal financial transactions outside regulated channels may not be fully captured. Nonetheless, the study

minimizes these limitations by relying on credible data sources such as the CBN statistical bulletins, NIBSS reports, and World Bank databases.

### **1.9 Definition of Key Terms**

- **POS Transactions:** The value of financial transactions carried out through Point-of-Sale terminals in Nigeria.
- **ATM Transactions:** The number or value of withdrawals and deposits conducted via Automated Teller Machines.
- **Mobile Money Transactions:** The value and volume of financial transfers conducted using mobile payment platforms.
- **Bank Credit to the Private Sector:** Loans and advances provided by deposit money banks to businesses and individuals.
- **Economic Growth:** The increase in the production of goods and services in Nigeria, measured by real GDP.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Financial inclusion has gained increasing attention in recent years as a critical driver of economic growth, poverty alleviation, and sustainable development. It refers to the accessibility of financial services by all segments of society, particularly the underserved and low-income groups, through formal financial institutions. In Nigeria, the government, Central Bank of Nigeria (CBN), banks, and fintech companies have introduced diverse policies and innovations, such as mobile banking, Point-of-Sale (POS) services, Automated Teller Machines (ATMs), and digital lending platforms to improve financial access. Despite these initiatives, financial exclusion remains a challenge, especially in rural communities. This chapter reviews relevant concepts, theoretical perspectives, and empirical studies that underpin the relationship between financial inclusion and economic growth, with emphasis on the Nigerian context.

#### **2.2 Conceptual Review**

##### **2.2.1 Economic Growth**

Economic growth refers to the long-term and sustained increase in a country's productive capacity, reflected in the expansion of goods and services produced within an economy, typically measured by changes in real Gross Domestic Product (GDP). It is not only a quantitative measure but also encompasses qualitative improvements in standards of living, employment opportunities, and structural transformation of the economy (Barro, 2019; Aghion et al., 2021). Growth is fundamentally driven by factors such as capital accumulation,

labor productivity, technological innovation, human capital development, and institutional quality (Acemoglu & Robinson, 2020).

In emerging economies such as Nigeria, economic growth is closely tied to the development of the financial system, which channels savings into productive investments, facilitates innovation, and enhances the efficiency of resource allocation (Nwokolo & Okafor, 2022). The financial sector also plays a crucial role in deepening financial inclusion, which broadens access to credit, savings, and payment systems, thereby stimulating entrepreneurial activities and small business growth (Demirgüç-Kunt et al., 2022). Additionally, government policies in fiscal and monetary management, trade openness, and infrastructure investment significantly affect growth dynamics (World Bank, 2023).

Nigeria's economic growth trajectory has been characterized by fluctuations, often driven by global oil price volatility, exchange rate instability, inflationary pressures, and structural weaknesses in manufacturing and agriculture (IMF, 2023). Despite these challenges, financial innovation and digitalization, particularly through mobile money platforms, point-of-sale (POS) systems, and electronic banking, are increasingly recognized as critical enablers of growth by reducing transaction costs and integrating the informal sector into the formal economy (Adeleye & Eboagu, 2019; Olayungbo & Akinlo, 2022).

Thus, economic growth in Nigeria can be viewed as both an outcome of sound financial sector development and a determinant of future opportunities for poverty reduction, employment generation, and inclusive prosperity. Strengthening financial systems, improving governance, and investing in technology and infrastructure are therefore pivotal in sustaining long-term growth.

### **2.2.2 Financial Inclusion**

Financial inclusion refers to the process of ensuring that individuals and businesses, particularly those in disadvantaged, underserved, and low-income groups, have access to affordable, useful, and timely financial products and services that meet their needs for payments, savings, credit, and insurance in a responsible and sustainable manner (Demirgüç-Kunt et al., 2022). It is more than just providing banking access; it involves creating an enabling financial system that is inclusive, affordable, and accessible to all.

Globally, financial inclusion is recognized as a critical enabler of sustainable economic growth, poverty alleviation, and inequality reduction. The World Bank (2023) highlights that over 76% of adults worldwide now have access to an account with a formal financial institution or mobile money provider, compared to 51% in 2011, largely due to innovations in financial technology and mobile banking. In developing countries like Nigeria, however, the challenge of access, usage, and quality of financial services persists, especially in rural and semi-urban areas.

In Nigeria, financial inclusion is viewed as a key driver of inclusive development. The Central Bank of Nigeria (CBN, 2022) defines financial inclusion as the process of ensuring access to a broad range of formal financial services, such as payments, savings, credit, insurance, and pension, at an affordable cost. The CBN's National Financial Inclusion Strategy (NFIS) targets increasing the percentage of adult Nigerians with access to financial services from 53% in 2008 to 95% by 2024, demonstrating the government's commitment to strengthening the financial system to support inclusive growth (CBN, 2022).

The importance of financial inclusion lies in its ability to bridge the gap between the formal financial sector and excluded populations. Studies show that access to financial services improves household welfare, supports micro and small business growth, encourages savings

culture, and enhances resilience against economic shocks (Allen et al., 2022; Ozili, 2023). Additionally, financial inclusion fosters economic growth by mobilizing savings, increasing investments, and expanding credit availability to the private sector, which drives productivity and job creation.

In the Nigerian context, the rapid expansion of financial technologies such as Point-of-Sale (POS) terminals, Automated Teller Machines (ATMs), mobile money services, and digital banking platforms has significantly improved financial access. For example, NIBSS (2023) reports that mobile money transactions grew by more than 140% between 2020 and 2022, indicating a growing reliance on digital platforms for financial services. This aligns with global trends where technology serves as a major catalyst in advancing financial inclusion (Klapper & Singer, 2023).

However, challenges remain. Barriers such as low financial literacy, poor infrastructure in rural areas, regulatory bottlenecks, cybersecurity risks, and lack of trust in formal financial institutions limit the progress of financial inclusion in Nigeria (Olayinka, 2023). To address these, policies must not only focus on increasing access but also emphasize affordability, usability, and sustainability of financial services to ensure long-term inclusivity. In summary, financial inclusion in Nigeria is both a development objective and a policy tool aimed at fostering inclusive growth. While progress has been made through the adoption of digital financial services, achieving universal inclusion requires coordinated efforts involving the government, financial institutions, fintech firms, and international organizations.

### **2.2.3 Measures of Financial Inclusion**

#### **Point-of-Sale (POS) Transactions**

Point-of-Sale (POS) services have become a significant driver of financial inclusion and economic activities in Nigeria, providing a convenient, secure, and efficient alternative to cash-based transactions. POS machines allow cardholders and mobile money users to make payments and access cash services in retail outlets, markets, and even informal settings, thereby bridging the financial access gap between rural and urban areas. The Central Bank of Nigeria (CBN) has actively promoted POS adoption as part of its cashless policy to reduce the over-reliance on cash transactions and improve payment system efficiency (CBN, 2023).

The increasing use of POS transactions in Nigeria has positively influenced small and medium-sized enterprises (SMEs), particularly those in informal markets, as it provides access to quick and secure payments. According to Adetunji and Madugba (2021), POS adoption has contributed significantly to small business expansion, improved customer service, and facilitated faster turnaround times for transactions. Similarly, Adeola and Evans (2023) argue that the growth of POS agents in Nigeria has created entrepreneurial opportunities for youths and women, contributing to employment generation and income diversification.

Moreover, POS transactions have been instrumental in driving financial inclusion, especially among rural dwellers who may lack access to traditional bank branches. With the rise of agent banking and mobile financial services, POS terminals serve as access points for deposits, withdrawals, bill payments, and fund transfers (Ikechukwu & Okafor, 2022). These services have reduced the travel costs and time previously associated with banking, thereby improving financial access for underserved populations.

Empirical evidence suggests that POS services are expanding rapidly in Nigeria. The Nigeria Inter-Bank Settlement System (NIBSS) reported that POS transaction volume rose to over 1.1 billion transactions valued at ₦8.03 trillion in 2022, representing a 41% increase compared to 2021 (NIBSS, 2023). This surge highlights the increasing preference for digital payment channels and the shift from cash dominance to electronic transactions. However, challenges such as network failures, transaction delays, fraudulent activities, and limited rural infrastructure continue to constrain the full potential of POS services (Ogunleye & Babajide, 2022). In sum, POS transactions have contributed not only to the deepening of financial inclusion but also to broader economic growth by supporting retail trade, enhancing consumer convenience, and facilitating the integration of informal businesses into the formal financial system. Strengthening digital infrastructure, improving transaction security, and enhancing regulatory oversight will be crucial to sustaining the growth of POS services in Nigeria.

### **Automated Teller Machines (ATMs)**

Automated Teller Machines (ATMs) represent one of the earliest and most widespread forms of financial innovation, providing customers with access to cash withdrawals, deposits, funds transfers, and account balance inquiries without the need to visit a physical bank branch. ATMs have been widely acknowledged as a key driver of convenience in the banking sector, as they operate beyond traditional banking hours, thereby expanding access to financial services (Okafor & Eze, 2022). In Nigeria, the deployment of ATMs by commercial banks has been central to efforts aimed at deepening financial inclusion by reaching unbanked and underbanked populations.

Despite their advantages, the effectiveness of ATMs in enhancing financial inclusion is often constrained by infrastructural challenges such as poor maintenance, power outages, and

frequent network failures. These issues limit accessibility and undermine users' confidence in the system (Ogunleye, 2020). Furthermore, security concerns such as card fraud, skimming, and cyber-attacks have also been highlighted as barriers to ATM usage (Afolabi & Ajiboye, 2021).

Nevertheless, ATMs continue to play an important role in driving electronic banking adoption in Nigeria, particularly in urban and semi-urban areas. Recent studies suggest that the expansion of ATM networks contributes to improved cash flow for businesses and reduces transaction costs for individuals (Ejemeyovwi & Osabuohien, 2022). The Central Bank of Nigeria (CBN) has consistently emphasized the importance of ATM services in reducing reliance on cash transactions and promoting the transition to a cashless economy. In summary, while ATMs remain a vital instrument of financial inclusion, their sustainability in Nigeria depends on addressing operational challenges and improving technological reliability. Enhanced security systems and broader coverage in rural areas will be crucial in maximizing their contribution to economic growth and inclusive financial access.

### **Mobile Money Transactions**

Mobile money has emerged as one of the most transformative financial innovations in Africa, revolutionizing the way individuals and businesses conduct financial transactions. By enabling money transfers, payments, deposits, and withdrawals through mobile phones, mobile money services reduce the dependence on traditional banking infrastructure and eliminate the need for users to maintain formal bank accounts (GSMA, 2023). This innovation has proven particularly effective in regions with low banking penetration, as it leverages the widespread use of mobile phones to bridge financial access gaps.

In Nigeria, mobile money adoption has played a critical role in increasing financial participation among previously unbanked and underbanked populations. Studies indicate that

mobile money has enhanced the capacity of individuals in rural and semi-urban areas to access financial services conveniently and affordably (Okoye, Nwankwo & Eze, 2022). The services provide an avenue for sending and receiving remittances, paying bills, purchasing goods, and engaging in savings and micro-credit activities, thereby fostering financial inclusion (Adewuyi & Afolabi, 2023).

The Central Bank of Nigeria (CBN) has also promoted mobile money as a strategic tool for achieving its cashless policy and improving financial inclusion indices. According to CBN's 2022 report, mobile money transactions in Nigeria recorded significant growth, with transaction values exceeding ₦13 trillion in 2021 compared to ₦3.5 trillion in 2018, reflecting the increasing trust and reliance on mobile payment systems (CBN, 2022).

However, despite the rapid growth, challenges such as poor internet connectivity, low levels of financial literacy, and concerns about fraud and cybersecurity continue to limit the full potential of mobile money adoption (Chukwu & Agwu, 2021). Additionally, regulatory bottlenecks and limited agent networks in remote communities have also constrained its impact on inclusive finance (Osabuohien & Ejemeyovwi, 2023). Overall, mobile money remains an essential driver of financial inclusion in Nigeria, offering opportunities to integrate more citizens into the formal financial system. Its continued expansion, supported by enabling regulatory frameworks, robust technological infrastructure, and consumer education, will be crucial in enhancing financial access and contributing to Nigeria's broader economic development goals.

### **Bank Credit to the Private Sector**

Access to credit is a fundamental component of financial inclusion and a vital driver of economic growth. Bank credit to the private sector provides businesses and households with the financial resources necessary to invest in productive activities, expand operations, and

enhance productivity (Demirgüç-Kunt et al., 2022). In Nigeria, credit availability plays a key role in fostering entrepreneurship, supporting small and medium-sized enterprises (SMEs), and facilitating innovation across various sectors of the economy.

Despite its importance, access to bank credit in Nigeria remains constrained for many potential borrowers. High collateral requirements, elevated interest rates, limited credit history, and perceived riskiness of borrowers in the informal sector restrict the flow of credit to underserved populations (CBN, 2023). Studies show that this limited access to credit disproportionately affects rural dwellers, women entrepreneurs, and micro-businesses, curtailing opportunities for inclusive growth (Olaniyan & Akinyemi, 2021).

Empirical evidence suggests that increased bank credit to the private sector is positively associated with economic growth in Nigeria. Uremadu and Efobi (2021) found that sectors receiving higher levels of credit experienced improvements in productivity and contributed more significantly to GDP growth. Similarly, Olowofeso et al. (2019) observed that enhancing credit availability for SMEs not only supports business expansion but also stimulates employment creation and innovation, which are critical for sustaining long-term economic development.

The Central Bank of Nigeria (CBN) has implemented various policies to improve credit access, including intervention funds, refinancing schemes, and the promotion of microfinance banks to reach underserved communities. Nevertheless, structural challenges such as weak credit information systems, inadequate financial literacy, and regulatory constraints continue to limit the effectiveness of these measures (Afolabi & Olagunju, 2022). In conclusion, while bank credit to the private sector is a key mechanism for promoting financial inclusion and driving economic growth, enhancing access requires addressing systemic barriers, improving risk assessment frameworks, and providing supportive policies for SMEs and informal sector

participants. Strengthening these aspects will ensure that credit contributes meaningfully to inclusive and sustainable economic development in Nigeria.

## **2.3 Theoretical Framework**

This study is anchored on Schumpeter's Theory of Economic Development, propounded by Joseph Alois Schumpeter in 1934. Schumpeter emphasized that financial intermediaries, such as banks, play a critical role in mobilizing savings and allocating credit to productive investments, which in turn drives innovation and economic growth. According to Schumpeter, economic development occurs when entrepreneurs use financial resources to introduce new products, processes, or technologies. In the context of this study, financial inclusion facilitated through instruments such as POS transactions, ATM services, mobile money, and bank credit to the private sector enhances access to financial resources. This enables individuals and businesses to innovate, invest, and contribute to economic growth. By integrating underserved populations into the formal financial system, financial inclusion aligns with Schumpeter's view that wider access to credit fosters entrepreneurship, increases productivity, and sustains economic development.

### **2.3.1 Schumpeter's Theory of Economic Development**

Schumpeter's theory underscores the centrality of financial intermediaries and entrepreneurial activities in driving economic growth. Financial inclusion provides the necessary credit and financial tools that allow entrepreneurs to identify and exploit economic opportunities. In Nigeria, the expansion of access to financial services through POS transactions, ATMs, mobile money, and bank credit has facilitated entrepreneurial activities, promoted investment, and contributed positively to GDP growth (Adetunji & Madugba, 2021; Uremadu & Efobi, 2021). This theoretical perspective supports the notion that improving

access to financial services for underserved populations can stimulate productive activities and strengthen the overall economy.

### **2.3.2 Endogenous Growth Theory**

The Endogenous Growth Theory, propounded by Paul Romer in 1994 and later updated by Barro (2021), complements Schumpeter's framework by emphasizing that long-term economic growth is driven by human capital, innovation, and financial development. From this perspective, financial inclusion contributes to growth by mobilizing savings, channeling funds to productive sectors, and fostering financial innovations such as mobile money platforms and POS services. These innovations enhance efficiency, encourage entrepreneurship, and increase productivity. By linking access to financial services with investment in knowledge, technology, and innovation, this theory explains how financial inclusion can create self-reinforcing mechanisms that sustain economic growth in Nigeria.

Anchoring this study on Schumpeter's theory provides a strong foundation, particularly given Nigeria's uneven financial access and the pivotal role of entrepreneurship in economic development. The Endogenous Growth Theory complements this by highlighting the interaction between financial inclusion, human capital, and innovation in sustaining long-term growth. Together, these theories justify examining the impact of specific financial inclusion indicators POS transactions, ATM services, mobile money, and bank credit on Nigeria's economic growth.

### **2.3.3 Financial Intermediation Theory**

The Financial Intermediation Theory, propounded by Ross Levine in 2020, posits that financial institutions serve as intermediaries between savers and borrowers, facilitating the efficient allocation of resources in the economy. According to the theory, financial

intermediaries reduce transaction costs, manage risks, and provide mechanisms for capital accumulation, thereby enhancing economic efficiency and growth.

In the context of this study, financial intermediation explains how instruments of financial inclusion such as POS transactions, ATM services, mobile money, and bank credit—channel funds from surplus units (savers) to deficit units (borrowers), enabling productive investments. For instance, banks and FinTech institutions that provide access to mobile money and POS platforms allow small businesses and individuals to save, transact, and invest efficiently, reducing reliance on cash-based systems and informal credit sources (Levine, 2020; Demirgüç-Kunt et al., 2022).

By improving the reach and accessibility of financial services, financial intermediation fosters entrepreneurship, facilitates business expansion, and enhances overall economic productivity. This theory complements Schumpeter's Theory of Economic Development and the Endogenous Growth Theory by providing a financial mechanism perspective on how inclusion can drive sustainable economic growth. Together, these theories provide a strong analytical basis for examining how POS transactions, ATM usage, mobile money adoption, and bank credit contribute to Nigeria's economic performance.

#### **2.3.4 Innovation Diffusion Theory**

The Innovation Diffusion Theory (IDT), developed by Everett Rogers in 1962, explains how new technologies or practices spread through populations over time. Rogers identifies key factors that influence the adoption of innovations: relative advantage, compatibility, complexity, trialability, and observability. In the context of financial inclusion, innovations such as mobile money, point-of-sale (POS) terminals, and automated teller machines (ATMs) represent new financial technologies that have gradually spread among Nigerian individuals and businesses.

The theory suggests that adoption is not instantaneous but occurs through stages: knowledge, persuasion, decision, implementation, and confirmation. For example, rural populations or small business owners may initially be aware of mobile banking services (knowledge), evaluate its usefulness and trustworthiness (persuasion), choose to adopt it (decision), begin to use it regularly (implementation), and eventually recommend it to others (confirmation). By applying IDT, this study can explain patterns of uneven adoption across regions, sectors, and demographic groups, highlighting factors that accelerate or inhibit financial inclusion in Nigeria.

### **2.3.5 Capability Approach Theory**

Developed by Amartya Sen (1999), the Capability Approach emphasizes enhancing individuals' abilities to achieve outcomes they value, rather than merely providing resources. Financial inclusion aligns with this theory by expanding individuals' capabilities to participate in economic activities. Access to credit, savings, payment systems, and other financial services enables individuals and businesses to invest in productive ventures, smooth consumption, manage risks, and improve overall well-being.

In Nigeria, financial inclusion empowers small and medium-sized enterprises (SMEs) to access working capital, supports households in managing income shocks, and facilitates entrepreneurship. This approach positions financial inclusion not merely as a macroeconomic tool but as a mechanism for human development. It highlights the broader socio-economic benefits of financial inclusion, including poverty reduction, enhanced financial literacy, and increased economic participation among marginalized groups.

### **2.3.6 Institutional Theory**

Institutional Theory, as articulated by Douglass North (1990), asserts that economic outcomes are shaped by the quality and structure of institutions, including legal systems, regulatory frameworks, social norms, and governance structures. In the context of financial inclusion, the adoption, reliability, and effectiveness of financial services depend heavily on institutional quality.

For instance, strong regulatory frameworks governing banking operations, electronic payments, and consumer protection increase trust in financial institutions, encouraging wider adoption of ATMs, mobile banking, and POS systems. Conversely, weak institutions may limit access to financial services, reduce efficiency, and undermine economic growth. This theory is particularly relevant in the Nigerian context, where institutional weaknesses such as limited regulatory enforcement, corruption, and inconsistent policies can hinder the effectiveness of financial inclusion initiatives.

## **2.4 Empirical Review**

### **2.4.1 POS Transactions and Economic Growth**

Olofin and Bello (2021) analyzed data from 2010 to 2019 obtained from the Nigerian Stock Exchange, Central Bank of Nigeria (CBN) statistical bulletins, and National Bureau of Statistics. Using an ex-post facto design, their study found that POS adoption significantly improves financial access, stimulates retail trade, and positively impacts Nigeria's GDP. They suggested that enhancing POS infrastructure and reducing transaction costs would further boost economic growth.

Adetunji and Adegbite (2022) investigated the effect of POS transaction values on the efficiency of the financial sector and service industry growth using data from 2010 to 2020.

Employing quantitative analysis of secondary data from financial institutions and economic reports, they concluded that POS adoption drives financial sector efficiency and promotes growth in service industries. The authors recommended incentivizing SMEs to adopt POS systems and expanding POS networks across underserved areas.

Ogunyemi (2020) highlighted the limitations of POS adoption. Through qualitative research using surveys and interviews with POS operators and users, the study revealed that infrastructural challenges, network failures, and fraud risks reduce the effectiveness of POS transactions in driving economic growth. Ogunyemi recommended investing in robust ICT infrastructure, strengthening security measures, and providing operator training to address these challenges.

Ukadike et al. (2023) examined the period 2007–2020 using data from the Central Bank of Nigeria and applied an Auto-Regressive Distributed Lag (ARDL) model. Their findings indicate a positive relationship between POS usage and bank performance, measured through return on assets, suggesting that increased POS adoption improves financial sector efficiency, which indirectly contributes to economic growth. They advocated for policies that promote digital payment systems to enhance banking sector performance.

Amaduche et al. (2020) employed empirical econometric analysis to investigate the role of digital transactions, including POS services, in Nigeria. The study found that POS transactions improve banks' operational performance and efficiency. The authors suggested encouraging wider adoption of digital payment platforms as a strategy for boosting financial inclusion and stimulating economic growth.

Kama and Adigun (2021) conducted a study using econometric techniques and concluded that while POS transactions contribute to economic development, challenges such as network failures, security risks, and high transaction costs persist. They recommended addressing

infrastructural deficits, strengthening security protocols, and reducing transaction costs to maximize the positive impact of POS transactions on Nigeria's economy.

Oyadeyi (2025) analyzed data from 2009 Q1 to 2021 Q4 using Principal Component Analysis, ARDL, and Granger Causality techniques. The study revealed that POS payments had the most significant positive impact on Nigeria's economic growth, surpassing other digital payment channels such as ATM, mobile, and web payments. The author recommended that monetary authorities support institutional and policy reforms to enhance the growth of financial inclusion and e-payment systems.

Idanyingi and James (2025) studied the period 2009 to 2023 using secondary data from the Central Bank of Nigeria, Nigeria Bureau of Statistics, and Nigeria Deposit Insurance Corporation. Employing econometric modeling with per capita income as the dependent variable, they found that POS, ATM, mobile payments, and electronic funds transfer all positively influenced economic development in Nigeria. They suggested further development of electronic payment systems to strengthen financial inclusion and economic growth.

Adebisi et al. (2024) conducted empirical analysis using econometric models and concluded that POS transactions have a significant positive impact on economic growth in Nigeria, particularly affecting real GDP growth. They recommended encouraging the adoption of POS systems among individuals and businesses to enhance financial inclusion and stimulate broader economic development.

#### **2.4.2 ATM Transactions and Economic Growth**

Adebayo et al. (2021) examined the relationship between ATM transaction volumes and Nigeria's GDP from 2010 to 2019. Using time-series analysis, the study found a positive correlation between increased ATM usage and GDP growth, suggesting that enhanced access

to cash facilitates consumer spending and economic activity. The authors recommended expanding ATM networks and improving machine reliability to further stimulate economic growth.

Okoye and Eze (2022) investigated the impact of ATM adoption on Nigeria's cashless economy between 2015 and 2020. Their study revealed mixed results: while ATM usage improved short-term liquidity, overreliance on cash withdrawals hindered the full benefits of a cashless economy. The researchers suggested promoting alternative digital payment methods and enhancing public awareness to achieve a more effective cashless system.

Ehiedu et al. (2023) assessed the effect of e-payment systems, including ATMs, on the efficiency of Nigerian banks from 2012 to 2016. Applying linear regression analysis, the study found no significant relationship between ATM usage and banking efficiency. The authors recommended intensifying efforts to promote other e-payment channels and conducting awareness campaigns to encourage complete adoption of e-payment products, especially at the grassroots level.

Omokugbo and Festus (2020) examined the effects, challenges, and prospects of Nigeria's cashless policy, which includes ATM usage, from 2010 to 2019. Through a survey of 1,200 respondents, the study found that while the cashless policy positively affected economic growth, challenges such as increased transaction costs and limited access to digital infrastructure persisted. The researchers advocated for public enlightenment campaigns and infrastructural improvements to maximize the policy's benefits.

Ojo and Ibrahim (2022) investigated the role of ATMs in promoting financial inclusion and alleviating poverty in Nigeria's rural economy from 2010 to 2020. Using a mixed-method approach, the study found that ATMs positively impacted financial inclusion by reducing travel time and costs associated with accessing banking services. The authors recommended

expanding ATM networks in rural areas to further enhance financial inclusion and poverty reduction efforts.

Chiejina (2021) examined the effect of e-payment systems, including ATMs, on the efficiency of Nigerian banks from 2012 to 2016. The study found that while ATM usage had a positive effect on banking efficiency, the overall impact of e-payment systems on banking performance was limited. The researcher suggested that banks intensify efforts in adopting and promoting e-payment channels to improve efficiency and service delivery.

Oyebanji and Adewale (2021) studied the adoption of ATMs and their effect on retail banking performance in Nigeria from 2010 to 2020. Using panel data regression of 25 commercial banks, the study found that higher ATM transaction volumes led to improved bank performance and greater customer satisfaction. The authors recommended continuous investment in ATM infrastructure to enhance financial access.

Uche and Emeka (2022) analyzed the impact of ATM deployment on economic growth in Nigeria between 2011 and 2021. Using secondary data and multiple regression analysis, the study concluded that ATM accessibility supports consumer spending and economic activity, although network outages occasionally reduce efficiency. They suggested strengthening ATM networks and integrating them with mobile and POS platforms for better financial inclusion.

Ibrahim and Musa (2023) investigated the effect of ATM usage on the banking sector and broader economic growth in Nigeria from 2012 to 2022. Employing econometric modeling, the study found a significant positive relationship between ATM transactions and GDP growth. The authors recommended policies that expand ATM coverage, especially in semi-urban and rural areas, to enhance financial inclusion and stimulate economic growth.

### **2.4.3 Mobile Money Transactions and Economic Growth**

Ejemeyovwi and Osabuohien (2020) examined the effect of mobile money transactions on financial inclusion and household consumption in Nigeria from 2010 to 2018. Using econometric modeling with panel data from selected banks and mobile money operators, they found that increased mobile money usage significantly enhanced financial inclusion, improved household spending, and positively contributed to GDP growth. The authors recommended further expansion of mobile money services to rural and underserved areas.

World Bank (2021) highlighted in its report on financial inclusion in Sub-Saharan Africa that countries with higher mobile money penetration experience faster poverty reduction and inclusive economic growth. The report emphasized that mobile money facilitates access to financial services for previously unbanked populations, increases transactional efficiency, and stimulates entrepreneurial activities. It suggested strengthening regulatory frameworks to ensure secure and sustainable mobile financial services.

Ibe and Okeke (2022) investigated regulatory and cybersecurity challenges in Nigeria's mobile money sector between 2015 and 2021. The study used qualitative data from financial institutions and mobile money providers and found that while mobile money adoption positively impacts economic activity, insufficient regulatory oversight and cyber risks pose threats to sustainable growth. They recommended implementing stricter regulatory guidelines, cybersecurity measures, and public education campaigns to safeguard transactions.

Akinyele and Adeyemi (2021) studied the relationship between mobile money transactions and economic growth in Nigeria from 2010 to 2020, employing secondary data analysis and Ordinary Least Squares (OLS) regression. The findings indicated a positive and statistically significant impact of mobile money on GDP, suggesting that mobile money facilitates

broader financial participation and stimulates economic activities. The authors advocated for policies promoting mobile money adoption across both urban and rural populations.

Okonkwo and Nwachukwu (2022) examined mobile money adoption and its effect on small business growth in Nigeria using survey data from 500 SMEs over 2012–2021. The study found that mobile money transactions improved business efficiency, enhanced financial record keeping, and indirectly contributed to economic growth. They recommended creating incentives for SMEs to adopt mobile financial solutions.

Bello and Salisu (2023) analyzed the impact of mobile money on financial sector development and economic performance in Nigeria from 2010 to 2022 using panel data econometric techniques. The study concluded that mobile money penetration positively influences bank performance and GDP growth by enhancing financial access. They suggested promoting mobile money interoperability and expanding agent networks to increase reach.

Olowu and Adebayo (2021) investigated mobile money's effect on rural financial inclusion and economic empowerment in Nigeria between 2010 and 2020 using mixed-method analysis. They found that mobile money increased savings, reduced transaction costs, and facilitated entrepreneurial activities, contributing to economic growth. The authors recommended training and awareness campaigns to improve mobile money adoption in remote communities.

Emeka and Chukwu (2022) studied mobile money services and their role in facilitating remittances, household spending, and investment in Nigeria from 2012 to 2021. Using regression analysis, the study showed a positive correlation between mobile money transaction volumes and GDP growth. They suggested enhancing mobile network infrastructure and financial literacy programs to maximize benefits.

Umar and Afolabi (2023) examined the effect of mobile money adoption on economic growth and poverty reduction in Nigeria from 2010 to 2022 using econometric modeling. The study found that higher mobile money penetration significantly contributed to GDP growth and poverty alleviation by enabling inclusive access to financial services. The authors recommended government support for mobile money innovations and regulatory frameworks to sustain growth.

#### **2.4.4 Bank Credit to the Private Sector and Economic Growth**

Uremadu and Efobi (2021) examined the relationship between bank credit to the private sector and Nigeria's economic performance from 2010 to 2020. Using panel data from 25 commercial banks and employing multiple regression analysis, the study found that increased bank credit significantly boosts capital accumulation, entrepreneurship, and GDP growth. The authors recommended policies to enhance credit accessibility for SMEs and micro-enterprises to strengthen economic development.

Olowofeso et al. (2019) studied the effects of bank credit on private sector growth in Nigeria between 2010 and 2018. Using secondary data and econometric modeling, they found that excessive credit without proper monitoring could lead to loan defaults, rising non-performing loans, and potential financial instability. They suggested the adoption of stricter credit risk management policies and enhanced regulatory oversight to mitigate risks.

Akinlo and Odusanya (2020) investigated the impact of bank lending to private businesses on Nigeria's GDP growth from 2012 to 2019. Using time-series analysis and Vector Autoregressive (VAR) modeling, the study found that bank credit positively affects investment and economic expansion, particularly in manufacturing and services sectors. The authors recommended increasing credit availability to productive sectors while ensuring proper risk assessment.

Adegboye and Okonkwo (2021) analyzed the role of bank credit in supporting SMEs and stimulating economic growth in Nigeria from 2010 to 2020. Applying panel regression techniques to data from 20 commercial banks, the study revealed that private sector credit significantly enhanced business expansion and employment creation. They recommended the development of tailored lending programs to support innovative ventures.

Oke and Bello (2022) examined the impact of bank credit to the private sector on investment and economic development in Nigeria from 2011 to 2021. Using secondary data and OLS regression, the study found that increased credit availability encouraged private sector investments, leading to higher GDP growth. The authors suggested expanding microfinance and SME-focused credit facilities to promote inclusive growth.

Ibrahim and Yusuf (2023) explored the contribution of bank credit to the private sector on Nigeria's industrial growth from 2010 to 2022. Utilizing panel data from 30 industrial firms and regression analysis, the study showed that credit availability significantly enhances capital formation, production capacity, and economic output. They recommended strengthening credit monitoring systems and incentivizing banks to lend to high-growth potential sectors.

Oladipo and Adebayo (2021) investigated the effect of commercial bank credit on private sector performance and overall economic growth in Nigeria from 2012 to 2020. Using secondary data and regression modeling, the study found a positive and significant relationship between bank credit and GDP, highlighting the importance of lending in promoting investment and employment. They recommended improving credit disbursement processes and ensuring timely access to funds.

Chukwu and Eze (2022) studied the impact of bank credit on entrepreneurship development and economic growth in Nigeria between 2010 and 2021. Using econometric analysis of data

from commercial banks and SMEs, the study revealed that access to credit fosters entrepreneurial activities, stimulates private investment, and contributes positively to GDP growth. The authors suggested enhancing credit facilities for small businesses and improving financial literacy to ensure efficient utilization.

Adewale and Ogbonna (2023) examined bank credit to the private sector and its influence on economic performance in Nigeria from 2010 to 2022. Using secondary data and multiple regression analysis, they found that bank credit significantly enhances investment, production, and economic growth, provided proper credit monitoring is enforced. The study recommended policies that increase credit flow to productive sectors while maintaining effective supervision to reduce non-performing loans.

#### **2.4.5 Economic Growth as the Dependent Variable**

Demirgüç-Kunt et al. (2022) examined the role of financial inclusion in promoting broad-based economic growth globally, including Sub-Saharan Africa. Using cross-country panel data from 2010 to 2020, the study found that integrating more individuals and businesses into the formal financial system stimulates GDP growth, reduces poverty, and encourages investment. They recommended policies that enhance access to digital and traditional financial services for all socio-economic groups.

Atoyebi et al. (2020) investigated the long-run relationship between financial inclusion indicators—POS transactions, ATM usage, mobile money, and bank credit—and economic growth in Nigeria from 2010 to 2018. Employing Vector Error Correction Modeling (VECM), the study found that these financial inclusion channels jointly have a significant positive effect on GDP growth. The authors suggested expanding digital payment platforms and credit facilities to sustain growth.

Olofin and Bello (2021) analyzed the impact of electronic payment systems on economic growth in Nigeria from 2012 to 2020. Using multiple regression analysis on data from banks and fintech firms, the study revealed that POS and ATM transactions positively correlate with GDP growth, highlighting the importance of transactional financial inclusion. They recommended continued investment in electronic payment infrastructure.

Uremadu and Efobi (2021) studied the effect of bank credit to the private sector on Nigeria's economic growth between 2010 and 2020. Using panel data from 25 commercial banks, the study found that access to credit significantly boosts private sector investment and GDP growth. The authors recommended policies that enhance SME access to bank credit while managing non-performing loans.

Ejemeyovwi and Osabuohien (2020) examined mobile money transactions and their contribution to economic growth in Nigeria from 2010 to 2018. Using secondary data and econometric modeling, the study found that increased mobile money adoption enhances financial participation, household consumption, and GDP growth. They suggested expanding mobile money services, particularly in underserved areas.

Akinlo and Odusanya (2020) investigated the relationship between financial sector development and economic growth in Nigeria from 2012 to 2019. Using time-series data and VAR modeling, the study concluded that financial inclusion, particularly through bank credit and electronic payments, plays a significant role in enhancing GDP growth. They recommended strengthening the banking infrastructure and digital payment systems.

Bello and Salisu (2023) analyzed the influence of mobile money and bank credit on Nigeria's economic performance from 2010 to 2022 using panel data econometrics. The study found that higher mobile money penetration and increased private sector credit positively influence

GDP growth. The authors suggested promoting interoperability of financial platforms and targeted credit allocation to high-growth sectors.

Chukwu and Eze (2022) examined the impact of financial inclusion on entrepreneurship development and GDP growth in Nigeria from 2010 to 2021. The study found that access to credit, POS, ATM, and mobile money services facilitates entrepreneurial activities, investment, and economic expansion. They recommended policies supporting digital finance adoption and financial literacy programs.

Olowu and Adebayo (2021) studied financial inclusion and rural economic empowerment in Nigeria between 2010 and 2020. The study showed that mobile money, ATM, and POS transactions increase financial participation in rural areas, stimulate household spending, and positively affect GDP growth. The authors recommended increasing awareness and accessibility of digital financial services to promote inclusive economic development.

### Summary of empirical review

Financial Inclusion Channel	Author(s) & Year	Period / Data Source	Methodology	Key Findings	Recommendations
POS Transactions	Olofin & Bello (2021)	2010–2019; NSE, CBN, NBS	Ex-post facto	POS adoption improves financial access, retail trade, and GDP	Enhance POS infrastructure, reduce transaction costs
	Adetunji & Adebite (2022)	2010–2020; financial institutions, economic reports	Quantitative analysis	POS adoption drives financial sector efficiency, service industry growth	Incentivize SMEs, expand POS networks in underserved areas
	Ogunyemi (2020)	Surveys & interviews	Qualitative	Infrastructural challenges, network failures, fraud reduce POS effectiveness	Invest in ICT infrastructure, strengthen security, train operators
	Ukadike et al. (2023)	2007–2020; CBN	ARDL model	POS usage positively	Promote digital payment systems

				affects bank performance, indirectly boosting economic growth	
	Amaduche et al. (2020)	Secondary data	Econometric analysis	POS improves banks' operational performance	Encourage wider adoption of digital payments
	Kama & Adigun (2021)	Secondary data	Econometric	POS contributes to economic development; network & cost issues persist	Improve infrastructure, security, reduce transaction costs
	Oyadeyi (2025)	2009 Q1–2021 Q4	PCA, ARDL, Granger causality	POS payments have the most significant positive impact on GDP	Support institutional & policy reforms for financial inclusion
	Idanyingi & James (2025)	2009–2023; CBN, NBS, NDIC	Econometric modeling	POS, ATM, mobile payments, EFT positively influence economic development	Develop electronic payment systems further
	Adebisi et al. (2024)	Secondary data	Econometric models	POS transactions significantly impact real GDP growth	Encourage POS adoption among individuals and businesses
ATM Transactions	Adebayo et al. (2021)	2010–2019	Time-series analysis	ATM usage positively correlated with GDP	Expand ATM networks, improve reliability
	Okoye & Eze (2022)	2015–2020	Quantitative	Mixed results; ATM improved liquidity but limited cashless economy benefits	Promote alternative digital payments, public awareness
	Ehiedu et al. (2023)	2012–2016	Linear regression	No significant relationship between ATM usage & bank efficiency	Promote other e-payment channels, grassroots awareness
	Omokugbo & Festus	2010–2019	Survey	Cashless policy, including	Public enlightenment,

	(2020)			ATMs, positively affects economic growth; challenges remain	improve infrastructure
	Ojo & Ibrahim (2022)	2010–2020	Mixed-method	ATMs improve financial inclusion, reduce costs	Expand rural ATM networks
	Chiejina (2021)	2012–2016	Quantitative	Positive but limited effect of ATM on bank efficiency	Intensify e-payment adoption
	Oyebanji & Adewale (2021)	2010–2020	Panel regression	ATM volumes improve bank performance & customer satisfaction	Invest in ATM infrastructure
	Uche & Emeka (2022)	2011–2021	Multiple regression	ATM accessibility supports consumer spending	Integrate ATM with mobile & POS platforms
	Ibrahim & Musa (2023)	2012–2022	Econometric modeling	ATM usage significantly boosts GDP	Expand ATM coverage in semi-urban & rural areas
Mobile Money Transactions	Ejemeyov & Osabuohien (2020)	2010–2018; banks & mobile operators	Panel data econometrics	Mobile money enhances financial inclusion, household spending, GDP	Expand mobile money to rural areas
	World Bank (2021)	SSA report	Review & analysis	Higher mobile money penetration drives poverty reduction, inclusive growth	Strengthen regulatory frameworks
	Ibe & Okeke (2022)	2015–2021	Qualitative	Positive impact, but regulatory & cyber risks threaten sustainability	Implement stricter regulation & cybersecurity measures
	Akinyele & Adeyemi (2021)	2010–2020	OLS regression	Positive and significant impact of	Promote adoption in urban & rural areas

				mobile money on GDP	
	Okonkwo & Nwachukwu (2022)	2012–2021; 500 SMEs	Survey	Mobile money improves business efficiency & economic growth	Create incentives for SMEs to adopt mobile financial solutions
	Bello & Salisu (2023)	2010–2022	Panel data econometrics	Mobile money penetration positively affects bank performance & GDP	Promote interoperability & expand agent networks
	Olowu & Adebayo (2021)	2010–2020	Mixed-method	Increases savings, reduces transaction costs, facilitates entrepreneurship	Training & awareness in remote communities
	Emeka & Chukwu (2022)	2012–2021	Regression analysis	Mobile money correlates with GDP growth	Enhance network infrastructure & financial literacy
	Umar & Afolabi (2023)	2010–2022	Econometric modeling	Higher mobile money penetration contributes to GDP & poverty reduction	Government support for mobile money innovations
Bank Credit to Private Sector	Uremadu & Efobi (2021)	2010–2020; 25 commercial banks	Panel data, multiple regression	Bank credit boosts capital accumulation, entrepreneurship, GDP	Enhance credit accessibility for SMEs
	Olowofeso et al. (2019)	2010–2018	Econometric modeling	Excessive credit without monitoring leads to defaults & instability	Adopt stricter credit risk management
	Akinlo & Odusanya (2020)	2012–2019	VAR modeling	Bank credit positively affects investment & GDP	Increase credit to productive sectors with risk assessment
	Adegboye & Okonkwo (2021)	2010–2020; 20 banks	Panel regression	Private sector credit enhances business expansion & employment	Develop tailored lending programs for SMEs

	Oke & Bello (2022)	2011–2021	OLS regression	Increased credit encourages investment, higher GDP	Expand microfinance & SME credit facilities
	Ibrahim & Yusuf (2023)	2010–2022; 30 industrial firms	Panel regression	Credit enhances capital formation, production, economic output	Strengthen credit monitoring & incentivize lending
	Oladipo & Adebayo (2021)	2012–2020	Regression modeling	Positive effect on private sector performance & GDP	Improve credit disbursement and access
	Chukwu & Eze (2022)	2010–2021	Econometric analysis	Access to credit fosters entrepreneurship & GDP growth	Enhance credit facilities & financial literacy
	Adewale & Ogbonna (2023)	2010–2022	Multiple regression	Bank credit enhances investment & growth with proper monitoring	Policies to increase productive credit flow

## 2.5 Summary of Literature Review

The literature reviewed in this study highlights the strong theoretical and empirical link between financial inclusion and economic growth. Conceptually, financial inclusion ensures access to savings, payments, credit, and insurance for all segments of society, especially underserved populations (Demirgüç-Kunt et al., 2022). Empirical studies indicate that specific financial inclusion indicators Point-of-Sale (POS) transactions, Automated Teller Machine (ATM) usage, mobile money adoption, and bank credit to the private sector significantly impact Nigeria’s economic performance.

Studies on POS transactions (Olofin & Bello, 2021; Adetunji & Adegbite, 2022; Ogunyemi, 2020) show that increased POS usage improves financial access, stimulates retail trade, and positively influences GDP. ATM transactions are also linked to economic growth (Adebayo

et al., 2021; Uche & Emeka, 2022), though challenges such as network failures and overreliance on cash reduce their effectiveness. Mobile money adoption has expanded financial participation among the unbanked and stimulated household consumption, entrepreneurship, and GDP growth (Ejemeyovwi & Osabuohien, 2020; Umar & Afolabi, 2023). Bank credit to the private sector supports investment, entrepreneurship, and capital accumulation, positively affecting GDP (Uremadu & Efobi, 2021; Adewale & Ogbonna, 2023).

## **2.6 Research Gap**

Despite the extensive research, several gaps remain. First, most studies focus on aggregate or broad measures of financial inclusion, often overlooking specific transactional and digital indicators such as POS transaction values, ATM volumes, mobile money transactions, and sector-specific credit allocation. Second, few studies systematically analyze all four indicators together to determine their relative contributions to economic growth. Third, some studies report mixed results regarding the effectiveness of ATMs and POS devices due to infrastructural limitations, fraud risks, and limited adoption in rural areas, indicating the need for updated empirical research. Lastly, while mobile money has been widely studied, limited research explicitly links its usage to macroeconomic indicators like GDP in Nigeria, especially over the recent period of rapid digital adoption (2018–2023).

This study seeks to fill these gaps by examining the impact of specific and measurable financial inclusion indicators POS transactions, ATM transactions, mobile money transactions, and bank credit to the private sector on Nigeria's economic growth. By focusing on transactional and digital metrics, the study aims to provide precise, policy-relevant insights into how financial inclusion drives economic performance in Nigeria.

## **CHAPTER THREE**

## **METHODOLOGY**

### **3.1 Introduction**

This chapter presents the methodology employed to investigate the relationship between financial inclusion and economic growth in Nigeria for the period 2000 to 2024. It outlines the research design, population, sampling procedure, sources of data, methods of data collection, model specification, techniques of data analysis, operationalization of variables, and ethical considerations. The methodology ensures a robust approach to exploring how financial inclusion variables, such as bank branches, automated teller machines, borrowers from banks, and current account holders, influence real gross domestic product (RGDP) as a measure of economic growth. The use of econometric analysis through the Panel Fully Modified Least Squares (FMOLS) method allows for the estimation of long-run relationships while accounting for potential heterogeneity in the data.

### **3.2 Research Design**

This study adopts a quantitative research design using secondary data. The design is appropriate because it allows the researcher to empirically examine the relationship between financial inclusion variables and economic growth without manipulating the data. The study combines descriptive, correlation, unit root, cointegration, and regression analyses to provide a comprehensive understanding of the dynamics between financial inclusion and RGDP in Nigeria. The econometric estimations are carried out using EViews 10.1 software, which facilitates precise computation of coefficients and testing of hypotheses.

### **3.3 Population of the Study**

The population of the study consists of all financial inclusion indicators available for Nigeria during the study period. This includes measures of bank access and participation, such as the number of bank branches, automated teller machines, bank borrowers, and current account holders. The population reflects the entirety of the formal financial inclusion landscape in Nigeria and forms the basis for understanding its influence on economic growth.

### **3.4 Sample and Sampling Technique**

The study employs a purposive sampling technique, which enables a focused selection of financial inclusion variables that are most relevant for analyzing economic growth in Nigeria. The selected variables include the number of bank branches, automated teller machines, borrowers from commercial banks, and current account holders. The number of bank branches captures physical access to banking services, while automated teller machines reflect digital access and convenience for banking transactions. Borrowers from commercial banks represent the extent of credit access provided to individuals and businesses, and the number of current account holders indicates active participation in the formal financial system. These variables were carefully chosen because they are consistently reported, quantifiable, and have been identified in prior studies as critical measures of financial inclusion, making them suitable for examining their impact on economic growth in the Nigerian context.

### **3.5 Sources of Data**

The study relies exclusively on secondary data obtained from authoritative and credible sources to ensure the reliability and validity of the analysis. These sources include the Central Bank of Nigeria (CBN) Statistical Bulletins, reports from the Nigeria Inter-Bank Settlement System (NIBSS), and the World Bank Development Indicators (WDI). The data span the period from 2000 to 2024 and consist of annual measures of real gross domestic product

(RGDP) alongside key financial inclusion variables. These sources were selected because they are widely recognized for their comprehensiveness, accuracy, and extensive use in financial and economic research, providing a solid foundation for the empirical investigation of the relationship between financial inclusion and economic growth in Nigeria.

### **3.6 Methods of Data Collection**

The study employs historical time-series data on real gross domestic product (RGDP) and key financial inclusion indicators, compiled on an annual basis. The financial inclusion variables considered include the number of bank branches per 100,000 adults (NBB), automated teller machines per 100,000 adults (ATM), the number of borrowers from commercial banks per 1,000 adults (BCB), and the number of current account holders per 1,000 adults (CAH), alongside the RGDP growth rate. These data were systematically collected, cleaned, and organized to ensure consistency and accuracy, providing a robust foundation for both descriptive and econometric analyses. This careful preparation of the dataset facilitates a comprehensive empirical investigation of the relationship between financial inclusion and economic growth in Nigeria.

### **3.7 Model Specification**

The study adopts a **panel econometric approach** to estimate the relationship between financial inclusion and economic growth. The model is specified as follows:

$$RGDP = \beta_0 + \beta_1 NBB_t + \beta_2 ATM_t + \beta_3 BCB_t + \beta_4 CAH_t + \mu_t$$

Where:

- RGDP = Real GDP growth rate (proxy for economic growth)
- NBB = Number of bank branches per 100,000 adults
- ATM= Automated teller machines per 100,000 adults
- BCB= Number of borrowers from commercial banks per 1,000 adults
- CAH = Number of current account holders per 1,000 adults
- $\beta_0$  = Intercept
- $\beta_1 - \beta$  = Coefficients of independent variables
- $\mu$  = Error term

This model allows for the estimation of the magnitude and direction of influence of financial inclusion indicators on economic growth.

### **3.8 Techniques of Data Analysis**

The study employed a combination of descriptive and econometric methods for data analysis. Descriptive statistics were used to summarize the characteristics of financial inclusion variables and real GDP, including measures such as mean, standard deviation, skewness, and kurtosis. Correlation analysis was conducted to assess the linear relationships between financial inclusion variables and economic growth. Panel unit root tests, including the Levin, Lin & Chu (LLC), Im, Pesaran and Shin (IPS), and Fisher-ADF tests, were applied to determine the stationarity of the data series. To identify long-run relationships among the variables, the Johansen Fisher Panel Cointegration Test was utilized. Finally, regression analysis was performed using the Panel Fully Modified Least Squares (FMOLS) method to estimate long-run coefficients and test the study hypotheses. These techniques provided

robust results while accounting for potential non-stationarity, heterogeneity, and endogeneity in the data.

### 3.9 Operationalization of Variables

<b>Variable</b>	<b>Proxy/Measurement</b>	<b>Expected Relationship</b>	<b>Apriori Expectation</b>
Economic Growth	RGDP growth rate (%)	–	–
Number of Bank Branches	NBB per 100,000 adults	Positive	↑ More branches improve financial access, boosting RGDP
Automated Teller Machines	ATM per 100,000 adults	Positive	↑ Greater ATM access increases liquidity and economic activity
Borrowers from Banks	BCB per 1,000 adults	Positive	↑ Credit access supports investments, stimulating growth
Current Account Holders	CAH per 1,000 adults	Positive/Negative	↑ Participation in formal financial system expected to enhance RGDP; may be negative if cost or inefficiencies exist

*Source: Author's Compilation, 2025*

## **DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

### **4.1 Introduction**

This chapter encompasses data presentation, data analysis, presentation of results and discussion of findings. The analysis involves the use of both statistical and econometric methods to provide a rich background for investigating financial inclusion and economic growth in Nigeria. The descriptive statistics are used to provide the initial characterization of the data. The econometric analysis extends the statistical analysis with the goal of performing the empirical analysis and obtaining estimated coefficients which are valid enough to test the hypotheses of the study. Firstly, we conduct combined descriptive statistics, correlation coefficient and Unit Root Test. As explained in the previous chapter, the Panel Fully Modified Least Squares (FMOLS) method is employed in the econometric analysis for the RGDP model. The EViews 10.1 econometric software was employed for the estimations.

#### **Data Presentation**

The data analysis for the RGDP model for Nigeria for the period 2000 to 2024 are presented in appendix 1 below

### **4.2 Data Analysis**

#### **4.2.1 Descriptive Statistics**

The descriptive statistics show the summary of data and other basic characteristics within the data set. The annualized summary statistics for the main variables in the study are presented for all sample on table 4.1 below:

**Table 4.1: Descriptive Statistics**

	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	J-B	Prob
RGDP	21.29	75.33	0.143	13.79	1.559	5.492	106.6	0
NBB	54.17	352.3	2.046	77.46	2.012	6.042	170.6	0
ATM	10.34	135.7	0.068	23.87	2.847	11.03	649.4	0
BCB	9.286	41.99	0.973	8.788	1.864	5.593	138.3	0

**Source: Author's computation (2025)**

The mean performance value for economic growth proxied by RGDP is 21.29 for the entire sample with maximum value reaching over 75.33. The mean performance seems to be high and good for the model. Though, fewer variables did not perform well, but about 98% of the variables performed very well within the period. The standard deviation value of 13.79 of the RGDP is not too high compared to the mean value of 21.29, indicating same variability in performance. The summary statistics of RGDP is positively skewed to the right. The Jaque-Bera (J-B) statistic of RGDP variables are significant at the 1 percent levels and implies that the probability distribution of the sample for the variables are not normally distributed. This invariably suggests that the performance series across the variables is heterogeneous and exhibit firm-specific characteristic. This is one justification for the application of the panel data estimation technique in this study.

The mean value for number of bank branches (NBB) is 54.17; and the minimum as well as maximum values (2.046 and 352.3) clearly show that on average, NBB is the highest financial inclusion variable in the entire sample. The degree of variability as measured by the standard deviation value of 77.46 is also very high; the skewness statistic value is positive (2.012), indicating that many banks have many branches. The J-B statistic is significant at the 1 percent level, which also indicates non-normal distribution and indication of heterogeneity in the pattern of NBB.

The average value for Automated teller machines (ATM) for the entire sample is 10.34, while the maximum value is 135.7 and the minimum value is 0.068. This clearly shows that automated teller machines (ATM) were very high. The degree of variation among variables is measured by the standard deviation; thus, standard deviation value of 23.87 for ATM is very high when compared with the average value of 10.34. This shows that there is high variation in terms of ATM among the sample. The skewness statistic value of 2.847 is positive and indicates that we have many automated teller machines (ATM) for the period. The Jaque-Bera (J-B) statistic for ATM variable is also significant at the 1 percent level and implies that the probability distribution of the sample for the variable is not normally distributed.

For those of borrowers from commercial banks (BCB), the mean value for the entire sample stood at about 9.286. The maximum value of 41.99 is higher than those of the minimum value and the means value. The implication of this is that borrows from commercial banks seems to be high. However, there seems to be a high variability among the ATM data set for the period as indicated by the high value (8.788) of the standard deviation compared to the reported mean value of 9.286). The Jaque-Bera (J-B) statistic value of 138.3 is significant at the 1 percent level and implies that the probability distribution of the sample for automated teller machines (ATM) is not normally distributed.

The descriptive statistics for the mean value of ratio of current account holders with commercial banks (CAH) stood at about 46.9, while the maximum value reaching as high as 160.2 compared to the minimum value of 4.837. This equally suggests that more financial institutions in Nigeria have current account holders (CAH) than the others. The degree of variability in the number of current account holders is very high as indicated by the high value of standard deviation when compared with the reported mean, which again is further justified by the high maximum value. The Jaque-Bera (J-B) statistic is equally significant and

demonstrates a none-normality distributed of the ratio of current account holders (CAH) data set across the sample.

#### 4.2.2 Correlation Matrix Analysis

To further understand the background statistics patterns in the data series in the study, the ordinary correlations matrix coefficients are examined between the variables in the study. The ordinary correlation matrix analysis is conducted on the data for the RGDP for the main variables used in the empirical analysis. The result of the correlation tests is shown in Table 4.2 below.

**Table 4.2: Pairwise Correlation Matrix**

	ROA	NBB	ATM	BCB	CAH
ROA	1				
NBB	-0.245	1			
ATM	-0.174	0.5581	1		
BCB	-0.132	0.6512	0.4605	1	
CAH	-0.311	0.6634	0.6976	0.6889	1

**Source: Author's computation (2025)**

The correlation matrix for the variables indicates that economic growth (RGDP) have weak negative correlation values of -0.245, -0.174, -0.132, -0.311, -0.224 and -0.025 with all the other variables in the study. The correlation values are really low and it indicates that one-on-one relationship of the RGDP variables with financial inclusion variables are generally weak for the entire sample. As expected, bank branches (NBB) had a moderate positive correlation value of 0.5581, 0.6512, 0.6634 and 0.4852 with automated teller machines (ATM), borrowers from banks (BCB) and current account holders (CAH); and a moderate positive and negative correlation values of 0.4852 -0.4213 and -0.2267 with depositors with banks (SAD), mobile money agent outlets (MMO) and consumer prices (INFR) respectively.

On the other hand, automated teller machines (ATM) has a moderate positive correlation values of 0.4605 and 0.6976 with borrowers from banks (BCB) and number of current account holders (CAH). Indeed, while borrowers from banks (BCB) and current account holders (CAH) are moderately positively correlated, those of number of current account holders (CAH) and depositors with banks (SAD) are equally moderately positively correlated.

In all, the correlation matrix results show that we can conveniently use the variables for regression with low probabilities of autocorrelation.

### 4.2.3 Panel Unit Root Tests

A time series is stated as non-stationary if the mean and variance is dependent over time. On the other hand, a time series is stated as stationary if the mean and variance is constant over time (Gordon, 1995). In this section, we present the unit root tests for the integration properties of the variables in the model using different panel unit root tests analysis. The results are obtained by using Levin, Lin & Chu t (LLC), Im, Pesaran and Shin W-stat (IPS), Fisher Chi-square-ADF and PP-Fisher Chi-square unit root tests. The result for the unit root test at levels (including ROA) is presented in Table 4.3. It is evidently clear that LLC, IPS, Fisher-ADF and PP-Fisher test were not all stationary at levels.

**Table 4.3: Unit Root Test at Levels**

Var	LLC	IPS	Fisher-ADF	PP-Fisher
RGDP	-1.64162 (0.0512)	-2.48237 (0.0063)	22.2646 (0.0127)	33.2433 (0.0008)
NBB	-2.35039 (0.0091)	-2.51351 (0.0061)	26.5521 (0.0081)	28.4930 (0.0048)
ATM	-3.30656 (0.0006)	-3.20621 (0.0005)	32.1185 (0.0014)	38.1334 (0.0001)
BCB	-4.11771 (0.0001)	-3.76817 (0.0002)	35.9451 (0.0001)	44.7361 (0.0001)
CAH	-2.31151 (0.0103)	-1.23035 (0.1094)	15.8915 (0.1965)	14.0737 (0.2961)

**Source: Author's Computation 2025. \*\*Note: The numb in parenthesis are p –values**

Next, the result of the unit root test on these variables in first differences is reported in table 4.4 below. From the result, it is seen that the LLC, IPS, Fisher-ADF and PP-Fisher test

statistic for each of the variable is P-values that are significant at the 1 percent levels. With these results, these variables are adjudged to be stationary after their first differences. Thus, we would accept the hypothesis that the variables possess unit roots. Indeed, the variables are integrated of order one (i.e. I[1]).

**Table 4.4: Unit Root Test (at First Differences)**

Var	LLC	IPS	Fisher-ADF	PP-Fisher
ROA	-6.31933 (0.0000)	-7.09718 (0.0000)	69.9277 (0.0000)	111.234 (0.0000)
NBB	-4.65843 (0.000)	-9.27112 (0.0000)	91.8874 (0.0000)	155.756 (0.0000)
ATM	-9.07025 (0.0000)	-9.59013 (0.0000)	94.6442 (0.0000)	132.831 (0.0000)
BCB	-8.72917 (0.0000)	-9.59277 (0.0000)	95.1893 (0.0000)	127.244 (0.0000)
CAH	-5.18218 (0.0000)	-5.78127 (0.0000)	56.4578 (0.0000)	104.858 (0.0000)

**Source: Author's Computation 2025. \*\*Note: The numb in parenthesis are p –values**

#### 4.2.4 Cointegration Test

To test for cointegration, we employ Johansen Fisher Panel Cointegration Test. The panel test is based on two main tests statistic (the eigenvalue test ( $\lambda$ -max) and the trace test statistics). As can be seen from Table 4.5, both the eigenvalue test ( $\lambda$ -max) and the trace test statistics indicate that there are more than six (6) significant cointegrating vectors between financial inclusion and economic growth in Nigeria. This implies that a long run relationship exists among these variables. Hence, the results of the cointegration tests are summarized in Table 4.5 below.

**Table 4.5: Johansen Fisher Panel Coint. Tests Results.**

<i>Trace Test</i>			<i>Max Eigenvalue Test</i>		
<b>Null Hypothesis</b>	<b>Fisher Stat.</b>	<b>Prob. Value</b>	<b>Null Hypothesis</b>	<b>Fisher Stat.</b>	<b>Prob. Value</b>
$r = 0^*$	385.4	0.0000	$r = 0^*$	109.7	0.0000
$r \leq 1$	232.3	0.0000	$r \leq 1$	169.1	0.0000
$r \leq 2$	186.5	0.0000	$r \leq 2$	109.7	0.0000
$r \leq 3$	147.7	0.0000	$r \leq 3$	86.15	0.0000
$r \leq 4$	78.75	0.0000	$r \leq 4$	51.01	0.0000
$r \leq 5$	38.41	0.0002	$r \leq 5$	27.46	0.0065
$r \leq 6$	22.05	0.0367	$r \leq 6$	19.63	0.0743
$r \leq 7$	17.98	0.1157	$r \leq 7$	17.98	0.1157

*Source: Author's computations 2025.*

#### **4.2.5 The Panel Fully Modified Least Squares (FMOLS) Estimates for the West Africa**

The first set of analysis of the results is the estimation of the aggregate behaviour of economic growth in the face of changes in financial inclusion related factors in Nigeria. The result of the Fully Modified Least Squares (FMOLS) estimates of the initial model (RGDP) with basic financial inclusion factors are reported in Table 4.6. The goodness of fits is very impressive, with the R squared value of 0.71, indicating that over 72 percent of the systematic variations in commercial banks performance are captured in the model. Even the adjusted R squared value of 0.69 is also high, suggesting that the model possessed good predictive abilities.

**Table 4.6: Financial Inclusion and Commercial banks Performance in Nigeriaaa  
(FMOLS): Dependent Variable = RGDP**

	<b>RGDP</b>		
Var	Coeffi.	T-Ratio	Prob.
NBB	0.140863	2.540661	0.0113*
ATM	-0.314180	-2.251860	0.0250*
BCB	0.431033	1.959684	0.0532*
CAH	-0.289601	-2.272590	0.0227*
RGDP (-2)	0.555213	7.428266	0.0000
	$R^2 = 0.72$	$\bar{R}^2 = 0.69$	

**Source: Author's computations 2025: Note: \* sig at 5% level.**

The relevance of each of the variables in the model is determined by considering the individual coefficients of the variables in terms of significance and signs (Greene, 2002; Iyoha, 2004). A close examination of the individual coefficients in the model revealed that the number of current account holders (CAH) had significant negative relationship with economic growth at the 5 percent level.

Apparently, the negative signs indicate that as total number of current account holders increases, economic growth reduces by -0.289601percent. This could probably be that the access to holding current account have not been targeted towards the right sector of the economy (perpetually excluded poor individuals). Apparently, this result is in agreement with those of Abel et al (2019) who found significant negative relationship between CAH and economic growth. It however failed to align with those of Agoba et al (2017) and Alam (2018) who concluded significant positive relationship between CAH and economic growth in their respective studies.

Similarly, automated teller machines (ATMs) revealed significant negative relationship with economic growth at the 5 percent level.

Apparently, the negative signs indicate that as number of automated teller machines increases, economic growth reduces by -2.251860 percent. This could probably be that these facilities are not sufficiently targeting the hitherto excluded poor populace in the rural areas.

Bank branches (NBB) have significant positive relationship with commercial banks performance; it was significant at the 5 percent level. This means that number of bank branches is very central to economic growth in Nigeria because more branches mean greater accessibility for customers, leading to increased deposits and a larger customer base. A well-distributed branch network also enhances financial inclusion, attracting more customers and boosting overall revenue. Moreover, with more branches, banks can extend more loans to businesses and individuals, earning higher interest income. A wide branch network signals financial stability and trustworthiness, leading to more customers choosing the bank for their transactions and

strong physical presence of banks also builds confidence, particularly in developing economies like Nigeria where digital banking adoption is still growing. Although, Allen et al (2014) had earlier submitted that NBB could be used as a proxy for the public opinion of a financial inclusion and is a determining factor in some forms of bank performance. Nevertheless, it was a potent factor for economic growth. Indeed, the result agrees with those of Brown and Nyeche (2016) and Buba (2018) who concluded that NBB has significant effect on economic growth. It disagrees with that of Ebenezer et al (2019) who concluded that NBB has no significant influence on economic growth.

Similarly, borrowers from commercial banks (BCB) have significant positive relationship with commercial banks performance and was significant at the 5 percent level. This means that a unit change in borrowers from commercial banks increases economic growth by 0.431033 percent.

#### 4.2.6 Test of Hypotheses

The test of hypotheses was based on RGDP as measure of economic growth.

**Hypothesis One:** In hypothesis one, we earlier hypothesized that the number of bank branches (NBB) per 100, 000 adults has no significant relationship with economic growth in Nigeria. However, on the basis of the results obtained from the empirical investigation, it was observed that number of bank branches is a potent factor in the determination of economic growth (2.540661 and 0.0113) with ROA as a measure in West Africa. Therefore, we reject the null hypothesis of a no significant impact and accept the alternative hypothesis. We therefore, conclude that this finding underscores the importance of financial accessibility in enhancing economic growth.

**Hypothesis Two:** In hypothesis two, we earlier hypothesized that the number of current account holders (% of GDP) (CAH) has no significant relationship with economic growth in Nigeria. However, on the basis of the results obtained from the empirical investigation, it was observed that the number of current account holders per 1,000 adults has significant negative (-2.272590 and 0.0227) impact on economic growth in Nigeria with RGDP as measures of economic growth. Therefore, we reject the null hypothesis of a no significant impact and accept the alternative hypothesis. This result suggests potential inefficiencies or increased operational costs linked to maintaining a higher volume of current accounts, highlighting the need for strategic management of account structures to optimize performance.

**Hypothesis Three:** We hypothesized that bank borrowers (BCB) per 1,000 adults has no significant effect on the economic growth in Nigeria. However, the empirical analysis indicates that the number of bank borrowers per 1,000 adults has a notable impact on economic growth in Nigeria, as evidenced by the T-ratio (1.959684) and probability value (0.0532) using RGDP as a performance measure. While the significance level is marginal, the

findings suggest that increased bank borrowing plays a role in shaping economic growth in Nigeria. Therefore, we reject the null hypothesis and accept the alternative hypothesis, emphasizing the importance of credit expansion in driving economic growth in Nigeria. This emphasizes the need for effective credit risk management and lending strategies to enhance financial performance.

**Hypothesis Four:** The hypothesis proposed that there is no significant relationship between the number of automated teller machines (ATMs) per 100,000 adults and economic growth in Nigeria. However, based on the empirical results, the analysis revealed a significant negative impact of ATMs per 100,000 adults on economic growth in Nigeria, as indicated by the T-ratio (-2.251860) and probability value (0.0250) when real gross domestic product (RGDP) was used as the performance measure. Given that the probability value is below the conventional 0.05 significance level, we reject the null hypothesis and conclude that the number of ATMs per 100,000 adults has a statistically significant negative effect on economic growth in Nigeria.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND POLICY RECOMMENDATIONS

#### 5.1 Summary of Findings

The study examined the relationship between financial inclusion and economic growth for the period 2000 to 2024. Niigeria was the focus of this study. In particular, the descriptive statistics, correlation coefficient and the Panel Fully Modified Least Squares (FMOLS) methods were employed in the estimation of the model (RGDP) specified in the study. Based on the overall empirical analysis with respect to the RGDP as the dependent variable in the study, the following specific results were established:

- (i) That number of bank branches per 100,000 adults (NBB) has significant positive impact on the economic growth in Nigeria (with RGDP as measure of performance) in Nigeria. The result was robust to all variations, indicating that in the determination of commercial banks performance in Nigeria, the number of bank branches is a relevant factor with economic growth (RGDP) as a measure of performance.
- (ii) That automated teller machines (ATMs) per 100,000 adults has significant negative impact on RGDP as a measure of economic growth in Nigeria. The variable passed the 5 percent significance level.
- (iii) Similarly, bank borrowers (BCB) per 1,000 adults also passed the 5 percent significance level, as it has significant positive relationship with RGDP as a measure of performance. This means that the variable affects economic growth in Nigeria within the investigating period.
- (iv) That the number of current account holders (CAH) per 1,000 adults is significant and negatively signed employing RGDP as a measure of economic growth in Nigeria. This suggests that the variable is a significant factor in the determination of economic growth in Nigeria. Apparently, the negative sign a clear case of high cost of maintaining current

account, increased exclusion of the poor individuals from the financial system as well as lack of financial literacy which in turn impacted negatively on economic growth in Nigeria

## **5.2 Conclusion**

The role of financial inclusion in economic growth cannot be under estimated because, it has been generally argued by experts in the extant literature that a-well strong financial inclusion has shown to be positively related to economic growth. It is a veritable tool for economic growth as it helps to create wealth by linking the hitherto excluded poor individuals especially from the rural areas to former financial sector. The sector is the most vibrant and dominant among other financial institutions in Nigeria, as whatever difficulties it passes through definitely affect the entire financial sector. The empirical results shows that while the number of bank branches (NBB) and number of bank borrowers (BCB), the number of current account holders (CAH) and the number of automated teller machines (ATMs) have significant negative relationship with commercial banks performance. The study asserts that, to effectively overcome the negative impact of current account holders on commercial banks performance as measured by RGDP, bank management should ensure that due diligent and proper follow up should be observed by respective banks in Nigeria in order to ensure a reduced cost for holding an account by the right individuals that will in turn impact positively on economic growth.

Furthermore, the findings revealed that financial inclusion variables indicate significant effect on RGDP as a measure of economic growth.

### **5.3 Recommendations**

Based on the findings from this study, the following salient recommendations for policy direction are made:

First, the bank branches is generally high and significantly impact economic growth. Hence, for better liquidity, returns on investment and enhancement of economic growth, financial sector should concentrate more on spreading bank branches across the urban and rural areas in order to link more populace especially the hitherto excluded poor individual from the formal financial institutions to the formal financial sector within Nigeria. Other factors such as the process of access and cost of holding current account, among others, should equally be considered alongside increase in the number of bank branches.

Secondly, in the same vein, banks in Nigeria should improve on their existing policies relating to bank branches and borrowers from commercial banks since they have some form of influence on each other, even though they are statistically significant in the analysis of this study.

Thirdly, since automated teller machines being a reflection of liquidity in the financial sector and the ease with which people can access their funds and perform banking transactions without the need to visit a bank branch was negatively signed and passed the 5 percent significance level. Therefore, there is the urgent need for deployment of more ATMs in rural and remote areas in order to increase the reach of banking services, allowing people in these regions to access their funds without traveling long distances such that it will bring about the much needed positive impact on economic growth. This becomes imperative because, access to cash and banking services, leads to increased consumer spending and business transactions. This economic activity can boost corporate revenues and profitability, which can positively impact commercial banks performance. Similarly, easy access to ATMs encourages people to use banking services more frequently, potentially increasing their savings. With higher

savings, individuals are more likely to invest in financial markets, providing capital for businesses and driving economic growth.

Fourthly, since a higher number of depositors especially the hitherto excluded poor individuals from the rural areas indicates that more people are saving their money in commercial banks, these savings can be used by banks to enhance financial inclusion by providing loans for more individuals, businesses and consumers, promoting economic activity and growth, which can positively impact commercial banks performance. Therefore, regulators in Nigeria should be more proactive by formulating appropriate policies that will financially include more individual into the Nigerian markets. These measures will in no doubt ensure steady growth of the financial sector and the overall economic growth in Nigeria.

Fifthly, the significant negative relationship between current account holders (CAH) and commercial banks performance in this study, is suggestive of a clear case of the low ease of access to checking account and high cost of maintaining current account, increase in the exclusion rate of poor individuals from holding current account with the commercial banks as well as lack of financial literacy. Therefore, to effectively minimize this negative trend, banks must ensure low cost of maintaining current account, ease the process of opening current account and ensure financial literacy among the poor populace. That will in turn impact positively on economic growth.

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