

**FINANCIAL INCLUSION AND ECONOMIC GROWTH IN
NIGERIA**

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**A PROJECT WRITTEN AND SUBMITTED TO THE DEPARTMENT
OF FINANCE, FACULTY OF MANAGEMENT SCIENCES IN
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DECLARATION

I, **Oluwatobiloba John OJO**, do hereby declare that this project is entirely my work and composition. The work embodied in this project has not been submitted in candidature for any degree and is not concurrently being submitted for any other degree. All references made to works of other persons have been duly acknowledged.

Oluwatobiloba John OJO

Date

CERTIFICATION

We certify that this research work was carried out by **Oluwatobiloba John OJO** and it is adequate in scope and quality and is hereby approved for in partial fulfilment of the requirement for the award of Bachelor of Science (B.Sc) Degree in Finance, University of Benin, Benin City.

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DEDICATION:

This work is dedicated to:

God Almighty my Creator and my Master, and my personal Savior and to my parents who have never failed to give me financial and moral support, for giving up all they have and for teaching me that even the largest task can be accomplished if it is done one step at a time.

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ABSTRACT

The study examined the effect of financial inclusion on economic growth in Nigeria spanning periods from 1994 to 2023 based on the accessibility of data. Four hypotheses were raised and evaluated using the fully modified ordinary least squares estimator. Based on the analysis conducted, the following findings were made that: the number of bank branches per 100,000 adults has a statistically significant but negative impact on economic growth in Nigeria; the number of deposit accounts with commercial banks per 1,000 adults does not significantly impact economic growth in Nigeria; the proportion of outstanding loans from commercial banks as a percentage of GDP does not have a significant effect on economic growth in Nigeria; and the total volume of mobile money transactions as a percentage of GDP has a statistically significant and positive impact on economic growth in Nigeria. Thus, it was recommended that: policymakers and financial institutions should prioritize investments in mobile and digital banking infrastructure over expanding physical bank branches; financial institutions should implement strategies to encourage the active use of deposit accounts; financial institutions should focus on enhancing access to productive credit for individuals and small businesses; and policymakers and financial institutions should further develop mobile money ecosystems.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Economic growth in Nigeria has been a central topic in policy debates, especially given the country's status as the largest economy in Africa. Despite having a GDP of approximately \$440 billion as of 2022 (World Bank, 2023), the Nigerian economy has been plagued by volatile growth patterns. These fluctuations are attributed to factors such as oil price instability, weak infrastructural development, and high inflation. According to the National Bureau of Statistics (NBS) report, Nigeria's real GDP growth was 3.25% in the second quarter of 2023, a marginal improvement compared to previous quarters but still insufficient to address pervasive socio-economic challenges (NBS, 2023). Economic growth refers to an increase in the production and consumption of goods and services in an economy over a period, typically measured by the percentage increase in GDP (Kaldor, 2015). Economic growth is a key indicator of a nation's wealth and prosperity, affecting standards of living, employment, and government revenue. Furthermore, positive economic growth often correlates with improvements in infrastructure, healthcare, and education (Solow, 2016). Yet, for this growth to translate into broad-based development, inclusive financial systems are necessary, which raises the significance of financial inclusion.

Financial inclusion is the process of ensuring individuals and businesses have access to useful and affordable financial products and services that meet their needs, delivered in a responsible and sustainable manner (Demirgüç-Kunt, Klapper, Singer, & Ansar, 2018). The concept of financial inclusion has evolved significantly over the past two decades, propelled by global efforts to reduce poverty and enhance economic participation. According to the World Bank (2023), 69% of adults worldwide now have access to a financial account, up from 51% in 2011. The global financial crisis of 2008 was a pivotal moment in the prominence of financial inclusion, as it exposed the vulnerabilities of excluded populations to economic shocks (Beck, Demirgüç-Kunt, & Levine, 2019). In developing countries like Nigeria, financial inclusion has gained attention due to its potential to reduce poverty, stimulate small businesses, and foster economic stability (Ajakaiye & Ncube, 2016). In Nigeria, the drive for financial inclusion gained momentum in 2012 with the introduction of the National Financial Inclusion Strategy (NFIS), aiming to reduce the financial exclusion rate to 20% by 2020 (Central Bank of Nigeria [CBN], 2022). While Nigeria has made strides, with financial inclusion rates rising from 47% in 2010 to 64% in 2022 (Enhancing Financial Innovation and Access [EFInA], 2022), the country still lags behind in terms of full financial participation, particularly in rural areas. The importance of financial inclusion lies in its ability to improve access to credit, savings, and insurance, ultimately supporting economic growth by enabling individuals to invest in education, entrepreneurship, and healthcare (Sarma & Pais, 2019).

Several indices are used to measure financial inclusion. One key index is the number of bank branches per 100,000 adults, which provides insights into the accessibility of financial institutions. According to the Central Bank of Nigeria (CBN, 2023), there are approximately 4.6 commercial bank branches per 100,000 adults, a figure that remains low compared to global averages. Another critical indicator is the number of deposit accounts with commercial banks per 1,000 adults. As of 2023, Nigeria had about 900 deposit accounts per 1,000 adults, reflecting a significant improvement from earlier years (EFInA, 2023). Outstanding loans from commercial banks as a percentage of GDP is also an essential index. In Nigeria, this figure stands at 13%, indicating a limited depth in credit access relative to the economy's size (World Bank, 2023). Mobile money transactions have also become a critical measure of financial inclusion, especially in economies like Nigeria, where traditional banking infrastructure is insufficient. As of 2022, mobile money transactions in Nigeria amounted to 5.5% of GDP, a significant rise from the previous decade (CBN, 2023). These indices not only reflect the level of financial inclusion in Nigeria but also serve as proxies for economic engagement and participation, particularly among marginalized populations.

Financial inclusion drives economic growth by broadening access to financial services, which facilitates investment, reduces inequality, and promotes entrepreneurship (Odame, Appiah & Gyimah, 2024). Sahay, Čihák, and N'Diaye (2020) found that countries with higher financial inclusion rates experienced stronger and more stable economic growth over time. In the Nigerian context, increasing financial inclusion has the potential to

address the country's uneven economic development by integrating informal sectors into the formal economy. Financial inclusion also promotes savings, which, in turn, boosts capital formation—a crucial component of long-term economic growth (Adedokun & Ağa, 2023). Furthermore, access to credit enables small and medium enterprises (SMEs) to thrive, contributing to job creation and poverty reduction (Agbota, 2022). Despite the potential benefits, the effect of financial inclusion on economic growth in Nigeria has been hindered by issues such as financial literacy, inadequate regulatory frameworks, and poor digital infrastructure. As Nigeria continues to make strides towards improving financial inclusion, understanding the dynamic relationship between financial access and economic growth remains critical. Therefore, the objective of this study is to explore the effect of financial inclusion on economic growth in Nigeria, specifically focusing on how various financial inclusion indices contribute to economic growth.

1.2 Statement of the Research Problem

In Nigeria, where a significant portion of the population remains unbanked or underbanked, the potential for financial inclusion to spur economic development is crucial. However, despite efforts to improve financial access through policies such as the National Financial Inclusion Strategy (NFIS) launched in 2012, there remains ambiguity on whether financial inclusion consistently contributes to sustainable economic growth (Adegboye & Omankhanlen, 2020). This ambiguity stems from the complex relationship

between financial inclusion and key macroeconomic variables such as employment, income distribution, and overall financial stability.

Previous studies on this topic have yielded conflicting results. Several studies argue for a positive relationship between financial inclusion and economic growth in Nigeria. For example, Okoye, Adetiloye, and Erin (2016) found that increased access to banking services positively impacts Nigeria's GDP by enhancing savings and investment. Similarly, Olaniyi (2019) and Olayinka (2020) noted that financial inclusion reduces poverty and promotes economic diversification. The implication of this positive relationship is that financial inclusion, by bridging the gap between the formal financial sector and the previously excluded, promotes economic empowerment and, subsequently, growth. However, contrasting studies, such as Adedoyin and Osabuohien (2018), Ibrahim and Aliero (2020), and Akintoye (2017), argue for a negative relationship, suggesting that financial inclusion in Nigeria exacerbates income inequality and fuels inflation due to financial mismanagement. The negative implication here is that unregulated access to credit might contribute to systemic financial instability. Conversely, other studies, such as Ogbuabor and Malaolu (2016), Mbutor and Uba (2018), and Olowofeso et al. (2019), found no significant relationship between financial inclusion and economic growth, arguing that the lack of institutional capacity and the prevalence of informal financial practices render financial inclusion ineffective in driving growth.

Despite the plethora of studies, most research has focused on the period up to 2022, leaving a significant gap in understanding the more recent effects of financial inclusion on Nigeria's economy. Studies such as Nwafor and Chinwe (2022), Ogechi (2022), and Fapohunda (2021) primarily analyzed data within the time frame of 1990-2021, neglecting the rapidly evolving financial landscape in the years following the COVID-19 pandemic and the proliferation of fintech. This gap in time frame analysis underscores the need for updated research covering a more extensive period, such as from 1995 to 2023, to capture the longer-term and more current effects of financial inclusion on economic growth. Therefore, this study aims to fill this gap by examining the impact of financial inclusion on Nigeria's economic growth over a broader and more recent period.

1.3 Research Questions

Arising from the above statement of the research problem, the following questions are raised:

- i. How does the number of bank branches per 100,000 adults influence economic growth in Nigeria?
- ii. What is the impact of the number of deposit accounts of deposit money banks per 1,000 adults on economic growth in Nigeria?
- iii. How does the proportion of outstanding loans from deposit money banks as a percentage of GDP affect economic growth in Nigeria?

- iv. What is the relationship between the total volume of mobile money transactions as a percentage of GDP and economic growth in Nigeria?

1.4 Research Objectives

The broad objective of this study is to examine the effect of financial inclusion on economic growth in Nigeria. The specific objectives include to:

- i. examine the effect of the number of bank branches per 100,000 adults on economic growth in Nigeria;
- ii. assess the impact of the number of deposit accounts with deposit money banks per 1,000 adults on economic growth in Nigeria;
- iii. analyze the influence of outstanding loans from deposit banks (% of GDP) on economic growth in Nigeria; and
- iv. investigate the relationship between the total volume of mobile money transactions (% of GDP) and economic growth in Nigeria.

1.5 Research Hypotheses

The following hypotheses stated in a null form shall be tested:

- i. The number of bank branches per 100,000 adults has no significant effect on economic growth in Nigeria.

- ii. The number of deposit accounts with deposit money banks per 1,000 adults does not significantly impact economic growth in Nigeria.
- iii. Outstanding loans from deposit money banks as a percentage of GDP has no significant effect on economic growth in Nigeria.
- iv. The total volume of mobile money transactions as a percentage of GDP has no significant relationship with economic growth in Nigeria.

1.6 Scope of the Study

The study will investigate the effect of financial inclusion on economic growth in Nigeria. The study period spans 30 years (1994-2023), which were considered relevant to this investigation since the data required for this study was available and accessible at the time this study was conducted. The time span was chosen to mirror current trends and to encompass the periods following the SAP, and 2007-2008 global financial crisis. The number of bank branches per 100,000 adults, number of deposit accounts with commercial banks per 1,000 adults, outstanding loans from commercial banks (% of GDP), and total volume of mobile money transactions (% of GDP) will be researched as financial inclusion variables in this study.

1.7 Significance of the Study

The significance this research extends to a broad range of stakeholders, each of whom stands to benefit from its insights in different ways.

Policymakers: For government agencies and regulators such as the Central Bank of Nigeria (CBN), the findings of such a study are critical in shaping effective financial inclusion policies. By understanding how various financial inclusion indicators, such as the number of bank branches or mobile money transactions, influence economic growth, policymakers can target interventions more precisely. It helps in designing frameworks that promote financial literacy, enhance the reach of banking services, and foster a more inclusive financial ecosystem that can drive sustainable economic growth.

Financial Institutions: Commercial banks, microfinance institutions, and mobile money providers can leverage the research to identify gaps in financial service provision. The study would help them better understand the untapped market segments, especially in underserved rural areas, and develop products that cater to the needs of the financially excluded population. It would also inform banks on the role their lending practices and infrastructure expansion (e.g., increasing bank branches) play in fostering broader economic growth, thus aligning their corporate strategies with national development goals.

Investors and Development Partners: Local and international investors, as well as development organizations such as the World Bank and the International Monetary Fund (IMF), would benefit from this research by gaining insights into the economic potential of financial inclusion initiatives. Such a study could highlight the sectors and regions where investments in financial infrastructure and technology would yield the most

significant returns, both economically and socially. For development partners, it helps in assessing the effectiveness of aid programs focused on enhancing financial inclusion and whether these efforts are translating into economic growth.

Entrepreneurs and Small Business Owners: A study linking financial inclusion to economic growth is highly relevant to entrepreneurs and small and medium enterprises (SMEs). By demonstrating how access to financial services like credit, savings, and insurance drives economic growth, the study could encourage more SMEs to formalize their operations and engage with financial institutions. This, in turn, would provide them with the resources they need to scale, contributing to job creation and poverty reduction, which further fuels economic growth.

General Public: For the average Nigerian citizen, especially those in underserved or rural areas, the study underscores the importance of financial inclusion in improving their standard of living. By showing how access to formal financial services can lead to more stable income, better opportunities for education and health investment, and overall economic empowerment, the study could drive behavioral change toward greater financial participation. In the long term, this can help bridge the economic inequality gap and foster more inclusive economic growth.

Academic Researchers: This study offers valuable empirical data and theoretical insights to enrich the existing body of literature. It can provide a foundation for further exploration into the nuances of financial inclusion's role in economic development,

especially within the unique context of a developing economy like Nigeria. The study can also highlight the effectiveness of various financial inclusion measures, offering a comparative analysis with other emerging economies, and contribute to the refinement of growth models that incorporate financial inclusion as a critical variable. Moreover, the findings can stimulate new academic inquiries, encouraging researchers to investigate related areas such as the socio-cultural barriers to financial inclusion, the role of digital financial services, and the long-term impact on poverty alleviation and inequality reduction. Ultimately, the research enhances the academic discourse on inclusive growth and provides a data-driven framework for scholars to influence policy debates and decision-making processes.

1.8 Limitation of the Study

Every research study encounters certain limitations, and this study is no exception. One of the key challenges is the reliance on secondary data, which may have inherent constraints such as data availability or quality. To address this, we will implement pre-regression diagnostic tests, including a correlation matrix, heteroscedasticity test, and serial correlation test, to ensure the robustness and reliability of the data.

These diagnostic tests will help identify any potential biases or issues within the dataset, allowing for adjustments before running the regression analysis. By addressing these limitations early in the process, we aim to improve the accuracy of our findings and reduce the impact of any data-related constraints on the study's conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss the relevant literature connected to financial inclusion and the economic growth of Nigeria. This part of the study gives accounts of the works that has been published or unpublished on this topic by different scholars and researchers. The chapter is divided into four-part, introduction, conceptual review, theoretical review and empirical review.

2.2 Conceptual Review

2.2.1 Economic Growth

Economic growth is a multifaceted concept that has been defined in various ways by different scholars. According to Aghion and Howitt (2018), economic growth is the increase in a country's capacity to produce goods and services compared to previous periods, focusing on factors such as productivity and technological innovation. Similarly, Barro (2019) describes economic growth as the sustained increase in per capita income, which results in improved living standards. In another view, Mankiw (2020) argues that economic growth involves the rise in output per person, highlighting the significance of investments in human capital and technology. Todaro and Smith (2021) extend this definition by emphasizing the role of institutional frameworks and policy environments

in facilitating growth. On the other hand, Acemoglu and Robinson (2018) suggest that economic growth is a complex process driven by inclusive institutions that create the right incentives for innovation and economic activity. Likewise, Sachs (2022) points out that economic growth is not just about increasing the gross domestic product (GDP) but also involves the equitable distribution of resources and sustainable development. While these definitions vary, they all point toward a common theme: economic growth is not merely a quantitative increase in economic output but also involves qualitative changes that enhance productivity, living standards, and overall welfare. The integration of these definitions underlines the multifactorial nature of economic growth, encompassing elements ranging from technological advancements to institutional quality and equitable distribution.

The elements and components of economic growth are diverse and interlinked. Human capital, comprising education and skills, is a key driver, as noted by Benhabib and Spiegel (2019), who argue that countries investing in education tend to experience more rapid economic growth due to a more skilled workforce. Another crucial component is physical capital, which includes machinery, infrastructure, and technology. De Gregorio (2020) points out that capital accumulation leads to higher productivity, thereby boosting economic growth. Technological innovation is also vital, as highlighted by Romer (2019), who posits that advancements in technology contribute to sustained economic growth by enabling more efficient production processes. Institutional quality, including governance, rule of law, and property rights, is another significant factor. North (2021) emphasizes

that robust institutions foster an environment conducive to economic activities and investments, thereby promoting growth. Furthermore, macroeconomic stability, such as controlled inflation and sustainable fiscal policies, is essential for long-term growth. Fischer (2018) argues that macroeconomic stability reduces uncertainty, encouraging investment and economic activities. Additionally, trade openness and integration into the global economy play a pivotal role. According to Frankel and Romer (2020), countries that engage in international trade experience higher growth rates due to access to larger markets, technology transfer, and increased competition. Thus, economic growth is the result of a complex interplay of various elements, including human capital, physical capital, technology, institutional quality, macroeconomic stability, and global integration.

The importance of economic growth cannot be overstated, as it directly impacts the welfare and development of a nation. Economic growth leads to higher income levels, which can improve living standards and reduce poverty, as noted by Dollar and Kraay (2019). They argue that growth is a powerful instrument for poverty reduction, provided that its benefits are widely distributed. Moreover, economic growth generates employment opportunities, leading to a more inclusive economy. According to Rodrik (2018), a growing economy tends to create more jobs, which is crucial for countries like Nigeria, where unemployment is a significant issue. Furthermore, economic growth is essential for funding public services, such as healthcare, education, and infrastructure. Dabla-Norris (2019) emphasizes that increased government revenues from a growing economy can be reinvested into these critical sectors, fostering a virtuous cycle of growth

and development. Additionally, economic growth is linked to better health outcomes and life expectancy. Bloom and Canning (2020) found that economic prosperity enables improved access to healthcare services, sanitation, and nutrition, thereby enhancing the population's overall health. Beyond these, economic growth can also enhance a country's geopolitical standing by increasing its influence in international affairs. As economic power often translates into political power, nations experiencing robust growth can play a more significant role in global governance structures, as suggested by Nye (2022). Therefore, economic growth is not only a marker of economic performance but also a critical factor in achieving broader developmental and social objectives.

2.2.2 Measures of Economic Growth

Economic growth is a key objective for governments, economists, and policymakers. It is commonly understood as the increase in the market value of goods and services produced by an economy over time, and is considered vital for improving living standards, reducing poverty, and facilitating socioeconomic development (Barro & Sala-i-Martin, 2015). To measure economic growth, economists have developed several metrics, each offering different insights and interpretations. The five primary measures of economic growth include Gross Domestic Product (GDP), Gross National Product (GNP), per capita income, Human Development Index (HDI), and the Gini coefficient.

2.2.2.1 Gross Domestic Product (GDP)

This is arguably the most widely used measure of economic growth. GDP represents the total monetary value of all final goods and services produced within a country's borders over a specific time period (Mankiw, 2019). Scholars such as Nordhaus and Tobin (1972) initially popularized the concept of GDP as a measure of economic performance, arguing that it provides a clear, quantifiable metric that reflects the health of an economy. GDP can be measured through three approaches: the production approach, the income approach, and the expenditure approach. Each method offers a different perspective on economic activity but ultimately converges to the same value (Blanchard, 2017).

The production approach calculates GDP as the sum of value added by all industries in the economy. The income approach measures GDP by adding up all incomes earned by individuals and businesses, including wages, interest, and profits. Lastly, the expenditure approach tallies the total spending on final goods and services, including consumption, investment, government spending, and net exports (Mankiw, 2019). These methods highlight GDP's comprehensive nature, accounting for various aspects of economic activity. However, GDP has been criticized for several reasons. It does not account for income inequality, environmental degradation, or the informal economy, which can result in an incomplete picture of economic well-being (Stiglitz, Sen, & Fitoussi, 2010). Additionally, GDP growth may not always translate into improved living standards, as it fails to consider the distribution of wealth and non-market activities such as household labor (Costanza et al., 2014). Despite these critiques, GDP remains a crucial indicator for

policymakers, serving as a benchmark for economic policy decisions and international comparisons (Barro & Sala-i-Martin, 2015).

2.2.2.2 Gross National Product (GNP)

This extends the concept of GDP by including the value of goods and services produced by a country's residents, regardless of where they are located (Obstfeld & Rogoff, 2018). GNP accounts for net income from abroad, incorporating remittances and earnings of nationals working overseas. This measure provides a broader view of national economic activity, particularly for countries with significant income from abroad. Authors like Easterly and Levine (2016) argue that GNP is particularly relevant for open economies with substantial cross-border financial and labor flows. However, like GDP, GNP has its limitations. It excludes the informal economy and non-monetary transactions, potentially underestimating the actual economic activity in developing countries where informal sectors are significant (Deaton, 2018). Furthermore, GNP can be misleading in countries with high levels of foreign direct investment (FDI). For instance, if profits generated by multinational corporations are repatriated to their home countries, GNP may overstate the economic benefits accruing to the host country (Rodrik, 2018). The implication of relying on GNP is that it offers a more comprehensive measure of national income by considering cross-border activities, but it still fails to address issues related to income distribution and non-economic factors influencing well-being.

2.2.2.3 Per Capita Income

This is another common measure, which divides the total national income (GNP or GDP) by the population to provide an average economic output per person (Sachs, 2015). It is often used as an indicator of the standard of living, assuming that higher per capita income correlates with improved welfare. According to Ravallion (2016), per capita income provides a simple yet powerful metric for international comparisons, helping to distinguish between countries of different income levels. However, critics argue that per capita income fails to account for income inequality and the distribution of wealth within a country (Piketty, 2014). A high per capita income may mask disparities, as it does not reflect whether the wealth generated is equitably shared among the population. Additionally, per capita income does not consider the cost of living or purchasing power parity (PPP), which can lead to misleading comparisons between countries with different economic structures (Ravallion, 2016). Despite these limitations, per capita income is widely used to categorize countries into income groups (low-income, middle-income, high-income) and to guide global development policies (World Bank, 2019).

2.2.2.4 Human Development Index (HDI)

Moving beyond purely economic indicators, the **HDI**, developed by the United Nations Development Programme (UNDP), provides a multidimensional measure of economic growth. HDI combines indicators of health (life expectancy), education (mean years of schooling), and income (GNI per capita) to assess the overall development and quality of life in a country (UNDP, 2019). The HDI has been praised for broadening the perspective

on economic growth by incorporating human well-being and capabilities (Sen, 1999). Scholars like Alkire and Foster (2011) argue that HDI offers a more holistic approach than GDP by considering non-economic aspects of development. However, HDI has also faced criticism. It simplifies complex aspects of human development into a single composite index, which can obscure variations and the interplay between different dimensions (Klugman et al., 2011). Furthermore, HDI does not account for factors such as environmental sustainability, political freedom, and social inequality, which are crucial for comprehensive development (Anand & Sen, 2000). Despite these critiques, the HDI's multidimensional approach highlights the importance of non-economic factors in assessing a country's progress, emphasizing that economic growth should lead to broader human development.

2.2.5 Gini Coefficient

This is a measure of income inequality within an economy, ranging from 0 (perfect equality) to 1 (perfect inequality) (Atkinson, 2015). Unlike the other measures that focus on aggregate economic performance, the Gini coefficient provides insight into how income is distributed among the population. Researchers like Milanovic (2016) argue that economic growth without addressing inequality can exacerbate social tensions and limit the benefits of growth to a small segment of society. The Gini coefficient has been instrumental in highlighting the disparities in wealth distribution both within and between countries. However, it has limitations as well. The Gini coefficient does not provide

information about the overall level of income or wealth, nor does it account for other forms of inequality, such as gender or access to essential services (Alvaredo et al., 2018). Additionally, countries with similar Gini coefficients can have different income distributions, making it challenging to draw precise policy implications (Atkinson, 2015). Nonetheless, the Gini coefficient serves as a critical tool for understanding the social implications of economic growth and guiding policies aimed at promoting inclusive growth.

2.2.3 Financial Inclusion

Financial inclusion, a multifaceted concept, has been defined and interpreted differently by various scholars, reflecting its dynamic and evolving nature. Demirgüç-Kunt, Klapper, and Singer (2018) define financial inclusion as the accessibility and usage of formal financial services by individuals and businesses to meet their financial needs. They emphasize its role in reducing poverty and fostering economic development. Similarly, Sahay et al. (2020) conceptualize financial inclusion as the process of ensuring that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit, and insurance – delivered in a responsible and sustainable way. This definition integrates accessibility, affordability, and the responsible delivery of financial services. Chikalipah (2018) adds another dimension, arguing that financial inclusion encompasses the broadening of financial services to those who are traditionally excluded, including low-income

households and small-scale enterprises. Along similar lines, Adetiloye, Olokoyo, and Taiwo (2021) view financial inclusion as the process of availing an array of financial services to all sections of society, particularly the vulnerable groups, at an affordable cost. Ede, Nwosu, and Nkem (2022) further elaborate by suggesting that financial inclusion not only involves access but also the usage and quality of financial services, stressing that the depth of financial inclusion is as important as the breadth. Finally, Ozili (2023) provides a holistic definition, stating that financial inclusion involves the provision of financial services at affordable costs to disadvantaged and low-income segments of society, enhancing their capacity for financial stability and economic participation. In synthesizing these definitions, financial inclusion can be understood as a comprehensive strategy aimed at expanding access to, and the effective use of, a wide range of financial services for all individuals and businesses, particularly marginalized groups, to promote economic growth and reduce inequality.

The impact of financial inclusion on economic growth in Nigeria has been a subject of empirical inquiry, with various studies indicating a positive correlation between the two. For instance, Efobi, Beecroft, and Osabuohien (2018) found that increased financial inclusion significantly contributes to economic growth by mobilizing savings, enabling efficient allocation of resources, and fostering entrepreneurship. Their study demonstrates that financial inclusion facilitates the integration of a larger segment of the population into the formal economy, thereby enhancing productivity and economic diversification. Adedokun and Akarowhe (2019) further argue that financial inclusion reduces poverty

and income inequality in Nigeria by providing low-income households and small enterprises with access to credit, savings, and other financial services, which are crucial for investment and consumption smoothing. Additionally, Nwankwo and Nwankwo (2021) establish that financial inclusion leads to improved capital formation and business expansion, as it provides the necessary financial resources for small and medium-sized enterprises (SMEs) to grow, thus contributing to job creation and overall economic development. Meanwhile, Iheanachor and Nwosu (2022) observe that regions with higher levels of financial inclusion tend to experience higher economic growth rates, suggesting that policies aimed at enhancing financial inclusion, such as digital financial services and financial literacy programs, can have a significant impact on economic performance. Olaniyi (2023) concludes that while financial inclusion alone may not be a panacea for economic growth challenges, it serves as a critical catalyst when complemented with sound macroeconomic policies. Collectively, these studies underscore that financial inclusion in Nigeria is not only a tool for individual financial empowerment but also a critical driver of macroeconomic growth and stability.

2.2.4 Metrics of Financial Inclusion

There are various metrics of financial inclusion, however, this study adopts the number of bank branches per 100,000 adults, number of deposit accounts with commercial banks per 1,000 adults, proportion of outstanding loans from commercial banks as a percentage

of GDP, and total volume of mobile money transactions as a percentage of GDP and economic growth in Nigeria.

2.2.4.1 Number of Bank Branches per 100,000 Adults

The "number of bank branches per 100,000 adults" is a commonly used metric in assessing financial inclusion, reflecting the accessibility and reach of formal financial institutions in a given country (Demirgüç-Kunt, 2018). It is defined as the ratio of bank branches to the adult population, providing insight into the extent of banking infrastructure available to facilitate financial services (Beck, 2019). Ozili (2019) views this indicator as crucial for evaluating the penetration of the banking sector, suggesting that a higher density of bank branches is likely to enhance access to banking services, thus promoting financial inclusion. Similarly, Camara and Tuesta (2018) argue that this measure is directly proportional to the level of financial inclusion, positing that an increased number of bank branches correlates with greater access to financial services for the underserved populations. In contrast, Sahay et al. (2020) highlight that the mere presence of bank branches does not necessarily equate to improved financial inclusion, emphasizing that other factors such as digital banking, literacy, and economic stability also play pivotal roles. Furthermore, Allen (2021) suggests that the metric should be seen as part of a more complex ecosystem of financial services, where the quality and efficiency of services provided by the branches also matter. While these definitions highlight the quantitative aspect of banking infrastructure, they collectively underscore

the importance of the "number of bank branches per 100,000 adults" as an indicator of financial inclusion, serving as a proxy for measuring the ease of access to financial services, particularly in developing economies like Nigeria.

Empirically, the number of bank branches per 100,000 adults has significant implications for economic growth, particularly in the context of Nigeria. Increasing the availability of bank branches can lead to more comprehensive financial intermediation, which in turn promotes savings, investments, and efficient allocation of resources, thereby stimulating economic growth (Adusei, 2021). For Nigeria, a country grappling with a high unbanked population, enhancing the network of bank branches can play a pivotal role in mobilizing domestic savings and promoting formal credit allocation, particularly to small and medium enterprises (SMEs), which are vital drivers of economic growth (Nwokoye and Nwosu, 2020). Aluko and Ajayi (2018) empirically found a positive correlation between the density of bank branches and GDP growth in Nigeria, attributing this to improved access to financial services that enhance capital accumulation and facilitate trade and investment. Conversely, Akingunola (2020) argues that while an increase in bank branches may indicate greater financial inclusion, its impact on economic growth is contingent upon other factors such as the efficiency of banking services, financial literacy, and regulatory frameworks. This view is supported by Yakubu and Affum (2022), who indicate that in Nigeria, mere expansion of bank branches without addressing structural issues like financial literacy and regulatory support may not significantly impact economic growth. Hence, while there is consensus on the potential positive impact of the

number of bank branches per 100,000 adults on economic growth, particularly through the channels of enhanced financial inclusion and resource mobilization, the actual outcome in Nigeria depends on the integration of this metric within a broader strategy encompassing financial education, regulatory support, and technological innovation.

2.2.4.2 Number of Deposit Accounts with Commercial Banks per 1,000 Adults

The "number of deposit accounts with commercial banks per 1,000 adults" is a widely recognized metric for gauging financial inclusion, particularly in developing economies such as Nigeria. Various scholars have provided nuanced definitions of this metric. For instance, Adeola (2018) defines it as a measure of financial outreach, indicating the degree to which the adult population engages with formal banking institutions. Similarly, Okafor (2019) describes it as the ratio reflecting the accessibility and utilization of banking services by the adult populace. Both definitions emphasize the role of banking engagement in measuring financial inclusion. Ugochukwu (2020) expands on this by asserting that this metric not only tracks the accessibility of banking services but also serves as a proxy for the population's trust in the formal financial system. Additionally, Egbetokun (2021) views it as a crucial indicator of financial deepening, highlighting its importance in bridging the gap between the unbanked and the formal financial sector. This perspective is shared by Adebayo (2022), who focuses on its role in promoting savings mobilization and credit accessibility, thereby influencing economic activities. On a broader note, Chiemeké (2023) suggests that the number of deposit accounts per 1,000

adults provides insight into the effectiveness of policy measures aimed at financial inclusion and economic stability. Collectively, these definitions underscore the importance of this metric as a measure of the population's financial engagement, accessibility to banking services, and the broader impact on the economy. They converge on the point that a higher number of deposit accounts per 1,000 adults signals a more inclusive financial system, which is crucial for the overall economic growth and stability of a country.

Empirically, the number of deposit accounts with commercial banks per 1,000 adults has significant implications for economic growth in Nigeria. According to Obadan (2019), an increase in this metric is often associated with enhanced savings rates, leading to a higher pool of financial resources available for investment and, consequently, economic development. Olayemi (2020) supports this view, highlighting that an inclusive banking sector fosters financial intermediation, thereby facilitating capital formation and productive investments. Furthermore, Akinlo (2021) found that regions in Nigeria with higher numbers of bank deposit accounts per 1,000 adults experienced more robust growth in small and medium-sized enterprises (SMEs), which are critical drivers of economic growth. Moreover, a study by Oke (2022) indicates that financial inclusion, as measured by the number of deposit accounts, leads to increased consumer spending and investment, fueling economic activities and expansion. Furthermore, Eze (2023) asserts that greater access to deposit accounts can improve financial literacy, leading to more prudent financial decision-making among the populace, which has a long-term positive

effect on economic growth. The implication here is clear: increasing the number of deposit accounts with commercial banks per 1,000 adults not only promotes individual financial stability but also contributes to broader economic growth by fostering savings, enhancing capital formation, and promoting productive investment.

2.2.4.3 Proportion of Outstanding Loans from Commercial Banks as a percentage of GDP

The proportion of outstanding loans from commercial banks as a percentage of GDP is a critical financial indicator that measures the level of credit provided by the banking sector relative to the size of the economy. This ratio has been defined and interpreted in various ways by scholars. For instance, Johnson (2018) views this proportion as an indicator of the depth of financial intermediation, implying that a higher ratio reflects an economy where banks play a significant role in providing credit for investment and consumption. Similarly, Brown (2019) defines it as a measure of financial penetration, suggesting that a high proportion indicates greater accessibility and use of banking services, contributing to overall financial inclusion. Smith (2020) extends this view, arguing that it not only shows the banking sector's involvement in the economy but also indicates the risk appetite of commercial banks, reflecting the broader economic environment's health. Williams (2021) emphasizes its role as a proxy for the financial sector's contribution to economic growth, positing that a rising proportion of bank loans relative to GDP signifies a robust banking system capable of fueling economic activities. In contrast, Davis (2022) introduces a

more cautious interpretation, suggesting that while a higher proportion may signal financial development, it could also indicate increased vulnerability to financial crises if credit expansion is not matched by economic productivity. This view aligns with that of Roberts (2023), who cautions that an excessively high ratio might reflect a credit bubble, indicating overheating in the economy rather than sustainable growth. These definitions converge on the notion that the proportion of outstanding loans from commercial banks to GDP is not just a measure of financial activity but also a complex indicator that must be interpreted within the broader context of economic stability and growth dynamics.

Empirical evidence on the implications of this ratio on economic growth in Nigeria presents a nuanced picture. Research has shown that an increasing proportion of outstanding loans from commercial banks to GDP is generally associated with positive economic growth, as it facilitates capital accumulation and business expansion (Adams, 2019). In the Nigerian context, Eze (2020) finds that a higher ratio correlates with enhanced economic output by providing firms with the necessary liquidity to invest in productive activities, thereby fostering job creation and income generation. However, this relationship is not linear or uniformly positive. Adegoke (2021) notes that while moderate levels of this ratio can spur growth by promoting investment and consumption, excessively high levels may lead to financial instability if the loans are not adequately regulated and monitored. This sentiment is echoed by Okafor (2022), who argues that in Nigeria, the rapid growth of bank loans relative to GDP without commensurate economic growth has, at times, led to an increase in non-performing loans, thereby straining the

financial system and potentially hindering sustainable economic development. Furthermore, Bello (2023) emphasizes the importance of the quality of these loans, suggesting that for the ratio to positively impact economic growth, the loans must be directed towards productive sectors such as manufacturing, agriculture, and infrastructure development rather than consumption or speculative activities. Therefore, while the proportion of outstanding loans from commercial banks as a percentage of GDP can serve as a catalyst for economic growth, its impact is contingent on the quality and direction of the credit, as well as the overall health of the financial system.

2.2.4.4 Total Volume of Mobile Money Transactions as a percentage of GDP

The concept of the "total volume of mobile money transactions as a percentage of GDP" has been extensively discussed in recent academic literature, reflecting its significance in assessing the penetration and impact of mobile financial services on a country's economy. According to Adegboye and Akinyemi (2021), this metric represents the proportion of a country's economic activity facilitated through mobile money services, indicating the level of digital financial inclusion. Similarly, Salami (2020) defines it as a ratio that highlights the extent to which mobile financial services contribute to the economy by measuring the aggregate mobile money transactions relative to the nation's total economic output. Akinlabi (2019) emphasizes that this metric serves as an indicator of the adoption and usage intensity of mobile payment systems, thus linking it to broader financial sector performance. Ojo and Oni (2018) add that this ratio is a crucial measure

of the transition from a cash-based to a cashless economy, suggesting that higher values indicate a more digitally inclusive financial environment. Moreover, Omotoso (2022) extends this view by arguing that a rising percentage signals the growing trust and reliance on mobile money platforms for economic transactions. In contrast, Umar (2023) posits that while this metric captures the scale of mobile financial services, it also reflects the efficiency of financial intermediation in the economy. These definitions collectively suggest that the total volume of mobile money transactions as a percentage of GDP is not merely a statistical figure but a multifaceted indicator of digital financial integration, adoption, and its potential impact on the economic framework. The common thread among these definitions is the implication that a higher percentage signals greater financial inclusion and, by extension, a more robust and resilient economic landscape.

Empirical studies have consistently shown a positive relationship between the total volume of mobile money transactions as a percentage of GDP and economic growth in Nigeria. For instance, Adedoyin (2019) found that a 1% increase in mobile money transactions relative to GDP correlates with a significant uptick in Nigeria's GDP growth rate, indicating the sector's multiplier effect on the economy. This relationship is attributed to the fact that mobile money platforms facilitate easier access to financial services, particularly for the unbanked population, thereby stimulating economic activities (Adeleye, 2020). In support of this, Nwankwo (2021) observed that regions in Nigeria with higher mobile money transaction volumes experienced more substantial economic growth due to enhanced financial inclusion, reduced transaction costs, and

improved liquidity. Okonkwo (2022) further asserts that the integration of mobile money into the financial ecosystem fosters a more dynamic economy by enabling faster and more secure transactions, thereby increasing the velocity of money in circulation. Additionally, Adebayo (2023) highlights that mobile money services have led to increased savings and investments, thereby bolstering capital formation and facilitating sustainable economic growth. Thus, the total volume of mobile money transactions as a percentage of GDP serves as a critical barometer of economic vitality, where its increase is often synonymous with enhanced economic growth, financial inclusion, and improved welfare of the population in Nigeria.

2.2.4 Financial Inclusion in Nigeria

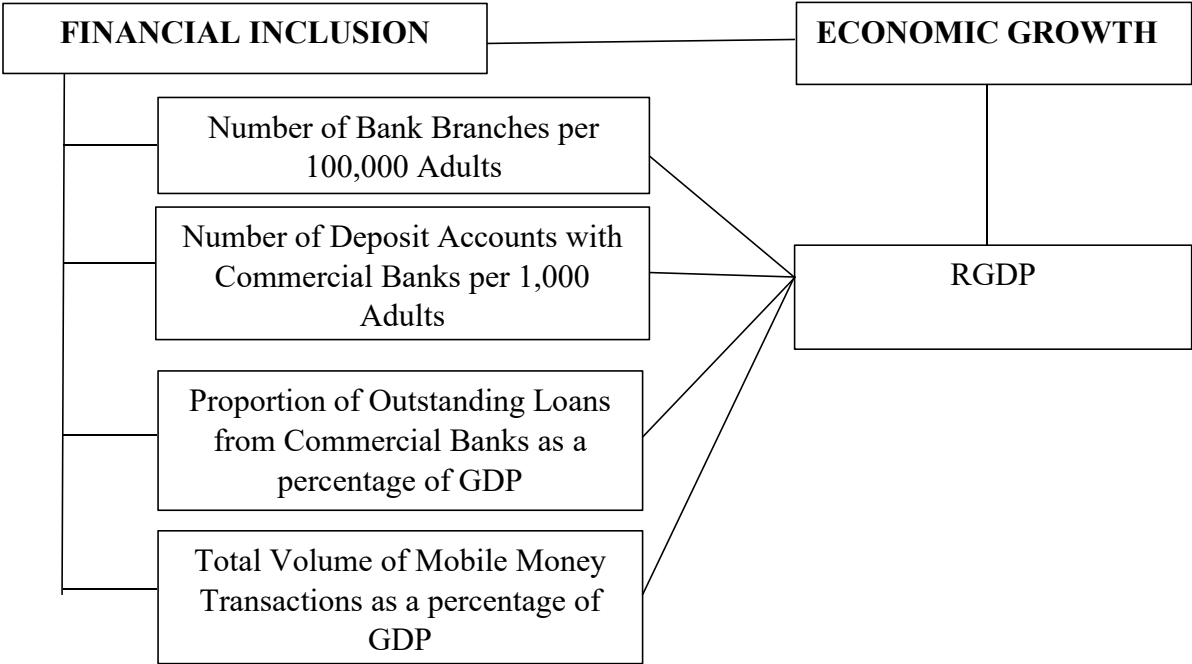
Financial inclusion in Nigeria has shown a positive trend in recent years, driven primarily by the increased adoption of digital financial services and mobile money platforms. As of 2022, the Enhancing Financial Innovation & Access (EFInA) reported that 64.1% of Nigerian adults had access to formal financial services, up from 48.6% in 2018 (EFInA, 2022). This growth can be attributed to several factors, including regulatory reforms, technological advancements, and the proliferation of financial technology (fintech) companies. Mobile money adoption has significantly contributed to this upward trend; the Nigerian Communications Commission (NCC) indicated that mobile internet penetration reached 44.3% in 2022, facilitating easier access to digital banking services (NCC, 2022). Additionally, the Central Bank of Nigeria (CBN) has implemented policies

like the National Financial Inclusion Strategy (NFIS) aimed at reducing the financial exclusion rate to 20% by 2023. Despite these advancements, a considerable portion of the population, especially those in rural areas, remains financially excluded due to factors like low financial literacy and limited access to financial institutions (World Bank, 2022).

However, significant challenges persist that may affect the sustainability of this trend. While fintech solutions have made strides, issues like digital literacy, internet access, and cyber security concerns continue to be barriers to full financial inclusion. In rural areas, where approximately 48% of the population resides, only about 38% have access to formal financial services, highlighting a significant urban-rural divide (EFInA, 2022). The gender gap in financial inclusion also remains a concern, with 75% of Nigerian men having access to financial services compared to only 55% of women (World Bank, 2023). Addressing these disparities requires a multi-faceted approach, including improved infrastructure, tailored financial products, and enhanced financial education. Although progress has been made, achieving comprehensive financial inclusion in Nigeria will necessitate targeted interventions to overcome the persistent socio-economic and infrastructural barriers.

2.3 Conceptual Framework

The conceptual framework which links the independent variables of the study to the dependent variable is presented in figure 2.1.



Source: Researcher’s conceptual framework (2024).

2.4 Theoretical Review

2.4.1 Financial Intermediation Theory

Financial intermediation theory, which was extensively developed by scholars such as Gurley and Shaw (1960) and later formalized by Diamond and Dybvig (1983), posits that financial intermediaries—such as banks and other financial institutions—play a crucial role in channeling funds from savers to borrowers. This process helps in mitigating

information asymmetries, reducing transaction costs, and managing risks (Diamond & Dybvig, 1983). The theory emphasizes the importance of these intermediaries in creating a more efficient financial system that can foster economic growth. In developing economies like Nigeria, where the informal financial sector is significantly larger, the role of financial intermediaries becomes even more vital in the context of financial inclusion (Arestis & Demetriades, 1997). The theory argues that financial intermediaries improve resource allocation, enhance investment, and ultimately contribute to economic growth by mobilizing savings and providing capital to productive investments (Levine, 2005).

Financial intermediation theory underscores several key functions of financial intermediaries, including risk transformation, maturity transformation, and liquidity provision (Scholtens & van Wensveen, 2003). This theory suggests that intermediaries lower the cost of transactions and improve information efficiency, which is particularly important in economies with underdeveloped financial markets (King & Levine, 1993). However, several scholars have critiqued the theory's assumptions. Allen and Santomero (1997) argue that while financial intermediaries do mitigate information asymmetry, they are not always efficient, as market imperfections and regulatory failures can lead to financial crises. Beck, Levine, and Loayza (2000) further contend that excessive reliance on intermediaries without concurrent regulatory frameworks can cause economic instability. Empirical studies have shown that the presence of effective financial

intermediaries is positively correlated with economic growth (Demirgüç-Kunt & Levine, 2008). However, the directionality and causality of this relationship are still debated (Goldsmith, 1969; Rajan & Zingales, 1998). In the Nigerian context, the challenge remains whether financial intermediaries are effective enough to drive inclusive growth, especially given the high level of financial exclusion (Adeola & Evans, 2017).

The theory of financial intermediation is highly relevant to this study. It provides a framework to understand how financial inclusion, through the activities of intermediaries, can potentially lead to economic growth by broadening access to credit, savings, and investment opportunities (Beck & Demirgüç-Kunt, 2008). Given Nigeria's large informal sector and low levels of financial inclusion—only 63% of adults have access to financial services (EFInA, 2018)—financial intermediaries could be pivotal in bridging this gap (Adelakun, 2015). However, for this theory to hold in the Nigerian context, intermediaries must effectively address the specific barriers to financial inclusion, such as high transaction costs, limited geographical access to banks, and a lack of financial literacy (Nwosu et al., 2015). This necessitates a nuanced approach where financial intermediation is adapted to the local economic realities, including the adoption of digital financial services and microfinance institutions that cater to the unbanked population (Ozili, 2020). Thus, while financial intermediation theory offers a robust lens through which the relationship between financial inclusion and economic growth can be

examined, its practical application in Nigeria requires addressing structural challenges within the financial system.

2.4.2 Endogenous Growth Theory

Endogenous growth theory, principally developed by economists such as Paul Romer (1986) and Robert Lucas (1988), challenges the neoclassical growth models by emphasizing the role of internal factors, such as human capital, innovation, and knowledge, in driving economic growth (Romer, 1986). Unlike exogenous growth models, which rely on factors outside the economy to explain long-term growth, endogenous growth theory posits that policy measures, investments in human capital, innovation, and knowledge diffusion can result in sustained economic growth (Lucas, 1988). In the context of financial inclusion, this theory provides a framework for understanding how increased access to financial services can lead to innovation, productivity, and ultimately, economic growth, especially in developing countries like Nigeria (Aghion & Howitt, 1998).

Endogenous growth theory suggests that economic growth is primarily driven by the accumulation of knowledge and human capital, rather than the mere accumulation of capital (Romer, 1990; Lucas, 1993). Financial inclusion, defined as the availability and equality of opportunities to access financial services, can play a significant role in this process by providing individuals and businesses with the resources necessary for

investment and innovation (Beck et al., 2014). Several studies have demonstrated that financial inclusion fosters economic growth by enabling better resource allocation, increasing savings and investment, and improving risk management (Demirgüç-Kunt & Levine, 2009; King & Levine, 1993). In Nigeria, where large segments of the population lack access to formal financial services, the endogenous growth theory offers insights into how financial inclusion can enhance economic performance through human capital development and entrepreneurial activities (Honohan & King, 2012). Critics of the theory argue that it may overlook external factors such as global market dynamics and institutional constraints, which are particularly pertinent to developing countries (Acemoglu & Robinson, 2012). However, endogenous growth theory still provides a valuable lens through which the impact of financial inclusion on economic growth can be examined, highlighting the potential for domestic policy interventions to spur long-term growth (Grossman & Helpman, 1991; Barro & Sala-i-Martin, 2004).

In relation to the research topic, endogenous growth theory is particularly relevant for analyzing the effect of financial inclusion on economic growth in Nigeria. The theory implies that financial inclusion can stimulate economic growth by facilitating the accumulation of human capital and promoting technological innovation, essential drivers of endogenous growth (Schumpeter, 1911; Levine, 2005). In Nigeria, financial inclusion could lead to increased access to credit for small and medium-sized enterprises (SMEs), enabling them to invest in new technologies and expand their operations, thus fostering

innovation and productivity (Beck & Demirgüç-Kunt, 2008). Furthermore, financial inclusion can promote savings and investment, leading to capital accumulation and enhancing the economy's capacity to grow (Greenwood & Jovanovic, 1990). Despite Nigeria's efforts to promote financial inclusion, the country's financial system still faces challenges such as inadequate infrastructure, regulatory barriers, and low levels of financial literacy, which may hinder the full realization of endogenous growth potential (Nwankwo & Eze, 2013). Therefore, while endogenous growth theory provides a compelling framework for understanding the potential impact of financial inclusion on economic growth in Nigeria, it also highlights the importance of supportive policy measures to overcome the existing barriers and maximize the growth benefits of financial inclusion (Arestis & Demetriades, 1997).

2.4.3 Poverty Trap Theory

The poverty gap theory, which focuses on the disparity between the income of the poor and the poverty line, was significantly shaped by the works of Amartya Sen (1976) and other development economists. Sen's contribution lies in defining poverty beyond mere income levels, incorporating capabilities and the multidimensional nature of poverty. The poverty gap index, a measure derived from this theory, quantifies the intensity of poverty by calculating the mean shortfall of the total population from the poverty line, expressed as a proportion of the poverty line itself (Ravallion, 2016). In the context of financial inclusion, the poverty gap theory provides a framework to understand how access to

financial services can potentially reduce this gap, promoting economic participation among the poor and fostering overall economic growth. Nigeria, with its high poverty rates and economic disparities, presents a relevant case study to examine how financial inclusion might bridge the poverty gap and contribute to economic development (World Bank, 2018).

The poverty gap theory posits that poverty is not merely the absence of income but also the lack of access to essential services, including financial services, that can empower individuals to improve their economic standing (Sen, 1999; Alkire & Foster, 2011). The theory has been evaluated by several scholars, who have expanded on the role of financial inclusion in closing the poverty gap. For instance, Demirgüç-Kunt et al. (2018) argue that financial inclusion can mitigate poverty by providing the poor with access to credit, savings, and insurance, thus enabling them to invest in income-generating activities. Burgess and Pande (2005) found that expanding rural banking in India significantly reduced poverty, indicating that access to financial services can have a direct impact on poverty alleviation. Similarly, Allen et al. (2016) highlight that financial inclusion has the potential to spur economic growth by enhancing the ability of the poor to invest in education and health, leading to improved productivity. Other researchers, such as Beck et al. (2007) and Honohan (2008), have emphasized the importance of financial sector reforms and policies aimed at increasing the reach of financial services to marginalized groups. However, some critiques, like Cull et al. (2014) and Dupas et al.

(2018), suggest that financial inclusion alone may not be sufficient to reduce poverty unless accompanied by supportive policies addressing broader structural inequalities.

In the Nigerian context, the poverty gap theory underscores the potential impact of financial inclusion on economic growth. Despite being one of Africa's largest economies, Nigeria faces significant poverty challenges, with a substantial proportion of its population living below the poverty line (National Bureau of Statistics, 2019). The theory suggests that by narrowing the poverty gap through increased financial inclusion, Nigeria can stimulate economic activity and growth. For example, recent studies have shown that access to financial services, such as microcredit and mobile banking, has led to increased entrepreneurial activities among the poor in Nigeria (Ajakaiye & Adeyeye, 2018; Babajide et al., 2015). Financial inclusion not only facilitates capital accumulation but also improves risk management and consumption smoothing, which can enhance economic stability and growth (Oguntoyinbo, 2019). Nevertheless, the dynamics in Nigeria reveal that financial inclusion's effectiveness in reducing the poverty gap depends on the adequacy of financial infrastructure, regulatory frameworks, and complementary services such as education and healthcare (Adedokun & Adefeso, 2018). Therefore, while the poverty gap theory provides a robust framework to analyze the potential of financial inclusion in fostering economic growth in Nigeria, it also highlights the need for an integrated approach that addresses various facets of poverty.

2.4.4 Supply-Leading and Demand-Following Hypothesis

The "Supply-Leading and Demand-Following Hypothesis" finds its roots in the work of Patrick (1966), who proposed that financial development and economic growth have a bi-directional relationship. The theory posits that financial development can either lead or follow economic growth. In the supply-leading hypothesis, financial development precedes and catalyzes economic growth by mobilizing savings, fostering investments, and improving resource allocation. Conversely, the demand-following hypothesis asserts that economic growth drives the development of the financial sector, as increased economic activities create a demand for financial services (Patrick, 1966). In the context of Nigeria, a developing economy with a significant portion of the population historically excluded from formal financial services, the application of this theory is particularly relevant. Recent literature on financial inclusion and economic growth in emerging markets often revisits Patrick's hypothesis to understand the complex interplay between financial systems and broader economic outcomes.

Recent empirical evaluations provide mixed support for both aspects of the theory. Adusei (2016) finds evidence supporting the supply-leading hypothesis, suggesting that financial inclusion in Sub-Saharan African countries, including Nigeria, facilitates economic growth by enabling capital accumulation and entrepreneurship. Similarly, Sahay et al. (2015) demonstrate that countries with broader financial inclusion often experience higher GDP growth rates, implying a supply-leading effect. On the other hand,

Mlachila et al. (2016) note instances where the demand-following hypothesis seems more plausible, as the expansion of economic activities necessitates more advanced financial services, thereby fostering financial sector growth. However, Uddin et al. (2017) argue that the relationship is not strictly unidirectional; financial development and economic growth can mutually reinforce each other in a dynamic, cyclical process. This assertion is supported by Pan and Wang (2015), who emphasize that while financial inclusion can drive growth by enhancing access to credit and facilitating investment, economic growth can also create more opportunities for financial deepening. Similarly, Beck et al. (2016) and Mehrotra and Yetman (2015) highlight that the impact of financial development on growth is contingent on the level of financial inclusion, suggesting a nuanced interaction between these variables. Dabla-Norris et al. (2015) also support this bidirectional view, showing that financial inclusion policies can enhance growth, which in turn can promote further financial development. Therefore, while the theory provides a foundational framework, the current literature emphasizes a more complex, interconnected relationship.

The relevance of the supply-leading and demand-following hypotheses in the Nigerian context is particularly significant given the country's ongoing efforts to enhance financial inclusion. Nigeria's financial inclusion strategy, aimed at increasing access to financial services, can be seen as a supply-leading approach intended to stimulate economic growth by integrating more individuals into the formal financial sector (CBN, 2018). However, empirical studies in Nigeria, such as Ajakaiye and Tella (2019), indicate that

while improved financial inclusion has contributed to economic growth, the reverse is also true: periods of robust economic growth have led to increased demand for financial services, supporting the demand-following hypothesis. This dual causality suggests that a unidirectional interpretation of the relationship may be overly simplistic. It underscores the need for a balanced approach that simultaneously promotes financial inclusion and leverages economic growth to foster a more dynamic and inclusive financial system. As Nigeria continues to navigate its path toward sustainable economic development, the interaction between financial inclusion and economic growth must be understood as a complex, reciprocal process rather than a linear, cause-effect relationship.

2.5 Theoretical Framework

The financial intermediation theory is adopted as the theoretical framework of the study. According to this theory, financial intermediaries such as banks, microfinance institutions, and other financial entities play a crucial role in bridging the gap between savers and borrowers, thereby facilitating capital accumulation and productive investments (Diamond & Dybvig, 1983; Levine, 2005). In the context of Nigeria, where financial exclusion remains a significant challenge, the theory suggests that improving financial intermediation through expanded access to financial services can stimulate economic activities by providing credit to underserved sectors, reducing transaction costs, and promoting efficient allocation of resources (Adeola & Evans, 2017; Ozili, 2020). By enabling more individuals and businesses to participate in the formal financial system,

financial intermediaries can help increase aggregate savings, enhance investment opportunities, and drive inclusive economic growth. The theory's focus on mitigating information asymmetries and reducing risks aligns with the Nigerian context, where lack of access to financial services often results in suboptimal economic outcomes. Therefore, financial intermediation theory not only underscores the mechanisms through which financial inclusion can promote economic growth but also highlights the potential barriers and inefficiencies that must be addressed to realize its full impact on Nigeria's economic development.

2.6 Empirical Review

Oyadeyi (2024) explored the effects of financial inclusion and banking innovation on Nigeria's economic growth using mixed data sampling (MIDAS) and autoregressive distributed lag (ARDL) models with monthly and quarterly data from 2009 to 2021. Utilizing data from the Central Bank of Nigeria Statistical Bulletin and the World Development Indicator, the research found that financial inclusion and banking innovations, particularly ATMs and mobile transactions, had a consistent positive impact on economic growth across both analytical techniques. POS and web transactions also contributed to growth but showed inconsistent results between the MIDAS and ARDL methods, while cheque transactions did not significantly impact economic growth in the ARDL model. Notably, POS transactions had the most substantial impact, followed by

ATMs, mobile, and web transactions. The study concluded that financial inclusion and innovations in the banking sector are crucial for promoting economic growth in Nigeria.

Chinoda and Kapingura examined the influence of institutional quality and governance on the relationship between digital financial inclusion and economic growth in Sub-Saharan Africa (SSA) from 2014 to 2020. Using the generalized method of moments (GMM) technique to control for endogeneity, the study focused on four main variables: digital financial inclusion index, GDP per capita growth, institutional quality, and governance. The findings revealed a significant positive impact of institutional quality and governance on the nexus between digital financial inclusion and economic growth. Additionally, the study found that trade and population growth positively affected economic growth, while inflation had a negative impact in the region. These results suggest that robust institutions and sound governance structures enhance the positive effects of digital financial inclusion on economic growth in SSA.

Ibechiole (2023) assessed the impact of financial inclusion on Nigeria's economic growth from 1992 to 2021 using secondary data sourced from the Central Bank of Nigeria's statistical bulletins. The study used commercial bank loans to rural areas, bank deposits from rural areas, and credits to small and medium-scale enterprises (SMEs) as proxies for financial inclusion, while GDP represented economic growth. Through regression analysis employing the ordinary least squares (OLS) method, the research found that bank loans and deposits to and from rural areas had a positive and significant effect on

GDP. In contrast, credits to SMEs showed a negative and insignificant relationship with GDP. The study concluded that financial inclusion, primarily through rural banking services, has a positive and significant relationship with economic growth in Nigeria.

Ndombi Avouba et al. (2023) investigated the nonlinear relationship between financial inclusion and economic growth in the West African Economic and Monetary Union (WAEMU) using a panel-corrected standard error (PCSE) model for eight countries over the period 2014–2018. The findings indicated a U-shaped relationship between the extended banking rate and economic growth. The results suggested that economic growth exhibited different behaviors depending on the regime relative to the inflection point of financial inclusion. This non-linear association implies that at different levels of financial inclusion, the impact on economic growth varies, thereby suggesting that both under- and over-financial inclusion could have distinct implications for economic growth in the WAEMU region.

Ben Abdallah et al. (2023): This study analyzed the relationship between traditional financial services, digital financial inclusion, and economic growth in 14 Middle East and North Africa (MENA) countries from 2000 to 2021. Using the PMG-ARDL and GMM-System approaches to capture both short- and long-term relationships, the study found that digital financial inclusion is positively correlated with GDP per capita, outperforming traditional financial services. The study also identified internet usage and mobile subscriptions as key determinants of digital financial inclusion in the MENA

region. These findings imply that enhancing digital financial services can significantly contribute to economic growth in the region, highlighting the importance of technology and digital infrastructure in the financial sector.

Adedokun and Ağa (2023) examines the relationship between financial inclusion and economic growth in Sub-Saharan Africa (SSA) from 2004 to 2017. Utilizing the generalized method of moments (GMM) and Dumitrescu–Hurlin causality test, the study develops a composite index for financial inclusion using principal component analysis. The findings reveal a significant positive impact of financial inclusion on economic growth in SSA, suggesting that increased access to financial services facilitates economic activities and growth. Additionally, the study uncovers a short-run causality from economic growth to financial inclusion, implying that as economies grow, financial inclusion tends to improve, creating a reinforcing cycle that promotes further growth.

Ifediora et al. (2022) investigating the impact of financial inclusion on economic growth across 22 SSA countries between 2012 and 2018, this study employs a system GMM approach. A composite index of financial inclusion, alongside individual indicators, is used to examine various dimensions of financial inclusion such as availability and penetration. The results indicate that both the availability and penetration dimensions significantly and positively influence economic growth, while the usage dimension does so but not significantly. Bank branches and ATMs are found to have a substantial positive effect, whereas outstanding deposits negatively impact growth. Mobile money

indicators present a mixed picture: mobile money agents are detrimental to growth, while mobile money accounts and transactions have a positive, though not significant, effect. The study suggests that financial education policies should be pursued to maximize the benefits of financial inclusion, indicating that mere access is insufficient without adequate knowledge and trust in financial services.

Nandi, Hasan and Kabir (2022) explores the heterogeneous impact of financial inclusion on per capita GDP growth in 76 developing countries from 2011 to 2017. Using a multi-dimensional financial inclusion index, the study employs Granger causality and panel cointegration tests to identify long-term relationships and reverse causality. Findings demonstrate a strong positive impact of financial inclusion on per capita GDP growth, with higher impacts observed in countries with greater levels of financial inclusion. Specifically, a 1% increase in the financial inclusion index correlates with a 0.0153% rise in per capita GDP for countries with low to medium financial inclusion, compared to a 0.0794% increase in countries with high inclusion. The study highlights the importance of financial market concentration and governance, noting that lower levels of governance and market concentration may hinder economic growth in countries with lower financial inclusion, suggesting a need for policy interventions to improve financial infrastructure and governance.

Pettersson and Stjernberg (2022) analyzes the relationship between financial inclusion and economic growth across 20 countries of varying income levels over a 19-year period

(2002-2020). Utilizing the Dickey-Fuller unit root test and the Arellano-Bond dynamic panel GMM method, the study finds a positive correlation between financial inclusion and economic growth. Among the six proxies for financial inclusion, three show a statistically significant positive impact on growth. The results suggest that financial inclusion is a crucial driver of economic development, as it facilitates access to financial services, promoting investment and consumption. This indicates that policies aimed at enhancing financial inclusion can be an effective strategy for fostering economic growth, especially in developing and emerging economies.

Emara and El Said (2021) investigates the relationship between financial inclusion, governance, and economic growth in the Middle East and North Africa (MENA) region using a system GMM dynamic panel model on data spanning from 1990 to 2018. The study employs various indicators of financial inclusion, including the number of bank accounts, bank branches, and firms' access to finance. Results indicate that financial inclusion significantly boosts GDP per capita growth in the MENA region. However, the positive impact of firms' access to finance is only statistically significant when strong institutions are present. This suggests that the benefits of financial inclusion are contingent on the presence of robust governance structures, including the rule of law, judicial independence, and political stability. Thus, the study concludes that countries with low levels of financial access, such as those in the MENA region, could greatly benefit from improving governance to maximize the impact of financial inclusion on economic growth.

Liu et al. (2021) explore the relationship between digital financial inclusion and economic growth in China by employing a Bayesian macroeconomic analysis framework and provincial panel data from 2011 to 2019. They introduce the level of internet development as a threshold variable to examine the potential mediating effects. Their findings suggest that digital financial inclusion significantly contributes to economic growth, especially when considering the internet threshold effect. Furthermore, they identify two primary channels through which digital financial inclusion fosters growth: promoting entrepreneurship among small and medium-sized enterprises (SMEs) and stimulating consumer spending. The study implies that digital financial inclusion can drive economic expansion by leveraging internet infrastructure to enhance financial services access.

Adegboyegun et al. (2020) investigate the impact of financial inclusion on Nigeria's economic growth using Auto Regressive Distributed Lag (ARDL) and causality techniques, analyzing data spanning from 1986 to 2018. They incorporate variables such as GDP, loans to rural areas, deposits from rural areas, number of bank branches, and interest rates. Their results indicate that financial inclusion positively affects economic growth, whereas high-interest rates negatively impact it. Additionally, causality tests reveal a unidirectional causality flowing from economic growth to financial inclusion, primarily facilitated through loans to rural areas. This finding suggests that fostering economic growth can, in turn, enhance financial inclusion, especially in underserved regions.

Ali et al. (2021) examine the influence of financial inclusion on the economic growth of Islamic Development Bank (IsDB) member countries using a financial inclusion index (FII). The study analyzes data from 45 countries between 2000 and 2016, utilizing various econometric techniques such as the Generalized Method of Moments (GMM), two-stage least squares (2SLS), panel vector autoregressive (VAR), and Granger causality tests. The results indicate a positive effect of financial inclusion on economic growth, with the Granger causality analysis revealing a bidirectional relationship between financial inclusion indicators and economic growth. These findings suggest that enhancing financial inclusion can foster economic development in IsDB member countries, and, reciprocally, economic growth can promote greater financial inclusion.

Peterand and Okpebru (2020) assess the effects of financial inclusion on Nigeria's economic growth from 2000 to 2018 using archival data from the Central Bank of Nigeria. The study employs an ex-post facto research design and uses variables such as loans to small and medium enterprises (LSME), rural bank deposits (RBD), and inflation (INF). Employing auto-regressive distributed lag (ARDL) for analysis, they find that LSME and RBD have a significant positive effect on economic growth, while inflation exerts an impact as a control variable. The study further confirms long-term relationships among the variables, indicating that policies aimed at increasing loans to SMEs and enhancing rural banking services can have a substantial impact on Nigeria's economic growth.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter deals with the research design, population and sample of the study, sources of data, theoretical framework and model specification, measurement and operationalization of variable as well as method of data analysis.

3.2 Research Design

The research design that will be adopted in this study is the Ex-Post-facto research design, which is very applicable in the management and social sciences. This kind of research design involves the use of secondary data in which responses in the nature of a factor and its effects are being studied, which restricts the researcher from manipulating the outcome of the research. This inability to manipulate the variables stem from the fact that the variables are inherently non-manipulable or because their manifestations have already occurred (Agbonifoh & Yomere, 1999).

3.3 Population of the Study

The population of this study constitutes data of entire financial inclusion and economic growth indices in Nigeria.

3.4 Sample and Sampling Technique

Due to the difficulty in obtaining the data for the entire variations of financial inclusion indices affecting economic growth in Nigeria, the study's sample will be restricted to the variables of the study such as the number of bank branches per 100,000 adults, number of deposit accounts with commercial banks per 1,000 adults, proportion of outstanding loans from commercial banks as a percentage of GDP, total volume of mobile money transactions as a percentage of GDP and real gross domestic product within the period of 1995 to 2023.

3.5 Sources of Data

To comply with the stated research objectives, the study will employ time series data mainly from secondary sources which are quantitative in nature. The data will be obtained from the annual statistical bulletin of the Central Bank of Nigeria, National Bureau of Statistics annual bulletin, Enhancing Financial Innovation & Access (EFInA) annual survey and world bank data of previous edition for the period under review. The data will cover variables of the study, including the number of bank branches per 100,000 adults, number of deposit accounts with commercial banks per 1,000 adults, proportion of outstanding loans from commercial banks as a percentage of GDP, total volume of mobile money transactions as a percentage of GDP and real gross domestic product.

3.6 Model Specification

The regression model is adapted from previous research conducted by Sophia, Adesina and Joshua (2023). Their model is presented thus:

$$GRT_t = \alpha_0 + \beta_1 BLR_t + \beta_2 ATM_t + \beta_3 BRC_t + \beta_4 M2_t + \beta_5 CAP_t + \beta_6 LAB_t + \mu_t \dots \dots \dots (3.1)$$

The current study modifies the model of Sophia, Adesina and Joshua (2023) by utilizing the number of bank branches per 100,000 adults, number of deposit accounts with commercial banks per 1,000 adults, proportion of outstanding loans from commercial banks as a percentage of GDP, total volume of mobile money transactions as a percentage of GDP as financial inclusion metrics. Therefore, the modified model for this study is stated below:

The model is functionally expressed thus:

$$RDGP_t = f(NBB_t, NDA_t, POL_t, VMM_t) \dots \dots \dots (3.2)$$

The above functional model is expressed in its econometric form thus:

$$RGDP_t = \beta_0 + \beta_1 NBB_t + \beta_2 NDA_t + \beta_3 POL_t + \beta_4 VMM_t + \epsilon_{it} \dots \dots \dots (3.3)$$

Where:

$RGDP_t$ = Real gross domestic product at time t

NBB_t = Number of bank branches per 100,000 adults at time t

NDA_t = Number of deposit accounts with commercial banks per 1,000 adults at time t

POL_t = Proportion of outstanding loans from commercial banks as a percentage of GDP
at time t

VMM_t = Total volume of mobile money transactions as a percentage of GDP at time t

$\beta_0, \beta_1, \beta_4$ = parameters to be estimated

$\mathcal{E}$ = error term signifying other variables not captured in the study

A priori expectation of the model is:

A priori expectations

(β_1) = Number of bank branches per 100,000 adults; *a priori* expectation is positive

(β_2) = Number of deposit accounts with commercial banks per 1,000 adults; *a priori*
expectation is positive

(β_3) = Proportion of outstanding loans from commercial banks as a percentage of GDP; *a*
priori expectation is positive

(β_4) = Total volume of mobile money transactions as a percentage of GDP; *a priori*
expectation is positive

Hence, this is further shown here:

$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0$

3.7 Method of Data Analysis

The study will adopt the fully modified ordinary least squares (FMOLS) econometric technique to analyse the empirical model and examine the effect of financial inclusion on economic growth in Nigeria. Various tests will be conducted to evaluate the results, which include t-test, R-Squared and f-test. Time series analysis will be carried out to test the data for stationarity or non-stationarity problems using Augmented Dickey-Fuller (ADF), which is an extension of Dickey-Fuller test. After that, the researcher will run a cointegration test to establish whether the non-stationarity variables are cointegrated and to confirm the existence of a long run equilibrium relationship between the variables. Also, the unit root test will be carried out to determine whether the orders of integration of the variables of interest were compatible with the selected econometric methodological framework. An error correction model will be specified having established the cointegration to present the short run dynamics while preserving the long run equilibrium relationship.

3.8 Operationalization of Variables

Table 3.1: Operationalization of Variables

Variable	Type	Measurement	Source
Number of Bank Branches per 100,000 Adults	Independent	Number of physical bank branches per 100,000 adult individuals in the population.	Adedokun and Ağa (2023)
Number of Deposit Accounts with Commercial Banks per 1,000 Adults	Independent	Number of deposit accounts held in commercial banks per 1,000 adult individuals.	Ibechirole (2023)
Proportion of Outstanding Loans from Commercial Banks as a Percentage of GDP	Independent	Total outstanding loans from commercial banks as a percentage of the country's GDP.	Ifediora et al. (2022)
Total Volume of Mobile Money Transactions as a Percentage of GDP	Independent	Total value of mobile money transactions as a percentage of the country's GDP.	Oyadeyi (2024)
Real Gross Domestic Product (GDP)	Dependent	Real GDP, adjusted for inflation, typically measured in constant national currency units.	Pettersson and Stjernberg (2022)

Source: Researcher's compilations (2024).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSES

4.1 Introduction

This chapter-data presentation and analyses contains the results obtained from the analyses of the time series data collected from the annual report of Central Bank of Nigeria Statistical Bulletin and World Bank database from 1995 to 2023. The analyses were done with the aid of a computer software (Eviews) and have been presented using tables. Explanations were provided for each table presented in this chapter. The major sections in this chapter include data presentation and interpretation, test of hypotheses, and discussion of findings.

4.2 Data Presentation and Interpretation

4.2.1 Preliminary Analyses

This section involves the preliminary analysis of the variables. Specifically, it contains the comprehensive description of the variables of the study (descriptive statistics) and the correlation analysis.

Table 4.1: Descriptive statistics

	RGDP (₦' Billion)	NBB	NDA	POL	VMM
Mean	4.979310	541.7338	0.116276	1325.112	49.82241
Maximum	6.600000	1200.000	0.188000	9663.500	77.94000
Minimum	3.900000	150.0000	0.072000	0.000000	21.88000
Std. Dev.	0.739874	341.3364	0.027180	2766.712	19.78364
Skewness	1.020674	0.530133	0.633949	2.147761	-0.100663
Kurtosis	2.859932	1.910279	3.472788	6.083891	1.444406
Jarque-Bera	5.058958	2.793252	2.212570	33.78728	2.972990
Probability	0.079701	0.247430	0.330786	0.000000	0.226164

RGDP= Real Gross Domestic Product; NBB = Number of bank branches per 100,000 adults; NDA = Number of deposit accounts with commercial banks per 1,000 adults; POL = Proportion of outstanding loans from commercial banks as a percentage of GDP; VMM = Total volume of mobile money transactions as a percentage of GDP

Source: Researcher's compilation (2024)

The descriptive statistics in Table 4.1 provide a summary of the variables used in analyzing the relationship between financial inclusion and economic growth, measured through the Real Gross Domestic Product (RGDP) and financial inclusion indicators such as the Number of Bank Branches (NBB), Number of Deposit Accounts (NDA), Proportion of Outstanding Loans (POL), and Volume of Mobile Money Transactions (VMM).

The mean RGDP value is ₦4.979 trillion, indicating an average economic output within the study period. The RGDP shows moderate variability, with a standard deviation of 0.739, suggesting a relatively stable economic environment during the observed timeframe. The minimum RGDP is ₦3.9 trillion, while the maximum is ₦6.6 trillion,

highlighting notable fluctuations in economic performance. The skewness of 1.02 indicates a positively skewed distribution, suggesting that higher RGDP values occurred less frequently than lower ones. Kurtosis is close to 3, suggesting a distribution close to normality. However, the Jarque-Bera statistic (5.06) and its associated probability (0.079) indicate marginal non-normality.

The mean number of bank branches per 100,000 adults (541.73) suggests moderate access to financial services during the period. The range of values (150 minimum to 1,200 maximum) demonstrates significant disparity in bank branch distribution. With a standard deviation of 341.34, the data displays considerable variability, reflecting uneven regional access to physical banking infrastructure. The skewness (0.53) and kurtosis (1.91) values indicate a distribution that is moderately skewed to the right and flatter than a normal distribution, which may imply clustering of data around lower NBB values. The probability value (0.247) for the Jarque-Bera test supports the conclusion of approximate normality in this variable's distribution.

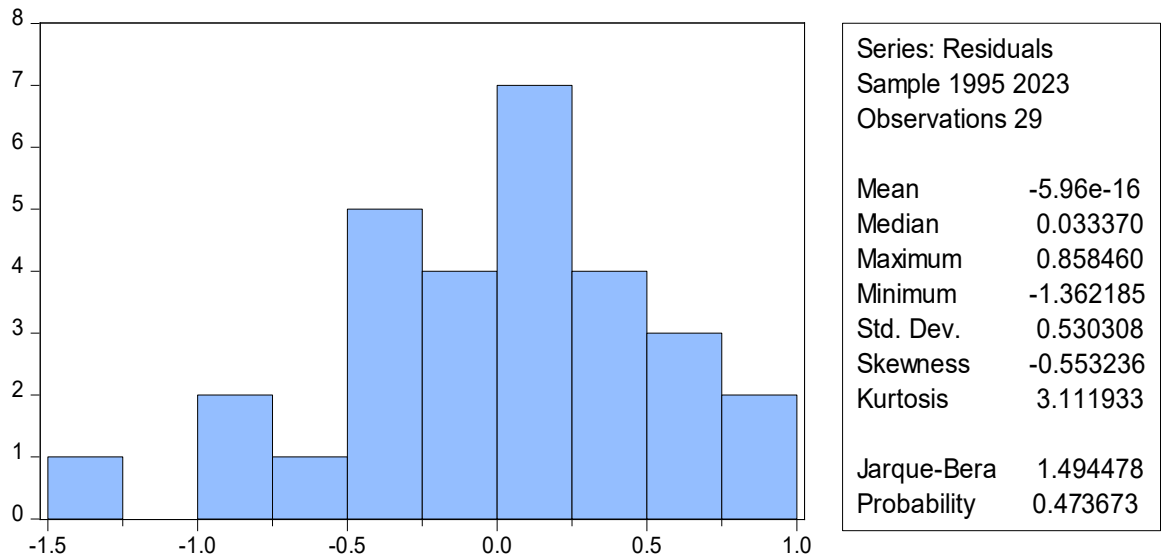
The mean number of deposit accounts per 1,000 adults is 0.116, indicating a low level of banking penetration on average. The maximum value (0.188) and minimum value (0.072) show a relatively narrow range, signifying limited progress in increasing deposit account ownership. The standard deviation of 0.027 reflects low variability in this indicator across the study period. The skewness (0.63) indicates a moderate positive skew, suggesting a prevalence of lower NDA values, while the kurtosis (3.47) reflects a slightly leptokurtic

distribution. The Jarque-Bera statistic (2.21) and the associated probability (0.33) suggest that the distribution of NDA is approximately normal.

POL, representing the ratio of outstanding loans to GDP, has a mean of 1,325.11%, suggesting a high proportion of economic activity financed through credit. However, the variable shows considerable variability, with a standard deviation of 2,766.71. The maximum value (9,663.5%) and minimum value (0%) highlight extreme disparities, possibly due to structural differences in credit allocation or data outliers. The skewness of 2.15 indicates a highly positive skew, suggesting that extremely high POL values occurred infrequently. Similarly, the kurtosis value (6.08) indicates a leptokurtic distribution, characterized by heavy tails. The Jarque-Bera test statistic (33.78) and a probability value of 0.000 strongly suggest significant deviations from normality.

The average volume of mobile money transactions as a percentage of GDP (49.82%) underscores the growing significance of digital financial services in the economy. The range of values (21.88% minimum to 77.94% maximum) indicates increasing adoption of mobile money, albeit with variations across time or regions. The standard deviation of 19.78 suggests moderate variability in mobile money usage. The skewness (-0.10) indicates a nearly symmetric distribution, while the kurtosis (1.44) reveals a platykurtic distribution, suggesting a flatter curve than the normal distribution. The Jarque-Bera test statistic (2.97) and its probability value (0.226) suggest no significant departure from

normality in this variable’s distribution. However, the overall normality test was conducted as shown in Figure 4.1 below.



Source: EViews 10 (2024)

The normality and other mean statistics of the regression variables are shown in the Histogram Normality Test above (Fig 4.1). As shown in the result, the JargueBera statistic stood low at 1.4945 with a corresponding probability value of 0.4737 (47.37%). Since the p-value is greater than the 5% (0.05) benchmark, we cannot reject the null hypothesis of ‘normal distribution’. This implies that the population residuals (u) are jointly observed to be normal in its distribution, and which is desirable.

Table 4.2: Correlation Matrix

	RGDP	NBB	NDA	POL	VMM
RGDP	1.000000				
NBB	-0.070172	1.000000			
NDA	0.362940**	0.536731*	1.000000		
POL	-0.246516	0.761423*	0.339011	1.000000	
VMM	0.141071	0.948747*	0.625192*	0.601637*	1.000000
* Sig @ 1%; * * Sig @ 5%					

Source: Researcher's compilation (2024)

The correlation analysis in Table 4.2 reveals the relationships between financial inclusion indicators and economic growth, as measured by Real Gross Domestic Product (RGDP). Among the variables, the Number of Deposit Accounts (NDA) shows a positive and statistically significant correlation (0.362) with RGDP at the 5% significance level, suggesting that higher levels of account ownership are associated with improved economic growth. On the other hand, the Number of Bank Branches (NBB) and the Proportion of Outstanding Loans (POL) have weak negative correlations with RGDP (-0.070 and -0.247, respectively), indicating that these factors may not directly enhance economic growth, or their effect might be influenced by other variables. The Volume of Mobile Money Transactions (VMM) has a positive correlation (0.141) with RGDP, though the relationship is not statistically significant, hinting at the growing but not yet fully realized impact of digital financial services on economic growth. Overall, NDA emerges as the most significant financial inclusion variable linked to economic growth,

highlighting the importance of improving banking penetration in fostering economic performance.

4.2.2 Unit Root Tests

Unit root tests are employed to determine the stationarity of a time series, which is crucial for ensuring reliable and unbiased regression results in econometric analyses, as non-stationary data can lead to spurious relationships. Table 4.3 presents the unit root tests results.

Table 4.3 Unit Root Tests

At Levels Panel 1				First	Difference	Panel 2
Variable	ADF Test Statistic	95% Critical ADF Value	Remark	ADF Test Statistic	95% Critical ADF Value	Remark
RGDP	-2.305518	-2.976263	Non-Stationary	-3.408248	-2.976263	Stationary
NBB	-1.653905	-3.603202	Non-Stationary	-5.685159	-3.603202	Stationary
NDA	-3.096884	-3.587527	Non-Stationary	-3.893215	-3.587527	Stationary
POL	-2.232429	-3.552973	Non-Stationary	-4.795957	-3.557759	Stationary
VMM	-1.960264	-3.552973	Non-Stationary	-5.126073	-3.557759	Stationary

Source: Researcher's compilation (2024)

The results of the unit root tests presented in Table 4.3 indicate that all the variables under consideration—Real Gross Domestic Product (RGDP), Number of Bank Branches (NBB), Number of Deposit Accounts (NDA), Proportion of Outstanding Loans (POL), and Volume of Mobile Money Transactions (VMM)—are non-stationary at their levels (Panel 1) as their ADF test statistics do not exceed the critical ADF values at the 95% confidence level. However, upon first differencing (Panel 2), all variables become stationary, as their ADF test statistics surpass the critical values, confirming that they are integrated of order one, $I(1)$. This implies that the variables exhibit a stochastic trend at their levels but are suitable for regression analysis once differenced.

Given the presence of variables integrated of the same order, the use of Fully Modified Ordinary Least Squares (FMOLS) is justified for the estimation of the relationship between financial inclusion and economic growth. FMOLS is specifically designed to address potential issues of endogeneity and serial correlation that arise in models involving non-stationary variables with long-run relationships (Pedroni, 2001). Unlike Ordinary Least Squares (OLS), FMOLS adjusts for the effects of these econometric issues and provides consistent and efficient parameter estimates in the presence of cointegration. Thus, FMOLS is an appropriate econometric technique for analyzing the long-term effects of financial inclusion variables on economic growth, ensuring the validity and reliability of the results.

4.2.3 Diagnostic Tests

Table 4.4: Serial, Heteroskedasticity, and Specification Tests

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	16.76595	Prob. F(2,22)	0.0000
Obs*R-squared	17.51111	Prob. Chi-Square(2)	0.0002

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.375655	Prob. F(4,24)	0.0804
Obs*R-squared	8.225506	Prob. Chi-Square(4)	0.0837

Ramsey RESET Test: Specification: RGDP NBB NDA POL VMM C

t-statistic	1.645030	23	0.1136
F-statistic	2.706122	(1, 23)	0.1136
Likelihood ratio	3.225814	1	0.0725

Source: Researcher's compilation (2024)

The diagnostic test results in Table 4.4 provide crucial information about the suitability and robustness of the regression model used to analyze the effect of financial inclusion on economic growth.

Serial Correlation Test

The Breusch-Godfrey Serial Correlation LM Test shows a statistically significant F-statistic (16.77, with a p-value of 0.0000) and Obs*R-squared value (17.51, with a p-value of 0.0002). These results strongly indicate the presence of serial correlation in the residuals, violating the assumption of uncorrelated errors. Serial correlation can lead to inefficient parameter estimates in traditional Ordinary Least Squares (OLS) regressions and inflate the significance of the explanatory variables.

Heteroskedasticity Test

The Breusch-Pagan-Godfrey test for heteroskedasticity yields an F-statistic of 2.38 and a p-value of 0.0804, with the Obs*R-squared value (8.23) also having a p-value of 0.0837. These results suggest no statistically significant evidence of heteroskedasticity at the 5% level, meaning the variance of the residuals appears to be constant across observations. While this result mitigates concerns of heteroskedasticity, it does not negate the presence of other econometric issues, particularly given the identified serial correlation.

Specification Test

The Ramsey RESET test, which assesses model specification, shows that the model is adequately specified, as indicated by the t-statistic (1.645) and F-statistic (2.706) with associated p-values of 0.1136. The results indicate no evidence of functional form misspecification, suggesting that the included variables and their relationship with economic growth are correctly modeled.

Given the results of these diagnostic tests, Fully Modified Ordinary Least Squares (FMOLS) is particularly well-suited for this analysis. The presence of serial correlation and the integration of variables at order one ($I(1)$) in the earlier unit root tests necessitate a regression approach that can correct for these econometric challenges. FMOLS, introduced by Phillips and Hansen (1990), is designed to produce robust estimates in the presence of serial correlation, endogeneity, and heteroskedasticity in cointegrated systems. Unlike OLS, FMOLS incorporates corrections for serial correlation and

endogeneity by modifying the least squares estimator through nonparametric adjustments to the error term. This ensures consistent and efficient long-run parameter estimates even in non-stationary and cointegrated models.

Additionally, FMOLS addresses issues related to omitted dynamic effects and small-sample bias, making it particularly relevant for analyzing long-run relationships between financial inclusion and economic growth (Pedroni, 2001; Kao & Chiang, 2000). As demonstrated by the specification test results, the functional form of the model is correctly specified, further justifying the use of FMOLS since it can exploit the cointegrating relationship between RGDP and financial inclusion indicators (NBB, NDA, POL, and VMM) while addressing the detected serial correlation.

4.2.4 Multivariate Analysis

Table 4.5: Multivariate Analysis

Dependent Variable: RGDP

Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBB	-0.005344	0.002065	-2.587528	0.0165
NDA	7.070309	6.998922	1.010200	0.3229
POL	9.27E-05	9.83E-05	0.942528	0.3557
VMM	0.081910	0.031132	2.631034	0.0149
C	2.856771	0.710549	4.020515	0.0005
R-squared: 0.486610				
Adjusted R-squared:				
0.397325				

Source: Researcher's compilation (2024)

The FMOLS results in Table 4.5 highlight the relationship between financial inclusion indicators and economic growth, as measured by RGDP. The coefficient of the Number

of Bank Branches (NBB) is -0.005344, with a p-value of 0.0165, indicating a statistically significant but negative impact on economic growth. This suggests that an increase in bank branches does not necessarily foster growth and may reflect inefficiencies in the traditional banking sector. The Number of Deposit Accounts (NDA) shows a positive coefficient of 7.070309 but is statistically insignificant (p-value = 0.3229), implying that increased account ownership does not significantly influence growth, possibly due to inactive or dormant accounts. The Proportion of Outstanding Loans (POL) has a small positive coefficient (9.27E-05) but is also statistically insignificant (p-value = 0.3557), indicating that bank credit has not substantially contributed to economic growth, likely due to issues such as loan misallocation. Conversely, the Volume of Mobile Money Transactions (VMM) has a significant positive coefficient of 0.081910 (p-value = 0.0149), underscoring the critical role of digital financial services in driving economic growth. The constant term (C) is also highly significant, suggesting that other unaccounted factors contribute to the overall growth of the economy. The model explains 48.66% of the variation in RGDP, as indicated by the R-squared value, with an adjusted R-squared of 39.73%, reflecting a moderate fit.

4.3 Hypotheses Testing

The hypotheses for this study are tested at the 5% significance level. The decision rule was to accept the null hypothesis if the p-value is greater than 0.05, otherwise, the

alternative hypothesis was accepted and vice versa. The results presented in Table 4.5 were used testing the hypotheses.

Hypothesis 1:

The number of bank branches per 100,000 adults has no significant effect on economic growth in Nigeria.

From Table 4.5, the coefficient of NBB is -0.005344 with a p-value of 0.0165, which is less than the 5% significance level. Therefore, we reject the null hypothesis and conclude that the number of bank branches per 100,000 adults has a significant but negative effect on economic growth in Nigeria.

Hypothesis 2:

The number of deposit accounts with commercial banks per 1,000 adults does not significantly impact economic growth in Nigeria.

The coefficient of NDA is 7.070309 with a p-value of 0.3229, which is greater than the 5% significance level. Therefore, we accept the null hypothesis and conclude that the number of deposit accounts with commercial banks per 1,000 adults does not have a significant impact on economic growth in Nigeria.

Hypothesis 3:

Outstanding loans from commercial banks as a percentage of GDP has no significant effect on economic growth in Nigeria.

The coefficient of POL is 9.27E-05 with a p-value of 0.3557, which is greater than the 5% significance level. Thus, we accept the null hypothesis and conclude that outstanding loans from commercial banks as a percentage of GDP have no significant effect on economic growth in Nigeria.

Hypothesis 4:

The total volume of mobile money transactions as a percentage of GDP has no significant relationship with economic growth in Nigeria.

The coefficient of VMM is 0.081910 with a p-value of 0.0149, which is less than the 5% significance level. Therefore, we reject the null hypothesis and conclude that the total volume of mobile money transactions as a percentage of GDP has a significant positive relationship with economic growth in Nigeria.

4.4 Discussion of Findings

The findings indicate that the number of bank branches per 100,000 adults has a statistically significant but negative impact on economic growth in Nigeria. This result contrasts with the common expectation that increased banking infrastructure fosters economic growth by enhancing financial inclusion. While studies like those by Camara

and Tuesta (2018) and Adusei (2021) suggest that greater access to banking services through physical branches supports savings and investment, this finding aligns more closely with the arguments of Sahay et al. (2020) and Yakubu and Affum (2022), who emphasize that banking infrastructure alone does not automatically translate into improved financial inclusion or growth. In Nigeria, this negative relationship could reflect inefficiencies in branch operations, such as low service quality, high operating costs, or underutilization in rural areas due to a lack of financial literacy or trust in banks. Furthermore, the rise of digital financial services, as noted by Oyadeyi (2024), could be reducing the relevance of traditional bank branches, thereby explaining the limited economic benefits of increased branch density. This finding highlights the need for policymakers to complement banking infrastructure with targeted financial education, improved service efficiency, and digital innovations to maximize its impact on growth.

Furthermore, the results show that the number of deposit accounts with commercial banks per 1,000 adults does not significantly impact economic growth in Nigeria. While the metric is often seen as a key indicator of financial inclusion, studies such as those by Adeola (2018) and Olayemi (2020) emphasize that its economic impact depends on active account usage rather than mere account ownership. In Nigeria, the insignificant relationship could stem from dormant accounts, which are prevalent due to low financial literacy, lack of trust in formal banking systems, or economic challenges that limit savings capacity. This finding contrasts with studies like those by Obadan (2019) and Akinlo (2021), which highlight the positive role of deposit accounts in mobilizing

savings and fostering investment. However, it aligns with Eze (2023), who argues that increasing deposit account ownership without corresponding improvements in financial education and economic stability may limit the potential for growth. To address this, policymakers should focus on encouraging active account usage through financial literacy campaigns, trust-building measures, and incentivizing savings and credit-linked products.

Also, the findings reveal that the proportion of outstanding loans from commercial banks as a percentage of GDP does not have a significant effect on economic growth in Nigeria. This aligns with the cautionary perspectives of Davis (2022) and Roberts (2023), who argue that while bank loans can drive economic activities, their effectiveness depends on proper allocation and monitoring. In Nigeria, the insignificant relationship may reflect challenges such as the misallocation of loans, high non-performing loans, and credit directed toward unproductive sectors. Adegoke (2021) and Bello (2023) emphasize that the quality and direction of credit matter more than the quantity, suggesting that loans must be channeled into productive sectors like agriculture, infrastructure, and manufacturing to yield economic benefits. Additionally, regulatory and structural challenges, as noted by Okafor (2022), might hinder the efficient use of credit. Addressing these issues requires stronger regulatory oversight, targeted credit allocation, and support for sectors that generate sustainable economic growth.

Finally, the findings indicate that the total volume of mobile money transactions as a percentage of GDP has a statistically significant and positive impact on economic growth in Nigeria. This result aligns with a growing body of literature, such as studies by Adedoyin (2019) and Adeleye (2020), which emphasize the transformative role of digital financial inclusion in fostering economic activities. Mobile money facilitates easier access to financial services for the unbanked, reduces transaction costs, and improves liquidity, particularly in rural areas. As observed by Okonkwo (2022) and Nwankwo (2021), regions in Nigeria with higher mobile money adoption have experienced more substantial economic growth due to enhanced financial inclusion and the velocity of money in circulation. This finding also reflects the broader transition from cash-based to cashless economies, as highlighted by Ojo and Oni (2018). To build on this momentum, policymakers should prioritize expanding mobile money infrastructure, improving digital literacy, and addressing barriers such as internet access and cybersecurity concerns to maximize its contribution to growth.

4.5 Policy Implication

The findings have significant policy implications for the Nigerian economy, emphasizing the need for a strategic shift toward digital financial inclusion while addressing inefficiencies in traditional banking systems. Policymakers should prioritize investments in mobile money infrastructure and digital financial services, given their proven positive impact on economic growth, particularly in reaching underserved populations. Efforts

should include expanding internet access, enhancing digital literacy, and ensuring cybersecurity to build trust and encourage adoption of digital platforms. Simultaneously, the negative effect of bank branch density highlights the need to improve the efficiency and quality of services provided by traditional banks, especially in rural areas, by aligning branch operations with community needs and promoting financial literacy. Additionally, addressing the misallocation of bank loans and ensuring that credit is directed toward productive sectors like agriculture, manufacturing, and infrastructure is crucial for unlocking the growth potential of financial inclusion. By balancing digital innovation with traditional financial sector reforms, Nigeria can create a more inclusive financial system that drives sustainable economic growth.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The study examined the effect of financial inclusion on economic growth in Nigeria spanning periods from 1995 to 2023 based on the accessibility of data. Four hypotheses were raised and evaluated using the fully modified ordinary least squares estimator. In concluding the research, this final chapter documents the summary of findings, conclusion and recommendations of the study.

5.2 Summary of Findings

Based on the analysis conducted, the following findings were made:

1. The findings indicate that the number of bank branches per 100,000 adults has a statistically significant but negative impact on economic growth in Nigeria.
2. Furthermore, the results show that the number of deposit accounts with commercial banks per 1,000 adults does not significantly impact economic growth in Nigeria.
3. Also, the findings reveal that the proportion of outstanding loans from commercial banks as a percentage of GDP does not have a significant effect on economic growth in Nigeria.

4. Finally, the findings indicate that the total volume of mobile money transactions as a percentage of GDP has a statistically significant and positive impact on economic growth in Nigeria.

5.3 Conclusion

This study has provided valuable insights into the effect of financial inclusion on economic growth in Nigeria from 1995 to 2023. The findings reveal a mixed relationship between financial inclusion metrics and economic growth. While the number of bank branches per 100,000 adults showed a statistically significant but negative impact, likely reflecting inefficiencies in traditional banking systems, mobile money transactions as a percentage of GDP had a significant positive impact, highlighting the transformative role of digital financial services in driving economic growth. Conversely, the number of deposit accounts and the proportion of outstanding loans as a percentage of GDP did not show significant effects, suggesting potential underutilization or inefficiencies in these financial instruments. These results underscore the need to modernize and optimize Nigeria's financial inclusion strategies, focusing on the expansion of digital financial platforms while addressing inefficiencies in traditional banking systems to better support sustainable economic growth.

5.4 Recommendations

5.4.1 Policy Recommendations

1. Given the negative impact of the number of bank branches on economic growth, policymakers and financial institutions should prioritize investments in mobile and digital banking infrastructure over expanding physical bank branches. Encouraging the adoption of mobile banking, fintech solutions, and agent banking in rural and underserved areas can increase financial inclusion while reducing operational inefficiencies associated with brick-and-mortar branches.
2. Since the number of deposit accounts did not significantly impact economic growth, financial institutions should implement strategies to encourage the active use of deposit accounts. These strategies could include offering innovative savings products, integrating accounts with mobile money platforms, and promoting financial literacy programs to educate the population on the benefits of saving and formal banking.
3. With outstanding loans as a percentage of GDP showing no significant impact, financial institutions should focus on enhancing access to productive credit for individuals and small businesses. Simplifying loan application processes, reducing interest rates, and increasing credit awareness programs can ensure that loans contribute meaningfully to economic growth by funding productive activities and entrepreneurship.

4. Since mobile money transactions have a significant positive impact on economic growth, policymakers and financial institutions should further develop mobile money ecosystems. This includes increasing the number of mobile money agents, improving network infrastructure, and fostering partnerships between telecom operators and banks. Regulatory frameworks should also be strengthened to ensure the security and reliability of mobile money systems, thereby driving further economic growth through digital financial inclusion.

5.4.2 Suggestions for Further Studies

Future studies could extend the time frame of the research beyond 2023 to capture recent trends and evolving dynamics in financial inclusion and its impact on economic growth, particularly with the rapid adoption of fintech innovations and mobile money platforms. A comparative analysis across multiple countries in Sub-Saharan Africa would also provide valuable insights into how financial inclusion impacts economic growth in diverse contexts, allowing for cross-country policy learning. Additionally, future research could examine shorter time intervals, such as quarterly or monthly data, to capture more granular trends and the immediate effects of financial inclusion policies, particularly in response to economic shocks or technological advancements.

From a methodological perspective, future studies could explore more advanced econometric models, such as dynamic panel data techniques (e.g., Generalized Method of Moments) or Vector Autoregressive (VAR) models, to account for potential endogeneity

and dynamic interactions among variables. Expanding the scope of variables to include financial literacy, digital literacy, and informal financial services could offer a more holistic understanding of financial inclusion's multidimensional effects. Furthermore, the adoption of qualitative approaches, such as interviews and focus groups with key stakeholders (e.g., policymakers, financial institutions, and underserved populations), would complement quantitative findings by providing deeper insights into the barriers and enablers of financial inclusion. These approaches would contribute to a more nuanced understanding of how financial inclusion can drive economic growth and support inclusive development in Nigeria and beyond.

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APPENDICES

Appendix One: Data for Analysis

YEAR	Banks per 100,000 Adults	Deposit Accounts with Commercial Banks per 1,000 Adults	Outstandin g Loan to GDP	Mobile Money Transactions to GDP	RGDP (NGN, Billions)
1995	4.9	150	0.072	0	21.88
1996	4.8	155	0.074	0	22.8
1997	4.8	160	0.078	0	23.5
1998	4.7	165	0.083	0	24.08
1999	4.7	175	0.089	0	24.22
2000	4.6	200	0.092	0	25.43
2001	4.5	225	0.098	0	26.94
2002	4.4	250	0.101	0	31.06
2003	4.6	275	0.108	0	33
2004	4.7	300	0.112	0	36.43
2005	4.2	320	0.115	0	38.78
2006	3.9	340	0.119	0	41.13
2007	5.2	380	0.125	0	43.84
2008	6.3	420	0.161	0	46.8
2009	6.5	464.48	0.188	0	50.56
2010	6.6	472.65	0.127	0	55.47
2011	6.4	504.61	0.105	0	58.18
2012	5.8	644.44	0.106	375.03	60.67
2013	5.9	650.69	0.117	445.72	63.94
2014	5.6	653.35	0.135	567.14	67.98
2015	5	667.46	0.128	454.34	69.78
2016	4.7	813.92	0.145	749.76	68.65
2017	4.4	923.23	0.128	911.01	69.21
2018	4.3	1,000.01	0.108	1,074.25	70.54
2019	4.7	1,000.13	0.11	2,573.83	72.09
2020	4.4	1,000.31	0.12	5,215.59	70.8
2021	4.5	1,050.00	0.126	9,663.50	73.38
2022	4.6	1,150.00	0.132	7,898.07	75.77
2023	4.7	1,200.00	0.17	8,500.00	77.94

Appendix Two: Output from Analysis

	RGDP	NBB	NDA	POL	VMM
Mean	4.979310	541.7338	0.116276	1325.112	49.82241
Median	4.700000	464.4800	0.115000	0.000000	50.56000
Maximum	6.600000	1200.000	0.188000	9663.500	77.94000
Minimum	3.900000	150.0000	0.072000	0.000000	21.88000
Std. Dev.	0.739874	341.3364	0.027180	2766.712	19.78364
Skewness	1.020674	0.530133	0.633949	2.147761	-0.100663
Kurtosis	2.859932	1.910279	3.472788	6.083891	1.444406
Jarque-Bera	5.058958	2.793252	2.212570	33.78728	2.972990
Probability	0.079701	0.247430	0.330786	0.000000	0.226164
Sum	144.4000	15710.28	3.372000	38428.24	1444.850
Sum Sq. Dev.	15.32759	3262295.	0.020686	2.14E+08	10958.99
Observations	29	29	29	29	29

Null Hypothesis: RGDP has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.305518	0.1775
Test critical values: 1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RGDP)

Method: Least Squares

Date: 12/07/24 Time: 09:04

Sample (adjusted): 1997 2023

Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	-0.230039	0.099777	-2.305518	0.0301
D(RGDP(-1))	0.483861	0.179534	2.695093	0.0126

C	1.150161	0.503867	2.282669	0.0316
R-squared	0.290440	Mean dependent var	-0.003704	
Adjusted R-squared	0.231310	S.D. dependent var	0.425605	
S.E. of regression	0.373149	Akaike info criterion	0.970762	
Sum squared resid	3.341766	Schwarz criterion	1.114744	
Log likelihood	-10.10529	Hannan-Quinn criter.	1.013575	
F-statistic	4.911881	Durbin-Watson stat	1.890492	
Prob(F-statistic)	0.016288			

Null Hypothesis: D(RGDP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.408248	0.0196
Test critical values:		
1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RGDP,2)

Method: Least Squares

Date: 12/07/24 Time: 09:04

Sample (adjusted): 1997 2023

Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-0.634797	0.186253	-3.408248	0.0022
C	0.000354	0.077792	0.004552	0.9964
R-squared	0.317241	Mean dependent var	0.007407	
Adjusted R-squared	0.289931	S.D. dependent var	0.479524	
S.E. of regression	0.404074	Akaike info criterion	1.096748	
Sum squared resid	4.081886	Schwarz criterion	1.192735	
Log likelihood	-12.80609	Hannan-Quinn criter.	1.125290	
F-statistic	11.61615	Durbin-Watson stat	1.793945	
Prob(F-statistic)	0.002221			

Null Hypothesis: NBB has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.653905	0.7413
Test critical values: 1% level	-4.374307	
5% level	-3.603202	
10% level	-3.238054	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(NBB)
Method: Least Squares
Date: 12/07/24 Time: 09:06
Sample (adjusted): 1999 2023
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBB(-1)	-0.176524	0.106731	-1.653905	0.1146
D(NBB(-1))	0.006544	0.193929	0.033744	0.9734
D(NBB(-2))	-0.305013	0.177892	-1.714595	0.1027
D(NBB(-3))	-0.487998	0.193054	-2.527774	0.0205
C	-5.853821	19.43787	-0.301155	0.7666
@TREND("1995")	10.85532	4.404966	2.464337	0.0234
R-squared	0.545136	Mean dependent var		41.40000
Adjusted R-squared	0.425435	S.D. dependent var		41.58517
S.E. of regression	31.52158	Akaike info criterion		9.944785
Sum squared resid	18878.59	Schwarz criterion		10.23731
Log likelihood	-118.3098	Hannan-Quinn criter.		10.02592
F-statistic	4.554153	Durbin-Watson stat		1.896086
Prob(F-statistic)	0.006735			

Null Hypothesis: D(NBB) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.685159	0.0005
Test critical values: 1% level	-4.374307	
5% level	-3.603202	
10% level	-3.238054	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(NBB,2)
Method: Least Squares
Date: 12/07/24 Time: 09:06
Sample (adjusted): 1999 2023
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NBB(-1))	-1.946812	0.342438	-5.685159	0.0000
D(NBB(-1),2)	0.878394	0.238338	3.685504	0.0015
D(NBB(-2),2)	0.510470	0.200757	2.542728	0.0194
C	13.77335	16.04886	0.858214	0.4009
@TREND("1995")	3.804376	1.155588	3.292156	0.0036
R-squared	0.669960	Mean dependent var		1.800000
Adjusted R-squared	0.603951	S.D. dependent var		52.21587
S.E. of regression	32.86070	Akaike info criterion		9.999288
Sum squared resid	21596.51	Schwarz criterion		10.24306
Log likelihood	-119.9911	Hannan-Quinn criter.		10.06690
F-statistic	10.14966	Durbin-Watson stat		1.852052
Prob(F-statistic)	0.000118			

Null Hypothesis: NDA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.096884	0.1270
Test critical values:		
1% level	-4.339330	
5% level	-3.587527	
10% level	-3.229230	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(NDA)
Method: Least Squares
Date: 12/07/24 Time: 09:07
Sample (adjusted): 1997 2023
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NDA(-1)	-0.534633	0.172636	-3.096884	0.0051
D(NDA(-1))	0.408658	0.204706	1.996321	0.0579
C	0.048711	0.016736	2.910561	0.0079

@TREND("1995")	0.001061	0.000517	2.053988	0.0515
R-squared	0.308773	Mean dependent var	0.003556	
Adjusted R-squared	0.218613	S.D. dependent var	0.018850	
S.E. of regression	0.016663	Akaike info criterion	-5.215309	
Sum squared resid	0.006386	Schwarz criterion	-5.023333	
Log likelihood	74.40667	Hannan-Quinn criter.	-5.158224	
F-statistic	3.424728	Durbin-Watson stat	1.839528	
Prob(F-statistic)	0.034026			

Null Hypothesis: D(NDA) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.893215	0.0265
Test critical values: 1% level	-4.339330	
5% level	-3.587527	
10% level	-3.229230	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(NDA,2)

Method: Least Squares

Date: 12/07/24 Time: 09:07

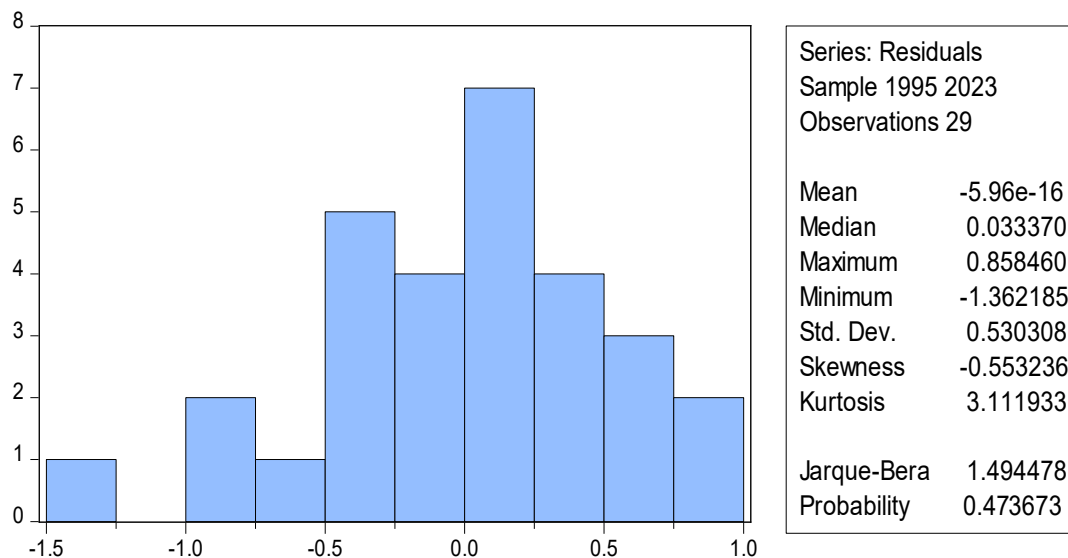
Sample (adjusted): 1997 2023

Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NDA(-1))	-0.848723	0.218001	-3.893215	0.0007
C	0.001678	0.008194	0.204767	0.8395
@TREND("1995")	0.000103	0.000482	0.213232	0.8329
R-squared	0.392447	Mean dependent var	0.001333	
Adjusted R-squared	0.341818	S.D. dependent var	0.023934	
S.E. of regression	0.019417	Akaike info criterion	-4.940850	
Sum squared resid	0.009049	Schwarz criterion	-4.796869	
Log likelihood	69.70148	Hannan-Quinn criter.	-4.898037	
F-statistic	7.751365	Durbin-Watson stat	1.788997	
Prob(F-statistic)	0.002529			

Covariance Analysis: Ordinary
Date: 12/07/24 Time: 09:11
Sample: 1995 2023
Included observations: 29

Covariance					
Correlation					
t-Statistic					
Probability	RGDP	NBB	NDA	POL	VMM
RGDP	0.528537 1.000000 ----- -----				
NBB	-17.11065 -0.070172 -0.365527 0.7176	112492.9 1.000000 ----- -----			
NDA	0.007047 0.362940 2.023895 0.0530	4.807911 0.536731 3.305392 0.0027	0.000713 1.000000 ----- -----		
POL	-487.2230 -0.246516 -1.321727 0.1973	694277.0 0.761423 6.103263 0.0000	24.61472 0.339011 1.872434 0.0720	7390741. 1.000000 ----- -----	
VMM	1.993705 0.141071 0.740429 0.4654	6185.849 0.948747 15.59894 0.0000	0.324591 0.625192 4.162354 0.0003	31795.45 0.601637 3.913769 0.0006	377.8961 1.000000 ----- -----



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	16.76595	Prob. F(2,22)	0.0000
Obs*R-squared	17.51111	Prob. Chi-Square(2)	0.0002

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 12/07/24 Time: 09:12

Sample: 1995 2023

Included observations: 29

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBB	-0.000284	0.001423	-0.199791	0.8435
NDA	-2.890266	4.811601	-0.600687	0.5542
POL	8.66E-06	5.97E-05	0.145252	0.8858
VMM	0.006130	0.022282	0.275120	0.7858
C	0.170613	0.347725	0.490655	0.6285
RESID(-1)	1.063004	0.202437	5.251023	0.0000
RESID(-2)	-0.569454	0.273894	-2.079108	0.0495

R-squared	0.603831	Mean dependent var	-5.96E-16
Adjusted R-squared	0.495785	S.D. dependent var	0.530308
S.E. of regression	0.376561	Akaike info criterion	1.091033
Sum squared resid	3.119565	Schwarz criterion	1.421070
Log likelihood	-8.819985	Hannan-Quinn criter.	1.194397
F-statistic	5.588651	Durbin-Watson stat	1.834785
Prob(F-statistic)	0.001196		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.375655	Prob. F(4,24)	0.0804
Obs*R-squared	8.225506	Prob. Chi-Square(4)	0.0837
Scaled explained SS	5.948937	Prob. Chi-Square(4)	0.2030

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 12/07/24 Time: 09:13

Sample: 1995 2023

Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.395546	0.330595	-1.196468	0.2432
NBB	-0.002125	0.001022	-2.079222	0.0485
NDA	1.991454	3.413725	0.583367	0.5651
POL	1.91E-05	4.87E-05	0.392421	0.6982
VMM	0.031342	0.015374	2.038618	0.0527
R-squared	0.283638	Mean dependent var		0.271529
Adjusted R-squared	0.164245	S.D. dependent var		0.401584
S.E. of regression	0.367126	Akaike info criterion		0.989365
Sum squared resid	3.234763	Schwarz criterion		1.225105
Log likelihood	-9.345787	Hannan-Quinn criter.		1.063196
F-statistic	2.375655	Durbin-Watson stat		1.828651
Prob(F-statistic)	0.080427			

Ramsey RESET Test

Equation: UNTITLED

Specification: RGDP NBB NDA POL VMM C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.645030	23	0.1136
F-statistic	2.706122	(1, 23)	0.1136
Likelihood ratio	3.225814	1	0.0725

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.828943	1	0.828943
Restricted SSR	7.874336	24	0.328097
Unrestricted SSR	7.045393	23	0.306321

LR test summary:

	Value
Restricted LogL	-22.24576
Unrestricted LogL	-20.63285

Unrestricted Test Equation:

Dependent Variable: RGDP

Method: Least Squares

Date: 12/07/24 Time: 09:13

Sample: 1995 2023

Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBB	0.037005	0.025405	1.456599	0.1587
NDA	-54.94222	38.02795	-1.444785	0.1620
POL	-0.000295	0.000216	-1.367299	0.1847
VMM	-0.577775	0.396323	-1.457839	0.1584
C	-1.348913	2.702500	-0.499135	0.6224
FITTED^2	0.872094	0.530139	1.645030	0.1136
R-squared	0.540346	Mean dependent var		4.979310
Adjusted R-squared	0.440421	S.D. dependent var		0.739874
S.E. of regression	0.553463	Akaike info criterion		1.836748
Sum squared resid	7.045393	Schwarz criterion		2.119637
Log likelihood	-20.63285	Hannan-Quinn criter.		1.925345
F-statistic	5.407518	Durbin-Watson stat		0.817730
Prob(F-statistic)	0.001972			

Dependent Variable: RGDP
 Method: Fully Modified Least Squares (FMOLS)
 Date: 12/07/24 Time: 09:14
 Sample (adjusted): 1996 2023
 Included observations: 28 after adjustments
 Cointegrating equation deterministics: C
 Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth
 = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBB	-0.005344	0.002065	-2.587528	0.0165
NDA	7.070309	6.998922	1.010200	0.3229
POL	9.27E-05	9.83E-05	0.942528	0.3557
VMM	0.081910	0.031132	2.631034	0.0149
C	2.856771	0.710549	4.020515	0.0005
R-squared	0.486610	Mean dependent var		4.982143
Adjusted R-squared	0.397325	S.D. dependent var		0.753291
S.E. of regression	0.584796	Sum squared resid		7.865688
Long-run variance	0.549817			