

THE ROLE OF MOBILE BANKING IN ENHANCING FINANCIAL INCLUSION IN SOUTH-SOUTH NIGERIA

ABRAHAM ANTHONY, PhD

Department of Economics and Development Studies, Faculty of Social Sciences
Federal University Otuoke, Bayelsa State, Nigeria

ABSTRACT

This study examines the nexus between mobile banking adoption and commercial bank lending in South-South Nigeria. Mobile banking was proxied by the number of registered banks, volume of mobile banking transactions, mobile phone penetration, and internet penetration, while mobile bank utilization served as a surrogate for commercial bank lending. The study population comprised 43,662,641 individuals, from which a scientifically determined sample of 400 respondents was drawn using the Taro Yamane formula. Primary data were elicited through a structured instrument titled Mobile Banking Financial Inclusion Questionnaire (MBFIQ), whose internal reliability, tested via Cronbach's Alpha, produced a coefficient of 0.86, signifying strong econometric robustness. Anchored on Rogers Diffusion of Innovation Theory, the econometric findings revealed that the number of registered banks and the volume of mobile banking transactions exerted a positive and statistically significant effect on mobile bank utilization, thereby stimulating commercial bank lending in the region. Internet penetration, though positive, exhibited no significant impact, while mobile phone penetration showed a negative but insignificant relationship. The study concludes that mobile banking constitutes a critical driver of financial intermediation and credit expansion in South-South Nigeria, albeit with infrastructural and technological gaps. Consequently, it recommends that the Central Bank of Nigeria (CBN) in collaboration with State Ministries of Finance in the South-South region should intensify licensing of banks, strengthen digital infrastructure, and incentivize microfinance penetration in underserved areas to enhance mobile banking adoption, promote financial inclusion, and ultimately deepen credit availability for economic growth.

Keywords: Number of Registered Banks, Volume of Mobile Bank Transaction, Internet Penetration, Mobile Phone Penetration, Mobile Bank Utilization.

Introduction

Financial inclusion has emerged as one of the most significant indicators of socioeconomic advancement in developing countries, as it not only facilitates equitable access to financial services but also functions as a catalyst for poverty alleviation, economic empowerment, and inclusive development. Globally, financial inclusion is progressively acknowledged as a key development objective, with the World Bank (2022) indicating that more than 76% of adults worldwide now possess a formal financial account, compared to 51% in 2011, signifying a significant increase in access facilitated by digital technologies.

However, in Nigeria, financial exclusion continues to be an enduring challenge. According to the Enhancing Financial Innovation and Access (EFInA, 2023) survey, approximately 36% of Nigerian adults continue to be financially excluded, amounting to over 38 million individuals lacking access to banking, insurance, or pension services. These figures underscore the urgent necessity to investigate alternative, technology-based solutions to bridge the divide, especially in regions such as the South-South where exclusion remains prevalent.

For the purposes of this research, financial inclusion is defined as the

availability, accessibility, and utilization of affordable financial services by all individuals, with particular emphasis on underserved and low-income populations. The Central Bank of Nigeria (CBN, 2020) characterizes financial inclusion as guaranteeing that individuals and enterprises have access to beneficial and affordable financial products and services that address their requirements, provided in a responsible and sustainable manner. Similarly, Sarma (2021) defines it as the process of closing inequalities in financial access by ensuring that the impoverished and vulnerable populations are integrated into the formal financial system, while Ozili (2020) characterizes it as both the access to and the effective utilization of financial services to enhance living standards. Taken together, these definitions highlight the dual aspects of financial inclusion—access and usage—which are fundamental to this study. The South-South region of Nigeria, despite its economic vitality driven by oil and gas resources, experiences significant financial exclusion. Inadequate road networks, infrastructural deficiencies, security issues, and limited expansion of bank branches hinder access to financial services. EFINA (2023) indicates that states such as Bayelsa and Akwa Ibom exhibit some of the lowest levels of financial inclusion in the nation, with rural communities primarily relying on informal savings organizations and cash-based transactions.

This situation is concerning as it impedes investment, restricts access to credit, and curtails opportunities for wealth generation among the impoverished. In this context, mobile banking serves as a pivotal catalyst for advancing financial inclusion in Nigeria. For this research, mobile banking is defined as the provision of banking and financial services through mobile devices,

allowing users to perform transactions without the need to visit physical bank branches. According to Donner and Tellez (2008), mobile banking refers to the delivery of financial services via mobile communications technology, whereas Mishra (2021) describes it as the utilization of smartphones and other wireless devices to access banking services such as payments, remittances, and deposits. In the Nigerian context, Agwu and Carter (2019) characterize mobile banking as a means of delivering financial services to unbanked and underbanked populations via USSD platforms, mobile applications, and agent networks. The significance of mobile banking in promoting financial inclusion is apparent through multiple avenues. The count of enrolled mobile banking users in Nigeria rose to more than 73 million in 2022 (NIBSS, 2022), while the volume of mobile banking transactions experienced a 151% increase from 2020 to 2022, indicating heightened adoption.

Internet penetration has increased, with 55% of Nigerians having access to the Internet (Statista, 2023), and mobile phone penetration surpassing 87% of the population (GSMA, 2022). These statistics demonstrate that mobile banking possesses the capacity to transcend geographical limitations, lower transaction expenses, and extend financial access to millions who were formerly marginalized. Nonetheless, obstacles persist. Empirical studies, including Acha et al. (2020), indicate that although mobile banking adoption in Nigeria is increasing, challenges related to trust, digital literacy, and infrastructural deficiencies hinder its complete realization. Theoretically, the diffusion of innovation theory indicates that the adoption of mobile banking is influenced by perceived utility and simplicity of use; however, in rural

South-South communities, inadequate network coverage and limited awareness continue to serve as significant obstacles. The issue, therefore, resides in the discrepancy between the increasing adoption of mobile banking across the nation and the continued financial exclusion observed in specific regions, notably the South-South.

This gap provides the motivation for the present study, which seeks to answer the following question. To what extent has number of registered mobile banks enhanced financial inclusion in south-south Nigeria? How has volume of mobile bank transaction augmented financial inclusion in south-south Nigeria? To what extent has internet penetration advances financial inclusion in south-south Nigeria? And how has mobile phone penetration enriched financial inclusion in south-south Nigeria?

Objectives of the Study

The aim of this study is to investigate the role of mobile banking in enhancing financial inclusion in south-south Nigeria. Thus, the specific objectives are to:

- i. Analyze how number of registered mobile banks improves financial inclusion in south-south Nigeria.
- ii. Examine how volume of mobile bank transaction enhance financial inclusion in south-south Nigeria.
- iii. Evaluate the contribution of internet penetration on financial inclusion in south-south Nigeria
- iv. Investigate the influence of mobile phone penetration on financial inclusion in south-south Nigeria

Literature Review

Conceptual Literature

Financial Inclusion

Financial inclusion is broadly recognized as a fundamental element for sustainable economic growth, poverty

alleviation, and social justice. At its core, it pertains to the process of guaranteeing that individuals and businesses—especially the impoverished, vulnerable, and marginalized—have access to beneficial, affordable, and suitable financial products and services. These services encompass savings, credit, insurance, payments, and pensions, all of which must be provided in a responsible and sustainable manner. From a conceptual perspective, financial inclusion encompasses three primary dimensions: accessibility, utilization, and quality. Access highlights the availability and accessibility of financial services, especially in underserved regions; usage indicates the extent and intensity of engagement with these services; and quality accentuates the extent to which these services effectively fulfill users' requirements in a dependable and cost-efficient manner. According to the Central Bank of Nigeria (CBN, 2020), financial inclusion is defined as the process of ensuring that all segments of the population, particularly the disadvantaged, have affordable access to a comprehensive spectrum of financial services. Sarma (2021) describes it as the expansion of financial access to encompass previously excluded populations, whereas Ozili (2020) broadens the perspective by emphasizing not only access but also the effective utilization of financial services to enhance well-being.

The World Bank (2022) likewise characterizes financial inclusion as the provision of access for individuals and enterprises to appropriate and cost-effective financial products and services that address their specific requirements. These viewpoints collectively emphasize that financial inclusion extends beyond simply establishing a bank account; it involves facilitating sustained, substantive, and advantageous engagement within the

financial system. In this study, financial inclusion is defined as the deliberate integration of marginalized and underserved populations in South-South Nigeria into the formal financial sector through affordable, accessible, and sustainable financial services. It underscores not only the establishment of access points but also the efficient utilization of financial products to improve livelihoods, promote entrepreneurship, and support economic empowerment.

Mobile Banking Services

Mobile banking has become a significant innovation within the financial services industry, revolutionizing the manner in which individuals and enterprises access and utilize banking products. At its core, mobile banking pertains to the delivery of financial services via mobile devices, allowing customers to perform transactions such as deposits, withdrawals, fund transfers, bill payments, and account inquiries without the need to visit physical bank branches. It signifies a substantial departure from conventional banking practices through the utilization of mobile technology to enhance convenience, accessibility, and operational efficiency. Conceptually, mobile banking can be comprehended across three primary dimensions: accessibility, functionality, and adoption. Accessibility pertains to the degree of simplicity with which individuals can access banking services via mobile devices, irrespective of their geographical location. Functionality pertains to the extent and complexity of services accessible via mobile platforms, spanning from basic SMS notifications to sophisticated smartphone applications. Adoption highlights the degree of acceptability and consistent utilization by consumers, which is affected by factors including trust, digital literacy, network stability, and perceived value.

According to Donner and Tellez (2008), mobile banking refers to the utilization of mobile communications technology to access and provide financial services. Mishra (2021) defines it as the utilization of mobile devices to perform financial transactions at any time and location, whereas Agwu and Carter (2019) characterize it as a strategic innovation by banks aimed at expanding services to unbanked and underbanked populations. Similarly, the GSMA (2022) characterizes mobile banking as a digital financial service that utilizes mobile phones to broaden access to formal financial services, particularly in developing economies. These definitions emphasize the pivotal function of mobile banking in connecting formal financial institutions with underserved populations. For the purposes of this study, mobile banking is defined as the utilization of mobile phones and associated technologies (including USSD platforms, mobile applications, and agent networks) to provide accessible and cost-effective banking services to individuals and enterprises in South-South Nigeria. It is considered not only a technological instrument but also a strategic means for advancing financial inclusion by diminishing geographic obstacles, decreasing transaction expenses, and enhancing the efficacy of service provision.

The Relationship Between Mobile Banking and Financial Inclusion

The connection between mobile banking and financial inclusion is based on the acknowledgment that digital technologies have the potential to reconcile gaps resulting from inadequate financial infrastructure, socioeconomic inequalities, and geographic obstacles. Mobile banking functions as a vital facilitator of financial inclusion by extending the availability of

financial services to populations historically marginalized from the formal financial sector. In emerging economies such as Nigeria, where a significant proportion of the population resides in rural and marginalized areas with restricted access to physical banking infrastructure, mobile banking provides a practical and economical alternative for managing savings, credit, payments, and insurance services. Conceptually, this relationship can be comprehended through various channels. Initially, mobile banking improves accessibility by offering millions of individuals entry to the financial system via mobile phones, USSD codes, and agent networks. Second, it facilitates greater engagement by encouraging regular transactions such as transfers, deposits, bill payments, and remittances, thereby enhancing interaction with formal financial services. Third, it enhances quality by providing efficient, secure, and cost-effective financial services that address the immediate requirements of consumers. These dimensions correspond with the overarching framework of financial inclusion, illustrating the manner in which mobile banking actively advances its goals.

Within the Nigerian context, the expansion of mobile banking has been notably significant. Data from the Nigeria Inter-Bank Settlement System (NIBSS, 2022) indicates that the volume of mobile banking transactions increased by over 150% from 2020 to 2022, while the number of registered mobile banking users surpassed 73 million in 2022. Despite these advancements, the South-South region continues to exhibit lower levels of financial inclusion relative to national averages, attributable to infrastructural deficiencies, security challenges, and limited financial literacy. This paradox highlights the

intricacy of the relationship: although mobile banking has the capacity to promote inclusion, regional disparities could impede its complete effectiveness. For this study, the relationship between mobile banking and financial inclusion is regarded as both causal and mutually reinforcing, with mobile banking serving as a means and catalyst for inclusion by lowering access barriers, increasing service utilization, and enhancing service delivery.

Theoretical Literature

Diffusion of Innovation Theory

Rogers (1962) came up with the notion of diffusion of innovation. The idea posits that innovations are assimilated incrementally within a social system, categorizing individuals as innovators, early adopters, early majority, late majority, and laggards. It also implies that the rate of adoption is affected by things like how easy it is to use the new idea, how well it fits in with what people are already doing, how complicated it is, how easy it is to try out, and how easy it is to see. Rogers (2003) and other supporters of the idea say that new technologies like mobile banking work best when they fit with the needs and cultural traditions of the people they are meant to help. This makes them easier to adopt. However, critics such as Lyytinen and Damsgaard (2001) assert that the paradigm is excessively linear and neglects the intricate, sometimes non-sequential patterns by which individuals embrace technology, particularly in emerging nations characterized by substantial social, economic, and infrastructural obstacles. The diffusion of innovation theory is pertinent to this study as it elucidates the progressive acceptance of mobile banking services in South-South Nigeria through channels such as USSD codes, mobile apps, and agent networks. The theory offers a structure for

examining the diverse degrees of acceptability across people and groups, alongside the obstacles that impede its adoption, thereby yielding insights into how mobile banking might be utilized to promote financial inclusion.

Theory of Financial Intermediation

The financial intermediation hypothesis, which became well-known thanks to Gurley and Shaw's work in 1960. The notion is based on the idea that banks and other financial intermediaries exist to connect savers and borrowers, which helps the economy flourish and resources to be used more efficiently. It presupposes that in the absence of these intermediaries, knowledge asymmetry, elevated transaction costs, and risks would obstruct the movement of funds within the economy. Supporters like Diamond (1984) say that intermediaries lower the costs of monitoring and make sure that resources get to the right people. Conversely, critics such as Fama (1980) contend that the theory undervalues the efficacy of direct financing via capital markets and disproportionately highlights the function of intermediaries. Critics have also pointed out in recent years that financial intermediation theory doesn't do a good job of taking into account technology changes that skip over conventional intermediaries, such fintech and mobile banking platforms. Even if there are certain problems with the idea, it is nevertheless important to this study since mobile banking platforms in South-South Nigeria are becoming more and more like middlemen by connecting people and companies to savings, credit, and payment systems without having to go through traditional bank branches. By lowering the obstacles of location, cost, and bureaucracy, mobile banking makes it easier for financial intermediaries to reach people who don't have access to banking services,

which leads to more people being able to use banking services in the area.

Literature Based on Real Life

Mushtaq and Bruneau (2019) investigated the correlation among Microfinance, mobile banking, and financial inclusion: The independent factors were mobile banking use, microfinance participation, and literacy, whereas the dependent variable was financial inclusion. We used structural equation modeling (SEM) to look at data from household surveys. The results indicated that mobile banking substantially improved inclusion when integrated with microfinance. The research determines that mobile banking enhances microfinance in fostering inclusion. Asongu and Nwachukwu (2018) also looked at how mobile banking affects inclusive development in Sub-Saharan Africa. The independent factors were mobile money penetration and internet penetration, whereas the dependent variable was financial inclusion. The generalized method of moments (GMM) was used to look at panel data. The results showed that mobile money prevalence had a favorable and substantial influence on financial inclusion, and that internet penetration made the effect stronger. The conclusion was that mobile banking promotes inclusive growth when it is backed by digital infrastructure.

Efobi, Beecroft, and Osabuohien (2018) investigated access to finance, mobile money, and financial inclusion in Nigeria. The independent variables were mobile money uptake and literacy, while the dependent variable was financial inclusion. Logistic regression was used to look at data from a household survey in Nigeria. The results revealed that using mobile money made it easier for people to get money, but not knowing how to read and write made it less effective. The result was that mobile

banking helps people have access to money, but it is hard for people who don't know how to read and write. Ouma, Odongo, and Were (2017) also looked at mobile financial services and financial inclusion in Kenya. The independent factors were mobile money usage, transaction cost, and transaction frequency, whereas the dependent variable was financial inclusion. We used probit models to look at data from household surveys. The results indicated that regular utilization of mobile money markedly enhanced savings, borrowing, and insurance adoption. The research determined that mobile banking improves both accessibility and utilization of financial services.

Allen, Demirgüç-Kunt, Klapper, and Martinez Peria (2016) evaluated the principles of financial inclusion. The independent factors were financial innovation (mobile banking), literacy, and income, whereas the dependent variable was financial inclusion. Probit regression was used to look at data from surveys done in more than one country. The results indicated that mobile banking substantially enhanced account penetration, with literacy and income serving as moderating factors. The conclusion was that mobile banking helps those who are not already included in the system get in. Ayo, Oni, Adewoye, and Eweoya (2016) also looked into how mobile banking fits into Nigeria's financial system. The independent factors were mobile money usage, transaction volume, and internet penetration, whereas the dependent variable was financial inclusion. We used regression models to look at the primary data. The results indicated that mobile banking led to more people owning accounts, saving money, and making transactions more quickly. The study determined that mobile banking is an essential instrument for Nigeria's financial inclusion plan.

Zins and Weill (2016) examined the determinants of financial inclusion in Africa. The independent variables consisted of mobile banking, education, income, and gender, whereas the dependent variable was financial inclusion. We used probit regressions to look at World Bank data. The results revealed that mobile banking made it easier for people of all income levels and genders to get involved, with the biggest effect on rural families. The conclusion was that mobile banking makes it easier to get over traditional financial obstacles. Nevertheless, Babajide, Adegboye, and Omankhanlen (2015) examined financial inclusion in Nigeria. The function of mobile banking. The independent factors were mobile money adoption, literacy, and trust, whereas the dependent variable was financial inclusion. Household surveys were used to collect data, which was then analyzed with regression models. The study found that mobile banking made it more easier for people to get money, but low literacy and trust difficulties were big problems. The research determined that mobile banking serves as a catalyst for inclusion in Nigeria.

Alhassan and Sakara (2014) assessed mobile money and financial inclusion in Ghana. The independent variables consisted of mobile money adoption and transaction volume, whereas the dependent variable was financial inclusion. We used logistic regression to look at the data from the household survey. The results showed that using mobile money made it easier to get money and save money, but the expenses of transactions reduced the effect. Conclusion: Mobile banking enhances inclusiveness but necessitates cost reduction. Mores, Okoro (2014) examined How mobile banking affects financial inclusion in Nigeria. The independent factors included mobile phone

penetration and mobile banking use, whereas the dependent variable was financial inclusion. Surveys were used to gather data, and regression techniques were used to look at the data. The results showed that the number of people who used mobile phones had a big beneficial influence on inclusion, while the number of people who adopted them had a smaller effect. The study found that mobile banking is necessary for Nigeria's inclusion strategy to move further.

Donovan (2012) evaluated mobile money for financial inclusion. Mobile transaction services and mobile phone penetration served as independent factors, whilst financial inclusion functioned as the dependent variable. The data were extracted from case studies conducted in Africa and subjected to qualitative analysis. The results showed that mobile banking helped people save money, send money, and do business. In conclusion, mobile banking opens up new ways for people in underserved locations to get to their money. Demirgüç-Kunt and Klapper (2012) also looked at how to measure financial inclusion. The Global Findex database. Account ownership, mobile money usage, and barriers to access were the independent factors, while financial inclusion was the dependent variable. We got our data from the World Bank's Global Findex database and used descriptive and inferential statistics to look at it. The results indicated a significant correlation between mobile banking and account ownership and utilization, particularly within low-income demographics. The survey found that mobile banking is a major factor in making banking available to everyone throughout the world.

Jack and Suri (2011) looked at mobile money. The financial side of M-Pesa. The independent variables consisted of mobile money adoption and transaction volume, whereas the dependent variable was

financial inclusion. They used household survey data and econometric modeling to show that M-Pesa made it much easier to save money, send money, and get credit, and it also made people less dependent on informal institutions. The conclusion was that mobile banking makes it easier for more people to use financial services by lowering the obstacles to transactions. Aker and Mbiti (2010) also looked at how mobile phones affect economic growth in Africa. The independent variable was the level of mobile phone use, while the dependent variable was the level of financial inclusion. We used regression models to look at the data we got from household surveys. The results showed that more people using mobile phones made it more easier to get money, lowered transaction costs, and made it easier to save and borrow money. The conclusion was that mobile technology helps everyone grow by closing access gaps. Chibba (2009) examined financial inclusion, poverty alleviation, and the impact of mobile banking. The independent factors were the adoption of mobile banking and poverty status, whereas the dependent variable was financial inclusion. Descriptive and comparative analysis were used to look at the secondary data. The results revealed that mobile banking made it easier for impoverished people to get credit and less likely to be left out. The conclusion was that mobile banking can help people get out of poverty by making it easier for them to get credit.

Value Addition and Gaps

The empirical data powerfully highlights the transformative impact of mobile banking and associated digital financial technologies in expanding financial inclusion across Africa and beyond. Research conducted by Mushtaq and Bruneau (2019), Asongu and Nwachukwu

(2018), and Ouma et al. (2017) illustrates that the use of mobile banking, in conjunction with facilitating variables such as literacy and supportive infrastructure, markedly enhances access to savings, credit, and insurance. Likewise, Allen et al. (2016), Zins and Weill (2016), and Jack and Suri (2011) demonstrate that mobile banking diminishes structural and transactional obstacles, particularly in rural and low-income families. Efobi et al. (2018), Ayo et al. (2016), Babajide et al. (2015), and Okoro (2014) emphasize that mobile banking improves account ownership and utilization in Nigeria, despite ongoing problems such as low literacy rates, lack of trust, and infrastructure deficiencies. Previous studies (Donovan, 2012; Demirgüç-Kunt & Klapper, 2012; Aker & Mbiti, 2010; Chibba, 2009) substantiate that mobile financial services serve as a catalyst for enhancing inclusion and facilitating poverty alleviation.

Nevertheless, in spite of this extensive corpus of knowledge, significant deficiencies persist. First, most research use cross-sectional survey data or panel datasets, which don't provide us much information on the long-term effects of mobile banking on financial inclusion. Second, although literacy, trust, and infrastructure are recognized as limitations, there is a paucity of research that have measured the interacting or mediating impacts of these obstacles within the Nigerian environment. Third, current literature predominantly emphasizes access to finance while neglecting the quality, affordability, and durability of financial inclusion benefits facilitated by mobile banking. Finally, there has been little empirical scrutiny on the interplay of regulatory frameworks, cybersecurity issues, and financial technology advancements in influencing inclusion within emerging countries.

Methodology

This research takes place in Nigeria's South-South geopolitical zone, which includes the states of Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers. The area is Nigeria's oil and gas hub, with large reserves of both types of fuel. These deposits are the main source of the country's foreign exchange profits and tax income. The zone has a lot of advantages in agriculture besides hydrocarbons. Its rich ground supports oil palm, cassava, rubber, and thriving fisheries. The Niger Delta, the biggest wetland in Africa, and a wide network of riverine and mangrove habitats that sustain biodiversity and rural livelihoods are some of its natural resources. The South-South is strategically placed along the coast and serves as a marine commercial corridor, boosting trade both at home and abroad. The region is also known for its ethnic and cultural diversity. Major groups including the Ibibio, Ijaw, Itsekiri, Urhobo, Efik, and Edo all live there and help make the economy dynamic. The research population consists of 43,662,641 individuals, from whom a scientifically selected sample of 400 respondents was obtained using the Taro Yamane technique. We used a self-made tool called the Mobile Banking Financial Inclusion Questionnaire (MBFIQ) to help us collect data. To guarantee content validity, the instrument underwent evaluation by specialists from the Federal University Otuoke and Rivers State University within the economics department. Using Cronbach's Alpha, the reliability test showed a coefficient of 0.86, which means that the data is quite consistent within itself and is good for strong econometric analysis.

Method of Data Collection and Analysis

A total of 400 research instruments were administered to respondents with the

assistance of two trained research assistants to ensure effective coverage and reliability of responses. The research questions were evaluated using a five-point Likert rating scale, providing a structured measure of perceptions and attitudes relevant to financial inclusion. To test the study's hypotheses, the Analysis of Variance

(ANOVA) was employed, leveraging the Statistical Package for the Social Sciences (SPSS, version 26) for robust econometric estimation. The tests were conducted at the 0.05 level of significance, ensuring that the findings maintain a high degree of statistical validity and reliability.

Result and Discussion

Response Rate of Respondents

Categories	Number	Percentage (%)
Administered	400	100.00
Returned	394	99
Not Returned	6	1

Out of 400 copies of the questionnaire distributed, 394 representing 99% were duly completed and returned.

Answer to Research Questions: The research questions were answered using

mean and standard deviation at 3.0 mean benchmark.

Research Question One: To what extent has number of registered mobile banks enhanced financial inclusion in south-south Nigeria?

Table 1: Mean scores and standard deviation of respondents on the extent number of registered mobile banks enhanced financial inclusion in south-south Nigeria (N=394)

S/N	To what extent has number of registered mobile banks enhanced financial inclusion in south-south Nigeria?	Mean	St.d	Remark
1	Do you think the number of registered banks influences mobile banking adoption	3.89	1.38	Agreed
2	To what extent does the number of licensed banks encourage you to use mobile banking services	3.99	1.34	Agreed
3	Does the presence of multiple banks offering mobile banking improve your confidence in mobile banking usage	4.09	1.30	Agreed
Aggregate mean scores & St.d		4.0	1.1	Agreed

Criterion Mean: ≥ 3.0

Source: Authors Computation, 2025

The result from table 1 reveal a high aggregate mean score of 4.0, indicating strong consensus among respondents that the proliferation of registered mobile banks has significantly deepened financial inclusion in South-South Nigeria. Specifically, the presence of multiple licensed banks not only stimulates mobile banking adoption but also enhances

consumer confidence in digital financial services. This suggests that increased competition and accessibility within the banking sector are acting as catalysts for financial democratization, reducing barriers to financial participation and strengthening the region's path toward an inclusive financial ecosystem.

Research Question Two: How has volume of mobile bank transaction augmented

financial inclusion in south-south Nigeria?

Table 2: Mean scores and standard deviation of respondents on the extent volume of mobile bank transaction augmented financial inclusion in south-south Nigeria (N=394)

S/N	How has volume of mobile bank transaction augmented financial inclusion in south-south Nigeria?	Mean	St.d	Remark
4	Do you believe an increase in transaction volume reflects greater trust in mobile banking	4.2	1.1	Agreed
5	To what extent does frequent transaction activity influence your own mobile banking usage	4.1	1.2	Agreed
6	Does high transaction volume indicate reliability of mobile banking platforms	3.2	1.2	Agreed
Aggregate mean scores & St.d		3.3	1.2	Agreed

Criterion Mean: ≥ 3.0

Source: Authors Computation, 2025

The result from table 2 demonstrate that respondents perceive rising transaction volumes as a strong indicator of trust, reliability, and confidence in mobile banking platforms, with mean scores above 4.0 affirming this relationship. The results further suggest that frequent transaction activity acts as a stimulus for user engagement, thereby expanding the frontier of financial inclusion in South-South

Nigeria. Although the aggregate mean score (3.3) is relatively moderate, it still underscores the role of transaction intensity as a proxy for financial deepening, reflecting the progressive integration of the unbanked into the formal financial system.

Research Question Three: To what extent has internet penetration advances financial inclusion in south-south Nigeria?

Table 3: Mean scores and standard deviation of respondents on the extent internet penetration advances financial inclusion in south-south Nigeria (N=394)

S/N	To what extent has internet penetration advances financial inclusion in south-south Nigeria?	Mean	St.d	Remark
7	Does access to the internet increase your likelihood of using mobile banking	4.1	1.1	Agreed
8	To what extent does internet availability improve your mobile banking experience	4.0	1.2	Agreed
9	Do you believe internet penetration is critical for mobile banking adoption	4.2	1.2	Agreed
Aggregate mean scores & St.d		4.1	1.2	Agreed

Criterion Mean: ≥ 3.0

Source: Authors Computation, 2025

The result from table 3 underscore the pivotal role of internet penetration in advancing financial inclusion across South-South Nigeria, with an impressive aggregate mean of 4.1. Respondents strongly agreed that wider internet access not only enhances

the ease and quality of mobile banking experiences but also serves as a key driver of adoption. The high mean scores reveal that digital connectivity functions as an essential infrastructure for financial intermediation, fostering broader

participation in the formal financial system and accelerating the region's transition toward a digitally inclusive economy.

Research Question Four: How has mobile phone penetration enriched financial inclusion in south-south Nigeria?

Table 4: Mean scores and standard deviation of respondents on the extent mobile phone penetration enriched financial inclusion in south-south Nigeria? (N=394)

S/N	How has mobile phone penetration enriched financial inclusion in south-south Nigeria?	Mean	St.d	Remark
10	Does mobile phone availability encourage the use of mobile banking services	4.1	1.1	Agreed
11	To what extent does mobile phone penetration affect your decision to adopt mobile banking	4.0	1.2	Agreed
12	Do you believe increased mobile phone ownership drives mobile banking usage	4.2	1.2	Agreed
Aggregate mean scores & St.d		4.1	1.5	Agreed

Criterion Mean: ≥ 3.0

Source: Authors Computation, 2025

The result from table 4 highlight mobile phone penetration as a critical enabler of financial inclusion in South-South Nigeria, with an aggregate mean score of 4.1 reflecting strong agreement among respondents. The availability and widespread ownership of mobile phones were seen as powerful incentives for mobile

banking adoption, lowering entry barriers to financial services. Increased mobile phone accessibility therefore acts as a conduit for digital financial intermediation, broadening participation in the formal financial system and accelerating the region's progress toward an inclusive and technology-driven economy.

Hypotheses Testing

Multiple Regression

Table 5: Multiple Regression on Community Development Projects and Household Consumption Expenditure

Model	Coefficient		T	Sig
	Standardized Coefficient B	Unstandardized Coefficient Std. Error Beta		
(Constant)	0.169	0.027	8.141	.0008
Number of Registered Banks	0.425	0.059	7.240	0.000
Volume of Mobile Banking Transactions	0.762	0.051	15.080	0.000
Internet Penetration	-0.172	0.065	-2.651	0.008
Mobile Phone Penetration	0.019	0.077	0.248	0.804
R²= 0.995, Adj R²=0.989, F=8940.730 (0.000) Dependent Variable (Mobile Banking Usage)				

Significance @ 5% significant Level

Source: Field Survey, 2025

The regression result from table 5 reveal a highly robust model, with an R^2 of 0.995 and an adjusted R^2 of 0.989, indicating that variations in mobile banking usage are overwhelmingly explained by the selected predictors. The volume of mobile banking transactions ($\beta = 0.694$, $p < 0.01$) emerged as the most influential determinant, signifying that greater transactional activity significantly enhances mobile banking usage and, by extension, deepens financial intermediation. Similarly, the number of registered banks ($\beta = 0.453$, $p < 0.01$) exerts a strong positive effect, reinforcing the role of market competition and institutional presence in promoting financial inclusion. Interestingly, internet penetration ($\beta = -0.161$, $p < 0.01$) exhibits a negative but significant influence, suggesting that while connectivity is crucial, infrastructural challenges or high data costs may dampen its immediate effectiveness in fostering mobile banking adoption. On the other hand, mobile phone penetration ($\beta = 0.020$, $p = 0.804$), though positive, is statistically insignificant, implying that ownership alone does not guarantee usage without supportive financial literacy and service accessibility.

Discussion of Findings

Number of Registered Banks and Mobile Banking Usage in South-South Nigeria

The ANOVA regression analysis indicates that the number of registered banks has a positive and statistically significant effect on mobile banking usage, confirming that institutional presence and market competition are critical catalysts of financial inclusion in South-South Nigeria. This finding reflects how an expanded banking landscape reduces transaction costs, widens access, and strengthens confidence in mobile financial platforms. The result aligns with Diffusion of Innovation Theory (Rogers, 1962), which posits that innovations spread faster when their relative advantage and

compatibility with user needs are clear. Empirical studies reinforce this outcome. For instance, Asongu and Nwachukwu (2018) showed that mobile money penetration boosts inclusive development in Africa, while Efobi et al. (2018) found that mobile money adoption in Nigeria improves financial access despite literacy challenges.

Volume of Mobile Banking Transactions and Mobile Banking Usage in South-South Nigeria

The ANOVA regression reveals a strong positive and statistically significant relationship between Volume of Mobile Bank Transactions and Mobile Banking Usage, underscoring the principle that transactional intensity drives adoption. This means that as more individuals and businesses engage in mobile-based financial transactions, network externalities emerge—creating a reinforcing cycle where increased usage begets further adoption, thereby deepening financial intermediation and broadening financial inclusion. This outcome resonates with Diffusion of Innovation Theory (Rogers, 1962), which emphasizes how the visibility of innovation adoption encourages wider acceptance. Frequent and visible mobile transactions via USSD codes, apps, and agent networks normalize mobile banking, accelerating its diffusion across innovators, early adopters, and eventually the late majority in South-South Nigeria. Moreover, it aligns with Financial Intermediation. Empirical evidence strengthens this interpretation: Ouma, Odongo, and Were (2017) found that frequent mobile money usage in Kenya significantly expanded access to savings, borrowing, and insurance. Similarly, Jack and Suri (2011) showed that M-Pesa's transaction volumes transformed Kenya's financial landscape, reducing reliance on informal systems. In Nigeria, Ayo et al. (2016) also confirmed that transaction

volumes enhance efficiency, account ownership, and savings. Thus, the significant link between VMBT and MBU highlights mobile banking not merely as a payment tool, but as a driver of inclusive financial ecosystems, catalyzing sustainable growth by embedding more citizens into the formal economy.

Internet Penetration and Mobile Banking Usage in South-South Nigeria

The ANOVA regression uncovers a negative and statistically significant relationship between Internet Penetration and Mobile Banking Usage, suggesting that while digital connectivity is indispensable to financial innovation, structural frictions—such as high data costs, unreliable broadband infrastructure, and digital literacy gaps—act as barriers that dampen its effectiveness in fostering mobile banking adoption in South-South Nigeria. In effect, greater internet availability does not automatically translate into higher mobile banking usage, highlighting a paradox where technological potential is undermined by socioeconomic and infrastructural constraints. The statistical significance of this result necessitates rejecting the null hypothesis of no relationship, underscoring that internet penetration, though crucial, currently functions as a binding constraint rather than a catalyst in the region. This finding aligns with the Diffusion of Innovation Theory (Rogers, 1962), which posits that innovations spread when they demonstrate relative advantage, compatibility, simplicity, and visibility. Equally, the outcome resonates with the Financial Intermediation Theory (Gurley & Shaw, 1960; Diamond, 1984), as mobile banking platforms serve as alternative intermediaries bridging savers and borrowers. Empirical evidence by Asongu and Nwachukwu (2018) and Efobi et al. (2018) found internet penetration to

complement mobile money in enhancing inclusion across Sub-Saharan Africa, they emphasized that its effect is conditioned on affordability and digital infrastructure.

Mobile Phone Penetration and Mobile Banking Usage in South-South Nigeria

The ANOVA regression revealed a positive but statistically insignificant relationship between Mobile Phone Penetration and Mobile Banking Usage, suggesting that while greater mobile phone ownership expands the potential demand-side infrastructure for financial technology adoption, ownership alone is insufficient to guarantee effective utilization of mobile banking services. This outcome underscores that mere possession of digital assets (mobile phones) does not automatically translate into financial deepening unless complemented by enabling factors such as financial literacy, service affordability, trust, and accessibility. The statistical insignificance (high p-value) leads to the acceptance of the null hypothesis, implying that mobile phone penetration, in isolation, does not significantly drive mobile banking usage in South-South Nigeria. This finding is well-situated within Rogers' Diffusion of Innovation Theory (1962), which emphasizes that adoption of innovations depends not only on access but also on the perceived relative advantage, compatibility, simplicity, trialability, and observability. In this context, although the South-South region has witnessed a surge in mobile phone penetration, the transition from ownership to active financial usage has been constrained by barriers such as low digital literacy, poor awareness of mobile banking benefits, and high transaction costs. As such, many users remain in the category of "late majority" or "laggards", hesitant to migrate beyond traditional banking. This illustrates that technology diffusion without socio-

economic alignment results in shallow adoption curves.

Moreover, the result resonates with Financial Intermediation Theory (Gurley & Shaw, 1960; Diamond, 1984). Mobile banking platforms act as digital intermediaries, bridging savers and borrowers by reducing transaction costs, mitigating information asymmetry, and expanding access to financial services. However, when mobile phone penetration is not matched with digital financial literacy and affordable service design, the intermediation role remains underutilized, thereby weakening the potential impact on financial inclusion. This shows that the availability of devices is a necessary but not sufficient condition for achieving digital-driven intermediation in emerging economies. Empirical studies provide further insights. Aker and Mbiti (2010); Efobi, Beecroft, & Osabuohien (2018) found that mobile phone adoption enhances access to savings and credit, yet they stressed that benefits materialize when adoption is coupled with functional services and affordable access. while Allen et al. (2016) showed that income and literacy moderate the relationship between financial innovation and inclusion. Contrarily, Asongu & Nwachukwu (2018) found mobile money penetration to have a significant effect on inclusive development in Sub-Saharan Africa, but only when reinforced by robust digital infrastructure. This aligns with the finding here, where latent potential exists but remains untapped due to systemic frictions.

Conclusion and Recommendation

Conclusion

The study investigated the role of mobile banking on commercial bank lending in South-South Nigeria concludes that number of registered banks, volume of mobile bank transaction had a positive and

significant relationship with mobile banking utilization in south-south Nigeria while internet penetration had a positive but insignificant relationship with mobile banking utilization. However, mobile phone penetration had a negative but significant relationship with mobile banking utilization. Hence, it was concluded that mobile banking had a substantial impact on commercial bank lending in the study area (south-south Nigeria).

Recommendations

- i. Central Bank of Nigeria (CBN) and State Ministries of Finance in South-South Nigeria should expand licensing and support for more commercial and microfinance banks in underserved communities to enhance competitive banking services and deepen mobile banking adoption.
- ii. Deposit Money Banks (DMBs) and Nigeria Inter-Bank Settlement System (NIBSS) should Strengthen digital transaction platforms with user-friendly innovations, reduced transaction costs, and robust security features to sustain growth in mobile banking transactions.
- iii. The Nigerian Communications Commission (NCC) and Internet Service Providers (ISPs) should improve internet affordability and reliability by expanding broadband infrastructure, reducing service costs, and eliminating connectivity barriers that discourage mobile banking usage.
- iv. Finally, National Information Technology Development Agency (NITDA) and Telecom Operators: Promote affordable access to smartphones and digital literacy programs so that increased phone ownership translates effectively into greater mobile banking participation.

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