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From Branch to App: Assessing the Impact of Traditional and Digital Financial Inclusion on Nigeria's Economic Growth

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ABSTRACT

This study examines the impact of traditional and digital financial inclusion on Nigeria's economic growth using quarterly data (2009- 2023). Financial inclusion is measured by the number of depositors at commercial banks, while digital inclusion is captured through mobile banking, point-of-sale (POS), and web-based transactions. Nigeria's economic growth is proxied by real gross domestic product (RGDP). This study is based on the financial intermediation theory and employs a Vector Autoregression (VAR) model in first differences, after verifying that all variables are integrated of order one and are not cointegrated. The results show that neither traditional nor digital financial inclusion variables have a statistically significant short-run effect on real GDP. However, a strong autoregressive behaviour was observed within the financial inclusion indicators themselves, especially for deposit accounts, mobile banking, and POS usage. A substitution effect is observed between POS and web banking, indicating shifts in user preference across digital channels. The findings of this study imply that while financial inclusion systems are becoming more established, their macroeconomic impact may unfold over the long term. This study stresses the importance of strengthening infrastructure, promoting financial literacy, and integrating financial services to maximize their developmental potential.

Keywords: Financial inclusion; Economic growth; Digital banking; Nigeria; Vector Autoregression (VAR)

INTRODUCTION

The quick advancement from traditional brick-and-mortar banking to app-based digital platforms in Nigeria has aroused interest in how these different forms of financial inclusion have impacted the nation's economic growth and performance. Traditionally, financial inclusion was measured by bank branches and deposit accounts, but with mobile money, online banking, and point of sale (POS) innovations, it now reshapes how individuals and businesses interact with the formal financial system.

The revolution of digital banking in Nigeria has been driven by expanding mobile network coverage, fintech innovations, and regulatory reforms by the Central Bank of Nigeria (CBN). According to the Central Bank of Nigeria in 2023, Electronic transactions, which include mobile and POS payments, have grown significantly over the past decades, and this contributes to the modernization of the financial system. At the same time, the number of individuals with formal deposit accounts captured through the number of depositors with commercial banks remains a significant proxy for traditional financial inclusion and continues to play a role in driving economic growth.

Both digital and traditional financial inclusion channels contribute to this function, although through different mechanisms. Digital banking offers speed, convenience, and cost-efficiency, while traditional banking offers trust, physical access, and institutional depth. However, there is still limited empirical consensus on which channel wields greater influence on economic growth, particularly in developing economies like Nigeria, where financial infrastructure is uneven.

The study seeks to address the problem of limited empirical consensus on whether traditional or digital financial inclusion significantly drives economic growth in Nigeria. It seeks to empirically assess the combined and comparative impact of traditional and digital financial inclusion on Nigeria's economic growth. Specifically, it investigates whether variables such as the number of depositors, mobile banking transactions, POS usage, and web-based payments have significant effects on real GDP. By incorporating these channels of financial inclusion into a single econometric model, the study hopes to provide insights into which components of the financial system are most instrumental for Nigeria's economic growth.

LITERATURE REVIEW

Theoretical Review

Many theories offer an understanding of the relationship between financial inclusion and economic growth:

Schumpeterian Finance-Growth Theory

This theory was posited by Joseph Schumpeter in 1911, and it states that financial institutions play a key role in fostering economic progress by directing resources toward high-impact ventures, particularly by offering credit to entrepreneurs and innovators. Whether through traditional or digital means, financial access stimulates entrepreneurial activity and capital formation.

Financial Intermediation Theory

This theory was developed through the works of economists like Diamond, Dybvig, Gurley, Shaw, and others. The theory states that financial institutions reduce information asymmetries and transaction costs, thereby improving the allocation of capital and fostering economic growth (Levine, 2005). Digital banking enhances these intermediary functions through efficiency and scale.

Diffusion of Innovation Theory

This theory was proposed by Rogers in 2003, and it explains how innovations like mobile banking spread through populations over time. This theory states that factors such as perceived usefulness and ease of use affect the adoption of technology, which in turn determines the level of financial inclusion and its developmental impact.

Technology Acceptance Model (TAM)

This theory was propounded by Davis in 1989, and the theory states that the acceptance of technology by users depends on the perceived usefulness and ease of use of that technology. In Nigeria, digital banking adoption is based on this perception, and it influences economic participation and growth.

Together, these theories state that a dual pathway of digital and traditional financial channels promotes economic growth even though it involves distinct behavioural and institutional mechanisms.

Theoretical Framework

The theoretical framework of this study is the Financial Intermediation theory, and this theory explains how financial institution promotes economic growth by gathering savings, reducing transaction costs, and efficiently allocating capital (Levine, 2005). Traditional financial inclusion shows the roles of banks in deepening financial intermediation, and it is measured by the number of depositors in commercial banks. To extend these functions, digital platforms such as mobile banking and POS systems help improve access, speed, and coverage, especially for the underserved population.

Even though the technology acceptance model and the diffusion of innovation theory help to explain the adoption of digital tools, these models are complementary. The best macroeconomic lens for analyzing how both traditional and digital channels influence GDP growth is the financial intermediation theory.

Empirical Review

Global Evidence

Demirgüç-Kunt et al. carried out a study in 2018 showing how both traditional and digital financial tools can significantly increase economic outcomes by improving access to credit and savings for people and businesses. The study also observed that countries with a higher level of digital financial inclusion tend to experience a faster level of GDP growth, especially when it is backed by strong regulatory support. But not all studies agree on this

direct link between financial inclusion and economic growth. Ozili (2018) stated that financial inclusion alone is not a silver bullet because, without the support of effective institutional frameworks and an increased level of financial literacy, its impact on economic development could be limited.

Evidence from Nigeria

There have been a lot of studies done in Nigeria that looked at the role of traditional and digital banking in promoting economic growth in Nigeria:

Ezie et al. (2025) examined how Nigerians' economic growth has been affected by fintech innovations over a 10-year period (2012Q1–2022Q4). They used the Autoregressive Distributed Lag (ARDL) model to examine the dynamic relationship between being Fintech and GDP. They found that while the short-term effects of fintech on growth in somewhat versatile, the long-term impact was significantly positive. They also used the Granger causality test to show that fintech development plays an important role in increasing economic growth, rather than the other way around. Drawing from these discoveries, the authors recommended increasing and enhancing digital infrastructure, expanding financial inclusion efforts for my and improving regulatory frameworks to take full advantage of Fintech's potential to boost economic development in Nigeria.

The study done by Onwere et al. (2023) researched how digital Banking influences economic growth in Nigeria and Kenya. The study used quarterly data from 2011 to 2023 and used indicators such as mobile banking, automated teller machines (ATMs), and point-of-sale (POS) terminals to proxy digital banking, while GDP was used as a measure of economic growth. Country-specific and panel ARDL models were used to analyze the data, and interestingly, it was found that these digital banking tools generally have an insignificant impact on long-run economic growth in Nigeria and Kenya. It was found that in Nigeria, ATMs have a negative long-run effect on GDP. The authors attribute this finding to operational inefficiencies within digital banking systems, and these inefficiencies include transaction delays and remittance issues. The study recommends that the central banks of both countries conduct a public awareness campaign to boost user confidence and familiarity with digital platforms, as this will improve the effectiveness of digital banking and enhance financial inclusion in both countries.

Igbonovia and Shittu, in their 2025 study titled *"Digital Financial Services, Foreign Direct Investment and Economic Growth in Nigeria,"* investigated and examined the complex relationship between digital financial services (DFS), foreign direct investment (FDI), and economic growth in Nigeria. The authors used time series econometric techniques to look at how innovations in DFS contribute to GDP growth, especially when supported by foreign investment. They found that digital financial services significantly increase economic performance, particularly when complemented by strong FDI inflows. Together, DFS and FGI are seen to increase financial inclusion, improve transaction efficiency, and encourage wider economic activity. However, they also highlighted important obstacles like infrastructural limitations, which are regulatory shortcomings that may limit the full benefits of digital finance. The authors recommend that the Nigerian government prioritize the expansion of digital infrastructure, encourage sustained foreign investments, and promote a stable and supportive regulatory environment.

Conceptual Review

Financial inclusion talks about the availability and accessibility of affordable financial services to people and businesses, particularly those who are underserved by the former financial system. It includes access to credit, savings, insurance, and payment systems. Financial inclusion can be categorized into:

- Traditional financial inclusion is commonly measured by indicators such as the number of depositors in commercial banks, bank branches per 100,000 adults, or account ownership in commercial banks.
- Digital financial inclusion, which includes the use of digital platforms like mobile banking, internet banking, POS terminals, and instant electronic transfers.

By eliminating geographic and cost-related obstacles, digital banking significantly broadens access to financial services compared to conventional banking. However, access to digital services depends heavily on literacy, infrastructure, and trust in technology (Demirgüç-Kunt et al., 2018).

Economic growth is usually measured by changes in real gross domestic product (RGDP). It is shaped by several factors, like financial intermediation. An inclusive financial system is important in gathering savings, increasing investment, and ensuring smoother consumption and production cycles. All these mechanisms work hand in hand to create a supportive environment for sustained economic growth (Beck et al.,2007).

Conceptual Framework

This section shows the dual pathways of traditional and digital channels of financial inclusion, which contribute to economic growth. Each of these pathways plays a unique but interconnected role in expanding access to financial services, facilitating seamless transactions and improving overall macroeconomic performance.

Pathway 1: Traditional Financial Inclusion

Traditional inclusion relies solely on physical bank branches and deposit accounts to measure people's engagement with the formal financial system. It fosters long-term stability by integrating individuals and businesses into structured and regulated banking.

Pathway 2: Digital Financial Inclusion

Digital financial inclusion delivers services through technology like POS, mobile money and web banking, which removes the physical barriers and distance, thereby expanding access to underserved populations. It enables real-time transactions, boosts efficiency, and broadens

economic participation.

Research Gaps

While many existing studies focus exclusively on either digital or traditional financial inclusion, few adopt a comparative framework that examines both channels simultaneously. Most research emphasises service adoption metrics without fully addressing the interaction between traditional banking behaviours and digital financial practices. This study aims to bridge these gaps by evaluating both traditional financial inclusion and digital indicators. By comparing their respective contributions to Nigeria's economic growth, the study offers evidence-based insights for policy formulation within the country's increasingly hybrid financial ecosystem. This study contributes uniquely by jointly examining traditional and digital financial inclusion within a unified empirical framework for Nigeria, revealing a substitution effect between POS and web banking. This dual perspective is largely absent in prior studies, which often isolate one channel.

Methods

This section outlines the research design, data sources, model specification, and estimation techniques used to empirically examine the effect of both traditional and digital financial inclusion on Nigeria's economic growth between 2009 and 2023.

Research Design

This study used a quantitative time-series research design with secondary data to assess both the short- and long-run impacts of financial inclusion on economic growth in Nigeria. The data were sourced from authoritative institutions. The Vector Autoregression (VAR) model was used in this study as the technique of estimation, and the robustness of the results was ensured through unit root and cointegration tests.

Model Specification

This study builds on the framework of Adeniji (2025) and Ezie et al. (2025). It adapts their models to further explore the connection between traditional and digital finance and economic growth in Nigeria. This study's model assumes that both traditional and digital financial channels function as means for mobilizing savings, allocating credit, and encouraging investment, all of which are key to the increase of economic growth in Nigeria.

This study introduced "number of depositors at commercial banks" as a proxy for traditional financial inclusion which complements digital financial indicators like mobile money, point of sale (POS) usage and Internet banking. The independent variable which is real gross domestic product (RGDP) serves as a measure of Nigeria's economic growth. This model shows the dual channels of financial intermediation in Nigeria; branch-based and app-based systems, effectively capturing the changing composition of the country's financial ecosystem. It also draws theoretical support from the Schumpeterian innovation-driven growth hypothesis, which views technological advancement in banking as a core driver of efficiency and national output.

Therefore, the functional form of the model is specified as:

$RGDP=f(DEP,MOB,POS,WEB)$……. (1)

The model was further expressed in stochastic form for estimation following the VAR model specification as thus;

$\ln(GDP_t)=\beta_0+i=1\sum n\beta_1\ln(DEP_t)+\beta_2\ln(MOB_t)+\beta_3\ln(POSt)+\beta_4\ln(WEB_t)+\epsilon_t$……. (2)

Where:

$\ln(GDP_t)$: Log of real Gross Domestic Product (economic growth)

$\ln(DEP_t)$: Log of number of depositors at commercial banks (traditional financial inclusion)

$\ln(MOB_t)$: Log of mobile banking transactions

$\ln(POS_t)$: Log of POS transactions

$\ln(WEB_t)$: Log of web/online banking transactions

ϵ_t: Error term

Variable Description and Expectation

Variable	Symbol	Measurement	Type
Real GDP	GDP	Constant Naira terms (log-transformed)	Dependent
Number of Depositors at Commercial Banks	DEP	Traditional financial access proxy	Independent
Mobile transactions	MOB	Value of mobile money financial transactions	Independent
POS transactions	POS	Value of POS terminal financial transactions	Independent
Web/Internet banking	WEB	Value of web-based financial transactions	Independent

Data Sources and Estimation Technique

This study will utilise quarterly data from 2009 to 2023, collected from the Central Bank of Nigeria (CBN) statistical bulletin and the Federal Reserve Economic Data (FRED). All monetary values will be adjusted for inflation using the GDP deflator and converted to logarithmic form to ensure linearity and normality. The estimation process will follow a structured sequence. First, stationarity testing will be conducted using the Augmented Dickey-Fuller (ADF) unit root test to determine the order of integration of each variable. Following this, the Johansen cointegration test was employed to examine the presence of long-run relationships among the variables.

Next, this study adopts the Vector Autoregression (VAR) model in first differences as the appropriate estimation technique. The VAR model is particularly suited for analyzing short-run dynamics among multiple interrelated time series when no cointegrating relationship exists. It treats all variables as endogenous and captures the dynamic interactions among them without imposing structural assumptions about causality.

DISCUSSION of RESULTS

Augmented Dickey-Fuller Test

Variables	ADF Statistics @ Level	t-statistic @ 5%	Prob.	ADF Statistics @1st Difference	t-statistic @ 5%	Prob.	Order of integration
LNRGDP	**-1.2791**	**-2.9117**	**0.6337**	**-7.4729**	**-2.9126**	**0.0000**	**I(1)**
LNDEP	**0.5731**	**-2.9155**	**0.9877**	**-2.9368**	**-2.9155**	**0.0476**	**I(1)**
LNMOB	**-2.5195**	**-2.9117**	**0.1161**	**-7.1067**	**-2.9126**	**0.0000**	**I(1)**
LNPOS	**-1.0190**	**-2.9177**	**0.7410**	**-6.7097**	**-2.9126**	**0.0000**	**I(1)**
LNWEB	**-0.1810**	**-2.9117**	**0.9335**	**-6.7805**	**-2.9126**	**0.0000**	**I(1)**

Source: Author's computation

The Augmented Dickey-Fuller (ADF) test results show that all the variables under consideration-LNRGDP, LNDEP, LNMOB, LNPOS, and LNWEB are non-stationary at their level forms. This is evident from their ADF test statistics, which are less negative than the 5% critical values, and their corresponding p-values, which are all greater than 0.05. As such, the null hypothesis of a unit root cannot be rejected at level for any of the variables, indicating that they each exhibit unit root behaviour and are not mean-reverting in their original form.

However, after taking the first difference of the series, all the variables become stationary. At first difference, ADF results confirmed stationarity for all variables at 5%. This means that all five variables achieve stationarity upon first differencing. Therefore, each variable is integrated of order one, denoted as I(1), and is suitable for further analysis involving cointegration tests or error correction models, depending on whether long-run relationships exist among them.

Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.382085	64.75389	69.81889	0.1187
At most 1	0.267863	38.27667	47.85613	0.2901
At most 2	0.217560	21.12839	29.79707	0.3497
At most 3	0.125266	7.634784	15.49471	0.5052
At most 4	0.004967	0.273845	3.841466	0.6008

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.382085	26.47722	33.87687	0.2924
At most 1	0.267863	17.14829	27.58434	0.5672
At most 2	0.217560	13.49360	21.13162	0.4079
At most 3	0.125266	7.360939	14.26460	0.4474
At most 4	0.004967	0.273845	3.841466	0.6008

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's computation

The Johansen cointegration test was conducted to determine the presence of long-run equilibrium relationships among the variables. The results from both the Trace statistics and the Maximum Eigenvalue statistics indicate no evidence of cointegration among the five variables at the 5% significance level. Specifically, the trace test reveals that the trace statistics for all hypothesised cointegration ranks (None through at most 4) are less than their corresponding 5% critical values, with p-values ranging from 0.1187 to 0.6008, all of which are greater than 0.05. Similarly, the maximum eigenvalue test also shows that none of the test statistics exceed the 5% critical values. All the associated p-values are above 0.05, confirming the absence of significant long-run relationships. Based on both test statistics, the null hypothesis of no cointegration cannot be rejected at any rank. Therefore, we conclude that there is no long-run equilibrium relationship among the variables under investigation.

Vector Autoregression Model (VAR)

The VAR analyses the relationships between LNRGDP (Log Real GDP), LNDEP (Log Deposits), LNMOB (Log Mobile Banking), LNPOS (Log POS Transactions), and LNWEB (Log Web Banking). The VAR(2) model includes two lags of each variable, estimated using Ordinary Least Squares. Below is a detailed breakdown of each equation, along with coefficient values and p-values, followed by their interpretation.

Equation: LNRGDP

Variable	Coefficient	p-Value
LNRGDP(-1)	0.5173	0.2179
LNRGDP(-2)	-0.3940	0.8649
LNDEP(-1)	1.8149	0.2930
LNDEP(-2)	-2.2229	0.2481
LNMOB(-1)	0.6042	0.1291
LNMOB(-2)	-0.3510	0.2953
LNPOS(-1)	-0.3183	0.3581
LNPOS(-2)	0.1516	0.6046
LNWEB(-1)	-0.0301	0.5310
LNWEB(-2)	-0.0021	0.9650
Constant	16.6913	0.5821

In the LNRGDP equation, none of the variables are statistically significant at the 5% level. LNMOB(-1) has the lowest p-value (0.1291), indicating a potential mild influence. Overall, the equation has weak short-run dynamics with an R-squared of 0.534.

Equation: LNDEP

Variable	Coefficient	p-Value

LNRGDP(-1)	-0.7171	0.2424
LNRGDP(-2)	0.4836	0.3196
LNDEP(-1)	1.6053	0.0000
LNDEP(-2)	-0.6837	0.0000
LNMOB(-1)	-0.0085	0.7454
LNMOB(-2)	0.0167	0.4472
LNPOS(-1)	0.0074	0.7424
LNPOS(-2)	0.0076	0.6920
LNWEB(-1)	0.0009	0.8054
LNWEB(-2)	-0.0010	0.7569
Constant	3.8943	0.1498

In the LNDEP equation, LNDEP(-1) and LNDEP(-2) are highly significant ($p = 0.0000$), suggesting strong persistence and correction effects. The model fits this equation very well, with an R-squared of 0.9995.

Equation: LNMOB

Variable	Coefficient	p-Value
LNRGDP(-1)	-0.6215	0.2360
LNRGDP(-2)	0.4345	0.8806
LNDEP(-1)	1.6667	0.4393
LNDEP(-2)	-1.2115	0.6139
LNMOB(-1)	1.9712	0.0001
LNMOB(-2)	-0.6713	0.1097
LNPOS(-1)	-0.6315	0.1450
LNPOS(-2)	0.2083	0.5692
LNWEB(-1)	-0.0478	0.4269
LNWEB(-2)	0.0114	0.8500
Constant	-5.1809	0.8912

The LNMOB equation shows that LNMOB(-1) is highly significant ($p = 0.0001$), suggesting persistence in mobile banking usage. Other variables are not statistically significant. The R-squared is 0.9946, indicating a strong model fit.

Equation: LNPOS

Variable	Coefficient	p-Value
LNRGDP(-1)	-0.4278	0.3882
LNRGDP(-2)	0.9081	0.7401
LNDEP(-1)	1.5239	0.4547
LNDEP(-2)	-1.1786	0.6039
LNMOB(-1)	0.4318	0.3579
LNMOB(-2)	-0.1341	0.7348
LNPOS(-1)	0.8746	0.0333
LNPOS(-2)	-0.3223	0.3520
LNWEB(-1)	-0.0411	0.4694
LNWEB(-2)	0.0261	0.6482
Constant	-10.5543	0.7684

In the LNPOS equation, only LNPOS(-1) is statistically significant at the 5% level ($p = 0.0333$), indicating some persistence in POS transactions. Other variables do not exhibit significant effects. R-squared is 0.9930.

Equation: LNWEB

Variable	Coefficient	p-Value
LNRGDP(-1)	0.3259	0.8312
LNRGDP(-2)	-12.3855	0.1437
LNDEP(-1)	2.1587	0.7315
LNDEP(-2)	-0.2371	0.9730
LNMOB(-1)	2.3479	0.1061
LNMOB(-2)	-0.4814	0.6937
LNPOS(-1)	-2.6781	0.0348
LNPOS(-2)	1.1147	0.2973
LNWEB(-1)	0.7548	0.0000
LNWEB(-2)	-0.1939	0.2726
Constant	99.7561	0.3677

In the LNWEB equation, both LNPOS(-1) ($p = 0.0348$) and LNWEB(-1) ($p = 0.0000$) are significant. The former has a negative coefficient, suggesting a possible substitution effect between POS and web banking. R-squared is 0.9729, suggesting a good model fit.

This study set out to examine the comparative and combined effects of traditional and digital financial inclusion on Nigeria's real GDP, guided by the Financial Intermediation Theory. Traditional financial inclusion was proxied by the number of depositors at commercial banks, while digital inclusion was measured using mobile banking, POS transactions, and web-based payments. Using a VAR model estimated in first differences, this discussion interprets the dynamic interrelationships among these variables and reflects on their alignment with the study's objectives. The results of the VAR model reveal that real GDP (LNRGDP) is not significantly influenced in the short run by either traditional or digital financial inclusion indicators. Although mobile banking transactions (LNMOB(-1)) showed a mildly suggestive effect ($p = 0.1291$), none of the explanatory variables met the conventional threshold for statistical significance ($p < 0.05$). With an adjusted R-squared of 0.430, the LNRGDP equation explains less than half the variation in economic growth, indicating weak short-term responsiveness of GDP to financial inclusion variables.

However, strong autoregressive behavior was observed in the financial inclusion variables themselves. The number of depositors (LNDEP) exhibited significant lagged effects: LNDEP(-1) and LNDEP(-2) were both highly significant ($p = 0.0000$), suggesting persistence and short-run correction dynamics within the traditional financial sector. Mobile banking (LNMOB) also showed strong persistence through a highly significant LNMOB(-1) term ($p = 0.0001$). Similarly, POS transactions (LNPOS(-1), $p = 0.0333$) and web banking (LNWEB(-1), $p = 0.0000$) demonstrated significant short-run effects, indicating that usage in prior periods strongly predicts current usage levels.

One noteworthy finding is the negative and statistically significant impact of POS usage on web banking (LNPOS(-1) → LNWEB, $p = 0.0348$). This suggests a substitution effect between POS and internet-based platforms, potentially driven by user convenience, access reliability, or trust in digital systems. This aligns with insights from the Technology Acceptance Model and Diffusion of Innovation Theory, where technology adoption hinges on ease of use and perceived usefulness. Overall, the study's VAR findings support the conceptual framework's dual pathway argument. While digital and traditional financial inclusion both show strong internal momentum, their immediate influence on GDP appears limited. These findings are consistent with the observation of scholars such as Enebeli-Uzor (2024) and Igbinovia and Shittu (2025), who argue that the economic benefits of financial inclusion often depend on the presence of enabling infrastructure, Supportive regulatory frameworks, are adequate user literacy. Similarly, Menyelim et al. (2021) emphasized the positive effects of financial inclusion have a tendency to unfold gradually, shaped by broader structural factors such as inequality and institutional capacity. Babajide et al. (2015) also states that financial inclusion alone cannot push economic growth unless supported by productive investment and reasonable policy implementation.

Additionally, the substitution effect that seen between POS and web-based platforms mirrors the findings of Uzoma et al. (2024b), who said that consumer preferences often alternate across digital channels in response to factors such as ease of use, trust, and accessibility. Overall, the short-run dynamics suggest that digital financial inclusion in Nigeria is gathering momentum but has not shown a direct and measurable impact on economic growth. Future studies should use long-term econometric models to find out whether these emerging trends can translate into sustained macroeconomic gains over time.

SUMMARY, RECOMMENDATIONS and CONCLUSION

This study used quarterly time series data covering 2009 to 2023 to study the impact of both traditional and digital financial inclusion on Nigeria's economic growth using the Vector Autoregression (VAR) model. The number of depositors at commercial banks was used to proxy traditional financial inclusion while by mobile money transactions, point-of-sale (POS) transactions, and web-based banking transactions were used to proxy digital financial inclusion.

The Augemented Dickey-Fuller test established that all variables were integrated of order one [I(1)], and Johansen cointegration tests showed no long-run relationship among them. Consequently, a VAR model in first differences was estimated to examine the short-run dynamics.

The results revealed that none of the financial inclusion variables had a statistically significant short-run impact on real GDP. However, strong autoregressive patterns were evident within the financial inclusion indicators themselves. Variables such as LNDEP(-1), LNMOB(-1), LNPOS(-1), and LNWEB(-1) were all significant, showing persistent behaviour and user engagement within the financial system. Additionally, a negative relationship between POS and web-based banking suggests a substitution effect in user preferences across digital platforms.

These findings imply that while financial inclusion mechanisms are growing and becoming cemented, their short-run effect on macroeconomic output remains limited. This suggests that the benefits of financial inclusion, especially through digital channels, may take time to manifest in national income metrics.

CONCLUSION

This study assessed the impact of both traditional and digital financial inclusion on Nigeria's economic growth using quarterly data from 2009 to 2023. The findings indicate that neither form of financial inclusion has a significant short-run effect on real GDP in Nigeria, but they reveal strong persistence within the financial inclusion variables themselves. This suggests that the infrastructure and user base for financial inclusion are steadily growing, even if macroeconomic effects are not yet evident. Importantly, the substitution effect between POS and web banking highlights evolving user preferences across digital platforms, suggesting that inclusivity is not only growing but also reshaping the way Nigerians interact with financial services. The study concludes that while financial inclusion is a critical foundation for long-term growth, its short-run impact on output remains limited. However, for these channels to significantly impact economic growth, especially in a developing nation like Nigeria, they must be backed by adequate infrastructure, policy coherence, user education, and institutional trust. In conclusion, financial inclusion is a necessary, but not immediately sufficient, condition for economic growth. As Nigeria transitions from "branch to app," sustained efforts are needed to ensure that inclusivity translates into meaningful economic outcomes over the long run.

RECOMMENDATIONS

- Strengthen Financial Infrastructure: The government and financial institutions should continue to expand digital and traditional banking infrastructure, especially in rural and underserved areas, to create a more inclusive environment that can eventually translate into economic growth.
- Enhance Digital Trust and Reliability: Policy interventions should focus on improving the reliability, speed, and security of digital financial services to foster greater user confidence and sustained adoption.
- Invest in Financial Literacy Programs: The Central Bank of Nigeria and allied stakeholders should promote digital and financial literacy campaigns to empower citizens to make better use of both traditional and digital financial services.
- Promote Complementarity: Instead of viewing traditional and digital channels as alternatives, stakeholders should encourage integration across platforms to ensure seamless transitions and maximize user value.
- Support Long-Term Financial Planning: Since short-run effects on GDP are limited, policies should be geared toward enhancing the long-term productivity and savings potential of financial inclusion, especially by supporting SMEs and entrepreneurs through inclusive credit and investment services.

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