

E-Payment Application Systems in Rural Areas: Driving Financial Inclusion and Economic Growth in Nigeria

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ABSTRACT

This research investigates the role of digital payment platforms in enhancing financial access and stimulating socioeconomic progress in Nigeria's rural communities. The study employs annual time-series data spanning 14 years (2011–2024), sourced from the Central Bank of Nigeria (CBN) statistical publications. Key variables analyzed include real gross domestic product (RGDP) as the dependent variable, and transaction volumes from Automated Teller Machines (ATM), Point of Sale (POS) terminals, and Internet Banking (INB) as independent variables. Data were analyzed using E-views 9 software with ordinary least squares (OLS) regression. The results indicate that ATM and POS transactions have a statistically significant and positive influence on economic growth. In contrast, Internet Banking exhibited a negative relationship with RGDP growth over the study period. The model demonstrated a strong fit, with an R-squared value of 0.949. It is concluded that digital payment mechanisms, particularly ATM and POS services, contribute meaningfully to economic development. To maximize benefits, financial institutions should identify and resolve obstacles to digital channel adoption in rural regions. Additionally, expanding and optimizing digital infrastructure is recommended to improve service efficiency and accessibility.

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INTRODUCTION

Digital payment systems have become a transformative force in promoting financial inclusion and stimulating economic development, especially in underserved rural regions. These technological solutions allow residents and businesses in remote areas to perform financial operations electronically, decreasing dependence on physical cash and improving availability of formal financial services. Leveraging mobile technology, such systems can connect rural populations often excluded from traditional banking with essential financial tools. A major advantage of digital payments in rural settings is improved access to banking. With few physical bank branches in these areas, individuals typically face long and costly travel to conduct basic transactions. Electronic platforms enable account opening, deposits, withdrawals, and transfers without visiting a bank, saving time and resources while empowering users financially. An electronic payment system refers to any method of settling transactions or purchasing goods and services via digital means, eliminating the need for cash or checks. Its adoption has risen significantly alongside the expansion of online banking and e-commerce. Technological progress has introduced more secure and efficient digital transaction methods, reducing but not entirely replacing cash use.

In Nigeria, the government introduced a cash-reduction policy in 2012 to modernize the national payment system, aligning with the Payment Systems Vision 2020 (PSV 2020). This initiative aimed to establish a secure, convenient, and efficient framework for electronic transactions through various channels. A well-functioning digital payment ecosystem supports monetary policy, financial stability, and broader economic activity.

Beyond convenience and safety, digital payments offer economic advantages such as increased savings mobilization and improved fund circulation within the banking sector, thereby enhancing credit access for businesses and individuals. However, despite advancements in Nigeria's payment infrastructure, its full economic potential remains unrealized due to systemic inefficiencies. Challenges to effective digital payment adoption in rural areas include public reluctance stemming from fraud concerns, limited technological literacy, inadequate banking penetration, and poor supporting infrastructure such as unreliable electricity, internet connectivity, and transportation networks. Frequent network and ATM failures further hinder user experience. Outdated policies and corruption also impede the positive economic impact of digital finance.

This study aims to evaluate the contribution of digital payment applications to rural financial inclusion and socioeconomic progress. Specific objectives are to assess the effects of ATM, POS, and Internet Banking services on economic growth in rural Nigeria.

LITERATURE REVIEW

Digital payments involve the automated transfer of monetary value between parties during commercial exchanges, facilitated by information and communication technology (ICT). In Nigeria, this enables payments to be executed electronically with minimal manual input. Common forms include:

Internet/Online Banking: Transactions conducted via the web, allowing users to access banking services remotely.

Mobile Banking: Payments initiated through mobile devices using SMS (USSD) or banking applications.

Automated Teller Machines (ATM): Self-service terminals for cash withdrawals, deposits, and account inquiries.

Point of Sale (POS) Terminals: Devices that allow card-based payments directly into merchant accounts.

Digital Payments and the Nigerian Economy

Digital payment systems enhance the effectiveness of monetary policy by influencing money supply and velocity. As adoption increases, the velocity of money circulation rises, potentially strengthening policy transmission. Card-based transactions, in particular, have been linked to economic growth through improved transaction efficiency, greater consumer confidence, and enhanced access to credit.

A large informal sector—estimated at 60% of Nigeria's GDP—limits tax revenue and distorts market dynamics. Broadening digital payment adoption can integrate more individuals into the formal economy, boosting growth. Moreover, increased digital transaction activity can stimulate employment by raising demand for goods and services.

E-payments play a huge role in reducing the level of unemployment as increased consumer spending leads to an increase in demand for labour by firms to accommodate the additional demand for goods and services. Card usage leads to a more efficient economy, yielding a meaningful boost to economic growth through transactional efficiencies, increased consumer confidence in e-payment systems and consumer access to credit (Zandi, et al, 2016).

Theoretical Framework

Theory of Consumption Values (TCV): Explains consumer choices based on functional, social, emotional, epistemic, and conditional values.

Technology Acceptance Model (TAM): Posits that perceived usefulness and ease of use determine technology adoption.

Empirical Studies

Previous research supports a positive link between digital payments and economic growth. For instance, Afaha (2019) found a significant relationship between electronic payment systems and GDP growth in Nigeria, advocating for improved cyber security and public awareness.

Similarly, Yusuf (2016) reported that POS and mobile payments positively impact economic growth, contributing to lower inflation and higher foreign investment.

METHODOLOGY

This study employs annual time-series data from 2011 to 2024. The dependent variable is Real Gross Domestic Product (RGDP), while independent variables include Point of Sale (POS), Automated Teller Machine (ATM), and Internet Banking (INB) transaction data. All data were obtained from the Central Bank of Nigeria Statistical Bulletin (2024).

The analytical approach uses multiple linear regression via Ordinary Least Squares (OLS). The model is specified as follows:

$$RGDP = \beta + \beta_1POS + \beta_2ATM + \beta_3INB + \mu$$

Where:

RGDP = Real Gross Domestic Product

POS = Point of Sale transaction

ATM = Automated Teller Machine transactions

INB = Internet Banking transactions

β = Constant

$\beta_1, \beta_2, \beta_3$ = Coefficients of the independent variables

μ = Error term

Data analysis was conducted using E-views 9.

RESULTS AND DISCUSSION

Dependent Variable: RGDP

Method: Least Squares

Date: 01/10/26 Time: 11:57

Sample: 2011 2024

Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	68890.59	7738.308	8.902539	0.0000
POS	4.613996	1.612952	2.860591	0.0169
ATM	5.999964	1.080196	5.554516	0.0002
INB	-2.345363	0.883019	-2.656074	0.0241
R-squared	0.948963	Mean dependent var		132491.1
Adjusted R-squared	0.933652	S.D. dependent var		54691.65
S.E. of regression	14087.58	Akaike info criterion		22.17893
Sum squared resid	1.98E+09	Schwarz criterion		22.36152
Log likelihood	-151.2525	Hannan-Quinn criter.		22.16203
F-statistic	61.97845	Durbin-Watson stat		1.532387
Prob(F-statistic)	0.000001			

Source: Authors' Computation from E-View, 2026

The model shows a strong fit, with independent variables explaining approximately 94.9% of the variation in RGDP. Both POS and ATM coefficients are positive and statistically significant ($p < 0.05$), confirming their positive impact on economic growth. Conversely, Internet Banking displays a negative and significant coefficient, indicating it does not currently contribute positively to growth in rural Nigeria. The remaining 5.1% of variation is attributable to factors outside the model.

CONCLUSION

Digital payment systems play a vital role in advancing financial inclusion and fostering socioeconomic development in rural Nigeria. The analysis confirms that ATM and POS services significantly and positively influence economic growth. However, Internet Banking has not yielded similar benefits, likely due to accessibility, usability, and infrastructure challenges in rural settings.

RECOMMENDATIONS

- i. Expand and Optimize Infrastructure: Financial institutions and government should increase the deployment of reliable digital service points (ATM, POS) and enhance their operational efficiency.
- ii. Enhance User Experience: Payment platforms should incorporate local languages and intuitive designs to accommodate rural users with varying digital literacy.
- iii. Strengthen Collaboration: Public-private partnerships among government, financial service providers, and telecom operators are essential to develop context-appropriate solutions.
- iv. Improve Network Reliability: Financial institutions must ensure stable and secure network connectivity to build and maintain customer trust.
- v. Promote Awareness and Education: Targeted campaigns should educate rural communities on the benefits and safe use of digital payment channels.
- vi. Support Local Agents: Training and supporting local agents can help bridge the technology gap and assist users in adopting digital services.

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