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IMPACT OF FINANCIAL INCLUSION TECHNOLOGIES ON POVERTY REDUCTION IN NIGERIA (2013Q1 – 2024Q4)

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ABSTRACT: *This study examined the impact of financial inclusion technologies on poverty reduction in Nigeria, covering the period 2013Q1 to 2024Q4. Data for the study were extracted from the Central Bank of Nigeria (CBN) Statistical Bulletin, 2024. The expo-facto research design was adopted in the study. The multiple linear regression with the application of Ordinary Least Squares (OLS) technique was adopted as the method of data analysis. The major findings of the study reveal that Point of Sales (POS) contributes positively and significantly to poverty reduction in Nigeria, Automated Teller Machines (ATM) contributes positively and significantly to poverty reduction in Nigeria, Web Pay (WP) contributes negatively and significantly to poverty reduction in Nigeria, and Mobile Pay (MP) contributes negatively and significantly to poverty reduction in Nigeria. The study therefore recommends that there should be a simplification of the user interface and payment processes to accommodate individuals with limited technical knowledge and the monetary authorities should launch nationwide financial and digital literacy programs to educate users on how to safely and effectively use Mobile Pay systems for transactions and savings.*

KEYWORDS: Financial Inclusion Technologies, Poverty Reduction, POS Transactions, ATM Usage, Web Pay, Mobile Pay, Nigeria, OLS Regression, Digital Finance.

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INTRODUCTION

Poverty remains one of Nigeria's most persistent development challenges, with over 40% of the population (about 83 million people) living below the poverty line on less than $1.90 per day (World Bank; Akinyetun et al., 2021). Despite being Africa's largest economy, structural issues such as high unemployment, low financial literacy, poor infrastructure, and widespread financial exclusion continue to deepen poverty. Rural areas are particularly affected, with more than 70% of residents lacking access to formal financial services, limiting their ability to save, borrow, or participate in the formal economy.

Financial inclusion—ensuring that individuals and businesses have access to affordable financial products such as payments, savings, credit, and insurance—is therefore critical for Nigeria's socio-economic development (Nnaomah et al., 2024; Ediagbonya & Tioluwani, 2023). The emergence of financial inclusion technologies, including mobile banking, digital financial services, POS systems, ATMs, and fintech innovations, has expanded access to financial services across both urban and rural areas. The rapid deployment of these technologies is evident in Nigeria's financial landscape; by 2023, the country had over 1.6 million POS terminals, 22,500 ATMs, and more than 120 million mobile subscriptions, providing a large user base for digital financial services (Ololade, 2024).

FinTech companies such as Paga, OPay, Paystack, Flutterwave, Carbon, and Renmoney have transformed how Nigerians transact, save, and access credit. These innovations offer convenient, low-cost, and round-the-clock financial services that are particularly beneficial to low-income earners and the previously unbanked (Ogunode & Akintoye, 2023; Appah et al., 2023). Technologies such as ATMs, POS terminals, mobile pay, and online payment gateways like WebPay also play complementary roles by extending financial services to underserved regions and reducing dependence on physical bank branches (Ahmad, 2023; Adeolu et al., 2024; Ahmed et al., 2023).

Government efforts especially through the Central Bank of Nigeria (CBN) have further strengthened financial inclusion through policies on microfinance, agent banking, mobile money, and digital payment regulation (Ezeanyeji et al., 2021). These initiatives support the broader national goal of reducing poverty and improving economic participation.

Given the rapid expansion of digital financial channels and their increasing use among low-income groups, understanding how financial inclusion technologies affect poverty is crucial. This study therefore provides an empirical analysis of the impact of financial inclusion technologies on poverty reduction in Nigeria from 2013Q1 to 2024Q4, a period characterized by significant digital transformation in the financial sector.

LITERATURE REVIEW

Conceptual Review

Financial inclusion refers to the access and usage of financial services by all segments of society, particularly the underserved and marginalized populations. It involves the provision of affordable, convenient, and secure financial services, such as savings, credit, payments, and insurance, to individuals and businesses (Ozili, 2020).

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Financial inclusion refers to the process of ensuring that individuals and businesses have access to useful and affordable financial products and services that meet their needs. These services include transactions, payments, savings, credit, and insurance, delivered in a responsible and sustainable manner. Financial inclusion aims to address the barriers that exclude people from participating in the financial system, thereby promoting economic development and reducing poverty and inequality (Sanderson, Mutandwa, & Le Roux, 2018).

Mhlanga (2023) outlined financial inclusion as a delivering of basic banking services at an affordable cost to all sections of the society, especially the vast disadvantaged and low-income groups who tend to be excluded from the formal banking system. Financial inclusion requires that attention is given to human and institutional issues, such as quality of access, affordability of products, provider sustainability, and outreach to the most excluded populations.

Financial Technology (FinTech)

Financial technology is perhaps the best innovation that has happened in the banking industry in the 21st Century. It has made banking possible away from banking premises. Banking can now take place anywhere using various electronic devices like mobile phones, automated teller machines, point-of-sale systems, smart televisions, computers, tablets, among others. Today, different banking transactions can be completed or initiated from different locations outside banking premises, such as transfer and receipts of funds, balance enquiry, purchase of airtime, payment of bills and account opening.

The concept of Financial Technology has been defined in many ways by researchers. Daniel (2005) defines the concept as the delivery of information and services by banks to customers via different delivery platforms that can be used on different electronic devices such as personal computers, mobile phones or digital televisions with browsers or desktop software. As good as this definition appears, it does not take into cognizance other platforms for financial technology, such as automated teller machines, internet banking and point-of-sales, which are the focus of this study.

Poverty and Poverty Reduction

Poverty is a complex and multifaceted issue that affects individuals, families, and communities worldwide. It is not merely a lack of income but encompasses a range of factors that prevent people from leading healthy, fulfilling lives. Understanding poverty involves examining its various dimensions, causes, and impacts on society (Townsend, 2020). There are three major dimensions of poverty, namely, absolute poverty, relative poverty, and multidimensional poverty.

Absolute poverty refers to a condition where individuals lack the basic necessities for survival, such as food, clean water, shelter, and clothing. It is a measure of poverty that is defined by a fixed standard, often established by international organizations, to determine the minimum level of income required to meet these basic needs. Unlike relative poverty, which considers an individual's economic status in comparison to others in their society, absolute poverty is concerned with whether people can meet their fundamental human requirements (Menyhert, 2024).

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Theoretical Literature

Technology Acceptance Model (TAM)

The Technology Acceptance Model, propounded by Davis in 1989, posits that there are two factors that determine whether a computer system will be accepted by its potential users: (1) perceived usefulness, and (2) perceived ease of use. The key feature of this model is its emphasis on the perceptions of the potential user., that is, while the creator of a given technology product may believe the product is useful and user-friendly, it will not be accepted by its potential users unless the users share those beliefs.

Diffusion of Innovation Theory

The Diffusion of Innovations (DOI) theory was proposed by Rogers (1995) to explain the approach through which innovation can be passed via different ways over certain periods among different users (Sarker & Sahay, 2004). DOI theory explores the ways in which innovative ideas are passed from one generation to the other. According to DOI theory, innovation is conveyed through various channels continually among individuals of the same social beliefs (Echchabi & Hassanuddeen, 2013).

Empirical Review

Iwedi, wachukwuru, and Chizuru (2024) analyzed the impact of digital financial inclusion on poverty alleviation in Rivers State, Nigeria. The study focused on residents of Rivers State as the target population. Using a combination of multistage and purposive sampling methods, a sample size of 223 participants was selected. Data collection involved the administration of a structured questionnaire, with steps taken to ensure the validity and reliability of the research instrument. The collected data was analyzed using basic descriptive statistics, including tables, frequencies, graphs, and percentages. Hypotheses were tested using simple regression models through SPSS version 25.0 software. Findings showed a significant and positive correlation between mobile money accounts, presence of point-of-sale (POS) machines, frequency of mobile payments, and consumption expenditure in Rivers State.

Ogbeide and Igbinidie (2019) examined the impact of financial inclusion on poverty alleviation in Nigeria using time series data for the period 2002 to 2015. The data was sourced from the World Bank indicators (2016). The study employed the ordinary least squares multivariate regression technique. Financial inclusion is found to exert a significant impact on per capita income, reduce poverty level and improve standard of living. Specifically, the result shows that commercial bank branches per 100,000 adults exert a positive impact on per capita income, increase standard of living and contribute to poverty alleviation. Depositors with commercial banks per 1,000 adults exerted a negative effect on poverty alleviation and are not statistically significant under the reference period. Borrowers from commercial banks per 1,000 adults are found to increase per capita income, and by extension poverty alleviation, and are not statistically significant. The finding also reveals that the number of automated teller machines enhanced financial inclusion, income generation and poverty alleviation and was not statistically significant.

Fadun (2019) examines financial inclusion, a tool for poverty alleviation and income redistribution in Nigeria. Structured questionnaires were administered to some selected respondents in the study area. This consequently favoured the use of descriptive statistics to

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analyze the data generated. The study finding indicates that financial inclusion serves as a veritable tool for alleviating poverty as well as redistributing income in Nigeria. Similarly, the report by Enhancing financial innovation and Access (2016) shows that 53.7% of persons in Nigerian urban centres are financially served, 46.3% are financially excluded, 36.63% are formally served (included), 17.49% are informally served (included), 30.0% are banked, while 6.3% are other financial institutions. Similarly, the record also shows that on the basis of zones in Nigeria, North West have 13% formally banked, 13% are informally served, 68% are financially excluded. In North Central (FCT), 27% are formally banked, 23% are informally served, and 44% are financially excluded. In south west (Lagos), 42% are formally banked, 18% are informally served, while 33% are financially excluded. Fifteen percent (15%) are formally banked, 11% are informally served, while 68% are financially excluded in the North East; 41% are formally banked, 21% are informally served and 32% are financially excluded in the South East. In the South-South, 39% are formally banked, 19% are informally served, while 36% are financially excluded; 80.4% are freely excluded from formal and informal financial services live in rural areas while the remaining 19.6% live in urban areas of Nigeria (EFINA, 2017).

Ehiedu (2021) examined ATM penetration and financial inclusiveness in Nigeria (1990-2019). The cardinal focus here was on a long- and short-run relationship. The explanatory variables were ATM Penetration proxied by Geographic ATM Penetration, Demographic ATM Penetration, and Total Numbers of ATMs about GDP. The explained variable is financial inclusion as measured by the financial inclusion index. The above ATM Penetration proxies formed the Tripod Banking System Approach. The econometric Views (E-Views) Version 9.0 was used to run the regression result. All tests proved the model as fit for prediction. Accordingly, the result showed that ATM penetration enhances the level of financial inclusiveness in Nigeria. However, in terms of individual variables, the level of ATM penetration within the economy is still weak though ATM Demographic penetration seems strong.

METHODOLOGY

Research Design

The investigation employed the *Ex Post Facto* design given that the study is anchored on the utilization of secondary data. This study makes use of econometric procedures in the impact of financial inclusion technologies on poverty reduction in Nigeria. In research works that involve times series and secondary data, the appropriate methodology is the linear regression with the application of Ordinary least squares (OLS) technique. The primary justification for adopting the linear regression is based on the fact that it possesses the optimal properties of linearity, unbiasedness, linearity and minimum variance (Koutsoyiannis, 2003).

Pre-Estimation Tests

Unit Root Test

In order to avoid spurious regression estimates, a time series data should be examined for stationarity or order of integration. Time series data is accepted to be stationary if "it exhibits mean reversion in that it fluctuates around a constant long-run mean, has a finite variance that

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is time invariant and has a theoretical correlogram that diminishes as the lag length increases" (Asteriou, 2006). There are many tests trying to find the order of integration of series and among them, Dickey-Fuller, Augmented Dickey-Fuller, and Phillips and Perron tests are the most widely used ones in testing the presence of unit roots. Dickey-Fuller (DF) test is based on the following model:

$$\Psi_t = \lambda \Psi_{t-1} + \varepsilon_t$$

The model can also be expressed as:

$$\Delta\psi_t = \varpi \psi_{t-1} + \varepsilon_t$$

where $\varpi = (\lambda - 1)$. This model is called a pure random walk model. Null hypotheses are $H_0 : \lambda = 1$ for model (3.4.1) and $H_0 : \varpi = 0$ for the model. The corresponding alternative hypotheses are $H_a : \lambda < 1$ and $H_a : \varpi < 1$ respectively. If the DF test statistic (t-statistic of lagged dependent variable) is less than the critical value, we reject the null hypothesis and conclude that the series is stationary. (There is no unit root.) Model (3.4.2) can be extended by including a constant term and/or the trend.

The corresponding models are called random walk with drift and random walk with drift and time trend:

$$\Delta\psi_t = \alpha_0 + \Omega\psi_{t-1} + \varepsilon_t$$
$$\Delta\Psi_t = \alpha_0 + \beta_2 t + \Omega\Psi_{t-1} + \varepsilon_t$$

where $\Omega = (\lambda - 1)$. The two models have the same testing procedures as the random walk model.

However, Equation (3.4.2) does not consider autocorrelation. Augmented Dickey-Fuller (ADF) test is used to test for the existence of unit root when there is autocorrelation in the series, and lagged terms of the dependent variable are included in the equation. The following three models represent pure random walk, random walk with drift, and random walk with drift and trend used in Augmented Dickey Fuller tests:

$$\Delta\psi_t = \Omega\psi_{t-1} + \sum_{i=1}^{p} \beta_i \Delta\psi_{t-1} + \varepsilon_t$$

$$\Delta\psi_t = \alpha_0 + \Omega\psi_{t-1} + \sum_{i=1}^{p} \beta_i \Delta\psi_{t-i} + \varepsilon_t$$

$$\Delta\psi_t = \alpha_0 + \Omega\Psi + \beta_2 t + \sum_{i=1}^{p} \beta_i \Delta\psi_{t-1} + \varepsilon_t$$

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where $\Omega = (\lambda - 1)$. The null hypothesis is $H_0 : \Omega = 0$ and the alternative hypothesis is $H_a : \Omega < 0$. If the ADF test statistic (t-statistic of lagged dependent variable) is less than the critical value, we reject the null hypothesis and conclude that the series is stationary (there is no unit root).

Cointegration Test

The co-integration technique allows for the estimation of a long-run equilibrium relationship. Simply put, one can argue that various non-stationarity time series are co-integrated when their linear combinations are stationary. One of the most popular tests for cointegration has been suggested by Engel and Granger (1987). The process is demonstrated thus, given a multiple regression: $y_t = \beta' x_t + \mu_t, t = 1,...,T,$ where $x_t = (x_{1t}, x_{2t}, ..., x_{kt})'$ is the k-dimensional I(1) regressors. For y_t and x_t to be cointegrated, μ_t must be I(0). Otherwise it is spurious. Thus, a basic idea is to test whether μ_t is I(0) or I(1).

The Model

The error correction analysis is an econometric analysis carried out if the variables under investigation are seen to be cointegrated. The Error Correction Mechanism (ECM) was used to estimate the speed of adjustment of the short-run dynamics of the variables and timing to long run convergence. The ECM is given by the equation: $\Delta PR_t = \beta_0 + \Delta\beta_1 POS_t + \Delta\beta_2 ATM_t + \Delta\beta_3 WP_t + \Delta\beta_4 MOP_t + \Delta\beta_5 FD_t + ECM_{t-1} + \mu_t \ldots .3.4$

where Δ = First Difference Operator.

Model Specification

The model of the study follows the research conducted by Udak (2020) with only ATM and POS as the independent variables. Following improvement adjustments, the guiding econometric model for the present study is specified thus:

Implicitly: $PR_t = f(POS_t, ATM_t, WP_t, MOP_t, FD,)$

The explicit econometric model is specified thus:

$$PR_t = \beta_0 + \beta_1 POS_t + \beta_2 ATM_t + \beta_3 WP_t + \beta_4 MOP_t + \beta_5 FD_t + \mu_t$$

where:

PR = Poverty Rate (Head Count)

POS = Point of Sales Transactions

ATM = Automated Teller Machines Transactions

WP = Web Pay Transactions

MOP = Mobile Pay Transactions

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FD = Financial Deepening (measured with the ratio of broad money supply to GDP)

t = Time Period

β's = Structural Parameters to be estimated

μ = Stochastic Error Term

The a priori expectations are given as: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, & $\beta_5 > 0$.

RESULTS AND DISCUSSION

Unit Root Test

The ADF unit root test's decision criteria is that its statistic must be bigger than the Mackinnon Critical Value at the 5% level of significance and in absolute terms. The result of this was summarized in Table 4.2.

Table 4.2: Result of Unit Root Test

VARIABLE	ADF STAT.	CRITICAL VAL.	ORDER
PR	-6.384204	-2.933158	I(1)
POS	-6.602664	-2.933158	I(1)
ATM	-6.327688	-2.933158	I(1)
WP	-6.370879	-2.933158	I(1)
MOP	-14.20641	-2.948404	I(1)
FD	-6.446079	-2.933158	I(1)

Source: *Author's Computation Using E-views 12.*

Table 4.2 presents the results of the Augmented Dickey-Fuller (ADF) unit root test conducted on six variables: Poverty Rate (PR), Point of Sales (POS), Automated Teller Machines (ATM), Web Pay (WP), Mobile Pay (MOP), and Financial Deepening (FD). It clearly shows that all the variables are stationary at first difference (I(1)). This means that the variables have unit-root until they are differenced in the first order.

Cointegration Analysis (Johansen Methodology)

Table 4.2: Cointegration Test Result

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.730726	84.95638	69.81889	0.0019

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At most 1	0.332691	36.41144	47.85613	0.3759
At most 2	0.300437	21.44486	29.79707	0.3305
At most 3	0.197890	8.224774	15.49471	0.4417
At most 4	0.001781	0.065938	3.841466	0.7973

Trace test indicates 1 cointegrating eqn(s) 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 Using E-views 12.*

The Johansen method of cointegration was used for the study because all the variables are stationary at first difference. The Johansen result, as displayed in Table 4.2, clearly shows evidence of cointegration as trace statistics test indicates 1 cointegrating equation as the trace statistic value is greater than that of 5% critical value (84.95638 > 69.81889).

Regression Results (ECM Inclusive)

Table 4.3: ECM Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.073194	0.169444	0.431967	0.6683
D(POS)	-0.002335	0.000223	-10.45147	0.0000
D(ATM)	-0.001853	0.000237	-7.830659	0.0000
D(WP)	0.000120	7.15E-06	4.532284	0.0001
D(MOP)	0.001258	9.72E-05	12.94264	0.0000
D(FD)	-0.975370	0.305985	-3.187644	0.0030
ECM(-1)	-0.305047	0.100151	-3.045881	0.0043

R-squared	0.928908	Mean dependent var	0.348837
Adjusted R-squared	0.917059	S.D. dependent var	3.686628
S.E. of regression	1.061731	Akaike info criterion	3.105578
Sum squared resid	40.58181	Schwarz criterion	3.392285
Log likelihood	-59.76993	Hannan-Quinn criter.	3.211307
F-statistic	78.39717	Durbin-Watson stat	1.921470
Prob(F-statistic)	0.000000		

Source: *Author's Computation Using E-views 12*

From Table 4.3, the regression output indicates that Point of Sales (POS), which is the independent variable, has a regression coefficient of -0.002335 when predicting the dependent variable, poverty rate (PR). The coefficient of -0.002335 is negative, which indicates an inverse

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relationship between POS and the poverty rate. For every 1 billion Naira increase in POS transactions, the poverty rate decreases by 0.002335 percentage points, holding all other factors constant. An increase in POS transactions reflects greater financial inclusion and economic activity, as more individuals and businesses engage in cashless transactions.

The regression output also indicates that Automated Teller Machines (ATM), which is the independent variable, has a regression coefficient of -0.001853 when predicting the dependent variable—poverty rate (PR). The coefficient of -0.001853 is negative, suggesting an inverse relationship between ATM transactions and the poverty rate. For every 1 billion Naira increase in ATM transactions, the poverty rate decreases by 0.001853 percentage points, holding all other factors constant. The negative relationship implies that increased usage of ATM services is associated with a reduction in poverty levels. This may occur because greater access to ATMs facilitates financial inclusion, enabling individuals to manage their finances more effectively and participate more actively in economic activities.

In the regression output, Web Pay (WP), which is the independent variable, has a regression coefficient of 0.000120, with the dependent variable being the poverty rate (PR). The coefficient of 0.000120 is positive, indicating a direct relationship between Web Pay transactions and the poverty rate. For every 1 billion Naira increase in Web Pay transactions, the poverty rate increases by 0.000120 percentage points, holding all other factors constant. A positive relationship suggests that increased Web Pay transactions are associated with a marginal increase in poverty levels. This could imply that the benefits of Web Pay transactions are not reaching the poorest segments of the population, or that other structural issues (e.g., digital divide, unequal access to technology) might exacerbate poverty levels despite the increase in Web Pay usage.

The regression output further indicates that Mobile Pay (MOP), which is the independent variable, has a regression coefficient of 0.001258 when predicting the dependent variable—poverty rate (PR). The coefficient of 0.001258 is positive, indicating a direct relationship between mobile pay and the poverty rate. For every 1 billion Naira increase in mobile payment transactions, the poverty rate increases by 0.001258 percentage points, holding all other factors constant. A positive relationship suggests that higher mobile payment volumes may coincide with a rise in poverty rates.

The regression output indicates that Financial Deepening (FD), which is the independent variable, has a regression coefficient of -0.975370 when predicting the dependent variable—poverty rate (PR). The coefficient of -0.975370 is negative, indicating an inverse relationship between financial deepening and the poverty rate. This suggests that as financial deepening increases, poverty rates decrease.

The R-squared value of 0.928908 is a measure of the proportion of variation in the dependent variable (poverty rate) that is explained by the independent variables in the regression model. An R-squared of 0.928908 indicates that approximately 92.89% of the variability in the poverty rate is explained by the independent variables in the model.

The F-statistics measures the statistical significance of the entire regression plane. It tests whether the independent variables collectively have a statistically significant effect on the dependent variable (poverty rate). Since the F-probability value is less than 0.05, it entails the test is statistically significant at the entire regression plane.

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In an Error Correction Model (ECM), the coefficient of the error correction term (ECT) measures the speed at which the dependent variable returns to equilibrium after a short-term shock. The value of -0.305047 provides important insights about the adjustment process. The negative sign indicates that the model corrects deviations from the equilibrium in the expected direction. In other words, if there is a disequilibrium in the short term, the poverty rate (dependent variable) will adjust back toward the long-term equilibrium. The value 0.305047 implies that approximately 30.5% of the deviation from the long-term equilibrium is corrected in each time period (e.g., quarter if quarterly data is used). This suggests a moderate adjustment speed. It would take slightly over three periods (1 / 0.305047 ≈ 3.3) for the system to fully return to equilibrium after a shock.

Serial Correlation LM Test Result

Table 4.4: Serial Correlation Test Result

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.056418	Prob. F(2,34)	0.9452
Obs*R-squared	0.142233	Prob. Chi-Square(2)	0.9314

Source: *Author's Computation Using E-views 10*

The Breusch-Godfrey Serial Correlation LM Test is used to check for the presence of serial correlation in the residuals of a regression model. The null hypothesis of the test states that there is no serial correlation in the residuals up to the specified lag order (in this case, lag 2). Both the Prob. F(2,34) (0.9452) and Prob. Chi-Square(2) (0.9314) are greater than 0.05, meaning we fail to reject the null hypothesis. This indicates that there is no evidence of serial correlation in the residuals of the model. The implication of the result is that the absence of serial correlation suggests that the regression model is well-specified concerning this aspect, and the residuals are independently distributed. This enhances the reliability of the estimated coefficients and standard errors, as serial correlation could otherwise bias these estimates in time-series data.

Granger Causality Test Result

Table 4.5: Causality Test Result

Pairwise Granger Causality Tests
Date: 12/03/25 Time: 17:19
Sample: 2013Q1 2023Q4
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
POS does not Granger Cause PR	42	7.59505	0.0017

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PR does not Granger Cause POS		3.18267	0.0530
ATM does not Granger Cause PR	42	1.95035	0.1566
PR does not Granger Cause ATM		2.43038	0.1019
WP does not Granger Cause PR	42	3.40916	0.0438
PR does not Granger Cause WP		2.24262	0.1204
MOP does not Granger Cause PR	42	5.58377	0.0076
PR does not Granger Cause MOP		3.62599	0.0365
FD does not Granger Cause PR	42	0.01132	0.9887
PR does not Granger Cause FD		3.54471	0.0390

Source: *Author's Computation Using E-views 10*

This table presents the results of Granger Causality Tests, which examine whether one time series can predict another. The interpretation of each result depends on the null hypothesis and the corresponding p-value. The null hypothesis is rejected if the p-value is below the chosen significance level (e.g., 0.05), indicating evidence of causality. From the table above, the following conclusions were drawn: POS Granger-causes PR; PR does not significantly Granger-cause POS. For ATM and PR, there is no causality in either direction. WP Granger-causes PR; PR does not Granger-cause WP. Bidirectional causality exists between MOP and PR. Finally, PR Granger-causes FD; FD does not Granger-cause PR.

CONCLUSION

This study examined the impact of financial inclusion technologies on poverty reduction in Nigeria from 2013 to 2024. The results show that POS and ATM services significantly reduce poverty, demonstrating their effectiveness in expanding financial access, easing transactions, and enabling greater economic participation for underserved groups. In contrast, Web Pay and Mobile Pay recorded significant negative effects, indicating that factors such as high transaction costs, low digital literacy, and limited internet access may have reduced their effectiveness during the period. Overall, the findings confirm that financial inclusion technologies not only correlate with but also influence poverty outcomes, underscoring the need to strengthen digital infrastructure and user capacity to fully harness their poverty-reducing potential.

Recommendations

The following recommendations are suggested based on the findings of the study:

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1. The result reveals that Point of Sales (POS) contributes positively and significantly to poverty reduction in Nigeria. The study therefore recommends the provision of incentives, such as tax breaks or subsidies for POS service providers, to establish operations in remote and low-income regions.

2. The result reveals that Automated Teller Machines (ATM) contributes positively and significantly to poverty reduction in Nigeria. The study recommends that there should be an improvement in ATM maintenance and cash management systems to ensure consistent availability of funds, particularly in high-demand areas.

3. The result reveals that Web Pay (WP) contributes negatively and significantly to poverty reduction in Nigeria. Based on this, there should be a simplification of the user interface and payment processes to accommodate individuals with limited technical knowledge.

4. The result reveals that Mobile Pay contributes negatively and significantly to poverty reduction in Nigeria. Based on this result, the monetary authorities should launch nationwide financial and digital literacy programs to educate users on how to safely and effectively use Mobile Pay systems for transactions and savings.

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