

A Longitudinal Study of Microfinance and Poverty Reduction in Nigeria

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Abstract

This study investigated the impact of microfinance banks on poverty reduction in Nigeria, with a specific focus on their contributions to financial inclusion and economic empowerment. Despite numerous government-led poverty alleviation initiatives, poverty remains widespread, highlighting the need to explore alternative and sustainable approaches. Drawing on secondary data from the Central Bank of Nigeria and the National Bureau of Statistics, the research applies econometric methods to evaluate the relationship between microfinance operations and key poverty indicators. The findings reveal that microfinance banks play a significant role in reducing poverty by improving access to credit and supporting small-scale enterprises. The study recommends strengthening microfinance institutions through targeted policy interventions to enhance their long-term impact on poverty alleviation.

Keywords: Economic Empowerment; Financial Inclusion; Microfinance Banks; Poverty Reduction.

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INTRODUCTION

Poverty remains a major challenge in Nigeria, affecting over 87 million people and undermining national development efforts (World Bank, 2024). Despite numerous government programs and international collaborations, limited access to finance continues to hinder the growth of small and medium-sized enterprises (SMEs), which are crucial for job creation and economic empowerment (Danaan, 2020; Abdelbary, 2019).

Microfinance banks (MFBs) have emerged as vital tools for promoting financial inclusion and reducing poverty by providing credit and savings services to low-income individuals and small businesses often excluded from traditional banking systems (Babalola, Mhlango, Obinyeluaku, Oladayo, & Daraojimba, 2023). With over 900 licensed MFBs in Nigeria, their role in improving livelihoods and supporting entrepreneurship has been significant (CBN, 2021).

However, the long-term impact of microfinance on poverty remains unclear. While short-term assessments often highlight immediate benefits, they fail to capture lasting effects on income stability, asset growth, and financial resilience (Ahmed, Musa, & Sule, 2024). A longitudinal research approach is necessary to evaluate how microfinance services affect poverty over time, including changes in client behavior, economic outcomes, and institutional sustainability (Chikwira, Vengesai, & Mandude, 2022; Egbuhuzor, Ugo, & Chibuike, 2021).

Despite the growth of MFBs, poverty still affects over 40% of Nigerians as of 2022. (World Bank, 2024). Despite numerous promises and repeated implementation of poverty alleviation programs, Governments globally and particularly in Nigeria have struggled to implement sustainable poverty alleviation programs, with many initiatives falling to achieve their intended outcome. (Ikpefan, Taiwo, & Isibor, 2016).

Given this context, this study investigates how key financial indicators of microfinance banks influence poverty reduction in Nigeria. Specifically, it focuses on lending practices, liquidity ratio, and capital adequacy ratio as determinants of the effectiveness of microfinance banks in promoting socio-economic development. (Onyele & Onyele, 2020)

Research Questions

1. How do microfinance banks' lending practices affect poverty reduction in Nigeria?
2. What is the effect of the liquidity ratio of MFBS on their ability to provide credit to low-income earners?
3. How does the monetary policy rate influence the operations and lending capacity of MFBs?
4. What role does capital adequacy play in ensuring the sustainability of microfinance banks and their impact on poverty reduction?

Objectives of The Study

1. Examine the effect of microfinance banks' lending practices on poverty reduction.
2. Determine how the liquidity ratio affects the ability of MFBs to provide credit.
3. Assess the influence of the monetary policy rate on microfinance bank operations.
4. Evaluate the role of the capital adequacy ratio In ensuring sustainable poverty reduction

RESEARCH METHODS

The Poverty Alleviation Theory is the most suitable theoretical framework for this study as it directly addresses poverty reduction through microfinance, which is central to the research objectives. This theory has been widely applied in various developing nations, including Nigeria, and even in some European countries, highlighting its adaptability to different economic contexts. It emphasizes financial institution lending, which is critical to Nigeria's communal structure, especially with microfinance banks and government-led initiatives like the Anchor Borrowers' Program, which funds small-scale farmers. Additionally, the theory's focus on rural populations is particularly relevant to Nigeria, where a significant portion of the impoverished population resides in rural areas with limited access to formal financial services. By adopting the Poverty Alleviation Theory, this study will utilize its principles to analyze the role of microfinance banks in poverty reduction in Nigeria.

The model in this study is described, following the empirical framework of the model adapted from Onyele and Onyele (2020), Cole and Akintola (2021), and Ogbonna (2022). The model's implicit form was:

$$PR = f(LDR, LR, MPR, CAR) \text{ ----- Equation 3.1}$$

Where;

PR is Poverty Rate

LDR is to loan-to-deposit ratio

LR is the Liquidity ratio

MPR is the monetary policy rate

CAR is the Capital Adequacy Ratio

F is a Functional relationship

An ex-post facto research design is the most suitable approach for this study, as it analyzes existing data that has already been collected. This design aligns well with the study's objectives, which involve examining secondary data sources, such as the Central Bank of Nigeria's Statistical Bulletin, covering key variables like poverty rates, loan-to-deposit ratios, cash ratios, and monetary policy rates. The study focuses on two main populations: the poverty index and microfinance banks. The data sample spans 64 quarterly observations, from 2008Q1 to 2023Q4. The study utilizes data obtained from the CBN's statistical database, examining both the dependent variable (poverty index) and independent variables, including loan-to-deposit ratio (LDR), liquidity ratio (LR), monetary policy rate (MPR), and capital adequacy ratio (CAR). The research relies on secondary data from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS).

To evaluate the effect of microfinance banks' assets and products on poverty reduction in Nigeria, this study employs the Johansen Co-integration Test, Vector Error Correction Model (VECM), and Vector Autoregression (VAR). The Johansen test is used to determine long-run equilibrium relationships between variables in multivariate time series. The VECM is ideal for analyzing both short- and long-term dynamics when variables are co-integrated, while VAR helps test the type of relationship between the dependent and independent variables. These methods are effective for time series data analysis, as they accommodate non-stationary variables and identify long-term relationships without requiring stationarity tests. The VECM model accounts for short-term disequilibrium while maintaining long-term stability, which is key for understanding variable interactions over time. Regression analysis will include the Coefficient of Determination (R^2), t-tests, and the Durbin-Watson test for autocorrelation, conducted using E-Views 12 statistical software to ensure accuracy.

Estimation Technique

This study employs the following estimation techniques:

- **Johansen Co-integration Test:** Identifies long-run equilibrium relationships between the variables in the multivariate time series.
- **VECM:** Analyzes short- and long-run dynamics, adjusting for disequilibrium in the short run and ensuring long-run stability.
- **VAR:** Examines the dynamic relationships among the dependent and independent variables.

These techniques are well-suited for time series data, accounting for non-stationarity and identifying long-term relationships. Evaluation of the model will use R^2 for explanatory power, t-tests for statistical significance, and the Durbin-Watson test for autocorrelation, all conducted using E-Views 12 software for reliability and precision.

Data Analysis and Presentation

The descriptive analysis of the study's variables, including the poverty rate (PR), loan-to-deposit ratio (LDR), liquidity ratio (LR), monetary policy rate (MPR), and capital adequacy ratio (CAR) provides insights into their statistical properties. The analysis includes measures of central tendency, standard deviation, skewness, kurtosis, and normality tests.

Measures of Central Tendency:

- Poverty Rate (PR): The mean value of 5.285792 indicates that poverty rates averaged 5.29% of the Nigerian economy during the study period.
- Loan-to-Deposit Ratio (LDR): The mean value of 2.857315 suggests that the LDR typically reduces the poverty rate by 2.85%, reflecting a moderate influence.
- Liquidity Ratio (LR): The mean value of 2.414007 suggests a small average reduction in poverty by 2.41%.
- Capital Adequacy Ratio (CAR): The mean value of 7.419149 reflects a modest contribution of 7.42% to reducing poverty.

Standard Deviation:

- The standard deviation values indicate how dispersed the data is from the mean. For example, PR's standard deviation of 0.515438 shows a close deviation around its mean, while LDR's standard deviation of 0.611969 shows minimal variation. LR and MPR show similar standard deviations (0.669918 and 0.69%, respectively), while CAR exhibits a higher deviation of 2.57%.

Skewness:

- Skewness measures the asymmetry of the data. Positive skewness values for PR, LDR, and CAR indicate that these variables have higher values, while negative skewness for LR and MPR suggests these variables are skewed towards lower values.

Kurtosis:

- PR, LDR, LR all show kurtosis values close to 3, indicating a normal (Mesokurtic) distribution, where data points are spread around the mean in a typical manner.
- CAR, however, has a kurtosis value of 5.569593, indicating a Platykurtic distribution, with a higher concentration of data points away from the mean, reflecting a flatter distribution.

In conclusion, the descriptive statistics show that while most variables exhibit normal distributions, there are slight differences in their contributions to poverty reduction, with the CAR exhibiting a particularly flat distribution. This analysis provides an essential foundation for the subsequent econometric analysis and model testing.

Table 1: Descriptive Statistics Table

	PR	LDR	LR	CAR
Mean	5.285792	2.857315	2.414007	7.419149
Median	5.418628	3.110576	2.603902	10.57109
Maximum	5.966602	3.624179	3.400711	8.163817
Minimum	4.224611	1.623249	0.845098	5.821672
Std. Dev.	0.515438	0.611969	0.669918	2.570110
Skewness	0.461621	0.839842	-0.551434	0.460715
Kurtosis	3.898936	3.376767	3.321364	5.569593
Jarque-Bera	2.494865	3.878456	2.026210	2.982572
Probability	0.044241	0.043815	0.035090	0.043583
Sum	153.2880	82.86212	70.00620	572.0000
Sum Sq. Dev.	7.438926	10.48615	12.56614	396.3279
Observations	64	64	64	64

Source: Researcher's Computation with E-view (2024)

Vector Error Correction Model (VECM)

The VECM was used to examine the adjustment speed, which measures how quickly short-term disequilibrium converges to long-term equilibrium. This model is particularly relevant for analyzing time series data with cointegrated variables, suggesting a long-term relationship between the variables. The study first assessed the coefficient values of Cointeq1 to confirm the long-term relationship between microfinance bank variables (LDR, LR, CAR) and the poverty rate

(PR). The significant value of **0.025546** at the 5% level confirmed the presence of a long-term relationship.

The subsequent analysis focused on evaluating the speed at which each independent variable affects PR in both the short and long term:

1. Loan-to-Deposit Ratio (LDR):

- Coefficient: 0.147422
- t-statistic: -0.04411 (significant at the 5% level)
- Adjustment Speed: Approximately 14%
- Interpretation: LDR had a significant negative effect on PR in both the short and long term, with a relatively moderate adjustment speed of 14%, indicating it takes a short period for LDR to exert influence on PR.

2. Liquidity Ratio (LR):

- Coefficient: 0.202265
- t-statistic: -0.03969 (significant at the 5% level)
- Adjustment Speed: Approximately 20%
- Interpretation: LR was found to have a substantial effect on PR, with a higher adjustment speed (20%) compared to LDR. This suggests that LR plays a key role in influencing PR over time, with both short and long-term negative impacts on poverty.

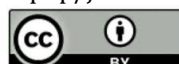
3. Capital Adequacy Ratio (CAR):

- Coefficient: 0.102790
- t-statistic: -0.04339 (significant at the 5% level)
- Adjustment Speed: Approximately 10%
- Interpretation: CAR showed a negative and significant impact on PR, with the smallest adjustment speed (10%) among the variables. This suggests CAR's gradual but notable influence on PR over time.

In summary, the VECM analysis highlights that all the independent variables (LDR, LR, CAR) have a significant impact on PR both in the short and long term. Among these, LR has the highest adjustment speed, indicating its more immediate effect on poverty reduction, while CAR exhibits the slowest adjustment speed. The model confirms that these variables, particularly the liquidity ratio, monetary policy rate, and capital adequacy ratio, play critical roles in influencing poverty in Nigeria.

Table 2: Vector Error Correction Model (VECM)

Error Correction:	D(PR)	D(LDR)	D(LR)	D(CAR)
CointEq1	0.025546 (0.01236) [2.06647]	0.016204 (0.09643) [-1.10131]	0.009898 (0.02049) [0.48302]	0.010494 (0.00854) [1.22811]
D(LPR(-1))	-0.132806 (0.17910) [-0.74151]	-0.147422 (6.39715) [-0.04411]	-0.202265 (0.29689) [-0.03969]	-0.102790 (0.22672) [-0.04339]
D(LDR(-1))	-0.005666 (0.03384) [-0.16745]	0.128021 (0.26396) [0.48501]	-0.025595 (0.05609) [-0.45632]	0.160208 (0.12034) [1.33125]
D(LR(-1))	0.191083 (0.09132) [2.09240]	0.042851 (0.71239) [0.06015]	0.173996 (0.15138) [1.14939]	0.859330 (0.30209) [2.84461]
D(CAR(-1))	0.041832 (0.03274) [1.58420]	0.471569 (0.27749) [0.82143]	0.193529 (0.75283) [0.59613]	0.098984 (0.08673) [1.14134]
C	0.039100 (0.00948)	-0.000402 (0.07397)	0.049428 (0.01572)	0.035172 (0.03428)



	[4.12370]	[-0.00543]	[3.14479]	[2.59782]
R-squared	0.651550	0.495428	0.573214	0.618340
Adj. R-squared	0.530966	0.409946	0.490170	0.572195
Sum sq. resids	0.015841	0.963990	0.043529	0.094338
S.E. equation	0.027465	0.214253	0.045528	0.036831
F-statistic	3.457939	0.443081	1.578871	5.161993
Log likelihood	62.14182	6.677556	48.49595	32.28461
Akaike AIC	-4.158653	-0.050189	-3.147848	-1.068269
Schwarz SC	-3.870689	0.237774	-2.859885	-1.015267
Mean dependent	0.055903	0.073730	0.076981	0.094264
S.D. dependent	0.033330	0.202455	0.047995	0.043651
Determinant residual covariance (dof adj.)	8.58E+19			
Determinant resid covariance	1.25E+19			
Log likelihood	-498.6245			
Akaike information criterion	55.64468			
Schwarz criterion	57.13590			

Source: Researcher's Computation with E-view (2024)

Var Serial Correlation Tests

The test was performed to check for the presence of autocorrelation in the model. According to Table 3, the probability value obtained was 0.1362. Given that the null hypothesis assumes no autocorrelation in the model, and since the probability value of 0.1362 is not significant at the 5% level, it suggests that autocorrelation is not present in the model.

Table 3 VAR Residual Serial Correlation LM Test Results

Lags LM-Stat Prob.

1	2719.538	0.1362
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Source: Researcher's Computation with E-view (2024)

RESULTS AND DISCUSSION

The empirical findings from existing longitudinal studies largely affirm the theoretical frameworks that link microfinance to poverty alleviation, yet they also expose the nuanced and multifaceted nature of this relationship. Over time, the effectiveness of microfinance has been shown to vary significantly based on factors such as implementation strategies, regulatory frameworks, socio-economic environments, and the availability of complementary support services. These variations indicate that while microfinance remains a promising long-term poverty alleviation mechanism, its outcomes are not uniform across different regions and institutional contexts (Onyeke & Onyele, 2020). To enhance its effectiveness, microfinance programs must be designed with a strong understanding of local contexts, supported by enabling regulations, and integrated with broader development initiatives such as education, healthcare, and vocational training. Comparative analyses by recent scholars suggest that microfinance performs best when accompanied by human-capital development and social protection programs (Nkamnebe, 2023). The mixed outcomes observed in longitudinal studies further underscore the importance of continued, context-specific research. In particular, more robust longitudinal analyses are needed to assess the sustained impact of microfinance on income levels, asset accumulation, and the overall well-being of beneficiaries. Such studies are crucial in identifying the conditions under which microfinance yields the most significant poverty-reduction outcomes and how it can be best leveraged as part of a comprehensive poverty alleviation strategy.

CONCLUSION

Microfinance banks have proven to be valuable tools for poverty alleviation, especially in developing countries like Nigeria. Their ability to provide financial services to underserved populations, particularly women, has contributed to increased income, improved living standards, and enhanced entrepreneurial activity. However, the effectiveness of microfinance varies based on contextual factors, requiring a tailored approach to maximize its impact on poverty reduction.

To optimize the role of microfinance in addressing poverty, a multifaceted approach is needed. This includes strengthening regulatory frameworks, enhancing the efficiency of microfinance institutions, and integrating microfinance with broader development strategies. Ongoing longitudinal research is crucial for refining our understanding of how microfinance contributes to sustainable poverty alleviation over time.

Despite the insights generated, this study is not without limitations. One major constraint lies in its reliance on secondary data, which may not fully capture the nuanced realities of individual microfinance beneficiaries or the informal sectors. Additionally, regional differences in the operations and performance of microfinance banks across Nigeria may limit the generalizability of the findings. This aligns with Manasseh, Logan, and Ede (2024). Who noted that studies relying solely on aggregate data often overlook institutional and regional peculiarities that influence the true effectiveness of microfinance. Future research should therefore employ mixed-method and primary data approaches, incorporating qualitative insights from beneficiaries and institutional managers. This would allow for a more comprehensive evaluation of the long-term and context-specific impact of microfinance on poverty reduction, especially when analyzed across rural and urban divides.

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