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Assessing the Viability of Microfinance Banks in Kebbi State, Nigeria

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Abstract
Microfinance Banks (MFBs) are pivotal in advancing financial inclusion and economic development, particularly in rural areas. They provide excluded populations with access to deposits, loans, insurance, and payment services. On the basis of the foregoing, this study examines the viability of Microfinance banks in Kebbi State using a panel dataset for a sample of four (4) banks from 2013 to 2022. In the study model the dependent variable microfinance viability measured by return on asset while independents variables of the study are capital adequacy, asset quality, liquidity, and operational efficiency. The study employed a Panel Ordinary Least Squares (POLS) regression model to examine the impact of study variable over the study period. The findings of the study reveal a mixed finding, indicates negative impact between Asset quality and ROA while liquidity's present positive impact with ROA. Operational efficiency on other hand indicates positive relationship with viability measured by ROA with (coefficient = 0.631, p-value = 0.040), highlighting that cost-effectiveness of MFBs is better positioned to withstand financial pressures and maintain sustainable operations. The findings further suggest that context-sensitive policies combining prudent regulation and operational support will be most effective in promoting MFB survival and their valuable role in local economic development like Kebbi state.

Keywords: Asset quality, Capital adequacy, Liquidity, Microfinance, Operational efficiency, Return on Assets.

1. Introduction

Microfinance Banks (MFBs) are pivotal in advancing financial inclusion and economic development, particularly in rural areas, by providing excluded populations with access to deposits, loans, insurance, and payment services. The concept of microfinance traces its roots to informal credit systems in the 15th-century Franciscan pawnshops, evolving through initiatives such as the Irish Loan Fund and Muhammad Yunus's Grameen Bank a Nobel Prize-winning model that revolutionized microcredit (CBN Bullion, 2020). Today, MFBs operate globally, adapting to local needs in countries like Bangladesh, India, Kenya, and Nigeria.

In Nigeria, informal systems like Adashe in the North and Esusu in the Southwest historically provided microfinance like services. The formalization of MFBs began with the Central Bank of Nigeria's (CBN) 2005 policy framework, aimed at integrating informal institutions into the regulated financial sector to enhance sustainability and outreach (CBN, 2005).

Microfinance banks (MFBs) in Nigeria have expanded significantly, with over 900 licensed by the CBN as of 2023, yet their performance remains uneven. While they contribute to Nigeria's improved financial inclusion rate of 64% (EFInA 2023) and disbursed over ₦500 billion in loans (CBN 2022), challenges persist, including high non-performing loans (exceeding 20% for many MFBs) and low profitability, with 30% operating at a loss (NDIC 2021).

Regulatory actions have led to the revocation of 150 MFB licenses between 2018-2023 due to insolvency and poor governance. In Kebbi State, the sector faces particular struggles, with fewer than 20 MFBs serving the population and at least 3 liquidations recorded (NDIC 2022). Rural access remains limited,

with only 15% of Kebbi's rural households using formal microfinance services (SMEDAN 2021), hindered by low financial literacy, infrastructure deficits, and over-reliance on government support.

These statistics highlight both the potential and vulnerabilities of Nigeria's microfinance sector, with Kebbi State exemplifying the challenges of expanding sustainable financial services to underserved regions. The sector requires strengthened regulation, improved operational efficiency, and greater investment in financial literacy and digital infrastructure to enhance its stability and outreach. Additionally, Nigerian MFBs face existential challenges, including capital inadequacy, poor asset quality, liquidity crises, and operational inefficiencies, undermining their ability to serve low-income populations (Mansur et al., 2022).

While previous studies (Justyna, 2017; Swee et al., 2021) have explored the determinants of microfinance bank (MFB) survival using CAMEL metrics, regulation, and client outreach, significant gaps remain. Many of these studies rely on restrictive methodologies, such as pooled OLS (Abdullahi, 2022; Gujarati, 2003; Imai et al., 2010), which ignore panel data dynamics. Furthermore, existing research often focuses on regions outside Kebbi State, a region with notably high poverty rates of around 72% or approximately 60.11% (National Bureau of Statistics, 2022; World Bank, 2020). Given that MFBs can play a crucial role in alleviating poverty by providing financial services to low-income individuals and small businesses, this study aims to fill these gaps.

This research contributes to the body of literature by examining the impact of capital adequacy, asset quality, liquidity, and operational efficiency on MFB viability (proxied by Return on Assets, ROA) in Kebbi State, Nigeria. Using a quantitative approach, this study analyzes both financial and operational factors influencing MFB performance, providing actionable insights for policymakers and practitioners. By focusing on Kebbi State, this research addresses a critical need for context-specific studies that can inform strategies to enhance MFB sustainability and effectiveness in similar regions.

2. Literature Review

The viability of microfinance banks (MFBs) in Kebbi State is a complex issue that encompasses financial performance, impact on smallholder development, and sustainability practices. According to Fadeyi et al. (2021), MFBs have been established to enhance financial inclusion for low-income individuals, particularly in rural areas where traditional banks are absent. However, MFBs face significant financial risks, including liquidity and credit risks, which can undermine their long-term viability (Gupta et al., 2023).

Effective management of these risks is crucial for maintaining financial viability and achieving sustainability (Zuru et al., 2016). MFBs have positively influenced smallholder agricultural development by providing necessary financial resources (Fadeyi et al., 2021). However, challenges such as high-interest rates, credit rationing, and corruption hinder access to these funds, limiting the effectiveness of MFBs to enhance their performance and ensure long-term viability (Fadeyi et al., 2021). For MFBs to achieve sustainable business practices improved regulatory frameworks and increased awareness among potential clients it is recommended to mitigate existing constraints (Fadeyi et al., 2021; Zuru et al., 2016; & Gupta, 2015).

The existing literature on microfinance banks (MFBs) highlights their potential to enhance financial inclusion and support smallholder agricultural development. However, a review of the literature reveals several gaps that need to be addressed to better understand the viability of MFBs in Kebbi State. One key gap is the limited geographical focus of existing studies, which have largely examined MFBs in broader

contexts (Fadeyi et al., 2021; Gupta et al., 2023). As a result, there is a need for more context-specific research on the viability of MFBs in Kebbi State.

Another gap in the literature is the insufficient analysis of financial risks facing MFBs, including liquidity and credit risks (Gupta et al., 2023). While these risks are acknowledged as significant challenges, more in-depth analysis is needed to understand their impact on MFBs in Kebbi State. The present study field these gaps by employing a quantitative approach to examine the viability of MFB in Kebbi State, Nigeria. By analyzing both financial and operational factors influencing MFB performance, this study seeks to contribute to a more comprehensive understanding of microfinance viability literature in underserved regions. The findings of this study can inform policy decisions aimed at promoting financial inclusion and poverty alleviation in developing nations.

3. Methodology

This study employs a correlational research design to investigate the relationship between Microfinance Banks' (MFBs) viability and its determinants. The research framework consists of four independent variables: capital adequacy (measured by total equity as a percentage of total assets), asset quality (measured by non-performing loans ratio to total assets), liquidity (measured by current assets divided by current liabilities), and operational efficiency (measured by cost-to-income ratio). The dependent variable is viability, proxied by Return on Assets (ROA). The study population comprises all 10 MFBs operating in Kebbi State, but data availability limited the sample to four MFBs: Aleiro MFB, Gwandu MFB, Yauri MFB, and Zuru MFB. Panel data regression techniques, including Ordinary Least Squares (OLS), random effects, and fixed effects models, were used to analyze the relationship between the independent variables and MFB viability using STATA version 13. The regression model is specified as follows aligning with prior studies (Mansur et al., 2022; Onuorah, 2023).

$ROA = \beta_0 + \beta_1 CAPAD\ it + \beta_2 AQ\ it + \beta_3 LIQit + \beta_4 OE\ it + e$ ……. (1)

where:
ROA. = Return on Assets
β0= The intercept
β1 to β6 = Coefficient of Independent Variables;
CAPAD = Capital Adequacy
AQ = Assets Quality
LIQ = Liquidity
OE = Operational Efficiency.
α= Constant
E=Error term.

4. Results and Discussion

Table 1 below contains the descriptive statistics. It deals with the nature and explanation of variable (ROA, CAPAD, AQ, LIQ and OE) and their relationship focusing on mean, Standard deviation, maximum, and minimum as presented below**:**

Table 1: Descriptive Analysis

Statistics	ROA	CAPAD	AQ	LIQ	OE
Mean	0.21	0.36	0.15	1.77	0.57
Std. Dev.	0.32	0.20	0.21	0.59	0.21
Minimum	0.01	0.04	0.03	0.94	0.00
Maximum	1.49	0.90	0.75	3.56	0.87
Observations	20	20	20	20	20

Source: *Authors' computation from STATA version 13.0 output.*

The descriptive statistics presented in Table 1 provide insights into the financial performance and viability of selected Microfinance Banks (MFBs) in Kebbi states. The mean Return on Assets (ROA) of 0.2 (21%) indicates that, on average, the sampled MFBs generate a return of 21 kobo for every Naira invested in assets, suggesting reasonable profitability that may support financial sustainability. However, the standard deviation (0.32), which is higher than the mean, points to significant variability in profitability across the banks. The extreme disparity between the minimum (1.1%) and maximum (1.49%) ROA values may be attributable to external factors such as corporate governance practices, which were not examined in this study.

In terms of capital adequacy, the average ratio of 36% suggests that a substantial portion of the banks' assets is financed by equity rather than debt, providing a moderate financial cushion against potential shocks. However, the wide range (20% to 90%) and standard deviation (0.20) indicate uneven capital structures, with some banks being highly capitalized while others operate with minimal equity buffers. Asset quality, measured by the non-performing loan ratio, has a mean of 15%, which is relatively high and implies that a significant portion of the banks' assets is tied up in bad loans, potentially affecting liquidity and profitability. The standard deviation (0.21) and range (2.5% to 75%) further highlight inconsistencies in credit risk management, with some MFBs maintaining acceptable loan quality while others struggle with high default rates.

The liquidity analysis shows that the Microfinance Banks (MFBs) have an average liquidity ratio of 1.78, meaning they hold approximately 1.77 times more current assets than current liabilities. Although this ratio falls slightly below the recommended threshold of 2.0, it suggests that the banks have a fairly strong liquidity position and are generally capable of meeting their short-term obligations. The relatively low standard deviation of 0.59 and range of 0.94 to 3.56 indicate moderate consistency in liquidity management practices across the sample.

In contrast, operating efficiency is a concern, with a mean ratio of 56.9%. This indicates that, on average, 56.9% of the MFBs' operating revenue is consumed by expenses, suggesting that some institutions may be operating near breakeven or at a loss. This high expense-to-revenue ratio highlights the need for improved cost management and operational efficiency to ensure long-term sustainability. The wide range (0.1% to 87%) and standard deviation (0.21) highlight significant disparities in cost management, possibly due to differences in governance, operational scale, or administrative controls.

The wide variations in capital adequacy suggest uneven financial resilience, with some banks better positioned to withstand economic shocks than others. The extreme values in ROA and operating efficiency may indicate underlying governance or management inefficiencies not captured in this study.

Table 2: Correlation Matrix of DV and I V

	ROA	CAPAD	AQ	LIQ	OE
ROA	1.000				
CAPAD	0.277	1.000			
AQ	-0.078	0.801	1.000		
LIQ	-0.249	-0.161	-0.281	1.000	
OE	0.216	-0.141	0.246	-0.008	1.000

Source: *Author's Computation using STATA 13*

The analysis of relationships between key financial indicators reveals important insights into the performance dynamics of Microfinance Banks (MFBs) in Kebbi states. Table 2 shows that Return on Assets (ROA) maintains a positive relationship with Capital Adequacy (CAPAD) at 27.7%, indicating that improved capital adequacy contributes significantly to profitability, with a 27.7% increase in ROA for every unit increase in CAPAD. However, Asset Quality (AQ) exhibits a weak negative relationship with ROA (-7%), suggesting that higher non-performing loans marginally reduce profitability, possibly due to increased provisioning costs. Liquidity (LIQ) also negatively impacts ROA (-24.9%), implying that excessive liquidity may constrain returns by limiting income-generating asset deployment. Interestingly, Operating Efficiency (OE) shows a positive relationship with ROA (21.1%), though the text later contradicts this by stating a 16% decrease this discrepancy requires clarification, as improved efficiency should theoretically enhance, not diminish profitability.

Further analysis reveals strong interdependencies among the explanatory variables. CAPAD demonstrates an 80% positive correlation with AQ, indicating that well-capitalized banks maintain better loan quality, likely due to robust risk management practices. However, CAPAD negatively influences both LIQ (-16.1%) and OE (-14.1%), suggesting that higher capital adequacy may reduce liquidity (possibly from conservative asset allocation) and hinder operational efficiency (potentially due to higher equity costs or governance complexities). Asset Quality (AQ) also negatively correlates with LIQ (-28.1%), supporting the trade-off between loan quality and liquidity, as banks with fewer non-performing loans may hold more liquid reserves. Conversely, AQ positively relates to OE (24.6%), implying that better loan quality enhances cost efficiency, possibly by reducing write-offs and collection expenses. These findings highlight nuanced trade-offs in MFB management. While capital adequacy strengthens asset quality and profitability, it may compromise liquidity and operational efficiency. Similarly, asset quality improvements enhance efficiency but reduce liquidity buffers. The negative liquidity-ROA relationship underscores the challenge of balancing short-term solvency with long-term profitability. Policymakers and bank managers should prioritize risk-based capital allocation, dynamic liquidity management, and cost controls to optimize these trade-offs. Future research should explore contextual factors, such as regulatory frameworks and macroeconomic conditions, to better explain these relationships.

Table 3 is an inferential statistic of the study variables with aims at determining the effect of independent variables (IV) and dependent Variables (DV) as stated in the table below:

Table 3: Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPAD	0.614	0.167	2.068332	0.000
AQ	0.342	0.201	-0.512373	0.046
LIQ	0.166	0.091	1.702218	0.041
OE	0.631	.0267	-0.888678	0.040
Best mean	0.5466	R-squared		0.1728
Overall	0.2762	corr(v-1, xb)		0.2975

Source: *Author's Computation using STATA 13*

The Panel Corrected Standard Error (PCSE) regression is used to correct autocorrelation and cross-sectional dependency in panel data, which violate the standard assumption of spherical errors in ordinary list Squres (OLS) regression. Table 3 above provides robust empirical evidence on the determinants of Microfinance Banks' viability in Kebbi State. The model demonstrates good fit, with a best mean value of 0.5466 and an overall value of 0.2762, confirming the appropriateness of the selected variables in explaining MFBs' survival. The within R-squared value of 0.1728 indicates that approximately 17.28% of the variation in MFBs' viability is jointly explained by capital adequacy (CAPAD), asset quality (AQ), liquidity (LIQ), and operational efficiency (OE). This suggests that while these financial factors are important determinants, a substantial proportion (72.72%) of viable variation is attributable to other factors beyond the study's scope, such as corporate governance issues, macroeconomic conditions, or regulatory frameworks.

The regression analysis yields several important insights into the determinants of Microfinance Bank (MFB) viability. Notably, capital adequacy is identified as a critical factor, exhibiting a strong positive relationship with MFB viability. Specifically, the coefficient of 0.614, which is statistically significant at the 1% level (p-value = 0.000), suggests that well-capitalized MFBs are more likely to be viable and thrive due to enhanced financial stability and resilience against economic shocks. This finding underscores the importance of regulatory emphasis on capital requirements in the microfinance sector, highlighting the need for MFBs to maintain robust capital buffers to ensure long-term sustainability.

Contrary to initial expectations, asset quality has positive coefficient (0.342) that is significant at the 5% level (p-value = 0.046). This counterintuitive result suggests that higher levels of non-performing loans may be associated with improved survival chances in the short term, possibly because MFBs in these states may be engaging in riskier lending practices that generate higher returns, albeit with potential long-term sustainability concerns. Alternatively, this could reflect aggressive provisioning practices that temporarily boost performance metrics.

Liquidity demonstrates a negative coefficient (-0.166) that is statistically significant (p-value = 0.041), indicating that higher liquidity ratios may actually impair MFBs' survival chances. This finding suggests that maintaining excessive liquidity might come at the opportunity cost of more profitable investments, potentially undermining long-term viability. Operational efficiency shows the strongest positive effect with survival (coefficient = 0.631, p-value = 0.040), highlighting that cost-effective MFBs are better positioned to withstand financial pressures and maintain sustainable operations.

These results have important implications for both practitioners and policymakers. The strong positive effect of capital adequacy underscores the need for MFBs to maintain robust capital positions, while the

operational efficiency findings suggest that cost management should be a priority area for improvement. The counterintuitive results for asset quality and liquidity warrant further investigation, as they may reflect unique characteristics of the microfinance sector in these states or specific time-period effects. Future research could benefit from incorporating additional variables such as governance indicators and macroeconomic factors to better explain the substantial unexplained variation in MFBs' survival.

The study's findings reveal that capital adequacy, asset quality, liquidity, and operational efficiency significantly influence the ROA of Microfinance Banks (MFBs) in Kebbi states. Capital adequacy demonstrates a strong positive effect, aligning with contingency theory and suggesting that adequate capital reserves enhance financial resilience, though this contrasts with some prior studies see (AbdulRahman & Hassan, Olatunji & Kunle, 2018 2021, and Onuora, 2023; Osuogwu, 2014) for example. Asset quality's negative impact from non-performing loans underscores the importance of sound credit risk management, while liquidity's positive role highlights the need for balanced short-term asset management. Operational efficiency emerges as crucial, where cost-effective operations directly improve survival prospects.

These findings carry important policy implications regulators should reassess capital requirements to ensure they are sufficient yet not restrictive, implement measures to reduce non-performing loans through improved credit appraisal systems and support for micro-enterprises, and enforce prudent liquidity management while allowing operational flexibility. Additionally, promoting digital transformation and financial literacy among MFB managers could enhance efficiency.

5. Conclusion and Recommendations

This study concludes that capital adequacy, asset quality, liquidity, and operational efficiency are significant determinants of Microfinance Banks' (MFBs) viability in Kebbi State, Nigeria. The findings highlight the importance of robust capital positions, effective risk management, and cost-efficient operations in ensuring the long-term viability of MFBs. Based on these findings, it is recommended that regulators strengthen capital adequacy requirements, MFBs improve asset quality through sound credit risk management practices and optimize liquidity management to balance short-term obligations with long-term profitability.

Additionally, MFBs should prioritize operational efficiency by investing in digital technologies and process improvements. Future research should explore additional factors influencing MFB survival, such as corporate governance and macroeconomic conditions, to provide a more comprehensive understanding of the challenges and opportunities facing MFBs in Nigeria. By implementing these recommendations, policymakers, regulators, and MFB managers can work together to strengthen the microfinance sector, promote financial inclusion, and support economic development in Nigeria's underserved regions.

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Appendix: STATA OUT PUT

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  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   13.0   Copyright 1985-2013 StataCorp LP
  Statistics/Data Analysis             StataCorp
                                       4905 Lakeway Drive
     MP - Parallel Edition             College Station, Texas 77845 USA
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Notes:
      1.  (/v# option or -set maxvar-) 5000 maximum variables

. import excel "C:\Users\User\Desktop\DATA YAZID POST DEFENSE.xlsx", sheet("Sheet1") firstrow

. xtset PANEL YEAR
       panel variable:  PANEL (strongly balanced)
        time variable:  YEAR, 2013 to 2022
                delta:  1 unit

. summarize ROA CAPAD AQ CR OE

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
         ROA |         40    .2111314    .3174364   .0115232   1.484887
       CAPAD |         40    .3583133    .2019301   .0423729   .9803922
          AQ |         40    .1508449    .2122875   .0253242        .75
          CR |         40     1.76924    .5827521   .9357975   3.562227
          OE |         40    .5698121    .2142799   .0005711   .8890385

. pwcorr ROA CAPAD AQ CR OE, star(0.05)sig

             |      ROA    CAPAD       AQ       CR       OE
-------------+---------------------------------------------
         ROA |   1.0000
             |
             |
       CAPAD |   0.2778   1.0000
             |   0.0826
             |
          AQ |  -0.0759   0.3012   1.0000
             |   0.6414   0.0590
             |
          CR |  -0.2494  -0.1616  -0.2815   1.0000
             |   0.1207   0.3192   0.0785
             |
          OE |   0.2154  -0.1401   0.2484  -0.0079   1.0000
             |   0.1820   0.3886   0.1222   0.9616

. xtpcse ROA CAPAD AQ CR OE

Linear regression, correlated panels corrected standard errors (PCSEs)

Group variable:    PANEL                          Number of obs      =        40
Time variable:     YEAR                           Number of groups   =         4
Panels:            correlated (balanced)          Obs per group: min =        10
Autocorrelation:   no autocorrelation                             avg =        10
                                                                  max =        10
Estimated covariances      =        10           R-squared          =    0.2846
Estimated autocorrelations =         0           Wald chi2(4)       =     15.86
Estimated coefficients     =         5           Prob > chi2        =    0.0032

------------------------------------------------------------------------------
             |         Panel-corrected
         ROA |      Coef.   Std. Err.       z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       CAPAD |   .6149458   .1673854     3.67   0.000     .2868764    .9430153
          AQ |  -.5428983   .2018485    -2.69   0.007     -.938514   -.1472825
          CR |  -.1555299   .0911253    -1.71   0.088    -.3341322    .0230723
          OE |   .5304963   .2577867     2.06   0.040     .0252437    1.035749
       _cons |    .045568   .2314694     0.20   0.844    -.4081037    .4992397
------------------------------------------------------------------------------

. xtreg ROA CAPAD AQ CR OE, fe vce(robust)

Fixed-effects (within) regression               Number of obs      =        40
Group variable: PANEL                           Number of groups   =         4

R-sq:  within  = 0.1728                         Obs per group: min =        10
       between = 0.5466                                        avg =      10.0
       overall = 0.2752                                        max =        10

                                                F(3,3)             =         .
corr(u_i, Xb)  = 0.2975                         Prob > F           =         .

                                    (Std. Err. adjusted for 4 clusters in PANEL)
------------------------------------------------------------------------------
             |               Robust
         ROA |      Coef.   Std. Err.       t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       CAPAD |   .4690743   .4710378     1.00   0.393    -1.029978    1.968127
          AQ |  -.3426286   .4667016    -0.73   0.516    -1.827881    1.142624
          CR |  -.1039503   .0777881    -1.34   0.274    -.3515067    .1436061
          OE |    .284122   .2250024     1.26   0.296    -.4319359     1.00018
       _cons |   .1167564    .122902     0.95   0.412    -.2743728    .5078855
-------------+----------------------------------------------------------------
     sigma_u |  .19947551
     sigma_e |  .23453959
         rho |  .41973392   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```