Liquidity Risk Management and Financial Performance of Microfinance Banks in Nigeria

AKPORHUARHO, Kevin Akpotu (M.Sc Student) & Prof. ONUORAH, A. C. (F, CIFIAN)
Department of Banking and Finance, Faculty of Management Sciences,
Delta State University, Abraka
Corresponding Author Email Address: anastasiaonuorah1@gmail.com
DOI: 10.56201/ijbfr.v10.no10.2024.pg129.148

Abstract

This study examined the analysis of the effect of liquidity risk management on financial performance of microfinance banks in Nigeria from the period of 1990 to 2022 (33years). In order to evaluate the effect of liquidity risk management on financial performance of microfinance banks in Nigeria, the following measures liquidity risk management, namely; Current Ratio (CR), Quick Ratio (QR), Maturity Gap (MG) and Liquid Asset to Total Asset Ratio (LATAR) in relation to Returns on Asset (ROA) proxied for the financial performance of Microfinance Bank in Nigeria. The CBN Statistical Bulletin, CBN Annual Report and CBN Bank Supervisory Annual Report from 1990-2022 were used to acquire data for the research. Descriptive statistics, correlation analysis, diagnostics tests, unit root test, and multiple regression analysis were used to assess the research hypotheses. Based on the results of the previous sections, CR and QR has a positive significant effect on ROA while MG and LATAR has insignificant effect on ROA of microfinance banks in Nigeria. The study recommended that managers of financial institution should from time to time train customers with regard to ATM, its benefits, risk exposure, physical and electronic security to avoid financial loss in the hands of hackers, trainings should be held for bank staff in short periods to acquaint them with modern developments of the sophisticated technology in changing times to improve the financial inclusion in Nigeria. In the light of the findings, it evident that measures of liquidity risk management used has mixed effects on financial performance in Nigeria. However, majority of the independent variables such CR and QR has significant effects on ROA of Microfinance Banks in Nigeria while MG and LATAR established an insignificant effects on ROA of Microfinance Banks in Nigeria. Hence, the study concluded that liquidity risk management on financial performance of Microfinance banks in Nigeria. In line with the objectives and findings, we recommend that the management of Microfinance banks should guarantee that most inactive cash are invested into short term portfolios to attract higher returns because it will eventually increase the performance of the companies.

Key Words: Liquidity, Risk, Current Ratio, Quick Ratio, Maturity Gap, Liquid Asset and Returns on Asset

1.1 Background to the Study

Microfinance banks help low-income individuals and small enterprises, alleviating poverty and boosting economic growth in many nations. However, like traditional banks, microfinance banks face risks that could endanger their financial stability (Shahale & Ibrahim, 2022). Liquidity risk, the possibility of incurring excessive expenditures or losses when short-term financial commitments are due, is a major concern for microfinance institutions. Minifinance banks must manage liquidity risk to ensure they have enough cash and liquid assets to meet customer withdrawals, loan disbursements, and deposit repayments in varied market situations (Njue, Kariuki & Njeru, 2020). Strategies, policies, and procedures to monitor, assess, and mitigate liquidity risk are needed for effective liquidity risk management. Uneven cash flows, asset-liability mismatches, over-reliance on short-term borrowing, and external shocks like economic downturns or political instability increase liquidity risk in microfinance institutions. To protect their finances and reputation, microfinance institutions need strong liquidity risk management (Domoita, Otinga & Miroga, 2021).

In microfinance banks, liquidity risk measurements, stress testing, liquidity contingency planning, and regulatory compliance are becoming more important (Musiita, Boyi, Kisaalita, Mutungi & Mbabazize, 2023). Scholarship and practitioners have stressed the significance of a comprehensive liquidity risk management strategy that takes into account microfinance banks' particular characteristics and challenges, such as their clients' high financial inclusion and susceptibility. The changing regulatory landscape, both nationally and internationally, has promoted liquidity risk management in financial institutions, especially microfinance banks (Ajayi, Abogun & Odediran, 2017). Regulators are increasingly asking microfinance institutions to follow liquidity risk management criteria to improve liquidity shock resilience and financial system stability. Therefore, liquidity risk management is essential for microfinance institutions' long-term survival and resilience in today's volatile financial environment. By adopting strong liquidity risk management methods, microfinance institutions can improve operational efficiency, prevent liquidity crises, and serve the underserved and promote inclusive financial systems (Al-Eitan & Bani-Khalid, 2019).

Effective and efficient working capital management eliminates the danger of short-term liabilities and unjustified investment in working capital, boosting financial performance. To avoid insolvency and bankruptcy, current assets should exceed current liabilities to pay short-term creditors (Ajayi, Abogun, & Odediran, 2017). Bank's main goal is to maximize profit to increase share price and dividends, however this requires protecting corporate liquidity. Thus, increasing profitability at the expense of liquidity or vice versa may hurt the business's viability. Bank profitability and liquidity should be traded (Gambo, Bambale, Ibrahim & Sulaiman, 2019). Microfinance banks in Nigeria are vulnerable to funding mismatches and liquidity challenges, making liquidity risk management crucial to their financial performance. Microfinance banks help underprivileged groups become financially included and build the country. This mandate requires sufficient liquidity to cover deposit withdrawals, loan demand, and other commitments on time

(Kabiru, 2019). Ensuring a microfinance bank has enough liquidity to meet its short- and long-term financial obligations without major expenses or interruptions is called liquidity risk management. Strategically planning, monitoring, and controlling financing sources, asset-liability mismatches, and cash flow dynamics can attenuate liquidity shocks and sustain financial stability (Margaret, 2019).

Nigerian microfinance institutions' financial performance is affected by liquidity risk management in many ways. Most importantly, good liquidity risk management helps microfinance institutions weather financial stress and economic turbulence. By preserving liquidity buffers and diversifying funding sources, microfinance institutions can mitigate liquidity shocks and improve risk management. By improving resource allocation, decreasing funding costs, and eliminating liquidity-related losses, liquidity risk management can boost microfinance bank profitability and sustainability (Usman, 2019). Through proactive liquidity risk management, microfinance institutions can increase operational efficiency, customer service, and market position, improving financial performance and long-term viability. Nigerian microfinance institutions must handle liquidity risk, according to recent studies. For instance, Njue (2020) found that liquidity risk management practices significantly affect microfinance institutions' financial performance, underlining the need for comprehensive risk management frameworks and policies to mitigate liquidity issues. Similarly, the Central Bank of Nigeria (CBN, 2021) has published rules and regulations to improve microfinance bank liquidity risk management to promote financial stability and consumer safety. Thus, liquidity risk management is essential for Nigerian microfinance banks' financial health. By improving risk management, diversifying funding sources, and improving operational efficiency, microfinance institutions can reduce liquidity risks, improve performance, and boost financial inclusion and economic development. In Nigeria, non-deposit taking microfinance banks have had a spike in non-performing loans over the previous two decades, causing liquidity management issues. This significantly impacts the organization's investment decisions, resulting in poor microfinance bank performance. Microfinance banks in Nigeria cannot access the CBN, the lender of last resort. Thus, microfinance banks have no funds in times of market turmoil and financial restraints. This makes MFIs more susceptible to liquidity shortages, which can wreck any microfinance bank, regardless of size. Microfinance banks that serve low-income individuals and small enterprises must handle liquidity risk. Due to their reliance on short-term funding, vulnerability to economic shocks, and lack of typical liquidity management techniques, Nigerian microfinance institutions have unique liquidity risk management difficulties. This study examines how liquidity risk management approaches like liquidity ratios, asset-liability management strategies, and contingency planning affect Nigerian microfinance institutions' financial performance. This study examines the relationship between liquidity risk management and financial performance indicators like profitability, solvency, and efficiency to show how important it is for Nigerian microfinance banks' resilience and success.

Review of Related Literature

2.1 Conceptual Review
2.1.1 Liquidity Risk

Since the financial crisis, analysts and vulnerability practitioners have focused on liquidity vulnerability. Liquidity shocks banks and can cause bank runs (Kung'u, 2015). It will reduce bank resources and income. Poor bank management could have serious consequences. Banks and regulators monitor financial institutions' liquidity (Mwangi & Murigu, 2015). A bank's inability to pay its debts without incurring losses poses a liquidity risk. Liquidity risk comes from inability to withstand future losses or funding changes. Missed market moves affect the capacity to quickly liquidate assets with minimal losses, causing liquidity risk. (Usman, 2019). The failure of a company to meet its commitments or get finance at an excessive cost can also be considered a liquidity concern (Zidan, 2020). (Zidan, 2020). Depositors want to withdraw their deposits, but the bank doesn't have enough money. Banks that periodically monitor asset- and liability-side imbalances may suffer liquidity and solvency issues (El Massah et al., 2018). Liquidity risk management ensures bonds are paid in full and on time and the Bank meets its deposits, medium-term commitments, and financial goals (Zidan, 2020). Banking risk management includes detecting and assessing bank danger, tracking, mitigating, and controlling threats, and dealing with risk (El Massah et al. 2018). Poor liquidity management can boost funding costs and lower bank income (Rahi, 2017). Medium-term planning and quick responses to market shifts are needed for effective liquidity management. Good rules for managing short-term assets and liabilities and realistic frameworks for improving liquid capital benefits are needed in liquidity management (Mobin and Ahmad 2015). Asset-side liquidity indicates a financial firm's ability to quickly convert an asset into cash at market rates without interest or capital loss. Selling financial assets briefly or permanently on marketplaces with unique profile, scope, and scale can emphasize the balance sheet asset segment as a funding outlet (Zidan 2020). Responsibility depends on inability to ascertain adequate funds to meet payment commitments (Sam, 2016). The deposit alert is unexpected. A bank can liquefy liquid assets like short-term investment and surplus fixed assets by selling or disposing of them. Growing liquidity and liability maturity might increase short-term debt or leveraging for liabilities (Sangmi & Tabassum, 2016).

2.1.2 Financial Performance

Financial performance is the use of corporate assets to generate income (Margaret, 2019). Financial performance as a measure of organizational performance only matters when compared to related organizations. Islam, Hassan, and Rashid (2017) listed several performance indicators, including potential profit, cash flow, debt service, and cost optimization. Profitability measures how much income a firm can make using its assets; liquidity measures how well it can meet its long-term and current credit obligations; and solvency measures whether a firm's assets can cover its liabilities in the event of dissolution.ROA displays a company's earnings as a percentage of its assets. ROA shows how well management uses its assistants. Thus, ROA measures efficiency (Kabiru, 2019). A corporation with a high ROA converts assets into profit well. An increasing ROA indicates higher profitability, while a falling ROA indicates lower profitability (Zubair,

2015). Divide net income by total assets to get ROA. Organizational financial statements show total asset as the sum of current and non-current assets.

2.2 Theoretical Review
2.2.1 Pecking Order Theory

Myer and Majluf (1984) created the pecking order theory of capital structure. The theory suggests that corporations prioritize internal finance to equity and use equity as a last resort. Debt is issued when internal funds run out. When increasing debt is unwise, equity is issued. According to this idea, businesses choose internal funding when accessible and debt over equity if external financing is needed (Khan & Ali, 2016). Every growth phase has different information asymmetry and financial needs, hence the hierarchy relies on the firm's size and progress. Also called the "financial growth cycle."

This argument states that private equity and venture capitalists changed the pecking order since equity finance sometimes precedes debt financing. Traditional financiers like banks and corporations need more transparency and less information asymmetry to handle problems that go beyond financial sources (Khokhar, 2015). The pecking order idea describes the private equity industry's role and, more importantly, why it runs regardless of firm size or development. Private equity firms contribute management skills and financial system expertise, unlike traditional financiers who merely provide money. Kimotho and Gekara (2016), claim that pecking order theory is followed to achieve a firm's optimal working capital management position. This study assumes corporations can employ aggressive financing by using more current liabilities than long-term obligations. Microfinance banks should choose immediate obligations like trade credit, which has no cost, over long-term liabilities with set interest rates. The variables in this hypothesis include current ratio, quick ratio, liquid asset to total asset ratio, and maturity gap.

2.3 Empirical Review

Liquidity management and Nigerian company financial performance were examined by Allan and Oladunni (2023). Return on assets proxied financial performance, whereas current ratio and quick ratio proxied liquidity management. The National Insurance Commission Statistical Bulletin was used to gather secondary data from 51 insurance companies operating as of December 31, 2020. Study dates were 2011–2020. Data analysis was done using panel multiple regression and E-View 10.0. Testing heteroscedasticity, multicollinearity, and standard error normalcy was done. In Nigerian insurance companies, current and quick ratios positively and significantly affect financial performance. Therefore, insurance company management should invest most passive capital in short-term portfolios to attract greater returns, which would improve company performance. Insurance authorities in Nigeria should penalize insurance businesses that fall below liquidity ratio and fail to pay claims.

Musiita, Boyi, Kisaalita, Mutungi, and Mbabazize (2023) investigated Bushenyi District SACCO financial performance and liquidity management attributes. This study used a cross-sectional survey of 72 Bushenyi District SACCOs. Krejcie and Morgan's Table was used to choose 61

Bushenyi SACCOs with accountants, managers, and credit officers as the units of study, to get 183 respondents. Content validity index and Cronbach's alpha coefficient were used to evaluate the research instrument's reliability and consistency in producing similar answers from the same respondents when administered at different times. To meet research goals, correlation and regression analyses were performed. Financial performance is positively correlated with cash and liquidity ratios. Comprehensive liquidity management features positively affect financial performance, according to the research. This implies that SACCOs' financial performance improves with improved liquidity management. Improved liquidity management and cash budgeting helps maximize cash use and ensure optimal planning and resource allocation. Debtor management and bank reconciliation statements will increase SACCO financial performance due to their weakly favorable connections with liquidity management.

Shahale and Ibrahim (2022) examined HOW liquidity management affects Mombasa non-deposit taking MFIs. Study aims were to determine how asset quality, capital sufficiency, maturity gap, and cash management affect financial performance. Study design was cross-sectional descriptive survey. The study focused on seven Mombasa County non-deposit MFIs. A sample of 66 MFI top managers and finance managers was observed. Purposive sampling was used to pick 58 responders using Fisher's formula. Primary data was acquired using structured closed-ended questionnaires. Pilot tests established data gathering tool validity and reliability. We used descriptive and inferential statistics to analyze data. Analysis was done with SPSS. The data was presented in frequency and descriptive tables. Loan portfolios are MFIs' main revenue source, according to the report. Microfinance institutions invested in real assets to increase asset quality, according to the report. The study found that equity and borrowing fund microfinance. Another conclusion was that the microfinance had enough total asset reserves to satisfy its financial demands and that losing income-generating activities would harm its capital base. To avoid loan delays, the study advised microfinance institution management to maintain liquidity.

In Kenya, Domoita, Otinga, and Miroga (2021) evaluated how operational and liquidity concerns affect microfinance institution profitability. Contingency and agency theories informed the investigation. A census sample of 13 microfinance banks was employed in the descriptive survey. The 2016–2020 secondary data collecting sheet was used. Pilot research sample size was 10%. A descriptive and inferential analysis was done with STATA 15. Means and standard deviation were descriptive elements. Regression and correlation analyses were employed to identify the direction and degree of the dependent-independent variable relationship. Correlation analysis is used alongside regression analysis to assess how well the regression line explains dependent variable variation. Linear, multiple regression, and correlation analysis examined two or more variables. Tables and graphs displayed analyzed data. Operational and liquidity risk hurt Kenyan microfinance banks' profitability. As financial risks rise, microfinance bank profitability falls. Financial risk affects Kenyan microfinance bank profitability, the study found. Microfinance bank management should lower the ratio of operating fixed cost to operating variable cost to reduce operational risk, according to the study. Managers of microfinance banks should avoid retaining too many liquid assets because they yield lower returns than riskier assets.

Kenyan microfinance banks' liquidity management and financial performance were studied by Njue (2020). The audited financial statements of the MFIs provided secondary data on the study

variables. For five years from 2012-2016, the CBK website, Annual Supervision reports, and AMFI annual reports provided the data. The research population was all twenty-six AMFI-member Kenyan MFIs listed on the CBK website. Primary data came from questionnaires, while secondary data came from audited financial documents. Data was analyzed using descriptive and inferential statistics. Descriptive analysis used mean and standard deviation, whereas inferential statistics used Pearson correlation, panel power correlation, and regression. Data showed that liquidity management techniques significantly affected Kenyan MFIs' financial performance.

Research Methodology

Ex-post facto research design is a type of non-experimental research design that is used in situations where the researcher cannot manipulate the independent variable. Instead, the researcher looks back at existing data to determine the relationship between variables. Ex-post facto research design is a valuable research approach that allows researchers to study relationships between variables in situations where manipulation of the independent variable is not feasible or ethical.

The method of data collection that will be use in this study will be the secondary source of data (time series data), from the CBN Statistical Bulletin, CBN Annual Report and CBN Bank Supervisory Annual Report for the period 1990-2022 (33years). Secondary source of data use in this study because it deals with the measures of liquidity risk management [Current Ratio (CR), Quick Ratio (QR), Maturity Gap (MG) and Liquid Asset to Total Asset Ratio (LATAR)] and Returns on Asset (ROA) proxy for the financial performance of Microfinance Bank in Nigeria of events that has already taken place and recorded from their secondary sources. More also, the CBN Statistical Bulletin, CBN Annual Report and CBN Bank Supervisory Annual Report will be selected as a source of data collection because it is the most reliable and accurate source of data for the study.

The study will conducts the descriptive statistics and the correlation analysis was used to determine the nature of relationship between the independent [Current Ratio (CR), Quick Ratio (QR), Maturity Gap (MG) and Liquid Asset to Total Asset Ratio (LATAR)] and dependent (Return on Asset (ROA)) variables, follow with unit roots test for the time series data in order to ascertain if they are stationary or not. After which, In view of the hypothesis formulated for this research, the method of data analysis chosen will be the ordinary least squares regression analysis which will be use through the regression model, using the computer software, E-VIEWs 9.0. This is the appropriate measures taken to analyze data as regards the study in question.

The model for this study was adopted from the work of Allan and Oladunni (2023), titled; effect of liquidity management on financial performance of insurance companies in Nigeria and was modified to suit the variables of this study. The model which specifies that financial performance of microfinance banks in Nigeria [proxy by Return on Asset (ROA)] is significantly influenced by the liquidity risk management measures; Current Ratio (CR), Quick Ratio (QR), Maturity Gap (MG) and Liquid Asset to Total Asset Ratio (LATAR) will be formulated as follows;

ROA = f(CR, QR, MG, LATAR)

ROA = β_0 + β_1CR + β_2QR + β_3MG + β_4LATAR + U

Where:

ROA = Return on Asset

β_0 = Constant Term

β_1 = Coefficient of Current Ratio

CR = Current Ratio

β_2 = Coefficient of Quick Ratio

QR = Quick Ratio

β_3 = Coefficient of Maturity Gap

MG = Maturity Gap

β_4 = Coefficient of Liquid Asset to Total Asset Ratio

LATAR = Liquid Asset to Total Asset Ratio

U = Disturbance Term (other variable not mentions in the model)

The a priori expectation is β_1, β_2, β_3, $\beta_4 > 0$

Table 3.1: Variable Descriptions

Variables	Category of Variables	Description
Return on Asset (ROA)	Dependent Variable	Is a proxy on financial performance, measures net profit/total asset
Current Ratio (CR)	Independent Variable	Current ratio is the total current assets to total current liabilities of Microfinance banks as calculated in CBN Publications.
Quick Ratio (QR)	Independent Variable	Quick ratio establishes the relationship between quick/liquid assets and current liabilities of Microfinance banks as calculated in CBN Publications.
Maturity Gap (MG)	Independent Variable	MG is described in the study cash reserve to customer deposit of Microfinance banks as calculated in CBN Publications.
Liquid Asset to Total Asset Ratio (LATAR)	Independent Variable	It measures the proportion of liquid assets held by the bank in relation to its total assets of Microfinance banks as calculated in CBN Publications

Section IV

Results and Discussion

Under this sub-heading, various analyses were conducted, this was done below;

Table 4.1: **Descriptive Statistics**

	ROA	CR	QR	MG	LATAR
Mean	23.61667	4.136115	6.995367	2.202118	0.852161
Median	1.390000	3.008036	6.811182	1.858525	0.595692
Maximum	142.0000	15.13580	7.818044	12.06471	2.342939
Minimum	0.200000	-4.646433	6.316457	-1.045730	0.091347
Std. Dev.	39.78167	4.948418	0.439336	2.235788	0.706400
Skewness	1.841295	0.850367	0.628366	2.628483	0.659747
Kurtosis	5.559448	2.852163	1.922916	12.62426	2.050404
Jarque-Bera	27.65433	4.007230	3.766791	165.3602	3.633845
Probability	0.000001	0.134847	0.152073	0.000000	0.162525
Sum	779.3500	136.4918	230.8471	72.66989	28.12131
Sum Sq. Dev.	50642.59	783.5790	6.176522	159.9600	15.96801
Observations	33	33	33	33	33

Source: EVIEW, 9.0 Outputs, 2024.

Table 4.1 above is the presentation of the descriptive statistics. The mean value for the CR recorded a mean value of 4.1361 with a standard deviation of 4.9484. Also, QR, recorded a mean of 6.9954 and standard deviation of 0.4393, MG recorded that a mean of 2.2021 with a standard deviation of 2.2358, LATAR recorded that a mean of 0.8522 with a standard deviation of 0.7064 and LATAR recorded an average of 0.8522 and standard deviation of 0.7064. Since the standard deviations for all the variables are greater than respectively means, it shows that the data are widely dispersed except for QR and MG.

The normal distribution has a kurtosis of three, which indicates that the distribution has neither fat nor thin tails. Consequently, if an observed distribution has a kurtosis greater than three, the distribution has heavy tails when compared to the normal distribution. Since some the kurtosis coefficients in Table 4.1 are lesser than 3, this shows that CR, QR and LATAR have thin tails while ROA and MG thick tails because the kurtosis is greater than 3 when compared to the normal distribution.

Table 4.2: **Correlation Matrix**

	ROA	CR	QR	MG	LATAR
ROA	1.000000				
CR	0.593761	1.000000			
QR	0.576769	0.661675	1.000000		
MG	0.180430	0.233965	0.069735	1.000000	
LATAR	0.554345	0.836631	0.665934	0.280949	1.000000

Source: EVIEW, 9.0 Outputs, 2024.

The correlation test is presented in Table 4.2 and it shows the absence of multi-co linearity among the variables since the correlation values are less than 0.7. Furthermore, the result shows the explanatory variables namely; CR, QR, MG and LATAR has positive strong correlation with ROA of Microfinance Banks in Nigeria.

Table 4.3: Variance Inflation Factors Multicollinearity Test
Variance Inflation Factors
Date: 02/18/24   Time: 20:59
Sample: 1990 2022
Included observations: 33

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	3850.228	478.4650	NA
CR	1.210673	6.146200	3.572394
QR	85.09324	519.4428	1.979196
MG	1.855392	2.235727	1.117627
LATAR	62.42832	9.387531	3.753897

Source: EVIEW, 9.0 Outputs, 2024.

Since the data for the study are annual time series, the multicollinearity test was conducted to ascertain if the data contained multicollinearity, this is presented in table 4.3 above. Multicollinearity occurs in a data set when two or more independent variables in multiple regression models are highly correlated. In order to ensure that the results of this study are valid, the variance inflation factor (VIF) computed as shown in Table 4.3. Furthermore, the Centered Variance Inflation Factor (CVIF) statistics for all the independent variables consistently lies between 3.5724, 1.9792, 1.1176 and 3.7539 for CR, QR, MG and LATAR respectively. This indicates the absence of multicollinearity problems among the variables under investigation because the cut off value of VIF is 10. Values of VIF that exceed 10 are often regarded as indicating multicollinearity.

Table 4.4a: Breusch-Godfrey Serial Correlation LM Test

F-statistic	10.46393	Prob. F(2,26)	0.2217
Obs*R-squared	22.80834	Prob. Chi-Square(2)	0.2317

Source: E-VIEW, 9.0 Outputs, 2024.

Prior to estimating the models, residuals of the variables were ascertained to check for the presence of serial correlation. This was done using the serial correlation LM test. The serial correlation LM test in Table 4.4a details that there is no element of serial correlation in the models owing to the fact that the p-values of the f-statistics are insignificant at 5% level of significance.

Table 4.4b: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	23.06044	Prob. F(4,28)	0.1452
Obs*R-squared	31.48480	Prob. Chi-Square(4)	0.7153
Scaled explained SS	33.93600	Prob. Chi-Square(4)	0.2131

Source: E-VIEW, 9.0 Outputs, 2024.

The situation in which the variability of a variable is unequal across the range of values of a second variable that predicts it leads to problem of heteroskedasticity. To ensure that there is homoscedasticity in the model estimation, the heteroskedasticity test via the Breusch-Pagan-Godfrey was performed. With the result there is no problem of heteroskedasticity in the models as the p-values of the f-statistics are insignificant at 5% significance level.

Table 4.4c: Ramsey RESET Test
Equation: UNTITLED
Specification: ROA C CR QR MG LATAR
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	14.97881	27	0.5619
F-statistic	224.3647	(1, 27)	0.6745
Likelihood ratio	73.62525	1	0.7651

Source: E-VIEW, 9.0 Outputs, 2024
From the Table 4.4c above, it confirms that the Durbin Watson stat that our data has no traits of autocorrelation. Indicates that the model is homoskendastic since the probability values of three parameters are greater than 0.05 level of significance. Ramsey test result reveals that our model is correctly specified and is stable for regression analysis.

Table 4.4d: Normality Histogram Test
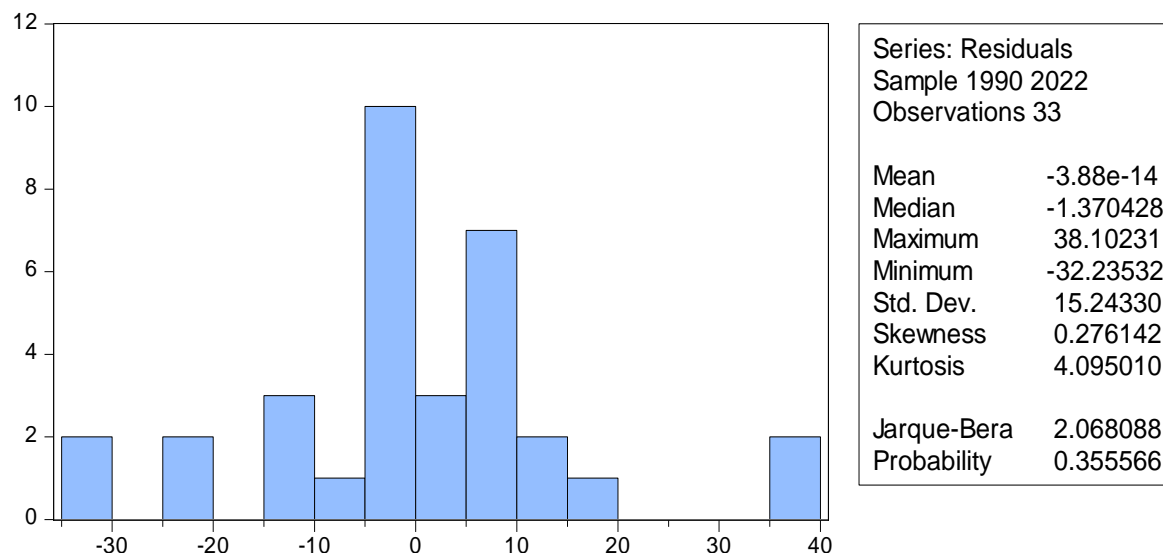
Source: E-VIEW 9.0 Output, 2024.

The test of residuals for normality was conducted to assess the distribution normality of the model residuals. When residuals are not normally distributed, it denotes the presence of significant outliers in the data which affects the standard errors and then the significance levels of the coefficients. From the test result, it indicates that the residuals are normally distributed as the histogram assumes a bell-shape and the J-B statistic probability value is 0.3556 which is greater that 0.05(5%), this form the premise to reject the null hypotheses that the residuals are not normally distributed.

Augmented Dickey-Fuller (ADF) Unit Root Test

Testing for the existence of unit roots is a principal concern in the study of time series models and co-integration. The rationale behind this test is to avoid the problem of spurious regression which is commonly associated with time series data. The presence of a unit root implies that the time-series data under investigation is non-stationary; while the absence of a unit root shows that the stochastic process is stationary. The unit root test was conducted using the Augmented Dickey-Fuller (ADF) Unit root test as presented in table 4.5 below:

Table 4.5:   Augmented Dickey-Fuller Unit root Test
ADF Test @ Level

Group unit root test: Summary
Series: ROA, CR, QR, MG, LATAR
Date: 02/18/24   Time: 21:07
Sample: 1990 2022

Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	3.86167	0.9999	5	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	2.67156	0.9962	5	150
ADF - Fisher Chi-square	12.7764	0.2364	5	150
PP - Fisher Chi-square	26.8731	0.0027	5	160

** Probabilities for Fisher tests are computed using an asymptotic Chi
 -square distribution. All other tests assume asymptotic normality.

ADF Test @ 1st Diff.

Group unit root test: Summary
Series: ROA, CR, QR, MG, LATAR
Date: 02/18/24   Time: 21:08
Sample: 1990 2022
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.73073	0.0000	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.25032	0.0000	5	144
ADF - Fisher Chi-square	80.2315	0.0000	5	144
PP - Fisher Chi-square	129.072	0.0000	5	155

** Probabilities for Fisher tests are computed using an asymptotic
Chi

-square distribution. All other tests assume asymptotic
normality.

Source: E-VIEW, 9.0 Outputs, 2024.

The summary of the ADF unit root test output in table 4.5, above revealed that all the variables under investigation i.e. ROA, CR, QR, MG and LATAR are not stationary at level but contain unit root test at their first difference 1(1). Evidence of this could be seen from the value of their respective ADF statistics which is more than the critical value at 5%. Moreover, additional evidence of stationary series could also be seen from the p-value for all variables which is less than 5% level of significance greater than 95% confidence level. They all attained stationarity at first difference i.e. at order one, hence, the data are suitable for regression.

Table 4.6: Multiple Regression Analysis
Dependent Variable: ROA
Method: Least Squares
Date: 02/18/24   Time: 20:58
Sample: 1990 2022
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-385.0944	62.05020	-6.206175	0.0000
CR	2.619601	1.100306	2.380794	0.0243
QR	56.24344	9.224600	6.097114	0.0000
MG	0.806456	1.362128	0.592056	0.5586
LATAR	3.117664	7.901159	0.394583	0.6961

R-squared	0.853178	Mean dependent var	23.61667	
Adjusted R-squared	0.832203	S.D. dependent var	39.78167	
S.E. of regression	16.29578	Akaike info criterion	8.558416	
Sum squared resid	7435.466	Schwarz criterion	8.785160	
Log likelihood	-136.2139	Hannan-Quinn criter.	8.634709	
F-statistic	40.67665	Durbin-Watson stat	1.923906	
Prob(F-statistic)	0.000000			

Source: EVIEW, 9.0 Outputs, 2024.

The multiple regression results in Table 4.6, the coefficient of CR are 2.6198 with a t-value of 2.3808 and an associated p-value (sig. value) is 0.0243. This suggests that CR have a positive significant effect on ROA of Microfinance Banks in Nigeria. This relationship is significant given

the fact that the p-value of 0.0243 is lesser than 0.05 (5%) level significance, hence, the alternate hypothesis is accepted and null hypothesis is rejected; which says that CR does not have significant effect on ROA of Microfinance Banks in Nigeria. The coefficient of CR is 2.6196, which imply that CR has a positive trend with ROA of Microfinance Banks in Nigeria. One percent (1%) movement in CR would lead to 261.96% increase in ROA of Microfinance Banks in Nigeria. This finding is in tandem with the findings of Allan and Oladunni (2023) and Musiita, Boyi, Kisaalita, Mutungi and Mbabazize (2023) but contradicts the findings of Dadepo and Afolabi (2020) and Emmanuel and Stephen (2020).

Also, the multiple regression results in Table 4.6, the QR coefficient of 56.2434 with a t-value of 6.0971 and an associated p-value (sig. value) of 0.0000. This suggests that QR have a positive significant effect on ROA of Microfinance Banks in Nigeria. This relationship is significant given the fact that the p-value of 0.0000 is lesser than to 0.05 (5%) level significance, thus, the null hypothesis which says that QR does not have significant effect on ROA of Microfinance Banks in Nigeria is rejected and alternate hypothesis is accepted. The coefficient of QR is 0.56.2434 which implies that QR has a positive trend with ROA of Microfinance Banks in Nigeria. One percent (1%) movement in QR with would lead to 5624% increases in ROA of Microfinance Banks in Nigeria. The finding is in agreement with the findings of Allan and Oladunni (2023) but contradicts the findings of Dadepo and Afolabi (2020).

More also, the multiple regression results in Table 4.6, the coefficient of MG is 0.8065 with a t-value of 0.5921 and an associated p-value (sig. value) is 0.5586. This suggests that MG have a positive insignificant effect on ROA of Microfinance Banks in Nigeria. This relationship is not significant given the fact that the p-value of 0.5586 is greater than 0.05 (5%) level significance; hence, the null hypothesis which says that MG does not have significant effect on ROA of Microfinance Banks in Nigeria is accepted while the alternate hypothesis is rejected. The coefficient of MG is 0.8065, which imply that MG has a positive trend with ROA of Microfinance Banks in Nigeria. One percent (1%) movement in MG would lead to 80.65% increase in ROA of Microfinance Banks in Nigeria. The finding is in agreement to the findings of Boyi, Kisaalita, Mutungi and Mbabazize (2023) but contrary to the findings of Salim and Bilal (2016).

Finallly, the multiple regression results in Table 4.6, the coefficient of LATAR is 3.1177 with a t-value of 0.3946 and an associated p-value (sig. value) is 0.6961. This suggests that LATAR have a positive insignificant effect on ROA of Microfinance Banks in Nigeria. This relationship is not significant given the fact that the p-value of 0.6961 is greater than 0.05 (5%) level significance, the null hypothesis which says that there is no significant relationship between LATAR and ROA of Microfinance Banks in Nigeria is accepted and the alternate hypothesis is rejected. The coefficient of LATAR is 3.1177 which imply that LATAR has on positive trend with ROA of Microfinance Banks in Nigeria. One percent (1%) movement in LATAR would lead to 311.77% increase in ROA of Microfinance Banks in Nigeria. This finding is in tandem with the findings of Boyi, Kisaalita, Mutungi and Mbabazize (2023) but contrary to the findings of Salim and Bilal (2016).

5.1 Conclusion

In the light of the findings, it evident that measures of liquidity risk management used has mixed effects on financial performance in Nigeria. However, majority of the independent variables such CR and QR has significant effects on ROA of Microfinance Banks in Nigeria while MG and LATAR established an insignificant effects on ROA of Microfinance Banks in Nigeria. Hence, the study concluded that liquidity risk management on financial performance of Microfinance banks in Nigeria.

5.2 Recommendations

In line with the objectives and findings, we recommend that:

1. The management of Microfinance banks should guarantee that most inactive cash are invested into short term portfolios to attract higher returns because it will eventually increase the performance of the companies.

2. The study recommended that managers of Microfinance banks should ensure that they invest excess cash in productive assets. This ensures that they do not hold excess cash at the expense of fixed assets that can improve profitability.

3. Managers should regularly gauge their capacity to raise funds quickly from each source thus identify the main factors that affect their ability to acquire funds and monitor the factors closely so as to ensure that sound liquidity. Microfinance supervisors should have a supervisory framework to enable them make assessments of banks' liquidity risk management and adequacy of their liquidity, in both normal times and periods of stress.

4. The study recommends that central bank of Nigeria should ensure effectiveness and efficiency in the review and monitoring of liquidity policy tools in banks in order to boost the performance of Microfinance banks (MFBs). Also there are needs for regulatory authorities to help build institutions in order to stabilise the financial sector of the economy.

Contributions to Knowledge

1. Ultimately, the findings of this study will contribute to the existing body of knowledge on liquidity risk management in the context of Microfinance banks and provide valuable recommendations for policymakers, regulators, and practitioners to enhance the financial performance and stability of these institutions in Nigeria.

2. By assessing the relationship between liquidity risk management and financial performance indicators such as profitability, solvency, and efficiency, this research aims to provide insights into the importance of sound liquidity risk management practices for the resilience and success of Microfinance banks in Nigeria.

References

Ajayi, M. A, Abogun, S & Odediran, T.H (2017). Impact of working capital management on financial performance of quoted consumer goods manufacturing firms in Nigeria. *Covenant Journal of Business & Social Sciences (CJBSS)*, 8(2), 1-22.

Al Nimer, M., Warrad, L., & Al Omari, R. (2015). The impact of liquidity on Jordanian banks profitability through return on assets. *European Journal of Business and Management*, *7*(7), 229-232.

Al-Eitan, N. G & Bani-Khalid, O. T. (2019). Credit risk and financial performance of the jordanian commercial banks: a panel data analysis. *Academy of Accounting and Financial Studies Journal*, 1-13.

Allan, O. & Oladunni, O. E. (2023). Effect of liquidity management on financial performance of insurance companies in Nigeria (2011-2020). *Journal of Risk and Financial Studies*, *4*(1), 27-44.

Bech, M., & Keister, T. (2017). Liquidity regulation and the implementation of monetary policy. *Journal of Monetary Economics*, *92*, 64-77.

Berger, A., & Bouwman, C., (2016), *Bank Liquidity Creation,* The Review of Financial Studies, Oxford University Press, 22(9), 3779–3837.

Bhattacharya, S., & Thakor, A., (2016), *Contemporary Banking Theory*. *Journal of Financial Intermediation, 3*, 2–50.

Central Bank of Nigeria. (2021). Guidelines on Liquidity Risk Management for Microfinance Banks in Nigeria. Abuja: CBN.

Cull, R., Demirgüç-Kunt, A., & Morduch, J. (2018). The microfinance business model: Enduring subsidy and modest profit. *World Bank Research Observer, 33*(2), 193-212.

Domoita, L. P., Otinga, H. N. & Miroga, J. B. (2021). Influence of operational and liquidity risk on financial performance of microfinance banks in Kenya, *IOSR Journal of Economics and Finance (IOSR-JEF), 12*(6), 1-12.

El Massah, S., AlSayed, O. & Bacheer, S. (2018). Liquidity in the UAE Islamic banks. *Journal of Islamic Accounting and Business Research, 10*(5), 679-694.

Ewool, L. M., & Quartey, J. A. (2021). Evaluation of the Effect of Risk Management Practices on the Performance of Microfinance Institutions. *International Journal of Academic Research in Accounting Finance and Management Sciences*, *11*(1), 211-240.

Gambo, H., Bambale, J. A., Ibrahim, A. M and Sulaiman, A. S. (2019). Credit risk management and financial performance of quoted deposit money banks in Nigeria. *Journal of Finance, Accounting and Management*, 26-42.

Islam, M. S., Hassan, M. K. & Rashid, M. (2017). Liquidity risk and performance of banks: An empirical study of an emerging economy. *Research in International Business and Finance,* 42, 139-155.

Jensen, A. C. H. (2018). *The finance of Microfinance: Liquidity creation in deposit-taking Microfinance Institutions.* Doctor of Philosophy in Finance Thesis, University of Stirling.

Jensen, M. C. & Meckling, W. H., (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, Vol. 3.

Kabiru, A.I. (2019). Effects of working capital management on financial performance of food and beverage companies in Nigeria. Published PhD Thesis, Ahmadu Bello University, Zaria.

Kamuinjo, A. V. (2021). *Investigating Liquidity Risk Management in the Namibian Banking System* (Doctoral dissertation, North-West University (South Africa).

Khan, R. A., & Ali, M. (2016). Impact of liquidity on the profitability of commercial banks in Pakistan: An analysis of the banking sector in Pakistan. *Global Journal of Management and Business Research*, *16*(1), 53-59.

Khokhar, S. (2015). Liquidity risk management and financial performance in the UK retail banking industry. *Journal of Business & Economic Policy*, 2(2), 103-116.

Kimotho, J. & Gekara, M. (2016). The relationship between credit management practices and the performance of commercial banks in Kenya. *International Journal of Economics, Commerce and Management*, 4(1), 1-11.

Kinyua, (2017), *Role of financial management practices in the performance of public service vehicle savings and credit co-operative societies in Kenya* (Published Masters Thesis) University of Nairobi.

Kosmidou, K. (2016). The determinants of banks' profits in Greece during the period of EU financial integration, *Managerial Finance, 34*(3), 146-159.

Kung'u, J.N. (2015). Effect of Working Capital Management on Profitability of Manufacturing Firm in Kenya. PhD Thesis, Jamo Kenyatta University of Agriculture and Technology, Kenya.

Maaka, A. (2016). *The relationship between liquidity risk and financial Performance of commercial banks in Kenya*, Unpublished MBA Project, University of Nairobi.

Maqsood, S., Mahmood, Z. & Hanif, I. (2016). Impact of liquidity management on the profitability of banking sector: Evidence from Pakistan. *Journal of Finance and Economics,* 4(6), 234-240.

Margaret, A. M. (2019). Effect of Capital Adequacy on the financial performance of insurance companies in Kenya. *International Academic Journal of Economics and Finance*, 3(4), 172-185.

Mmari, D. & Thinyane, H. (2019). Financial performance and challenges of savings and credit cooperatives in Tanzania. *African Journal of Science, Technology, Innovation and Development,* 11(6), 695-706.

Mugo, R. & Njeje, D. (2016), Factors affecting liquidity risk management practices in microfinance in Kenya. *Journal of Economics and Sustainable Development, 6*(4), 78-90.

Musiita, B., Boyi, B., Kisaalita, T., Mutungi, W. & Mbabazize, R. (2023). Liquidity management and financial performance of SACCOs in Bushenyi District. *Journal of Economics and Behavioral Studies, 15*(3), 55-69.

Muthoga, M. S. (2019), *Liquidity risks and profitability of commercial banks listed in Nairobi Securities Exchange, Kenya.* Master of Business Administration Thesis, Kenyatta University, Kenya.

Mwangi, M. & Murigu, J.W. (2015). The Determinants of financial performance in general insurance companies in Kenya. *European Scientific Journal, 11(*1), 288-297.

Njeru, M. D. (2016). *Effect of Liquidity Management on Financial Performance of Deposit Taking Saving and Credit Co-operative Society in Kenya* (Doctoral dissertation, Business Administration (Finance), JKUAT).

Njue, A. M. (2020), *Liquidity management and financial performance of Microfinance banks in Kenya.* Unpublished Masters Thesis, University of Embu, Kenya.

Njue, A. M., Kariuki, S. N. & Njeru, D. M. (2020). Liquidity management on financial performance of microfinance institutions in Kenya. *The Journal of Social Sciences Research, 6*(11), 943-953.

Olayinka, A., & Adejumo, A. (2019). Impact of liquidity risk management on financial performance of microfinance banks: A case study of Nigeria. *International Journal of Finance and Banking Studies, 8*(2), 45-58.

Onwonga, M., Achoki, G., & Omboi, B. (2017). Effect of cash reconciliation on the financial performance of commercial banks in Kenya. *International Journal of Finance*, *2*(7), 13-33.

Perera, S., Skully, M. & Wickramanayake, J. (2016). Competition and structure of South Asian banking: A Revenue Behavior Approach, *Applied Financial Economics*, *16*, 789-801.

Rahi, S. (2017). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *International Journal of Economics & Management Science, 6*(2), 1-5.

Salim, M. & Bilal, A. R. (2016). Impact of liquidity management on the financial performance of banks: Evidence from Pakistan. *Journal of Finance and Accounting,* 4(4), 174-179.

Sam, H. K. (2016), *Liquidity risk management practice of the selected financial institutions in Kumasi Metropolis.* Unpublished Masters Thesis, Kwame Nkrumah University of Science and Technology, Ghana.

Sangmi, M., & Tabassum, N. (2016). Analyzing Financial Performance of Commercial Banks in India: Application of CAMEL Model. *Pakistan Journal Commercial Social Sciences, 4,* 11, 40-55.

Shahale, D.M., & Ibrahim, A. A. (2022). Effect of liquidity management on financial performance of non-deposit taking microfinance institutions in Mombasa, Kenya. *The Strategic Journal of Business & Change Management, 9*(2), 720 – 734.

Slama, J. (2018), *Risk management for African Microfinance Institutions. The Global Treasurer publication.* Retrieved from https://www.theglobaltreasurer.com/risk-management-for-african-microfinance-institutions/ on 7th July, 2021.

Tirole, J. (2016). Illiquidity and all its friends. *Journal of Economic Literature*, *49*(2), 287-325.

Usman, A. (2019). Impact of working capital management on financial performance of listed agricultural firms in Nigeria. *M.Sc. Dissertation*, Abubakar Tafawa Balewa University, Bauchi.

Yahaya, O. A., & LAMIDI, Y. (2015). Empirical examination of the financial performance of Islamic banking in Nigeria: A case study approach. *International Journal of Accounting Research*, *2*(7), 1-13.

Zidan, K. (2020). Impact of Liquidity Management on the Profitability of Banks Operate in Palestine. *International Journal of Business and Social Science, 11*(1), 12-17.