Bank-Specific Internal Factors and Asset Quality of Deposit-Taking Microfinance Banks in Kenya

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Abstract: The effect of bank-specific internal factors on the asset quality of deposit-taking microfinance banks in Kenya is the central focus of this research, with the individual objectives involving determining how asset quality was influenced by capital adequacy, leverage, liquidity, and bank size. The study's central premise was based on the agency, moral hazard, and institutional theories. The study's target population was 14 deposit-taking microfinance banks in Kenya, with each bank's panel data collected from their audited reports for the years 2019 to 2023. Longitudinal design was the most ideal given the balanced panel data of the banks. Panel data regression was used to determine the causality between the predictor and response variables. Correlation results showed that liquidity ($r = -0.289$, $p = 0.015 < 0.05$), bank size ($r = -0.339$, $p = 0.004 < 0.05$) and capital adequacy ($r = -0.391$, $p = 0.000 > 0.05$) were negatively correlated with asset quality, but leverage ($r = 0.316$, $p = 0.007$) had a positive correlation with asset quality. Hypotheses results indicated that liquidity ($p = 0.024$, $B = -1.548$) and bank size ($p = 0.011$, $B = -2.232$) exerted negative and significant influences on asset quality. On the other hand, leverage ($p = 0.027$, $\beta = 1.052$) and capital adequacy ($p = 0.002$, $B = 0.2587$) exerted a positive and significant effect on asset quality. The study recommends that the management of DTM banks ensure steady profitability and controlled non-performing loans during phases of rapid growth through credit monitoring. Further, bank management should accumulate more leverage up to the optimal leverage position to lower the agency cost between shareholders and stockholders.

Key Words: Capital Adequacy, Leverage, Liquidity, Bank Size, Asset Quality.

1. INTRODUCTION

Given the importance of banks to the country's economy and the knowledge that credit risk presents a significant risk to banks, the asset quality factors must be investigated. Banks may decide to raise lending rates to compensate for a decline in earnings if NPLs rise. This measure may improve lending conditions by lowering the NPL ratios, but it may have a negative effect on financially strapped sectors (Erdas & Ezanoglu, 2022). Therefore, understanding the determinants of asset quality is important; it can help detect a set of warning signs, facilitate prompt action, and reduce the chance and related cost of crises (Msomi, 2022). Ghosh (2015) opined that the rise in NPLs signifies significant hazards for the financial sector, pertaining to both liquidity and profitability.

Poor asset quality, as reflected by increasing NPLs, reduces banks' lending abilities and raises their opportunity cost of capital because these assets generate no returns and need capital provisioning, management, and funding (Roychowdhury, 2018). Rapid and excessive NPL accumulation can also result in a credit crunch, which can then escalate into a banking crisis. As a result, small-and medium-sized business financing, commerce, infrastructure, and household financing may all suffer significantly. Businesses with poor asset quality are mostly uncompetitive and register poor efficiency ratios (Ferreira, 2022). As a result, it is critical to examine different factors, including those that are internal to banks, as these might offer vital insights to regulatory agencies and the bank's management. The asset

quality of DTM banks in Kenya was above 10% except in 2019. The NPLs ratio rose from 9.5% during years 2019 to 13.4% in 2020, 13.7% in 2021, and 14.5% in 2022 (Kenya Banking Association, 2023), a sign of deteriorating asset quality.

The coverage ratio provision for loan impairment as a proportion of net NPLs reduced by 2.3% to February 2024. According to Roychowdhury (2018), a reduction in impairment provisions is interpreted as an inaccurate assumption where NPLs are increasing, raising default risk and lowering financial stability in the economy (Roychowdhury, 2018). Specifically, some DTM banks, including Rafiki DTM (30.8%), Milano Financial Service Ltd (17.2%), SMEP (17.2%), and Jamii Bora (15.8%), have had a high portfolio at risk of 30 over the past three years (Ngungu & Abdul, 2022). This trend results in the devaluation of the banking institutions' asset quality and reduces their effectiveness and sustainable capacity.

DTM banks also disbursed Ksh. 32.98 billion micro, small, and medium enterprises (MSMEs). In 2022, 9.6 billion bad debts from MSMEs were written off; of this, DTM banks wrote off 510 million worth of NPLs (Muiruri, 2023). Banks writing off bad loans can be an effort in futility because loan losses written off are replaced by substandard and doubtful loans (Roychowdhury, 2018).

The declining asset quality resulting from NPLs affects the banks' profitability. Out of all the DTMs, only 4 made a profit. The remaining 10 DTMs suffered losses ranging from Ksh 8 million to Ksh 522 million (Kenya Bankers Association, 2023). Therefore, it is important to closely explore the determinants of asset quality in light of the current increase in NPLs and deteriorating asset quality in deposit-taking microfinance banks. It is crucial to look at the asset quality determinants because if non-performing loans increase, banks could choose to increase lending rates as a way to offset drop-in earnings. By reducing the NPL ratios, this strategy might help banks with lending conditions, but it might hurt financially struggling industries (Erdas & Ezanoglu, 2022). Understanding the determinants of asset quality can help detect a set of warning signs, facilitate prompt action, and reduce the chance and related cost of crises (Msomi, 2022).

Studies such as Salas et al. (2024) explored the determinants of NPLs using global data from Europe, Asia, and Africa. The study was, however, not country-specific, hence making generalization difficult. Munyua (2022) investigated the determinants of financial performance. Asset quality is different from financial performance as it's a predictor of credit risk, whereas financial performance focuses on efficient asset utilization to generate business revenue. Rocha et al. (2019) analyzed macroeconomic factors and financial performance in Indonesia. The study, however, investigated MFIs, which are different from DTM banks, which are regulated by the CBK. Kuria et al. (2024) investigated AQ and financial stability of large banks, and Kimotho (2023) investigated asset quality and credit performance of MFBs. Both studies explored asset quality as a predictor variable and not a dependent variable. This current study aimed to fill these gaps by investigating bank-specific internal factors and the asset quality of deposit-taking microfinance banks in Kenya.

Asset quality remains a critical concern for deposit-taking microfinance banks (DTMFBs) in Kenya, as reflected by persistent levels of non-performing loans that threaten institutional sustainability, depositor confidence, and overall financial stability. Despite the sector's important role in promoting financial inclusion among low-income and underserved populations, many DTMFBs continue to experience loan portfolio deterioration arising from weak credit appraisal, inadequate risk management, and operational inefficiencies. Poor asset quality not only undermines profitability but also erodes capital buffers, exposes institutions to liquidity pressures, and increases regulatory risk.

While existing regulatory frameworks emphasize prudential management, evidence on how bank-specific internal factors such as bank size, leverage, liquidity position, capital adequacy, and management efficiency influence asset quality among DTMFBs in Kenya remains limited and fragmented. Most prior studies have either focused on commercial banks or examined microfinance institutions without isolating deposit-taking entities, thereby limiting the applicability of findings to the DTMFB segment. Consequently, there is insufficient empirical clarity on the extent to which internal bank characteristics drive asset quality outcomes in the Kenyan microfinance banking sector. This gap constrains effective managerial decision-making and policy formulation, thus necessitating a systematic investigation of the relationship between bank-specific internal factors and asset quality of deposit-taking microfinance banks in Kenya.

The study was guided by general objectives and specific objectives. The general objective of this study was to assess the influence of bank-specific internal factors on the asset quality of deposit-taking microfinance banks in Kenya. The specific objectives were to establish the effect of capital adequacy on the asset quality of deposit taking microfinance banks in Kenya, to assess the effect of leverage on the asset quality of deposit taking microfinance banks in Kenya, to investigate the effect of bank size on the asset quality of deposit taking microfinance banks in Kenya and to determine the effect of liquidity on the asset quality of deposit taking microfinance banks in Kenya.

2. LITERATURE REVIEW

2.1 Capital Adequacy and Asset Quality

Ikpesu and Oke (2022) assessed how CAR and AQ affected Nigeria banking firms' performance. The authors collated panel data spanning 2010 to 2019. Their population consisted of 12 large banks that are listed. They adopted the SGMM model to process data extracted from audited reports. The study's conclusion showed that asset quality and capital sufficiency resulted in Nigerian banks performing well. Further, the results showed that higher bank performance and earnings are correlated with capital and good asset quality. In Indonesia between 2015 and 2019, Setiawan and Muchtar (2021) investigated the elements influencing the capital adequacy ratio of Indonesian banks. Using a sample of 42 listed banks, the authors extracted information using secondary collection technique from the bank's financial reports and later processed data inferentially and using descriptive analysis. The outcome revealed that bank size, loan and size were significant factors influencing CAR. The findings linked banks with larger economies of scale to having significant CAR and those with lower loan ratio to also having a larger CAR ratio.

In Kenya, Njeri (2019) examined how CAR affected the AQ of SACCOs by targeting 35 SACCOs and extracting financial information from audited reports. The case study design was selected as appropriate, and the researcher descriptively and inferentially analyzes data using the SPSS software. Capital reserve influenced asset quality of the SACCOs negatively. The research examined SACCOs whose capital and asset quality requirements differ from microfinance banks. Nyaundi (2018) investigated whether a large CAR leads to better AQ management for 43 large banks in Kenya.

Adopting a descriptive design, the researcher obtains data from audited report for the period 2010 to 2014. Data analysis is achieved descriptively and inferentially using the SPSS software. The findings showed that a larger capital adequacy exposed the banks to a greater credit risk and thus could result in poor asset quality. The relationship was, however, not significant. He recommended that banks reexamine their credit monitoring practices maintaining good asset quality levels.

2.2 Leverage and Asset Quality

In Teheran, Sarhangi (2023) conducted a study on asset quality, bank leverage and systematic risk for 10 firms at the stock exchange. Adopting a descriptive design, the researcher obtained data from secondary financial audited report sources for the period 2010 to 2019. The author adopted econometric techniques in examining the research questions. The findings indicated that bank leverage had no impact on asset quality. Furthermore, adjusting the leverage had minimal impact on strengthening the correlation between bank leverage and these banks' systematic risk as measured by asset quality. In Vietnam, Kim, Quoc and Trung (2022) examined how debt affected the AQ of 35 banks during COVID-19 (2010-2020). The study relied on primary data through surveys and interviews administered to 50 credit management experts working in the banking sector. The outcome depicted leverage as being a significant firm level factor influencing non-performing loans. Leverage had an adverse effect on the AQ of banks. The findings concur with the agency theory and stakeholder theory which identify leverage as vital in managing the AQ of a bank. A study conducted by Alhassan, Andoh and Kyereboah-Coleman (2019) in Ghana examined the contributing elements of poor asset quality for 25 banks during financial distress covering 2005 to 2010. The authors find that loan growth, leverage, bank size, market structure, and NPLs persistence contributed to poor asset quality of Ghanaian banks.

In Kenya, Mukuru and Thuo (2023) investigated leverage and NPLs amongst MFBs. The study population consisted of 13 MFBs and data for processing for the period 2016 to 2021 is extracted from CBK reports and the MFBs audited reports. The author opted for descriptive research design and analyzed data descriptively and inferentially. Leverage and NPLs association was determined to be positive and significant. The authors concluded that reducing microfinance banks' debt ratio would result in fewer nonperforming loans and thus improve the bank’s asset quality.

2.3 Liquidity and Asset Quality

A study conducted by Vuong et al. (2023) in Vietnam looked at liquidity and asset quality by targeting 33 banks covering 2009 to 2020. They used a descriptive design and obtained data from audited reports. They used the moderating variables of GDP and inflation whose information was collated from the World Bank reports. The authors controlled for endogeneity in the study by adopting GMM. The outcome showed that the creation of bank liquidity considerably lowers NPLs. Vietnamese commercial banks' non-performing loans (NPLs) increases exponentially because of bank funding diversity. In Indonesia, Pratama (2019) investigated how liquidity and asset quality impacts on the growth of 23 banks. He extracted data from the audited report for the period 2010 to 2017. They found that the sustainable growth rate was significantly impacted negatively by both liquidity and poor asset quality. These findings demonstrated the significance of a sustainable growth rate in relation to the bank's ongoing and expansion strategy, which aimed to maximize corporate growth while preserving funding sources.

In the MENA region, Alaoui Mdaghri (2022) investigated liquidity and its influence on asset quality for 111 banks in 10 nations. Data was collated for the period 2010-2017 and processed descriptively and inferentially. He found that bank liquidity influenced the banking firm’s asset quality negatively and significantly by reducing the NPLs both in the short and long-term. Increasing liquidity lowered the total NPLs for Islamic and non-Islamic banks. He recommended that banks reexamine their credit monitoring practices and maintain good asset quality levels. A study conducted by Mbatia and Sporta (2022) in Kenya examined liquidity creation and its influence on asset quality of 119 SACCOs. Adopting a descriptive design, the researcher obtained data from SASRA audited report sources between 2012 to 2017. Data analysis is attained descriptively and inferentially. They find that bank liquidity influenced asset quality negatively and significantly by increasing NPLs. Increasing liquidity increased NPLs.

2.4 Bank Size and Asset Quality

A study conducted by Ahmed et al. (2021) in Pakistan looked at firm specific factors influencing the NPLs of banking institutions. Adopting a descriptive design, the researcher obtains data from secondary financial audited report sources for the period 2008 to 2018. NPLs had significantly increased in Pakistan. Furthermore, earlier research had concentrated on developed markets, and the study was conducted to close this gap. Researchers discovered that NPLs were significantly decreased by ROA, bank size, and operating efficiency. In Indonesia, Hermuningsih and Rahmawati (2023) investigated how bank size affected 20 banks asset quality. The researchers collect financial data for the period 2012 to 2021 from audited accounts and analyzed this collected information using the SmartPLS software. The authors found that bank size influenced positively and significantly the asset quality.

Another study was conducted by Hassan, Sabo and Aliyu (2023) on bank size and the asset quality of Nigerian banks. They sampled 12 banks and selected the period 2011 to 2020 as the data collection duration. Using published reports, the researcher extracted finance data and relied on the ex-post-facto design. The Stata software was used in the processing of data.

The results indicated that size influenced the AQ negatively. As the bank size increased, the bank advanced more loans to borrowers resulting in NPLs increasing. Chibole, Lyani and Maniagi (2022) explored if the size of the bank moderated the association between CAR, NPLs, and liquidity with profitability in Kenya. The author targeted 39 banks and adopted the cross-sectional descriptive research design. He extracted information from financial reports of the banks. Results showed that size failed to moderate the association between the variables. Bank size was not adopted as a predictor variable, which limited its' generalizability.

2.5 Critique of Existing Literature

Setiawan and Muchtar (2021) investigated the elements influencing the capital adequacy ratio of Indonesian conventional banks and Nyaundi (2018) explored whether a large capital adequacy ratio leads to better asset quality management in large sized banks in Kenya. The studies focused on conventional banks which possess more capital than DTMs and accumulate significant interest income and fees. Such differences could have implications on asset quality.

Ikpesu and Oke (2022) assessed how CAR and AQ affected the Nigerian banking firm performance status. They could have explored asset quality as the dependent variable to derive robust findings. Njeri (2019) examined how CAR affected the AQ of deposit institutions in Kenya using the explanatory design which possesses insufficient statistical rigor and has no basis for extending findings to a broader population. The author should have considered the cross-sectional descriptive design because it would ensure minimal bias in data collection. Sarhangi (2023) conducted a study on asset quality and bank leverage in Teheran. The study adopted AQ as the moderating variable. The study should have considered asset quality as the dependent variable to make a better conclusion.

Kim Quoc Trung (2022) examined how debt affected the NPLs of banks in Vietnam. He examined leverage as the determinant of asset quality. Important drivers of AQ such as capital adequacy, liquidity and bank size were left out. The use of primary data also exposed the study to biasness or subjectivity issues.

Mbatia and Sporta (2022) examined liquidity creation and asset quality of deposit taking SACCOs in Kenya. Because SACCOs have more flexible repayment alternatives, cheaper interest rates, and better loan terms than MFBs, the study's findings are limited. Such differences could influence how asset quality is impacted by liquidity. The source of data could also have been prone to errors because it is not from the primary audited report of banks. Alaoui Mdaghri (2022) investigated liquidity and its influence on asset quality for banking institutions in MENA and Vuong, et al. (2023) investigated liquidity and asset quality proxied by non-performing loans in Vietnam. Both studies focused on commercial banks and not MFBs. Commercial banks screen less risky borrowers, offering them

better loan terms than MFBs. This has implications on the amount of capital, leverage and liquidity accumulated. Vuong, et al. (2023) study was also not country specific.

Ahmed et al. (2021) examined bank specific factors for NPLs in Pakistan. The study was a review of literature and therefore lacked empiricism. Chibole et al. (2022) explored if the size of the bank moderated the association between CAR, NPLs and profitability in Kenya using quarterly. Because they used data with a higher frequency (quarterly), which was not accessible for as long as data with a lower frequency (annual), the author might have missed significant long-term trends. Limiting bank size to a moderating variable also limited its generalizability.

2.6 Research Gap

Conceptual gap arises in the following studies: Ikpesu and Oke (2022) assessed how capital adequacy and asset quality relate; Setiawan and Muchtar (2021) investigated the elements influencing CAR of Indonesian banks; Sarhangi (2023) investigated asset quality, bank leverage and systematic risk in Teheran; Pratama (2019) investigated how liquidity and asset quality influence banking institutions growth. These studies overlooked the direct influence of CAR, liquidity and leverage on asset quality of DTMs.

For contextual gaps: Njeri (2019) examined CAR and SACCOs asset quality; Nyaundi (2018) investigated CAR and asset quality in commercial banks; Mbatia and Sporta (2022) examined liquidity creation and asset quality for SACCOs. These studies examined conventional banks and SACCOs excluding microfinance banks. Also, Kim Quoc Trung (2022) examined how leverage affected asset quality of Vietnamese banks when COVID-19 struck. Our study will incorporate the Pre- and Post-Covid-19 period. Alaoui Mdaghri (2022) investigated liquidity and asset quality in the MENA region, but the study was not country specific.

In addition, for methodological gap: Njeri (2019) examined capital adequacy and asset quality using the case study design but not the correlational research design and Hassan et al. (2023) investigated bank size of Nigerian banks adopting the ex-post-facto design. Both studies did not employ correlational research design. Further, Sarhangi (2023) examined asset quality, bank leverage and systematic risk in Teheran using the econometric model. Chibole et al. (2022) explored if the size of the bank moderated the association between CAR and NPLs with profitability in Kenya. Our research employed the panel data model and utilized bank size as the independent variable.

3. RESEARCH METHODOLOGY

This research opted for a longitudinal research design because of the panel data that was collected. It was particularly useful for evaluating the association between panel data variables, leverage, CAR, bank size, and liquidity with asset AQ, collected and analyzed over multiple periods of time (2019 to 2023). Akin to that, when data is gathered for specific groups (microfinance banks) inside a designated group (deposit-taking microfinance banks), relevant statistical tests can be used to examine changes over time for the group

as a whole or for specific individuals. This study is best suited for the longitudinal research approach, which offers insights into how time affects the variables under investigation. As a result, it is typically more reliable when analyzing cause-and-effect correlations. Kiio, Wamugo, and Omagwa (2023) explored the impact of CAR on the liquidity risk of Kenyan microfinance banks using the longitudinal research design.

The population was the 14 deposit-taking microfinance banks. Appendix (IV) shows the list of the DTMs that this research selected. Instead of sampling the 14 banks, the study will select the entire target population. This is because there are only a small number of microfinance banks (fewer than 50), making it necessary to use the entire population to attain a higher accuracy. The duration of study ranged from 2019 to 2023, and data were collected for this period.

Secondary data in this context is information on the financial position of DTMs publicly published by its management in audited reports. This secondary data that was obtained from the DTMs' financial statement is less expensive and simpler to access than primary data because it has already been published. It was also easier to confirm the reliability of the collected data.

Data was collected for the variables' gross loans, net non-performing loans, total deposits, total assets, total debt, total equity, and total capital. The researcher gathered separate yearly data on all the variables for all the DTMs in one Excel sheet. Thereafter, the researcher determined the different ratios for the study variables as per the conceptual framework.

Before the research instruments and methodology were used in the complete study. All variables in the data collection sheet were analyzed to guarantee information accuracy and clarity with respect to certain study objectives, using DTM banks for the pilot program. The results of the pilot study showed that the data were valid and reliable, meaning they could be utilized to examine the goals of the research.

Various diagnostic tests, such as the normality test, multicollinearity test, homoscedasticity test, autocorrelation test, stationarity test, and Hausman test, were conducted. The process of data analysis consisted of cleaning and preparing the data, analysis, report discussion, and interpretation. The researcher analyzed data using STATA statistical software version 16. The data was presented using tables through descriptive statistics and using means and standard deviation. The panel data regression model was used in the study-combining cross section data and time series, where the same unit cross-section is recorded at many times. Panel data was gathered over the time period (2019 to 2023) from each DTM bank. The model increased the degrees of freedom, removed the influence of the individual of the independent variables, thus making the estimates of model coefficients more realistic.

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon$$

Where:

Y = Asset Quality measured as non-performing loans to gross loans

β_0 = Constant term

β = regression coefficient to be estimated

X_1 = Capital adequacy measured as total capital to risk weighted assets

X_2 = Leverage measured as debt to equity

X_3 = Liquidity measured as loans to deposits

X_4 = Bank Size measured as the natural log of total assets

i = Microfinance banks (Cross - section dimension) ranging from 1 to 14

t = Time index: (Years (time - series dimension) ranging from 2019 to 2023.

4. FINDINGS AND DISCUSSIONS

4.1 Descriptive Statistics

Table 4.1 below reports the mean, standard deviation, maximum, minimum, and observations of the data. Descriptive statistics are presented after preparing the data for analysis. A total of 69 observations were used in the analysis.

Table 4. 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Bank Size	69	7.153913	1.770677	3.806662	10.32918
Leverage	69	0.176918	0.109876	0.023729	0.514852
Liquidity	69	0.911108	0.748079	0.120342	3.9
CAR	69	0.140929	0.582112	-2.53192	2.1875
Asset Quality	69	0.27822	2.685214	-22	0.769231

In Table 4.1, asset quality depicts a mean of 0.278, with the min and max values ranging from -22 to 0.769. It falls within over 20% reported by the CBK (2023), pointing to poor asset quality. The SD of 2.685 is relatively higher than the mean implying that the variation in asset quality between MFBs overtime is rather high. The high variability indicates that asset quality differs markedly across banks and over time, justifying further econometric examination of internal determinants.

Bank size based on the natural log of total assets ranged from 3.807 to 10.329 with an average value of 7.154. The SD of 1.771 is significantly lower than the mean, revealing the there is a small difference in the total assets owed by the MFBs over time. Furthermore,

the minimum (3.807) and maximum (10.329) values suggest substantial heterogeneity, implying the coexistence of both small and relatively large DTMFBs in the sector. This dispersion highlights differences in operational capacity, market reach, and risk absorption ability, which may influence asset quality outcomes.

Leverage measured using debt to equity- ranges from 2.3729 % to 5.1485, with a mean of 17.69%. This shows that the MFBs are lowly leveraged and largely rely on customer deposits for funding. The standard deviation of 0.109 is lower than the mean, an indication of low volatility for the variable leverage over time between the MFBs. Institutions at the upper extreme may face heightened financial risk, potentially amplifying exposure to credit losses and affecting asset quality during adverse conditions.

Liquidity measured using the indicator, loan deposit ratio, ranges 12.034% and 390%, with a mean of 91.111%. This mean value exceeds the 34% performance category that depicts a strong liquidity position as per CBK (2023). The standard deviation of 0.748 is rather low compared to the mean. This means that variation in liquidity ratio either between MFBs or within each MFB over time is rather low. Such dispersion underscores differences in liquidity management practices and risk tolerance, which can directly affect lending behavior and loan portfolio performance.

The CAR depicts a mean of 14.09%, ranging from -2.5319 to 2.1875, which is lower than the 19.05% capital adequacy strong performance rating, but within the 12.5% -15.0% fair performance ratings (CBK, 2023). The standard deviation of 0.582 is rather high compared to the mean, an indication of high volatility in CAR values between the MFBs over time. These widespread further signals uneven capital buffers across the sector, with implications for resilience to credit risk and asset quality deterioration.

4.2 Diagnostic Tests for Assumptions in the Regression Model

Regression modeling cannot be performed until a few key presumptions are met. Inaccurate statistical results may arise if the data does not support these assumptions. According to Osborne and Waters (2002), using data that deviates from these presumptions may result in type I or II errors and overestimate or underestimate the coefficient's significance.

4.2.1 Testing for Normality of Residuals

We adopted the Kolmogorov-Smirnov and Shapiro-Wilk tests in determining the data normality. A $p > 0.05$ would indicate data is normal and reject the null hypothesis, whereas a $p < 0.05$ would reveal abnormal data and not reject the null hypothesis. The results of the normalcy test are displayed in Table 4.2.

Table 4. 2: Kolmogorov-Smirnov and Shapiro-Wilk Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Asset Quality	1.432	69	.244	1.431	69	.336
Bank Size	3.164	69	.329	.662	69	.491

Liquidity	0.132	69	.411	.111	69	.899
Leverage	2.164	69	.260	2.693	69	.555
CAR	1.433	69	.396	1.892	69	.333

We observe from Table 4.2 the p-values of the Kolmogorov-Smirnov test and the Shapiro-Wilk test for asset quality, bank size, capital adequacy, liquidity, and leverage exceed 5%, pointing to the data not violating the normality assumption. This reveals that, to a certain extent, the data collected had a normal distribution.

4.2.2 Testing for Heteroscedasticity

Homoscedasticity assumes that the errors in a linear regression model are spread uniformly across all the independent variables when applying the model to make inferences; if this is violated, heteroscedasticity exists. The coefficient estimators and predictors can withstand significant deviations from these assumptions; however, inference (such as confidence intervals) is not as resilient. The Breusch-Pagan test was applied in determining heteroscedasticity, with a chi-square exceeding 9.21 indicating its presence.

Table 4. 3: Heteroskedasticity Test

Breusch-Pagan Test
Ho: Constant variance
Variables: fitted values of Asset Quality
chi2(1) = 1.46
Prob > chi2 = 0.2268

There is no indication of heteroscedasticity in the assembled data, according to the test results in Table 4.3. There is no heteroscedasticity problem according to the test results in Table 4.3, because banks' size, capital adequacy, liquidity, and leverage produced a Chi-square value of 1.46, lower than 9.21, and the p-value exceeded 5%.

4.2.3 Testing for Multicollinearity

Regression coefficients are unstable, and conclusions drawn from the regression model may be inaccurate and misleading when the regressors are almost perfectly correlated. This phenomenon is referred to as multicollinearity, which is determined using the VIF test.

Table 4.4: VIF (tolerance) Test

Variable	VIF	Tolerance
Capital Adequacy	1.77	0.565
Liquidity	1.75	0.572

Bank Size	1.18	0.851
Leverage	1.03	0.966
Mean VIF	1.43	

Table 4.4 outcome on multicollinearity shows that the VIF for all the variables, bank's size (1.18), capital adequacy (1.77), liquidity (1.75), and leverage (1.03) were less than 5, pointing to the absence of multicollinearity. In addition, the tolerance values for bank size (0.851), capital adequacy (0.565), liquidity (0.572), and leverage (0.966) are close to 1, an indication of no multicollinearity.

This study conducted multicollinearity diagnostics in examining the relationship between bank-specific internal factors and asset quality among deposit-taking microfinance banks (DTMFBs) in Kenya, consistent with the prudential and supervisory framework established by the Central Bank of Kenya (CBK). Under the Microfinance Act (2006) and the Microfinance (Deposit-Taking Microfinance Institutions) Regulations, licensed DTMFBs are required to comply concurrently with regulatory standards governing capital adequacy, liquidity management, asset quality, earnings performance, governance, and internal controls. These indicators are monitored collectively as measures of institutional soundness rather than in isolation.

CBK Prudential Guidelines relating to capital adequacy, liquidity management, and asset classification and provisioning implicitly recognize the interdependence of internal bank indicators. Capital adequacy influences lending capacity, liquidity affects credit risk exposure, and management efficiency shapes loan monitoring and recovery processes, all of which jointly determine asset quality outcomes, commonly proxied by non-performing loans. Consequently, the simultaneous inclusion of these regulatory-driven internal factors in econometric models increases the likelihood of multicollinearity.

Accordingly, multicollinearity diagnostics were conducted to assess the degree of linear dependence among explanatory variables and to ensure the statistical reliability and interpretability of the estimated parameters. This approach enhanced the robustness of the empirical model and ensured consistency with CBK's integrated prudential monitoring framework, thereby strengthening the credibility of the study's findings within the Kenyan microfinance banking context.

4.2.4 Testing for Autocorrelation

Autocorrelation results from a model's error term being correlated over several time periods. It can lead to inaccurate inferences and biased estimates between variables (Field, 2000). The error terms associated with any two observations should be mutually independent, according to the test's null hypothesis. Autocorrelation was evaluated using the Breusch-Godfrey Serial Correlation test.

Table 4. 5 Serial Correlation Test

lags(p)	chi2	df	Prob > chi2
2	3.752	2	0.9880

We observe from Table 4.5 that the p-value > 0.001, indicating that serial correlation is not present since the value is insignificant.

4.2.5 Stationarity Test

Disregarding stationarity could result in erroneous regression if the study utilizes non-stationary variables. Inaccurate and erroneous findings are produced when non-stationary time series data is used in forecasting models, which hinders comprehension and forecasting. The Levin-Lin Chu unit-root test was used to test for stationarity in the data. Stationarity of the data is accepted if the null hypothesis is rejected. As shown in Table 4.6, panel data with unit roots were removed, and the data became stationary.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	**Hypothesis**	**p value**	**Verdict**
Asset quality	Ho: Panels contain unit roots	0.0000	Reject Ho
Capital Adequacy	Ho: Panels contain unit roots	0.0000	Reject Ho
Liquidity	Ho: Panels contain unit roots	0.0000	Reject Ho
Leverage	Ho: Panels contain unit roots	0.0000	Reject Ho
Bank Size	Ho: Panels contain unit roots	0.0000	Reject Ho

4.2.6 Hausman Specification Test

The study used the Hausman test in selecting the most ideal model. Using the Chi-square test statistic, the FE model would be adopted where probability < 0.05, but rejected for the RE model where p > 0.05.

Table 4. 7: Hausman Test Results

Hausman Specification test (model)	**(1978) Chi-square value**	**P-value**	**Conclusion**
Asset quality	1.79	0.7742	Random effect model

Table 4.7 reveals that, at a 5% level of significance, the Hausman specification test supports the random effect model for asset quality (chi-square = 1.79, p > 0.05). The panel regression results are all based on the random effect model.

4.3 Inferential Analysis Results

This section is a presentation and analysis of the findings of the correlation and panel regression model results. Interpreting the data and working with current empirical and theoretical outcomes support the analysis and discussion.

4.3.1 Correlation Results

In Table 4.8, the results of the correlation analysis are presented. The DTM bank's asset quality reported a strong positive correlation with leverage (r = 0.316, p = 0.007). However, liquidity, bank size, and capital adequacy were negatively and strongly correlated with asset quality as indicated by: (r = -.289, p = .015), (r = - .339, p = .004), and (r = -. 391, p = .000), respectively.

Table 4.8: Pearson Correlation Test

		Asset quality	Liquidity	Leverage	Capital adequacy	Bank size
Asset quality	Pearson Correlation	1	-.289	.316	- .391	-.339
	Sig. (2-tailed)		.015	.007	.000	.004
Liquidity	Pearson Correlation	-.289	1	.042	.597	.119
	Sig. (2-tailed)	.015		.732	.063	.327
Leverage	Pearson Correlation	.316	.042	1	.230	.687
	Sig. (2-tailed)	.007	.732		.057	.402
Capital adequacy	Pearson Correlation	- .391	.597	.230	1	.107
	Sig. (2-tailed)	.000	.063	.057		.382
Bank size	Pearson Correlation	-.339	.119	.687	.107	1
	Sig. (2-tailed)	.004	.327	.402	.382	

4.3.2 Panel Regression Analysis

A panel regression data analysis was done to determine the causal association between the predictor variables and the explanatory variable- asset quality, and Tables 4.9, 4.10, and 4.11 reveal the outcomes.

Table 4.9: Model Summary

Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.5018[a]	.2518	.2050	.66699

a. Predictors: (Constant), CAR, Liquidity, Leverage, Bank Size

As observed in Table 4.9, the R-squared is 0.2518, revealing that 25.18 % of deviations in asset quality occur due to the studied bank-specific internal factors (leverage, bank size, capital adequacy, and liquidity). This implies that other variables that are not part of the study accounted for the remaining 74.82% in asset quality variations.

We also observe from Table 4.10 an F value of 5.38 and $p < 0.05$, suggesting that the model was adequate (fit) for this study. Therefore, we infer that there are significant variables in the study that influenced asset quality of DTM banks.

Table 4.10: ANOVA with Asset Quality as Dependent Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.58188978	4	2.39547244	5.38	.0008[b]
	Residual	28.4724158	64	.444881498		
	Total	38.0543056	68			

Table 4.11: Random Effect Panel Regression Estimates

Asset Quality	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**95% Confidence Interval**	
Liquidity	-1.5482	0.6745	-2.29	0.024	-2.8952	-0.2012
Bank size	-2.2318	0.8432	-2.65	0.011	-3.9319	-0.5317
Leverage	1.0524	0.4613	2.28	0.027	0.1297	1.9752
CAR	2.5871	0.7853	3.29	0.002	1.0109	4.1634
_cons	9.5338	21.5684	0.44	0.661	-33.7466	52.8141
sigma_u	9.8745					
sigma_e	8.1639					
Rho	0.5943					

The coefficient results in Table 4.11 show that bank-specific internal factors significantly predicted the asset quality of DTM banks in Kenya at a 5% significance level. Liquidity (p = .024, B = -1.548) and bank size (p = 0.011, B = - 2.232) influenced asset quality negatively, with the association being significant. However, leverage (p = .027, B = 1.052) and capital adequacy (p = .002, B = 2.587) influenced asset quality positively, with a significant relationship. The model with the coefficients embedded is as follows:

Asset Quality = 9.534 + 2.587 (CAR) + 1.052 (Leverage) – 1.548 (Liquidity) – 2.231(Bank Size)

4.4 Hypotheses Testing

The hypotheses were tested using panel data regressions. Table 4.11 displays the panel data regression findings.

4.4.1 Capital Adequacy and Asset Quality

The first null hypothesis, H_{01}, capital adequacy has no significant effect on the asset quality of deposit-taking microfinance banks in Kenya. Table 4.11 outcome reveals p-value of $0.002 < 0.05$, leading to the H_{01} being rejected.

CAR positively influenced the asset quality of the DTM banks studied (B = 2.587). The association was also significant ($p = 0.002 < 0.05$). This implied that as MFBs accumulated more capital, the level or amount of NPLs decreased, thus leading to an improvement in their asset quality. High bank CAR discourages banks from taking unnecessary risks and acting speculatively. Fewer guarantors of loans motivate banks to be hesitant in advancing credit for fear of losing their principal and interest amount.

Our findings concur with the Moral Hazard hypothesis, which argues that banks with inadequate capital but with higher NPLs are motivated to increase risk in their loan portfolio by advancing more loans to offset the NPLs' lost income. As a result, NPLs continue to rise, as a result of increased loan growth and, perhaps more significantly, the lowering of screening and monitoring requirements. The outcome could be deteriorating asset quality.

Our findings concur with Ikpesu and Oke (2022), who established that an increase in CAR contributed to better asset quality in Nigerian banks. However, our findings contradict Njeri (2019), who determined that CAR negatively affected the asset quality of SACCOs in Kenya. Similarly, our findings contradict Nyaundi (2018), who found that a larger capital adequacy exposed the banks to a greater credit risk and thus resulted into poor asset quality of banks in Kenya. The relationship was, however, not significant.

Descriptive analysis was employed to examine capital adequacy and asset quality in order to provide an initial empirical overview of the financial condition of deposit-taking microfinance banks (DTMFBs) before inferential modeling. Capital adequacy and asset quality are core prudential indicators that reflect the solvency and credit risk profile of financial institutions, and their behavior over time and across institutions is best understood through systematic summarization of observable patterns, trends, and dispersion measures.

In the context of capital adequacy, descriptive statistics facilitate an assessment of the average capitalization levels, variability, and compliance tendencies of DTMFBs relative to regulatory thresholds. Given that microfinance banks often exhibit heterogeneity in size, risk exposure, and growth trajectories, descriptive measures such as means, minima, and standard deviations enable identification of capitalization asymmetries that may not be immediately evident from aggregate or model-based analysis. This preliminary examination

is essential for contextualizing subsequent econometric results and for establishing whether observed capital ratios display sufficient variation to meaningfully explain asset quality outcomes.

Similarly, descriptive analysis of asset quality commonly proxied by non-performing loans or related credit risk indicators provides insight into the distribution and severity of credit risk within the sector. Asset quality indicators are typically skewed and sensitive to institutional, macroeconomic, and borrower-specific factors. Descriptive statistics, therefore, serve to highlight the prevalence of problem loans, the extent of dispersion across institutions, and temporal trends in credit performance, all of which are critical for interpreting the economic significance of regression estimates.

4.4.2 Leverage and Asset Quality

Second null hypothesis H_{02}: leverage has no significant effect on the asset quality of deposit-taking microfinance. Table 4.11 outcome reveals p-value of $0.027 < 0.05$, leading to the H_{02} being rejected. Leverage has a positive influence on the asset quality of DTM banks ($B = 1.052$). The association is also significant ($p = 0.027$).

Our findings support the agency theory, which asserts that leverage ratios can be used to lessen conflict in owner-manager relationships (Frierman & Viswanath, 1994), as banks can monitor borrowers through debt. It forces them to exercise control over their profitable enterprises to pay off maturing commitments. Banks are able to control NPLs and improve their asset quality.

This study's findings parallel those of Sarhangi (2023), who established that bank leverage had a positive impact on the asset quality of banks in Tehran. The findings contradict Mukuru and Thuo (2023), who established that reducing microfinance banks' debt ratio would result in fewer nonperforming loans and thus improve the bank's asset quality. Akin to that, Alhassan et al. (2019) established that leverage contributed to the poor asset quality of Ghanaian banks. Further, Kim, Quoc, and Trung (2022) study results indicated that leverage harmed NPLs and asset quality.

Descriptive analysis was employed to examine leverage and asset quality in order to provide a preliminary assessment of the risk profile of deposit-taking microfinance banks before inferential analysis. Leverage reflects the extent of debt financing and exposure to financial risk, while asset quality captures the performance of loan portfolios and the effectiveness of credit risk management. Descriptive statistics such as means, ranges, and dispersion measures facilitate understanding of variability in leverage levels and credit risk across institutions and over time. Additionally, asset quality indicators are often skewed and influenced by institutional and borrower-specific factors, making descriptive examination necessary to highlight distributional characteristics and trends. This preliminary analysis also supports data diagnostics by identifying outliers or extreme observations, thereby strengthening interpretation and informing subsequent econometric modelling.

4.4.3 Bank Size and Asset Quality

Third null hypothesis H_{03}: bank size has no significant effect on the asset quality of deposit-taking microfinance. Table 4.11 outcome reveals p-value of 0.011 < 0.05, leading to the H_{03} being rejected. Bank size has a negative influence on the asset quality of DTM banks (B = - 2.232). The association is also significant (p = 0.011).

Our findings concur with Hassan, Sabo, and Aliyu (2023), who found that as bank size increased, the bank advanced more loans to borrowers, resulting in NPLs increasing and asset quality deteriorating in Nigeria. Akin to that, Ahmed et al. (2021) established that bank size contributed to poor asset quality of banks in Pakistan.

The study results refute the institutional theory, which asserts that compared to small businesses, large businesses have more market power, lower operating costs, and more qualified and experienced staff who can conduct credit monitoring, thus lowering the incidence of non-performing loans. The findings also contradict Hermuningsih and Rahmawati (2023), who established that larger microfinance banks are better poised than smaller banks to reduce their NPLs as they have more qualified and experienced staff who can easily monitor borrowers. Ahmet (2018) posited that the bank size matters because it strongly correlates with access to capital, which represents the bank's desire and ownership in managing risk or insolvency.

Descriptive analysis was employed to examine bank size and asset quality to provide an initial empirical understanding of structural differences and credit risk profiles among deposit-taking microfinance banks before inferential modeling. Bank size, commonly measured by total assets, reflects operational scale, market reach, and resource capacity, which are factors that may influence loan portfolio management and risk absorption. Descriptive statistics such as means, ranges, and dispersion measures facilitate comparison of size heterogeneity across institutions and over time.

Similarly, descriptive analysis of asset quality indicators, such as non-performing loan ratios, allows for assessment of the distribution and severity of credit risk across different-sized institutions. Asset quality measures are often unevenly distributed and sensitive to scale-related operational dynamics. This preliminary analysis also serves a diagnostic function by identifying patterns, trends, and extreme observations, thereby providing essential context and supporting robust interpretation of subsequent econometric results.

4.4.4 Liquidity and Asset Quality

The fourth null hypothesis, H_{04}: Liquidity has no significant effect on the asset quality of deposit-taking microfinance banks in Kenya. Table 4.11 outcome reveals p-value of 0.024 < 0.05, leading to the H_{04} being rejected. Liquidity has a negative influence on the asset quality of DTM banks (B = - 1.548). The association is also significant (p = 0.024).

Our findings are supported by Mbatia and Sporta (2022) in Kenya, who examined liquidity creation and its influence on asset quality of SACCOs and found that bank liquidity influenced asset quality negatively and significantly by increasing NPLs. Increasing liquidity increased NPLs. However, Mdaghri's (2022) study in the MENA region contradicts our findings. They found that bank liquidity influenced the banking firm's asset quality positively and significantly by reducing the NPLs both in the short and long-term.

Increasing liquidity lowered the total NPLs for Islamic and non-Islamic banks. Akin to that, Vuong et al. (2023) study in Vietnam established that the creation of bank liquidity considerably lowers NPLs and influences the asset quality positively.

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary of Findings

The researcher explored bank-specific internal factors and their influences on the asset quality of deposit-taking microfinance banks in Kenya, with the predictor variables consisting of CAR, leverage, bank size, and liquidity. The response variable included asset quality. The study opted for a longitudinal research design, given that secondary panel data from audited reports were collected for 14 microfinance banks from 2019 to 2023 and processed using STATA.

5.1.1 Capital Adequacy and Asset Quality of Deposit-Taking Microfinance Banks.

The study determined if capital adequacy had any influence that was significant on the asset quality of DTM banks. Correlation findings pointed to a direct and significant association between CAR and asset quality. Similarly, the random effect model results signified that increasing CAR leads to the asset quality of the DTM banks improving by 0.296. The association was also significant.

5.1.2 Leverage and Asset Quality of Deposit-Taking Microfinance Banks

The researcher also assessed how leverage is associated with asset quality and the significance of this association, if any, for DTM banks in Kenya. Results of correlations indicated that leverage had a positive link with asset quality. The relationship was also significant. For the regression random effect model, leverage also influenced asset quality positively, signifying that accumulating more debt by DTM banks contributed to an increase in their asset quality by 0.116. This influence was also significant.

5.1.3 Bank Size and Asset Quality of Deposit-Taking Microfinance Banks

The other objective was to explore whether bank size impacted on DTM banks' asset quality in Kenya. We observed from the correlation table that bank size had an adverse and strong influence on the asset quality of DTM banks in Kenya. Random effect model results also pointed to a negative effect of the variable bank size on asset quality, where accumulating additional assets resulted in a 0.0214 decrease in asset quality of the studied banks.

5.1.4 Liquidity and Asset Quality of Deposit-Taking Microfinance Banks

The last objective was to determine whether there are any relations between liquidity and DTM banks' asset quality. Study correlation outputs revealed that liquidity had an adverse and strong link with asset quality. Random effect model results further augmented the findings due to the negative association that was established between liquidity and asset quality. Further, the association was significant.

5.2 Conclusions

The study concludes that higher capital adequacy ratios improve the quality of assets in deposit-taking microfinance banks in Kenya. This suggests that DTM banks with higher capital could be disincentivized to engage in risky behavior by limiting the loans to unsafe borrowers. The study also concludes that leverage contributes to higher asset quality of DTM banks in Kenya. This suggests that MFBs could be an incentive to act more in the interests of debtholders when they possess higher leverage by monitoring borrowers.

In addition, the study concludes that liquidity has an adverse influence on the asset quality of DTM banks, as highly liquid banks could engage in riskier lending to maximize returns, thus accumulating NPLs. Lastly, the study concludes that bank size and asset quality are negatively related, as bigger DTM banks can advance more loans to borrowers, resulting in NPLs increasing and asset quality deteriorating.

5.3 Recommendations of the Study

The study offers more proof of the positive correlation between CAR and asset quality and suggests that this relationship is the primary driver for regulatory goals for greater stability and higher coverage. Therefore, to guarantee that DTM banks have enough capital to cover both short- and long-term needs, regulatory bodies should tighten the capital requirements for these banks. Additionally, strengthening the regulatory framework would guarantee that these banks can successfully compete with other banks worldwide.

Results also indicated that leverage contributed to higher asset quality amongst DTM banks. The study suggests that banks accumulate more leverage up to the optimal leverage position to lower the agency cost between shareholders and stockholders. Through additional leverage, MFBs can be incentivized to monitor borrowers through debt, since it forces them to exercise control over profitable enterprises to pay off maturing commitments, and thus improve the asset quality.

The results have demonstrated that DTM banks with substantial asset bases tend to grow their loan portfolios and increase loan sizes, which can occasionally raise the risk of client default (NPLs) and contribute to poor asset quality. Because of this, regulatory bodies must keep a close eye on how banks in this sector lend money as they expand to prevent banks from taking on unnecessary risk that could jeopardize their survival.

Further, the management of DTM banks must ensure steady profitability and controlled non-performing loans (NPLs) during phases of rapid growth through credit monitoring. The research also finds an adverse influence of liquidity on the asset quality of banks and therefore suggests that regulatory bodies take steps to deter highly liquid banks from making irresponsible lending. These steps could include requiring DTM banks to partially insure deposits, assessing insurance fees to the banks based on risk assessments, or requesting that banks contribute to the reserves kept in case a member bank fails.

5.4 Suggested Areas for Future Research

This research focused on four bank-specific internal factors. Other bank factors were not examined; Internal factors such as management competency and cost-efficiency, industry factors such as competition and bank-risk taking, and inflation, GDP, and interest rates. These factors can affect the borrowers' ability to repay loans, thus influencing asset quality. Thus, future research should consider examining these additional factors.

Researchers in the future can also include the non-deposit-taking microfinance bank population, which doesn't accumulate deposits but may have a lot to contribute to the alleviation of poverty amongst the vulnerable groups. Moreover, comparative research between DTM banks and non-DTM banks may provide a more accurate and verifiable answer to the research question.

REFERENCES

Ahmed, S., Majeed, M. E., Thalassinos, E., & Thalassinos, Y. (2021). The impact of bank specific and macro-economic factors on non-performing loans in the banking sector: evidence from an emerging economy. *Journal of Risk and Financial Management, 14*(5), 217.

Alhassan, A. L., Andoh, C., & Kyereboah-Coleman, A. (2019). Asset quality in a crisis period: An empirical examination of Ghanaian banks. *Review of Development Finance, 4*(1), 50-62.

CBK (2022). *Kenya Financial Sector Stability Report.* https://www.centralbank.go.ke/uploads/financial_sector_stability/1710270688_FSR%20July%202022_revised%20for%20printing.pdf

Chibole, K. W., Lyani, N. M., & Maniagi, M. G. (2022). The moderating effect of bank size on the relationship between financial distress factors and financial performance of commercial banks in Kenya. *The Strategic Journal of Business & Change Management, 9* (4), 706 – 719.

Erdas, M. L., & Ezanoglu, Z. (2022). How do bank-specific factors impact non-performing loans: Evidence from G20 countries. *Journal of Central Banking Theory and Practice, 11*(2), 97–122.

Hassan, S. U., Sabo, B., & Aliyu, I. A. (2023). Moderating effect of bank size on the relationship between interest rate, liquidity, and profitability of commercial banks in Nigeria. Gusau *Journal of Accounting and Finance, 4*(1), 96-120.

Hermuningsih, S., Sari, P. P., & Rahmawati, A. D. (2023). The moderating role of bank size: influence of fintech, liquidity on financial performance. *Jurnal Siasat Bisnis*, 106-117.

Ikpesu, F., & Oke, B. O. (2022). Capital Adequacy, Asset Quality and Banking Sector Performance. Acta Universitatis Danubius. *Economic, 18*(3), 142-167.

International Monetary Fund (2023). *West African Economic and Monetary Union (WAEMU)* Documents.www.imf.org/en/Publications/SPROLLs/WAEMU-362#sort=%40imfdate%20descending.

Kenya Bankers Association (2023). *State of the banking industry report 2023.* https://www.kba.co.ke/wp-content/uploads/2023/08/KBA-State-of-the-Banking-Industry-Report-2023.pdf

Kim Quoc Trung, N. (2022). Does leverage fit non-performing loans in the COVID-19 pandemic–evidence from the Vietnamese banking system. *Cogent Business & Management, 9*(1), 2119675.

Kimotho, H. G. (2023). *Firm characteristics and credit performance of microfinance Banks in Kenya.* Unpublished master's Thesis. Kenyatta University.

Kuria, K. J., Kiboi, A. & Macheru, J. (2024). Asset quality and financial stability: an empirical review of commercial banks in Kenya. *Journal of Finance and Accounting 8*(3), 22-38.

Li, L. (2020). Regulation of leverage ratio, credit expansion and credit risk of commercial banks. *Open Journal of Social Sciences, 8*(04), 376.

Mbatia, N., & Sporta, F. (2022). Effects of firms' liquidity on non-performing loans of deposit taking SACCO's in Kenya. *African Journal of Accounting, Auditing and Finance, 8(*1), 49-55.

Mdaghri, A. (2022). How does bank liquidity creation affect non-performing loans in the MENA region? *International Journal of Emerging Markets, 17*(7), 1635-1658.

Msomi, T. S. (2022). Factors affecting non-performing loans in commercial banks of selected west African countries. *Banks and Bank Systems, 17*(1), 1

Mukuru, L., & Thuo, A. (2023). Firm Characteristics and Non-Performing Loans of Microfinance Banks in Kenya. *Journal of Finance and Accounting, 3*(2), 32-44.

Munyua, L.N (2022). *Effect of firm level factors and regulatory requirements on the financial performance of microfinance banks in Kenya*. Unpublished Master's Thesis. University of Nairobi.

Njeri, M.C. (2019). *Determinants of capital adequacy in Kenya's Sacco's: a case study of deposit taking Sacco's in Nairobi*. Unpublished Masters Project. United States International University.

Nyaundi, D. N. (2018). *The effects of capital adequacy requirements on liquidity of commercial banks in Kenya*. Unpublished Master's Thesis. University of Nairobi.

Rocha, R. A., Cervantes Zepeda, M., & Bernal Ponce, L. A. (2019). The determinants of outreach and profitability in MFI's: a structural equation approach. *Revista mexicana de economía y finanzas, 14*(1), 129-146.

Reserve Bank of India (2023). *RBI Annual Report (2022-23): 5 Key Takeaways.* www.wintwealth.com/blog/rbi-annual-report/#:~:text=The%20RBI's%20balance%20sheet%20size,12.3%25%20in%202021%2D22.

Salas, M., Lamothe, P., Delgado, E., Fernández-Miguélez, A. L., & Valcarce, L. (2024). Determinants of nonperforming loans: *A Global Data Analysis. Computational Economics, 1-22*.

Sarhangi, R. (2023). The effect of asset quality on the relationship between banks leverage and Systematic risk. *Quarterly Journal of Fiscal and Economic Policies, 11*(41), 81-122.

Setiawan, A., & Muchtar, S. (2021). Factor affecting the capital adequacy ratio of banks listed in Indonesia Stock Exchange. *Journal of Economics, 26*(1), 153-169.

Vuong, G. T. H., Phan, P. T. T., Nguyen, C. X., Nguyen, D. M., & Duong, K. D. (2023). *Liquidity creation and bank risk-taking: Evidence from a transition market.*