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NON-PERFORMING LOAN CHARACTERISTICS AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

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ABSTRACT

The potentiality of microfinance institutions to offer loan facilities to the unbanked population makes them important financial intermediaries. The financial success of microfinance organizations aids in the growth of the banking industry and the nation's economy as a whole. However, due to loan default experiences, its financial performance may be compromised, leading to its downward trend. As an example, the financial performance of MFB's continues to plummet and fluctuate unpredictably despite having put in place measures to limit loan defaults as demonstrated over a five-year period spanning the years 2016 to 2020. As a result, it is uncertain whether non-performing loans significantly affects the financial performance of MFB's. Non-performing loans of MFB's realize a situation where either the principal or interest or both have not been honored beyond the due date and hence have a direct relationship with its financial performance. Therefore, in light of this context, the study aimed at evaluating the effect of non-performing loan characteristics on the financial performance of microfinance institutions in Kenya. The study's particular goals were: To determine the effect of cost per loan asset, and collateral provision on the financial performance of microfinance banks, Kenya. The study utilized Non-experimental research design. The target audience was 13 microfinance banks. The study employed census survey since the population was small. The time scope of the study was five years from year 2016 to the year 2020. Secondary data of audited financial reports of microfinance banks was collected from MFB'S website, CMA and CBK reports using a data abstraction tool. Data analysis was done using panel linear regression analysis and multiple diagnostic test statistics. The data was presented using tables, graphs, and frequency tables. The results showed that the cost per loan asset had a statistically significant effect on financial performance, and the collateral had a statistically significant negative impact on financial performance of the company. The cost per loan asset and collateral null hypothesis tests were rejected because their p-values were less than 0.05, making them significant. The study recommends that managers of microfinance banks should ensure that the collateral value being attached to the loan is commensurate to the loan being advanced by the microfinance bank. This will confirm certainty of loan repayment by customers.

Key Words: Non-Performing Loan, Financial Performance, Microfinance Banks, Cost Per Loan Asset, Collateral

Background of the Study

Globally, microfinance's development as a complement to conventional financial services supply has been a breath of fresh air for most individuals and institutions that haven't been able to participate in the official financial sector, despite the fact that its (microfinance's) arrival has also posed certain problems (Chortareas, Logothesis, Magkronis, Zekente, 2016). Microfinance has a proven track record of 130 million clients as a crucial instrument in the fight against poverty, despite the fact that this represents less than 20% of the world's potential market of three billion unbanked or poor people (KPMG, 2016). The principal activity of MFBs is to offer loans and advances as well as to operate as social savings depositories. They generate revenue by charging interest on loans and earning interest or dividends on their investments in equities and bonds (Laryea, Ntow-Gyamfi &Alu., 2016). Loans are thus the MFBs' most important product, yet they are a risky output (EL-Maude, Abdul-Rahman & Ibrahim, 2017). Hence, MFBs usually want loans to be performing.

Nonperforming loans, according to the IMF (2020), are those in which the debtor has not paid interest or principle for at least 90 days, and interest payments of more than 90 days have been capitalized, refinanced, or deferred by arrangement. Non-performing loans, as per the World Bank (2020), are loans which the lender has not made any principle repayments, interest, or both for over 90 days. Depending on the postulated bank's or monetary regulatory authority's prescribed requirements, the loan will become non-performing (ECB, 2019). Fundamentally, the non-performing loan ratio, Provision for loan losses ratio, cost to asset ratio, and credit to deposit ratio are the four elements of non-performing loans (IMF, 2021).

ECB (2020) reported that the major determinants of nonperforming loans among various financial institutions across various countries are joblessness, income tax as percentage of GDP, Budget deficits and surpluses in the government and government debt as a proportion of GDP, inflation, the production gap and GDP growth. The general effects of NPLs have been found to be negative. According to Angelini (2018) nonperforming loans are significant concerns for the financial sector since they impair MFB profitability, and is frequently portrayed as restricting MFBs from lending more to firms and individuals, hence slowing economic development. The amount of nonperforming loans in a financial organization also impacts how long it may stay in business. According to studies, the amount of nonperforming loans one of the primary factors in a financial institution's financial success (Kereta, 2019). As a result, it is clear that nonperforming loans are critical in defining the degree of financial achievement that financial institutions may achieve.

According to literature non-performing loans characteristics are size of non-performing loan, the average lifespan of a non-performing loan, cost per loan asset, loan deposit ratio and collateral which forms this study. The proportion of nonperforming loans in a bank's loan portfolio relative to all existing loans is known as the nonperforming loan magnitude. The NPL ratio assesses a bank's potential to recover loan repayments. In this study, it was measured using Gross NPL against total outstanding loan book value.

The time it takes a credit facility to progress by the use of various risk categorization bands, like ordinary, watch, substandard, questionable, and loss, defines the length of time a nonperforming debt. Days past due/days in NPL following reorganization was used to measure it in this study. The value per loan asset is the estimated cost per loan issued to a client. It was calculated in this study by dividing total operational costs by total loan amounts.

Collateral worth is one of the most essential elements that lenders look at when assessing secured loan applications. In a secured loan, if the borrower fails to repay the debt, the lender

has the power to seize control of a specified asset. The amount of a secured loan compared to the collateral value, or loan-to-value ratio, was used to quantify collateral in this study (LTV).

Profitability is a good measure of financial performance. Malik (2011) indicates that profitability is an index and measure of efficiency, an efficiency indicator that is widely used by a firm's management. Profitability serves as a key objective of financial management which primarily seeks to maximize shareholders wealth. Additionally, profitability is a primary determining factor as pertains to performance. Mwangi and Murigu (2015) contend that without profits, a firm would be unable to draw sufficient external capital to achieve its goals and survive in globalized environment which is constantly changing rigorously competitive.

Financial performance of an organization is affected by NPLs because loans are the main investment of an organization that is needed to generate revenue. If customers' debts are not repaid in full, including interest, it demonstrates that greater resources will be required to provide for NPLs and the organization will incur additional costs for financing recovery efforts (Oloo, 2014). A number of scholars have documented literature linking non-performing loans to microfinance banks performance. For instance, according to Harelimana (2017), NPLs affect future stream of profits since they hinder the interest earnings and further necessitates an opportunity forgone of venturing in some profit-making schemes. Similarly, Kavata (2016) noted NPLs have an element of making a choice to forego the greatest option of non-interest-bearing loans that could have been put to better use elsewhere and give a nice income. Again, Harelimana (2017) further noted NPLs are time consuming and involve efforts of the bank management hence banks have to accommodate and cope with.

In addition, Mombo (2013) claims that loan loss provision and expenditures per loan asset eat up a considerable percentage of microfinance organizations' income, causing their financial performance to lag. An organization's level of NPLs affects how profitable that business will be since it accounts for the largest share of the variation in the income of the financial organizations, (Lelgo & Obwogi, 2018). According to Warue (2013), there is a contradiction between NPLs and an organization's financial performance. The researcher goes on to say that when NPLs are high in an organization, that organization's financial performance is low, and when NPLs are low in an organization, that organization's financial performance is high. Similarly Kavata (2016) stated that an increase in NPLs directly hurts banks' profitability because it lowers returns on assets (ROA).

Statement of the Problem

Both statistical and empirical evidence show that there is a problem with financial performance of MFB's. Since 2015, the statistical proof of ROA for these MFBs has shown diminishing tendencies. For example, the ROA of MFBs were 1% correspondingly in 2015. However, this resulted in a drop in ROA in 2016 of -0.5%. ROA further decreased to -0.9% in 2017. They considerably enhanced to ROA of -0.4% in 2019 before sharply decreasing to ROA of -3% in 2020. It got worse in 2018 when ROA was -2% (CBK, 2021). Based on the financial performance of MFBs, which continues to plummet and fluctuate unpredictably despite MFBs adopting measures to gap NPLs, there is a paradox to this, which this study was seeking to investigate as to whether NPL characteristics have a substantial effect on MFBs' financial performance or not.

On the other hand, majority of empirical research on the link between nonperforming loans and financial performance were carried out with respect to banks. In addition, few studies done on Microfinance banks offered conflicting results, which have a number of research gaps and

thus cannot be generalizable. For instance, Abel (2018) explored the influence of non-performing loans on bank profitability and found that non- performing loans are shown to be negatively connected with commercial bank profitability in Tanzania, according to the study. Due to this, there were both conceptual and contextual holes in Kenya's MFBs, which the current study aims to remedy by adding size, age, collateral, Loan to deposit ratio and cost per loan. Muniappan (2020) investigated the impact of Nepalese conventional banks' non-performing loans (NPLs) and found that ROA, Bank Size, GDP, and Inflation all have a substantial impact on NP. However CAR has no impact on bank NPL. Therefore, there existed conceptual, contextual and methodological gaps that this is seeking fill by applying experimental research design and incorporating age collateral and cost per loan variables in MFBs in Kenya. Kirui (2018) agrees that nonperforming loans have a detrimental effect on return on asset, confirming that nonperforming loans have a detrimental effect on the earnings of Kenyan commercial intuitions.

Based on the preceding statistical and empirical evidence, there is a problem that warrant a further research because of mixed findings from various scholars, both conceptual, contextual and methodological gaps as well as declining financial performance. Consequently, this study was seeking to ascertain the effect of nonperforming loan characteristics on financial performance of MFBs, Kenya.

Research Objectives

i. To assess the influence of cost per loan asset of non-performing loan on financial performance of Microfinance banks in Kenya.
ii. To establish the influence of collateral on financial performance of Microfinance banks in Kenya.

LITERATURE REVIEW

Theoretical Review

Efficiency Structure Theory

This theory was originated by Demsetz (1973). The theory states that increase in managerial efficiency, reduces the amount of firms' credit risk and better management and practices leads to higher profits and better performance leads to higher concentration in the share market. The firm uses a specific level of efficiency in their organizational structure to manage the risk related to performance and maximize income from organizational activities. Operational effectiveness thereby contributes to businesses' reduced risk and maximum output. The theory's key characteristics are X-efficiency and scale efficiency. According to the efficient-structure hypothesis, better profits come first in terms of time, then, heightened attentiveness. Alternatively, profitability increases as a result of efficient performance and operations, which results to a higher market share and exceptionality.

Microfinance institutions' operational and management efficiency structure improves their financial performance by lowering the rate at which market performance risks have an impact on these banks. The theory's X-efficiency suggests that reducing operating costs for businesses will improve profit optimization. Additionally, the scale-efficiency concept describes how select microfinance institutions operate with an advantage over a sizable number of other banks, mostly because of lower operating costs. In this instance, microfinance institutions with lower operational costs are more effective than those with greater costs, resulting in maximum earnings (Ngungu & Abdul, 2020). According to Abdo and Onour (2020), the managerial effectiveness of microfinance banks reduces operating costs. However, banks with more efficiency manage their resources more effectively for the best results.

This theory was relevant to this study as it contributed to this study by demonstrating how microfinance banks that employ operational efficiency will utilize and manage well their resources for optimum financial performance in Kenya. Therefore, the theory anchored the study as the main theory as it is linked to the financial performance of MFBs which is the problem variable to the study.

The Theory of Moral Hazard and unobservable behavior

J. A. Mirrless coined the terms "moral hazard" and "unobservable behaviour" in 1999. Moral hazard is the risk that a transaction's side may provide false information regarding its assets, commitments, or borrowing power, or will be encouraged to take extraordinary risks in an attempt to capitalize just before contract expires (Wolfson, 2002). In most circumstances, a party to the agreement doesn't sign into the contract in good conscience, and as a result, incorrect information regarding its assets, commitments, or creditworthiness is provided. Asymmetric information, which differentiates between good and bad debtors challenging, is regarded to be the root of moral hazard concerns. Moral hazard has also had a tremendous buildup of NPLs.

Moral hazard issues in financial institutions have been visible at various phases of the current financial crises, hence the theory is pertinent to the research. Debtors and creditors have a tendency to keep important details about the loan and borrowing arrangement hidden (Freeman et al (2004). However, under current macroeconomic theory, economic growth's speed is critically reliant on the competence of financial institutions. Financial systems rely on reliable information on debtors and the projects for which funds are being used. Despite the idea that fewer predictable occurrences can result in NPLs, they have suggested that moral hazards coming from extensive government assurances may result in a loan default (Capron, 2013).

It is plausible that MFBs with inadequate capital, similar to other conventional financial organizations, may be influenced by moral hazard considerations by raising the risk of their credit facility, which is consistent with previous claims about moral hazard. As a result of the above, the overall number of non-performing loans will almost probably increase drastically. Buchholz, Andreas (2014). Microfinance banks that take greater risks, such as excessive lending, eventually lose money, according to another study. Higher equity-to-assets ratios result in reduced NPLs, which is similar to moral hazard. Since moral hazard considerations like Low equity has a tendency to deteriorate NPLs, microfinance institutions and other financial institutions should stay away from them in order to minimize NPL losses.

As a result, this theory was relevant as it adds to the study by anchoring and connecting to the collateral variable, and it is important to the study since both creditors and debtors frequently obscure critical information about lending and borrowing agreements, increasing the likelihood of nonperforming loans in MFBs.

Empirical Review

Cost per loan asset and financial performance

According to Abel (2014), when a bank realizes that a loan is non-performing, they normally try to collect the money owing to them. He claims that banks have a vital role in the distribution and allocation of people's savings so that they can be put to the greatest profitable use. The bank's intermediate role is critical for economic growth since it boosts the economy's overall performance and effectiveness. According to the report, if a bank's disposal of nonperforming loans continues to outperform profits, the bank's share capital is diminished, and their ability to take risks is reduced, increasing the difficulty of engaging in risky initiatives and develop hypothetically profitable enterprises. Non-performing loans can erode a bank's profitability in

two ways, according to Abel (2014). The first is that non-performing loans have substantial disposal costs, such as establishing credit loss reserves and delaying the eventual disposal of non-performing loans, which may result in significant losses if the fundamental asset's collateral value falls. Second, retaining nonperforming loans for a longer duration without getting rid of them accrues charges in addition to the amount of non-performing loans dispose of. To put it another way, continual of maintaining nonperforming loans, or assets that do not drive the demand cause banks to lose profits that they would have earned if the loans had been collected.

Kamunge (2013) investigated the impact of interest rate spreads on the accumulation of nonperforming loans in financial institutions Kenya, using an explanatory research methodology to see if a causal connection interest rate differential and the level of nonperforming loans existed. The survey included all 43 financial institutions. Secondary data sources were employed to acquire information that was useful in achieving the study's goal. The secondary data is obtained from CBK macroeconomic indicator oversight reports and KNBS reports. The data was gleaned and entered into SPSS to generate tables and descriptive statistics. According to the ANOVA results, the independent variable; variables that account for subpar loans, difficulties managing credit, and loan portfolio success were efficient analysts on the quantity of NPL. The results showed that the level of nonperforming loans was statistically significantly affected by the log interest rate spread and log debt collection cost. Furthermore, the NPL level changes significantly and negatively with a unit change in the log debt collection cost, whereas it changes positively with a unit change in the log interest rate spread variable. It suggests that banks be instructed to perform regular credit staff exercises. It is proposed that Kenya's Central Bank, that is also the Regulatory Authority for financial institutions, impose strict interest rate limits on commercial banks. Credit risk management in banks should be efficient and productive. It is suggested that commercial banks employ credit reference bureau services to determine customers' credit histories in order to reduce problematic loans. As a result, the present research closed the conceptual gap by including more factors.

Chege (2014) did a research on the impact of nonperforming loans in Kenyan commercial banks, stating that loaning money is the complex purpose of commercial banks, and this component of banking has remained unchanged to this day. Nevertheless, loan defaults amongst commercial banks continue to be significant, putting the banks in financial difficulties and perhaps causing them to fail. The cost of credit given by banks is implicitly costed by interest rates, which has a knock-on effect on loan defaulters. The study utilized a descriptive research approach to look at all of Kenya's 43 licensed commercial banks. For a five-year period, secondary data on interest rates paid by banks, total risk weighted assets non- interest costs, and total income was gathered (2009-2013). Multiple linear regression analysis was employed to evaluate the data gathered, which included both descriptive and inferential statistics. Tables and figures were utilized to report the findings. The outcome of the research showed there are substantial negative and positive linear correlations amongst a bank's NPL, interest rate spread, and total assets. Additionally, there were positively significant and phenomenal linear connections among the bank's NPL, cost income ratio, and capital adequacy. As per the findings, there is a clear link between commercial banks' financial performance and interest rates. According to the report, banks should use productive and convenient credit risk management to guarantee that loans are aligned with repayment capabilities and that interest rate spreads and other unavoidable expenses are kept to a minimum in order to prevent loan default. Consequently, there were methodological and contextual gaps, which the current study aimed to remedy using panel regression analysis and a focus on overall operating costs among microfinance institutions.

Bhattarai (2016) looked at the impact of nonperforming loans on commercial bank profitability in Nepal from 2010 to 2015. The NPLR and cost per loan asset ratio were used to measure NPL, while ROA and ROE were utilized to assess performance, and firm size, GDP growth rate, and consumer price index were employed as control variables. The study found that NPLs had an adverse effect evaluated by ROA, but, a positive effect as evaluated by shareholders returns-ROE, using panel data estimate methodologies. Furthermore, as assessed by ROA, cost of each loan asset showed a substantial positive relationship with bank earnings. However, because this study was conducted in a Nepalese perspective characterized by a diverse regulatory, ideological, and economic environment, the current study utilized ROA to assess MFB performance in Kenya, as well as other variables such as size, age, and LDR to assess their influence on the financial performance of Kenyan MFBs.

Sheefani (2016) investigated the impact of interest rate spreads on non-performing loans in Namibia, using unit root, co-integration, and error correction model techniques on quarterly data from 2001 to 2014. From the findings, interest rate spread has a beneficial and statistically significant on NPL in Namibia. In addition, the study found that inflation had a favorable, but not statistically significant, influence on Namibian NPL. As a consequence of beneficial influence of interest rate spread, an expansion of the interest margin has the potential to raise the likelihood of clients defaulting on loans.

Pondel (2012) explored on impact of credit risk management on financial performance of 31 financial institutions for about 11 years (2001-2011) in Nepal. Various parameters including default rate, cost per loan assets and capital adequacy ratio measured the credit risk whereas profitability was proxied by ROA. Using data techniques, the study showed negative but statistically insignificant association between CLA ratio and bank achievement measured by ROA. However, default rate was the most important determinant of bank performance and had an inverse impact. The current study aimed to fill the contextual gap by conducting effect of NPL son financial performance of MFBs. Panta (2018) explored the impact of non-performing loans on bank profitability from both a bank- specific and macroeconomic perspective. The study used secondary data of 7 joint ventures (2006 to2017) with a fixed effect panel model. Capital adequacy, net interest margin, bank size as assessed by total assets, and loan to deposit ratio are among the bank-specific indicators examined. Similarly, macroeconomic factors include GDP growth, price increases, and the Herfindahl-Hirschman metric that evaluates loan volume in the banking sector. According to the study the net interest margin (NIM) has a significantly positive relationship, whereas the bank size has a significantly negative correlation. The macroeconomic factors, on the other hand, are unrelated. Additionally, when the net interest rate margin, bank size, and non-performing loan are included as independent variables, the profitability shows a significant influence.

Kurawa and Garba (2014) examined the impact of credit risk management (CRM) on the competitiveness of Nigerian banking institutions from 2002 to 2011. The study's goal was to determine how much the default rate (DR), cost per loan asset (CLA), and capital adequacy ratio (CAR) influence profitability as determined by ROA. Using least square regression technique, the study findings established CRM as determined by default rate, cost per loan asset and capital adequacy ratios have significantly positive influence on profitability of Nigerian banks. Thus, the current study aimed to fill the contextual gap by utilizing cross sectional and time series data in contrast to pooled least regression model to ascertain the impact of NPLs on financial performance of MFBs in Kenya.

Collateral on financial performance

Serwadda (2018) examined how credit risk management affected the financial performance of 20 financial institutions in Uganda (2006-2015). ROA was utilized to assess the performance of the bank, while NPLs, LLP to total loans and growth in interest earnings measured credit risk. Using panel data estimation techniques, the study demonstrated that banks performance is inversely influenced by NPLs and that credit risk management impact on the performance of Ugandans banks. The current study filled the gap by incorporating other variables like size, age and LDR on their effect on financial performance of MFBs in Kenya.

Nguyen, Gan, and Hu (2015) explored the use of soft and hard data in bank lending choices to small and medium companies (SMEs) in Vietnam. The goal of the study was to see how different forms of information were used for loan approvals. Even though collateral-based lending was the most common approach and could be used in place of other lending technologies, the study found that in most cases, a combination of lending assessment metrics were used in the decision-making process. This indicates that the different information types used by Vietnamese banks for such decision-making are both complimentary and substitutive. The current study filled the gap by incorporating other variables like size, age and LDR on their effect on financial performance of MFBs in Kenya.

Karanja, Mwangi, and Nyakarimi (2014) examined the variables affecting access to capital for female entrepreneurs in Isiolo town. They performed a census of the six recognized financial institutions, the 18 management personnel, and the 20 female entrepreneurs employing a descriptive survey methodology. They discovered that the collateral requirement and access to credit services had a strong correlation. It was also discovered that 80 percent of the organizations analyzed requested conventional security, which hampered the expansion of many SMEs as they couldn't get enough loans to expand their businesses. The current study filled the gap by incorporating other variables like size, age and LDR on their effect on financial performance of MFBs in Kenya.

Ackah and Vuvor (2011) explored the difficulties that SMEs face in obtaining credit in Ghana and discovered that borrowers' failure to provide appropriate collateral for loans to banks, as required by banks, resulted in banks' refusal to give loans to SME borrowers, limiting SMEs' development. 60% of the 68 respondents claimed they were unable to obtain bank loans or credit as they could not provide the necessary security, and even if they could, the security they could provide was insufficient. The current study filled the gap by incorporating other variables like size, age and LDR on their effect on financial performance of MFBs in Kenya.

Conceptual Framework

According to Naomi & Nagib (2017), a conceptual framework is a graphic depiction that illustrates the connection between dependent and independent variables. Mugenda & Mugenda (2009) assert that a conceptual framework is a clear portrayal of the occurrence under investigation that is complemented with an illustration or other visual depiction of the study's main aspects. The connection between the dependent and independent variables is therefore depicted schematically and aesthetically in the conceptual framework. Cost, and collateral of nonperforming loans are the independent variables in this study, while the financial performance of microfinance banks in Kenya is the dependent variable, as shown in figure 1

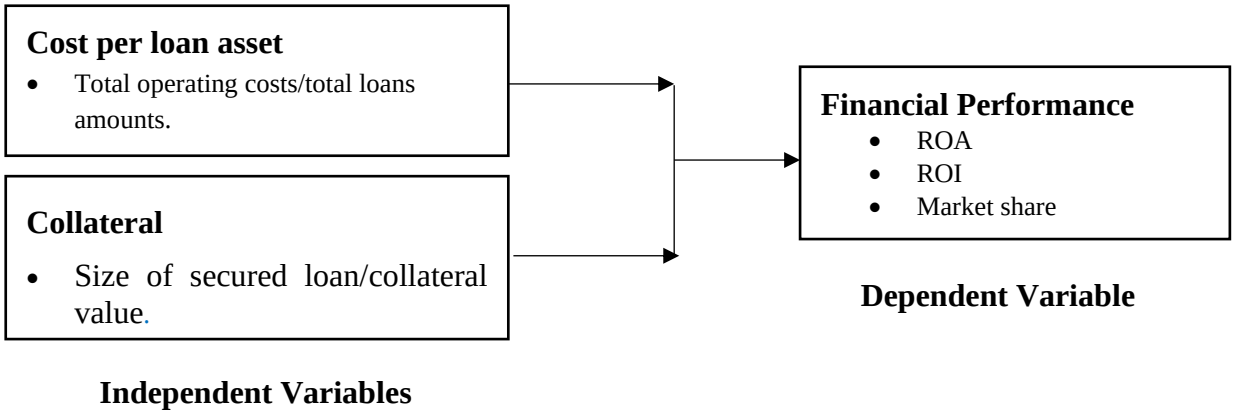

Figure 1: ***Conceptual Framework***

Source: Researcher (2022)

RESEARCH METHODOLOGY

The study utilized non-experimental research design that depended on statistical analysis to prove or disprove a theory. All operating and registered microfinance banks as of December 31, 2020, was included in the research population. Based on this, 13 microfinance banks that were authorized and open throughout the research period were considered. Given the limited population, the researcher did not employ sampling; instead, the study was conducted using data from a census, which included all 13 MFBs. The study used secondary data which was collected using a secondary data documentation guide to retrieve the necessary secondary data from the audited MFB's published financial statements for the years 2016 – 2020. These statements were gotten from the handbooks and website of CMA and specific MFB firm's websites. By concentrating on means and standard deviations, descriptive statistics was utilized to illustrate the patterns of the research variables throughout the course of the five-year study period. The degree and direction of the link between the independent and dependent variables were displayed using correlation analysis. Regression analysis, on the contrary, was employed to demonstrate the influence of the independent factors on the dependent variable. Software from STATA was utilized to help the panel regression analysis.

RESEARCH FINDINGS AND DISCUSSIONS

Descriptive Analysis

Descriptive statistics were outlined in this section, including means, standard deviation, minimum and maximum values.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	66	-.0156061	.0385558	-.12	.03
Cost	66	.3013636	.1233368	.12	.64
Collateral	66	410.0459	649.7924	.85	1837.97

Source: Research findings (2022)

Table 1 above illustrated the descriptive statistics for the variables utilized in the study. Inconsistent performance over the given time was indicated by ROA, which had a mean of -0.016 and a standard deviation of 0.039. A low ROA indicated ineffective utilization of the company's resources to increase revenue. On the other hand, cost mean of 0.301 and a standard deviation of 0.123, the measurement period's cost fluctuation was moderate. Average collateral had a mean of 410.0446 and a standard deviation of 649.792, which indicated that collateral reasonably fluctuated throughout the course of the referenced period.

Correlation Analysis

The correlation between the dependent and independent variables was established to clarify the type of connection. Pearson's simple correlation analysis was utilized to determine the association between the ROA of MFBs and the study's independent variables (cost, and collateral).

Table 2: ***Correlation Analysis.***

	ROA	**Cost**	**Collateral**
ROA	1.000000	-0.780645	-0.516752
Cost	-0.780645	1.000000	0.377408
Collateral	-0.516752	0.377408	1.000000

Source: Research findings (2022)

Table 2 displayed the results of the correlation analysis. Cost per loan asset had a negative significant connection with ROA as demonstrated above (r= -0.7806, p= 0.000). This study was congruent with the findings of Pondel (2012) where cost per loan asset had a negative influence on financial performance. The research did not support the findings of Bhattarai (2016) and Kurawa and Garba (2014), who found that cost per loan asset positively affects financial performance.

As seen above, collateral showed a substantial negative association with ROA (r= -0.5168, p= 0.000), which was consistent with studies by Serwadda (2018) and Karanja, Mwangi, and Nyakarimi (2014) that found collateral to have a substantial negative link with financial performance.

Diagnostic Tests

Stationarity (Unit root) test

This study used the Augmented Dickey-Fuller (ADF) test to test for stationarity through null hypothesis that "there was unit root/data was not stationary." The first observation is never considered in the test because ADF is based on lags (t-1). Table 3 displays the ADF test findings.

Table 3*: Unit Root (Stationarity) test*

Augmented Dickey-Fuller test for unit root Interpolated Dickey- Fuller					Number of obs = 64	
Test Statistics	1% critical Value	5% critical Value	10% Critical Value			
Z(t)	-6.202	-4.119	-3.486		-3.172	
Mackinnon approximate P-value for z (t) = 0.0000						
D.roa	Coef.	Std. Err.	t	P>(t)	(95% conf.	Interval)
roa						
L1.	-1.08787	.1754015	-6.20	0.000	-1.438725	-.7370146
LD.	.1447534	.1280581	1.13	0.263	-.1114009	.40090767
_trend	.0001256	.0001256	0.47	0.640	-.0004085	.0006597
_Cons	-.0217504	.0106968	-2.03	0.046	-.0431472	-.0003536

Source: Research findings (2022)

The hypothesis that "there was unit root" was rejected as a result of the findings, which showed that the determined test statistic was lower than the critical value (-6.202-3.486) and the disparity exhibited statistical significance (p=0.00000.05) at 95% confidence interval. This led to the conclusion that the data utilized in this study was stationary and, as a result, statistically valid for regression models. The validity of the model was further supported by the fact that the coefficient of lag 1 (L1) was negative (-1.08787).

Model specification test

The Hausman specification test was utilized in the study to determine which model would be used to analyze panel regression. The alternative hypothesis was the fixed effect model, whereas the null hypothesis was the accepted model which was the random effect. When the p value was less than 0.05, the null hypothesis was rejected; as a result, the fixed effect model was used; when the p value is larger than 0.05, the null hypothesis would not be rejected; as a result, the random effect model was applied.

Table 4: *Hausman test*

	Coefficients			
(b) Fe	(B) Re	(b-B) Difference	sqrt(diag(V_b-v_B)) S.E	
Cost	-.2576761	-.2156726	-0.420034	0.640
Collateral	-.0000128	-.0000159	3.12e-06	0.046

B = consistent under Ho and ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficient not systematic
Chi2(4) = (b-B)'((v-b-B)^(-1))(b-B)
=3.36
Prob>chi2 = 0.4989

Source: Research findings (2022)

According to the above data, the Hausman test's chi-square value was 3.36, and its Prob>chi2 value was 0.4989, which was greater than 0.05, meaning that the null hypothesis was not rejected. A panel regression was then conducted using a random effect model.

Normality Test

In contrast to the non-directional hypothesis, this upheld the notion that data are regularly distributed, Green (2008) claimed that the null hypothesis information was not often disseminated. While a p value more than 0.05 indicated that the data was normal, one less than 0.05 indicated that the data were not normal. The Doonik Hanson test was utilized for the normality test as displayed in table 5.

Table 5: ***Normality Test***

Skewness/kurtosis test for normality					
			----------joint ----------		
Variable	**Obs.**	**Pr.(Skewness)**	**Pr.(Kurtosis)**	**adj. .chi2(2)**	**Prob.>chi2**
ROA	66	0.0000	0.0065	21.31	0.0510
Cost	66	0.0005	0.0089	14.92	0.0606
Collateral	66	0.0004	0.5385	10.92	0.0843

Source: Research findings (2022)

Table 5 above illustrates that each variable's p value was above 0.05 (p > 0.05), indicating that the data were normally distributed.

Panel Regression Analysis

The study's primary objective to ascertain the impact nonperforming loans on Kenyan MFBs' financial performance. Size, age, cost, LDR, and collateral were independent variables in the study, whereas financial performance (ROA) was the dependent variable. A panel regression analysis was performed, and the outcomes are exhibited in Table 5.

Table 6: ***Random Effect Panel Regression Model Summary***

Random-effects GLS regression				Number of obs = 66	
Group variable: company				Number of groups = 13	
R-sq: within = 0.6219				obs per group: min = 5	
Between = 0.8836				avg = 5.1	
Overal = 0.6777				max = 6	
				Wald chi2 (5) = 126.17	
Corr (u_i, x) = 0 (assumed)				prob > chi2 = 0.0000	
roa	coef	Std. Err	z	P>(z)	(95% conf . Interval)
Cost	-.2156726	.0327234	-6.59	0.000	-.2798092 -.151536
Collateral	-.0000159	5.52e-06	-2.89	0.004	-.0000267 -5.11e-06
Cons	.0360717	.016226	2.22	0.026	.0042694 .067874
Sigma_u	0				
Sigma_e	.02360592				
rho	0 (fraction of variance due to u_i)				

Source: Research findings (2022)

The model was significant and most appropriate for the regression analysis since the Prob > chi2 =0.0000 was not larger than 0.05. The estimates of the random effect panel regression coefficients, including intercept and significance levels, were summarized in Table 5. The estimations from the regression analysis were the coefficients, which explained the variance in the dependent variable attributed to the independent variables (Martin, 2017).

Changes in non-performing loans, according to the estimated coefficient of determination R squared of 0.6777, account for 67.77% of variances in ROA of MFBs (non-performing loans being measured by size, age, cost, LDR and collateral). Other factors outside the model were responsible for the 32.23% explanation. The results demonstrated that the panel regression model was adequately specified and that independent variables effected the financial performance of MFBs were not solely due to chance.

Using random effect panel regression, the financial performance of MFBs in Kenya was regressed against the independent variables of cost, and collateral. Rewriting equation in the manner shown in equation was made possible by the regression analysis's findings (4.1).

$Y= 0.036072 – 0.215\ 73x_{3it}– 0.000016 + \epsilon_{it}$ ...equation 4.1

Where: Y= ROA

X_{3it}=Cost per loan asset; X_{5it}=Collateral; ϵ_{it} = Probable Error

The panel regression model's coefficient findings showed that holding cost, and collateral constants kept at zero, ROA equals 0.036072 at a significance level of 0.026, making the continual statistical significance because the p-value was below the crucial value of 0.05.

Cost had a statistically significant adverse impact on Kenyan MFBs' return on assets (ROA) (B=-0.215673, p=0.000). According to this, a 1% increase in liquidity caused a 21.5673% fall in the ROA of MFBs. This study's conclusions were in line with those of Pondel (2012), who found that cost per loan asset had a detrimental effect on financial performance. Bhattarai (2016) and Kurawa and Garba (2014), who found that cost per loan asset had a favorable impact on financial performance, disagreed with the study's findings.

In Kenya, collateral had a statistically significant detrimental impact on MFBs' return on assets (ROA) (B=0.000016, p=0.004). It stated that a 1% increase in collateral resulted in a 0.0016% increase in MFBs' ROA. This study's concluded that collateral had a major impact on financial performance and were consistent with those of Serwadda (2018) and Karanja, Mwangi, and Nyakarimi (2014).

Hypotheses Testing

The table 7 below provided an overview of the hypothesis tested.

Table 7: ***Hypothesis Tests Results***

Variable	Objective	Hypothesis	Rule	P-Value	Null hypothesis status	Comment
Cost	To ascertain the impact of cost per loan asset on the Kenyan MFBs financial	$H_{03:}$ Price per loan Assets from nonperforming loans has no discernible impact on the financial	Reject H_{03} if p value < 0.05	0.000< 0.05	Rejected	Cost significantly influenced how well MFBs function
Collateral	To assess how collateral impacts the financial performance of Kenyan MFBs.	$H_{05:}$ The performance of Kenya's MFBs is not significantly impacted by the collateral for nonperforming loans.	Reject H_{04} if p value < 0.05	0.004< 0.05	Rejected	Collateral had a big impact on how well Kenya's MFBs do financially.

Source: Research findings (2022)

Conclusions of the Study

The study discovered that Kenyan microfinance's financial performance was significantly negatively impacted by the cost per loan asset. This implied that the MFBs were unable to carefully screen the loans being provided to clients. Because MFBs with well-chosen loans were less likely to be in financial difficulty, this study suggested that cost per loan asset be a driving factor to NPL. The study drew the conclusion that non-performing loans were an indicator of cost per loan asset, which could considerably lower the financial performance of MFBs.

The study discovered that Kenyan microfinance's financial performance was significantly negatively impacted by collateral. This implied that the MFBs were unable to appraise the associated collateral to its market value before taking loans. Considering these MFBs with loans advanced after attaching collateral equal to the loan being advanced to customers which were less likely to be in financial difficulty, this study advised that collateral should be a driving element to NPL. This result led the study's authors to draw the conclusion that collateral could severely harm microfinance banks' financial performance as an indicator of nonperforming loans.

Recommendations

The study found that cost per loan asset had a substantial detrimental impact on financial performance of MFBs in Kenya. The study recommends that managers of MFBs ought to avoid being lenient when advancing loans instead ensure that they use tight strategies that would ensure optimal loan amount being advanced to avoid default. Hence, recommends maximum vetting and screening of loan customers before loan advancement.

The study found that collateral had a substantial detrimental impact on financial performance of MFBs in Kenya. The study recommends that managers of microfinance banks should ensure that the collateral value being attached to the loan is commensurate to the loan being advanced by the microfinance bank. This will confirm certainty of loan repayment by customers.

Areas for Further Studies

This study was done in microfinance banks sector on the non-performing loans that accounted for 67.77% of the variation in financial performance of MFB's where the present

study was conducted leaving 32.23% unaccounted for. As a result, further studies can consider other jurisdiction in the financial sector like commercial banks, listed commercial banks and deposit taking SACCO's. It is necessary to do research on how non-performing loans affect the financial performance of financial institutions operating in a related sector in Kenya and to compare the findings. Similar cases can be made using comparable data from many nations and other financial performance indicators, such as return on equity and investment. Other researchers should take into consideration using primary data to analyze the association between non-performing loans and financial performance since the study employed secondary data.

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