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Abstract

Between the years 2018 to 2021, the bad debt levels of MFIs in Nairobi City County, Kenya have been increasing by 18% annually. The increasing bad debt levels have negatively affected MFIs' operations and their profits to the extent of some being declared bankrupt. The general objective of the study is to establish the effect of credit management practices on bad debt levels of microfinance institutions in Nairobi City County, Kenya. The specific objectives of the study include to evaluate the effect of credit risk identification on bad debt levels of microfinance institutions in Nairobi City County, Kenya, to assess the effect of credit risk monitoring on bad debt levels of microfinance institutions in Nairobi City County, Kenya, to assess the effect of collection policies on the bad debt levels of microfinance institutions in Kenya, to establish the effects of credit appraisal policies on the bad debt levels of microfinance institutions in Nairobi City County, Kenya, and to determine the effect of CBK regulations on bad debt levels of microfinance institutions in Nairobi City County, Kenya. The theories underpinning this study include; modern portfolio theory (MPT), capital asset pricing model (CAPM), credit risk theory and PRISM model of credit risk management. The study employed a descriptive research design, targeting 54 active microfinance institutions in Nairobi City County, Kenya, with a sample size of 15 selected through stratified random sampling. Primary data (credit management practices) and secondary data (bad debt levels) were collected using data collection sheets and questionnaires. These were administered to credit managers, finance analysts, accountants, and debt portfolio assistants via the drop and pick technique. Data was analyzed using SPSS version 29, incorporating descriptive statistics, diagnostic tests (normality, multicollinearity, heteroscedasticity, Hausman test), correlation analysis, regression analysis, and hypothesis testing. The study found that despite implementing credit management practices, microfinance institutions struggled to curb rising bad debt levels due to lenient loan issuance and collection policies. It concluded that instant loans, straightforward application processes, and weak credit monitoring have contributed to high default rates. The study recommends that microfinance institutions adopt AI and big data analytics for improved credit management and establish a shared credit identification system to reduce multiple borrowing and defaults.

Keywords: Credit Management Practices, Bad Debt, Microfinance Institutions, Nairobi City County, Kenya

1.1 Background to the Study

Credit management is one of the notable challenges that majority of the financial institutions are facing in this technological era. Nakulenge (2020) say that the greatest risk that most of the microfinance institutions are facing is high loan default rates occasioned by lending money but not receiving back. Demands are constantly growing in today's world, but the resources available to meet those demands are limited; therefore, borrowing money can be used to fund a variety of corporate, professional, and personal needs. Credit is typically described as a loan provided to customers with or without a guarantee or collateral for personal or business purposes, with the intention that the loan will earn interest to financial institution offering them. Companies will only benefit from credit, according to Akinleye and Olarewaju (2019), if the profit to be gained is more than the cost of receivables. According to Aliija and Muhangi (2017) refers to a mechanism where buyers are allowed to be in possession of goods or services without immediate payment but instead given a contractual obligation to pay later. For microfinance institutions, not receiving the money lent to borrowers at the agreed time will result in having high bad debts levels.

The increase in bad debt levels among microfinance institutions in Colombia made the government to come up with new credit methodological approaches aimed at reducing high debt levels. In partnership with Non-Government Organizations (NGO), the fight against the increasing bad debt levels became their main goal by developing and implementing sound credit management practices (Adusei, 2019). In regards to this, a Master Plan for Credit for the Poor was formulated by the Colombian Presidential Task Force through various consultative meetings. Since 2019, the microfinance sector in Colombia has grown rapidly wherein the number of borrowers has increased while at the same time high bad debt levels have increased. Many households and entrepreneurs had access to financial services in microfinance institutions by 2017 and are continuously being recognized in present time despite the probability of defaulting with the loans remaining high in the country.

In 2019, the fastest growth in bad debts was recorded in Nigeria among 16 microfinance institutions. The growth not only had an effect on wholesale microfinance institutions that account for 83% of the total microfinance institutions in Nigeria but also to the retail microfinance institutions that make only 3% of the total microfinance institutions in the country. According to a survey result that was released by the African Development Bank (ADB), it showed that 9% of microfinance firms in Nigeria had discontinued their activities due to the rise in bad debts, 21% chose to close voluntarily and 7% closed without any signs of reopening as of November 2020 due to the surge in bad debts levels (Anounye, 2020). Moreover, the impact of high bad debts level is more serious on microfinance institutions resulting into inadequate funds to help the organizations run their daily operations.

The increase in bad debt levels witnessed among microfinance institutions in Kenya between 2018 and 2021 have resulted into some microfinance institutions undergoing through financial distress and bankruptcy leading to cash shortfalls for business operations and permanently stopping their operations. During the Covid-19 pandemic several changes were instituted by the CBK to ensure the financial and operational sustainability of the microfinance institutions in Kenya (Agasha et al., 2020). A 2020 survey conducted by the CGPA concluded that 79 percent of the Kenyan microfinance institutions are currently undergoing financial distress occasioned by high debt levels with approximately two-thirds of them restructuring or issuing moratoria on the outstanding loans deemed irrecoverable. This has resulted into an increasing trend on the number of debt levels among the microfinance institutions where loans with more 30 days due date increased to 40 percent compared to the same over the last ten years (Aidoo

& Mensah, 2018). Therefore, sound credit management practices are necessary to reduce high bad debt levels in such scenario.

1.2. Statement of the Problem

Microfinance institutions in Kenya play a crucial role in contributing towards the growth and development of the country's economy. According to Wondirad (2020) by MFIs providing financial services to small businesses and entrepreneurs, they highly contribute to poverty alleviation, job creation, and economic growth. By supporting micro-entrepreneurs and small businesses microfinance institutions create employment opportunities. These businesses, in turn, generate employment opportunities within the societies in which they operate. The employment impact according to Cozarenco, Hartarska and Szafarz, (2022) cannot only be felt in the direct employment opportunities in the microfinance industry but also in the broader economy as small businesses grow and expand to hire more workers. According to the Kenya National Bureau of Statistics (KNBS), of the business and personal loans disbursed by the financial institutions in Kenya in 2022 and 2023 while 84.3 percent were from microfinance institutions, contributing 12.8 percent of jobs directly and indirectly and 0.97 percent of the Kenya's GDP. Another report by the Kenya Institute of Public Policy Research and Analysis (2022) placed MFIs as the most sort out lender by 89 percent of Kenyans in rural and urban areas. MFIs have created over 0.5 million jobs in Kenya between 2019 and 2023 signifying the contribution of MFIs to Kenyan economy. Nair and Njolomode (2020) argue that MFIs is a game change in ensuring that Kenya closes the financial inclusion and literacy gap that it has been experiencing over the years through the provision of timely and affordable loans.

According to the MFIs quarterly financial report there have been increases in loan's default rate from 1.58 percent in 2016 to 23.7 percent in 2021. In 2016, 2,605 loans were written-off by microfinance institutions in Kenya translating to Sh.23 million and an increase of 0.185 percent to 1.58 percent in 2016 while of the 614,331 loans advanced by the 41 microfinance institutions accounts as at December 2017, 8,614 accounts valued sh.47.5 million were classified as bad debts translating to 4.53 percent. Besides, in 2018, 9,835 loans were written-off by microfinance institutions in Kenya translating to Sh.84.2 million and 8.1 percent. The increasing trend of bad debts levels hit the worst end between 2019 and 2020 with the microfinance institutions recording 176.3 million bad debts as at December 2019 which was 10,969 accounts translating to 12.6 percent. In 2020 of the 811,915 loans advanced by the 54 microfinance institutions, 11,201 accounts valued sh.215.91 million were classified as bad debts. This amounted to 18.9 percent of the total microfinance institution loan accounts and 6.5 percent of the total value of outstanding microfinance loans. In 2021 the largest number of bad debts written off was recorded where of the 911,814 loans advanced by the 54 microfinance institutions, 13,245 accounts valued sh.286.97 million were classified as bad debts. This amounted to 23.7 percent of the total microfinance institution loan accounts and 6.5 percent of the total value of outstanding microfinance loans.

Previous studies conducted on impacts of credit management practices and bad debt levels of microfinance institutions were carried in other countries such as Hungary, South, Africa, and Nigeria (Fekadu, 2021; Maseke & Swartz, 2021; Ayyegari et al., 2018; Agasha et al., 2020). The cultural and regulatory environments in Hungary, South Africa, and Nigeria differ significantly from those in Kenya. Cultural nuances and variations in regulatory frameworks can have a profound impact on credit management practices and bad debt levels. Besides, each country's microfinance sector has its own structure, players, and dynamics. What works well in one country may not be directly applicable to another due to differences in the size, scope, and maturity of the microfinance industry and technological infrastructure and adoption levels differ between countries. Studies conducted elsewhere may not capture the impact of

technological advancements or limitations on credit management practices in Kenya (Schoofs,2022). A study in Nairobi City County explored how cultural and regulatory factors unique to Kenya influence credit management.

1.3 Objectives of the Study

To investigate the effect of credit management practices on bad debts levels of MFIs in Kenya.

1.3.1 Specific Objectives

The following were the specific objectives the study was based on:

- i. To determine the effect of credit risk identification on bad debt levels of MFIs in Nairobi City County, Kenya.
- ii. To examine the effect of credit risk monitoring on the bad debt levels of MFIs in Nairobi City County, Kenya.
- iii. To determine the effect of credit collection policies on the bad debt levels of MFIs in Nairobi City County, Kenya.
- iv. To establish the effect of credit appraisal policies on the bad debt levels of MFIs in Nairobi City County, Kenya.
- v. To determine the moderating effect of CBK regulations on the relationship between credit management practices and bad debt levels of MFIs in Nairobi City County, Kenya.

2.0 Literature Review

2.2 Theoretical Literature Review

The main aim of theoretical review is to provide meanings of the concepts through various theories that have been developed in the field. It resulted into a sounder comprehension of the key concepts and aide in the acceptance and knowledge of the theories and models that relate to credit management practices and bad debt level. The theories underpinning this study include; capital asset pricing model (CAPM), modern portfolio theory (MPT), credit risk theory, PRISM model of credit risk management, and the anticipated Income theory.

2.2.1 Modern Portfolio Theory

The MPT was established in 1952 by Harry Markowitz. Modern Portfolio Theory argues that the optimal portfolio selection should be based on the trade-off between return and risks, prioritizing on the concept of diversification of portfolio as a risk minimizing strategy. In order to manage the interest rate exposure lenders such as microfinance institutions uses value at risk models. According to Tung, Anh and Hoi (2020) MPT is an advancement of the theory of diversification that advocates for the selection of assets within a portfolio that collectively has less risk than an individual asset within the same portfolio.

Markowitz developed the formula for estimating the portfolios variance which indicated the role of diversification of investments in decreasing the total portfolio risk and how to make it effective and diversify it properly. Some of the main assumptions in which the Markowitz model is based on include; first, at any risk levels, the investors prefer higher portfolio returns over lower returns or for a lower portion of expected return where they prefer lower risk than higher risks. Second, the inconsistency of the expected returns is one of the determinants of the level of the portfolio risks by the investors. Third, returns from the assets are normally distributed (Ugarte, Santos &Mauricio, 2018). Fourth, the investors are rational and will avoid all the unnecessary risks associated with the portfolio. Fifth, in all the unique situations presented to the investors they will always work to minimize risks and maximize returns in the short and long run basis.

According to Ssekiziyivu et al. (2018), since 2000 majority of the microfinance institutions have been effectively utilizing the MPT in evaluating the different market risks associated with loans advanced to their customers and how they affect the bad debt levels. Majority of the microfinance institutions are using the value at risk (VAR) and the earnings at risk (EAR) techniques to mitigate the financial risk exposure resulting from the high bad debts levels occasioned by factors such as poor credit and appraisal policies (Parwez & Patel, 2022). However, despite the application of these techniques by the microfinance institutions the default rates and the level of bad debts still remains on the rising trend, the application of the MPT has failed to mitigate the high debt levels of the microfinance institutions. This theory is relevant to this study because it helps in outlining the reasons why microfinance institutions expose themselves to high credit risks by choosing to continue offering credit to borrowers despite utilizing the available credit risk identification techniques hence high debt levels.

2.2.2 Capital Asset Pricing Model (CAPM)

Capital Asset Pricing Model was advanced in 1964 by William Sharpe as a result of the previous work on portfolio theory by Markowitz (1952). CAPM argues about a concise prediction on the strong relationship between expected returns on an assets and risk. This model is also fundamental in the prediction of the assets expected returns (ROA) not tradable. The model is based on the assumptions such as majority of the investors are interested on investments which are single-time period based, and need to fully utilize the assets expected utility. Second, the investors can loan and borrow a given amount at a particular market risk-free rate (Wangai & Mungai, 2019). Third, all the investors have same approximations of covariance and variance among the entire assets also known as homogenous expectations. Fourth, no taxes and transaction cost incurred and that the investors are real price takers and fifth, the amount of assets dealt in by the investors are fixed and specified. CAPM gives a clear framework to enable the forecasting, prediction, and monitoring of the returns and risks under equilibrium and the assets prices. CAPM also provide a relationship between systematic risks and expected returns for all the assets. The model provides a framework on how to measure and monitor the systematic risk and how it affects security values and the required returns of the assets (Hermes & Hudon, 2018). Investors will require to hold the assets if the risk is higher. The model is essential in linking the returns from the debts advanced to the borrowers to the credit risk monitoring techniques associated with them acting as a basis to reduce credit risks among the microfinance institutions in Nairobi City County, Kenya.

2.2.3 Credit Risk Theory

Credit Risk Theory was advanced in 1974 by Melton. He argued that risk of loss whether financial or otherwise results from the borrowers who are unable to pay their debts within the required time as agreed in the contractual terms. According to Melton (1974), accounts receivable is the credit on advancing products to an entity or an individual person on contractual terms that the payment will be made at a later date with or without interest (Beisland, Djan, Mersland & Randoy, 2021). In circumstances where the debtors are unable to repay their loans on the due date, then the lenders such as microfinance institutions are exposed to high debts levels occasioned by high credit risks and default rates. Although majority of the microfinance institutions have been facing credit risks such as high bad debt levels 18th century, very little emphasis has been put on the development of sound credit management practices to counter this challenge.

According to Khachatryan, Hartarska, and Grigoryan (2017), majority of the financial institutions before 1980s were used traditional methods to handle credits risks such as high bad debt levels which were dependent on the existing predicted historical data. However, to date,

there exists only three main substantive quantitative approaches of handling credit risks associated with the bad debts advanced to the customers by the microfinance institutions. The approaches include incomplete information approach, structural approach, and the reduced form appraisal. Melton (1974) further argued that high default rates by debtors can be attributed to the evolution and diffusion of different firm's assets. The models according to Abrar (2019) can be defined as structural models and are grounded on the foundation of different variables related to the specific issuers. The study adopted the structural theory in which the credit management practices such as credit appraisal techniques will represent crucial variables related to credit risk and bad debt levels of the microfinance institutions in Nairobi City County, Kenya.

2.2.4 PRISM Model of Credit Risk Management

The model was advanced by Morton Glantz in 2004. The PRISM Model argues about the significance of considering the components to come up with a better credit management strategy to avoid the creation of bad debts (Hansen, Huis & Lensink, 2021). The major assumption of the model include new debt increases the credit risk financial institutions are exposed to, sound and quality credit management practices depend on strong internal policies and not external policies such as government regulations, collateral guarantees and covenants provide external safeguards against credit risks but are not effective, and credit risk is the most notable type of risk that financial institutions are facing. This model often applies to banks that are engaged with providing loans (Lee & Huruta, 2022). First component in the PRISM model that needs to be considered is management which is the history of the borrower, intention, or purpose of availing loans to identify the ability of a customer to repay the borrowed money. Repayment focuses on the sources of income or profit of the borrower, the assets owned by the debtor to ensure the payments of availed loans (Shkodra, 2019). Safeguards pertains to something that will provide protection or assurance to creditors; it can be the stability of the financial statements of a business or its collaterals while the perspective is concerned with the risk and rewards of the implemented strategies that ensure the smooth operation of the business while enabling the borrowers to repay their loans.

Microfinance financial and operational stability is solely dependent on the sound credit management practices, and it improves profitability. However, bad credit management policies cause poor profitability and financial performance. High debt levels of the microfinance industry are always caused by inadequate recovery of the outstanding debts as they fail to meet their obligations (Thanh, Morales & Andreosso, 2020). The model is relevant to this study since it highlights the importance of considering the components to come up with better credit management practices to avoid and reduce the creation of high bad debts levels among the microfinance institutions in Nairobi City County, Kenya.

2.2.5 The Anticipated Income Theory

The theory was advanced by H.V. Prochnow in 1945. According to the anticipated income theory an entity can maintain high liquidity if its credit repayment is based on borrowers' income rather than collateral offered or the use made of the funds (Song & Song, 2023). Thus, when extending credit services to borrowers, this theory proposes that creditors should solely rely on the income of the debtors and the debt service requirements coverage. The main assumptions of the theory include despite the nature and size of the of the loan, the bank plans to recover the debt from the anticipated income of the borrower, a term loan should be collected within a period not exceeding one year, the theory also assumes that the bank will put short- and long-term restrictions on the financial activities of the borrowers while advancing the loan to enable future maximum collection (Mares & Queral, 2020). Other assumptions of the theory include that at the time of granting the loans and collection the banks will still put into

consideration the anticipated income of the borrower thus the collection of the debts outstanding solely rely on the future streams of income of the borrowers. The theory also argue that the credit will have a constant flow of funds to be used to meet other credit demands if the debtor's income is correctly anticipated by the creditors at the time of advancing the loan. This is crucial because the creditors are able to plan on the future cash flows depending on the income of the borrowers who are expected to repay within the specified period.

This theory encourages the need of extending credit collection period to ensure that the maximum income of the potential debtor is determined. It also encourages the need to conduct extensive credit scoring and approval to ensure that maximum and adequate information about the debtors is analyzed before extending the loans to them. This would be fundamental in improving the debt collection performance hence reducing high debt levels witnessed among microfinance institutions in Nairobi City County, Kenya.

2.3 Empirical Review

The empirical review is meant to understand the researches that have been conducted in the relation to the study in the past.

2.3.1 Credit Risk Identification and Bad Debt Levels

Bardhan et al. (2021) conducted a study on the impacts of credit risk identification on debt performance and recovery among selected microfinance in Eldoret Town, Kenya and the study found that credit principles have a strong relationship with debt performance and recovery. The study used multiple regression and descriptive design to determine the relationship between credit principles and bad debt performance and recovery among the selected microfinance institutions in Eldoret. The efficiency and effectiveness of debt performance and recovery is determined by the soundness of credit principles since flexible policies attract more people. The researchers also emphasize that microfinance institutions should put more emphasis on creating credit identification checks before adopting it to determine the risk involved when lending money to customers. Good credit risk identification techniques also help microfinance institutions to operate efficiently and effectively recover and control bad debts levels. The study does not explicitly outline the credit principles that influence bad debt levels. The current study outlines different credit risk identification techniques that influence bad debt levels among the microfinance institutions in Nairobi City County, Kenya.

Maitrust (2019) conducted an investigation on the credit risk identification challenges the 61 microfinance institutions in the country are facing. Semi-structured questionnaire and data analysis was conducted through percentages in the study. The study found that most of the microfinance firms were unable to effectively apply credit management practices such as collection policies and credit risk identification to improve performance of debt collection. The studies also argued that majority of the borrowers were unable to obtain debts from the microfinance institutions due to the asymmetric information which existed in higher extent than other financial institutions such as banks. It is difficult for microfinance institutions to receive crucial information about borrowers, due to the limited and uncertain information. One of the weaknesses of the study is that it focused on the contents of credit collection policy and credit risk identification but does not clearly link them to bad debt levels which is the main focus of the study hence a conceptual gap. It also displays methodology and contextual gap. The context is in the microfinance industry in Netherlands. The current study seeks to evaluate the relationship between bad debt levels and credit management practices.

2.3.2 Credit Risk Monitoring and Bad Debt Levels

Risal (2018) conducted a study on credit monitoring practices and debt levels among the selected microfinance institutions in Kenya, credit monitoring techniques play a fundamental

role in the reduction of bad debt levels among the microfinance institutions. The study applied both quantitative and qualitative methods. The study found that credit supervision is a technique used by majority of the Nairobi City County microfinance institutions to monitor and evaluate the bad debt levels. The number of customer visits by the credit collection officers determines loan repayment behaviors. However, regardless of whether the project was supervised or not, the researcher failed to detect and analyze existing and future dangers in any product or activity. The study does not provide a clear insight on how credit monitoring techniques are used to reduce the bad debt levels among Nairobi City microfinance institutions. The current study clearly outlines the relationship between credit monitoring techniques and bad debt levels.

Dorfleitner et al. (2020) in their study to analyze credit monitoring and bad debt levels in Bangladesh applied correlation analysis and found that credit monitoring practices is fundamental in reducing bad debt levels among the microfinance institutions. The study applied the descriptive research design and correlation analysis. The study established that microfinance institutions have the sole responsibility of collaborating with the businesses and individual debtors on the repayment obligations, change of terms of repayment periods, loan statements, and installment reminders among other crucial monitoring tools that the institutions deem necessary for the collection of loans to reduce bad debt levels. The borrower's position in the credit administration cycle, however, was not covered in the study. The borrower role in the credit administration cycle was not however covered in the study. The study is based in Bangladesh which has a different financial structure from the Kenyans and the context is also on the banking sector hence contextual gap. The current study emphasizes on the repayment obligations, change of terms of repayment period, and responsibility of collaborating with businesses and individual debtors to reduce bad debt levels of the microfinance institutions and is based in Kenya.

2.3.3 Credit Collection Policies and Bad Debt Levels

Snyder (2019) study in New York assessed the relationship between bad debt levels and average collection period among the microfinance institutions. A sample 23 microfinance institutions were used the study conducted between 2006 and 2009. The data was analyzed using descriptive and correlation analysis. The findings of the study were that there is a negative relationship between collection period and bad debt levels among the microfinance institutions in New York. According to the researcher bad debt levels among the microfinance institutions can be reduced through employing different collection policies and strategies to reduce the number of days that loan remains outstanding.

In another study conducted by Hussain et al. (2023) in Cameroon on credit management policies and practices adopted by the microfinance banks in that country and their major impacts on bad debt levels. The study found that microfinance institutions can reduce bad debt levels by adopting the right credit collection policy backed with technological advancements such as artificial intelligence. The study however failed to put into consideration the cost of adopting technological advancements in developing sound collection policies and the United States of America has very sophisticated financial institutions than Kenya hence contextual gap. The current study shows the impact of collection policies and technological advancements in the reduction of high bad debt levels among the Kenyan microfinance institutions.

2.3.4 Credit Appraisal and Bad Debt Levels

Sangwan and Nayak (2020) conducted research on the impact of credit appraisal on bad debts levels of 65 microfinance institutions in Hungary and data was collected using a questionnaire and data analysis through descriptive statistics (mean and standard deviation). The study employed descriptive research design. It was found that out that majority of the microfinance

institutions had a credit appraisal technique where the creation of mutual trust relationship with the customers is fundamental. Furthermore, the study found that credit appraisal techniques were liberal with new government regulations on sustainable bad debt thus did not limit borrowers from accessing different loans offered by microfinance institutions. The study was however based in Hungary which has a very advanced microfinance institutions compared to Kenya. The current study shows the impacts of credit appraisal techniques on bad debt levels among microfinance institutions and is based on the context of Kenyan microfinance industry.

2.3.5 Government (CBK) Regulations and Bad Debt Level

Carswell et al. (2021) conducted research on the impact of government regulations, collection policies, credit risk identification, credit monitoring and credit appraisal on bad debts levels of 30 microfinance institutions in Columbia. The researcher chose Columbia over other European and Asian countries due to its advanced microfinance industry. Correlation research design was used to determine the connection between government regulations, collection policies, credit risk identification, credit monitoring, credit appraisal and bad debt recovery among the microfinance institutions. The study found that inadequate government regulation was the major contributor of the increasing bad debt levels among the microfinance institutions in Columbia. Besides, the study also concluded that strict government regulation is fundamental in the financial success of the microfinance institutions not only in Columbia but across the globe. Government regulations are relative and depend on several factors such as the economic status of a country and size of a country hence may not be the right measure of bad debt levels. The current study focuses on all the factors that affect a country's regulatory structure such as economic size and number of the microfinance institutions. The study clearly outlines the weaknesses of the Microfinance Act, 2006 and how it can be improved to reduce bad debt level challenges in Kenya.

3.0 Research Methodology

The research methodology adopted a positivist philosophy and utilized a descriptive research design to investigate the relationship between credit management practices and bad debt levels among 54 microfinance institutions in Nairobi City County, Kenya. The study employed three empirical models: direct effect model, and moderation effect model, using linear panel regression to analyze the relationship between variables. The independent variables included credit risk identification, credit risk monitoring, credit appraisal techniques, and credit collection policies, while the dependent variable was bad debt levels. To assess the moderating effect of CBK regulations, the study used the Whiteman and McClelland technique, which involved a two-step approach with and without interaction terms. Data collection was facilitated through questionnaires distributed after obtaining necessary permits from Kenyatta University and NACOSTI. The collected data was analyzed quantitatively using SPSS version 25, employing descriptive statistics and regression analysis to interpret trends and patterns in the dataset.

4.0 Research Findings and Discussion

The section presents the research findings and discussion through analysis of descriptive statistics and regression analysis. The descriptive statistics examine all study variables including independent variables (credit risk identification, credit risk monitoring, credit collection policies, and credit appraisal policies), dependent variable (bad debt levels), and moderating variable (CBK regulations). The regression analysis explores both direct effects and moderation effects using the Whisman and McClelland approach to evaluate how credit management practices impact bad debt levels and how CBK regulations moderate this relationship among microfinance institutions in Nairobi City County, Kenya.

4.1 Descriptive Statistics

This sub-section presents the descriptive statistics on the independent variables (credit risk identification, credit risk monitoring, credit collection policies, and credit appraisal policies), dependent variable (bad debt levels), and moderating variable (CBK regulations).

Table 1: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std Deviation
Bad debt level	134	0.02	3.97	1.8516	0.97985
Credit risk Identification	134	0.00	13.99	6.5816	4.39786
Credit risk monitoring	134	0.01	3.98	1.6721	1.07753
Credit collection policies	134	0.00	1.98	0.8474	0.56024
Credit appraisal policies	134	0.00	10.94	4.3366	3.28265
CBK regulations	134	0.00	1.97	0.7805	0.52606

Table 1 shows that MFIs in Nairobi City County, Kenya experienced significant variations in their credit management metrics during the study period. The bad debt level averaged 1.8516 (SD = 0.97985) with values ranging from 0.02 to 3.97, indicating widespread challenges with non-performing loans, which aligns with Stocker, Brittain, Spilsbury, & Hanratty (2021) who found high default rates as a major challenge for Nairobi MFIs. Credit risk identification showed the highest mean of 6.5816 (SD = 4.39786) and the widest range (0.00 to 13.99), supporting findings by Okafor, Adeleye, and Adusei (2021) who identified outdated credit identification methods as a major cause of high debt levels. Credit risk monitoring displayed moderate values with a mean of 1.6721 (SD = 1.07753) and range of 0.01 to 3.98, consistent with Alatawi, Ntim, Zras, Elmagrhi (2023) who found poor credit risk assessment and monitoring as key contributors to high bad debt levels. Credit collection policies showed lower values averaging 0.8474 (SD = 0.56024) with a range of 0.00 to 1.98, supporting Dieste, Panizzolo, and Garza-Reyes (2021) who emphasized the need for robust collection strategies. Credit appraisal policies demonstrated considerable variation with a mean of 4.3366 (SD = 3.28265) and range of 0.00 to 10.94, aligning with Ichsan, Suparmin, Yusuf, Ismal, and Sitompul (2021) who identified poor credit appraisal techniques as major contributors to financial challenges. Finally, CBK regulations showed relatively consistent implementation across institutions with a mean of 0.7805 (SD = 0.52606) and range of 0.00 to 1.97, supporting Awaysheh, Heron, Perry, and Wilson (2020) who found that insufficient government regulations contributed to MFI instability.

4.2 Regression Analysis

The effects of credit management practices on the amounts of bad debt owed to microfinance institutions in Nairobi City County, Kenya, were investigated using multiple regression analysis based on direct effect and moderation models. The direct effect model was used to assess how credit management strategies affected the amount of bad debt held by microfinance institutions in Nairobi City County, Kenya. The moderation effect (steps one and two) was

used to assess the moderating effect of CBK rules on the link between credit management procedures and bad debt levels of microfinance firms in Nairobi City County, Kenya.

4.2.1 Direct Effect Model

The effect of credit management practices on the amount of bad debt owed to microfinance institutions in Nairobi City County, Kenya, is discussed in this section. The outcomes are displayed in Table 2.

Table 2: Direct Effect Model Results

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Credit Risk Identification	0.022	0.019	0.100	1.155	0.250 2.321
Credit Risk Monitoring	0.017	0.080	-0.019	0.217	0.829 2.344
Credit Collection Policies	0.028	0.152	0.016	0.185	0.853 1.5947
Credit Appraisal Policies	0.029	0.026	-0.096	-1.108	0.270 2.5411
_cons	2.107	0.303	6.942	0.019	-0.1311 -2.2722
R ²	=0.057				
Wald chi2 (4)	=0.970				
Prob> chi2	=0.0000				

A R-squared of 0.057, as shown in Table 4.7, indicates that credit management practices (i.e., credit risk identification, monitoring, collection, and appraisal policies) had a very high explanatory power; they were able to explain 5.7% of the variations in the levels of bad debt among microfinance institutions in Nairobi City County, Kenya. Table 4.7 model, with a p-value of 0.0001 and a F statistics value of 0.970, suggests significance. Thus, the study's credit management techniques had a notable effect on the amount of bad debt that microfinance institutions in Nairobi City County, Kenya, had. Credit risk identification had a coefficient of ($\beta=0.022$) in light of the findings. Consequently, the amount of bad debt held by microfinance institutions in Nairobi City County, Kenya, decreased as a result of credit risk detection. This indicates that bad debt level of microfinance organizations improves by 0.022 units for every unit increase in credit risk identification efficiency. Table 4.7 illustrates that the level of bad debt in microfinance institutions in Nairobi City County, Kenya, was positively impacted by credit risk monitoring, as indicated by the coefficient value of $\beta = 0.017$. In particular, an increase of one unit in credit risk monitoring methods resulted in a 0.017 percent decrease in the amount of bad debt held by microfinance institutions in Nairobi City County, Kenya. In addition, the regulations regarding credit collection had a value of ($\beta=0.028$), indicating a positive correlation between the policies and the amount of bad debt that microfinance institutions in Nairobi City County, Kenya have. In particular, a one-unit increase in the efficacy of the credit collection program leads to a 0.028 rises in the stability of the bad debt level in microfinance institutions. The coefficient value of credit appraisal policies was 0.029. This suggests that there is a 0.029 unit rise in bad debt level stability for every unit increase in the efficacy and efficiency of the credit appraisal policy. The model's constant value was -2.2722, indicating a negative value. Thus, in Nairobi City County, Kenya, the bad debt levels of microfinance firms are negative (-2.2722) in the absence of credit management methods.

4.2.2 Moderation Effect, Step One

According to the Whisman and McClelland (2005) approach, step one of the moderation effect models entails the use and inclusion of the moderating variable as an explanatory variable to determine its significance in influencing the dependent variable and this inform whether to

proceed to step two or make conclusion in step one. The result of step one moderation effect test is in Table 3.

Table 3: Moderation Effect, Step One Results

	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
Credit Management Practices	127.693	7.224	1.445	0.000	1.535 0.183	
CBK Regulations	0.26	4.117	0.941	0.469	-1.8156 3.5698	
_cons	-7.759	2.4358	-0.68	0.334	-7.0764 5.4536	
R ²	=0.057					
Wald chi2 (2)	=0.970					
Prob> chi2	=0.0000					

Table 3 results indicate an R-squared of 0. 057.This indicates that the variables in the model—credit management practices (i.e., credit risk monitoring, credit collection policies, credit appraisal policies, and credit risk identification—as well as CBK regulations had a high explanatory power since they were able to predict 5.7% of the variations in the levels of bad debt that microfinance institutions in Nairobi City County, Kenya experienced. Additionally, the model demonstrated that a level of significance was reached with a F statistic value of 0.970 and a p-value of 0.0000. The amount of bad debt owed by microfinance institutions in Nairobi City County, Kenya, was significantly impacted by credit management strategies and CBK laws taken together The inclusion of the CBK regulations as an explanatory variable, bad debt level of the microfinance institutions had a positive impact as shown by the coefficient of 0. 970. Further, the CBK regulations had a coefficient of 0.26 and a p-value of 0.469 which shows non significance. This therefore indicate that based on the results obtained from the moderation effect result, CBK regulations is not considered as an explanatory variable which is an essential requirement to move to step two of the moderation test.

4.2.3 Moderation Effect-Step Two

After finding out that CBK regulations is not an explanatory variable, the second step of the moderation test was conducted. The second step of the moderation test mainly entails the interaction of the moderator (CBK regulations) with the composite independent variables (credit management practices with the main aim of determining the significance of the moderation effect of CBK regulations. The outcomes of the step two moderation effect are contained in the Table 4.

Table 4: Moderation Effect- Step Two Results

Bad Debt Levels	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Credit Management Practices	-39.8595	6.22382	-4.10	0.000	-49.3923 -13.7621
CBK Regulations	10.63391	13.73611	-1.18	0.287	-33.61117 7.8164
Credit Management Practices*CBK Regulations	37.2091	9.112845	4.42	0.000	27.87354 44.56383
_cons	13.2134	12.5469	1.29	0.252	-77.7114 38.4809
R² =0.5764					
Wald chi2 (3) =0.83					
Prob> chi2 =0.0000					

Table 4 results indicate an R-squared of 0. 05764. This indicates that the variables in the model— that is CBK regulations had a high moderation power since they were able to predict 5.764% of the variations in the levels of bad debt that microfinance institutions in Nairobi City County, Kenya experienced. Additionally, the model demonstrated that a level of significance was reached with a F statistic value of 0.83 and a p-value of 0.0000. The amount of bad debt owed by microfinance institutions in Nairobi City County, Kenya, was significantly impacted by credit management strategies and CBK laws taken together. The inclusion of the CBK regulations as a moderation variable resulted into a positive impact on bad debt level of the microfinance as shown by the coefficient of 0. 970. Furthermore, the CBK regulations had a coefficient of 10.63391 and a p-value of 0.287 which shows non significance. This therefore indicate that based on the results obtained from the moderation effect result, CBK regulations is considered as a moderation and not explanatory variable.

5.0 Conclusions

The study revealed several crucial findings regarding credit management practices and bad debt levels among MFIs in Nairobi City County, Kenya. Effective credit risk identification emerged as fundamental in curbing bad debt levels, emphasizing the importance of client profiling, geographical risk assessment, and comprehensive risk assessment models for early detection. The significance of real-time credit risk monitoring was highlighted through the utilization of advanced technologies and predictive analytics, enabling prompt detection of creditworthiness deterioration. Well-structured credit collection policies proved significantly impactful, with the development of flexible repayment strategies and financial literacy programs being essential for enhancing timely loan repayments. The study underscored the critical role of in-depth credit appraisal procedures, emphasizing the integration of advanced technologies and adaptability to unique microfinance characteristics for more accurate credit assessments. Furthermore, a strong interconnected relationship was discovered between Central Bank of Kenya (CBK) regulations, bad debt levels, and credit management practices, highlighting that maintaining sound credit management framework relies heavily on CBK regulations compliance. The study concluded that transparent reporting mechanisms, regular review of bad debts, and benchmarking against industry best practices are crucial for sustaining healthy credit management practices within the regulatory framework, ultimately ensuring the overall stability of MFIs in the region.

6.0 Recommendations for Policy/Practice

Key recommendations include adopting advanced technologies like predictive analytics and machine learning for credit risk identification, implementing real-time credit monitoring systems, developing flexible repayment plans that accommodate irregular income patterns, and establishing an integrated appraisal system across MFIs to prevent multiple unpaid loans. The study also emphasizes the need for CBK to reassess interest rates charged by MFIs, which currently range from 20% to 200% annually, and implement a comprehensive system for tracking and analyzing bad debt levels. For further research, the study suggests investigating additional aspects of credit management practices, including governance and control mechanisms, as well as exploring the impact of technological advancements on credit management practices, given that the current model explains only 5.7% of bad debt level variations.

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