

**EFFECT OF FINANCIAL INNOVATION ON OPERATIONAL SUSTAINABILITY OF
MICRO-FINANCE INSTITUTIONS IN KENYA**

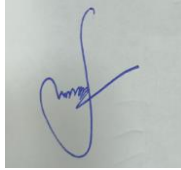
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DECLARATION

This research project is my original work and has not been presented for examination in this or any other university.



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This research project has been submitted for examination with my approval as the University Supervisor.



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LIST OF ABBREVIATIONS & ACRONYMS

ANOVA:	Analysis of Variance
CPB:	Cost per Borrower
DER:	Debit to Equity Ratio
GMM:	Generalized Method of Moment
LCT:	The Life Cycle Theory
MFI:	Micro Finance Institutions
NOAB:	Number of Active Borrowers
OLS:	Ordinary Least Squares
OPA:	Operating Cost Ratio
PAR:	Portfolio at Risk
SEM:	Structural Equation Model
SEMS:	Social and Environmental Management System
VAR:	Vector Auto regression

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In an ideal world, the scope of sustainability encompasses various financial factors that constitute the relational framework that connects company value and continuity. In particular economic situations, the most advantageous mix of these variables ensures the maximum level of financial sustainability. However, the weakening of the value-continuity link leads to uncertain sustainability impacts (Hosaka, 2019). Excessive value orientation can lead to a company's financial difficulty and insolvency (Ashraf, Felix & Serrasqueiro, 2019). Meyer (2012) claims that operational sustainability occurs when operating income is adequate to cover operational costs such as salaries, supplies, loan losses, and other administrative expenses.

Managers, on the other hand, often emphasize solvency and liquidity in the pursuit of continuity, which might impair corporate profitability (Samiloglu & Demirgunes, 2008). In this context, the concept of an entity's financial sustainability is sometimes likened to the risk-return paradigm that comes from investment theory (Modiglian & Pogue, 1972). According to the concept, taking more risk, as measured by the volatility of a financial instrument's price, enhances the likelihood of making a bigger profit. As a result, at the business level, a management must determine whether to optimize investment returns while increasing financial leverage (Hosaka, 2019), or to prevent risk while maintaining solvency and liquidity (Hosaka, 2019). However, as (Ashraf et al, 2019) note, corporate finance theory and practice frequently violate the concepts of financial market investment, which frequently rely on historical data alone.

On the other side, the term "financial" describes the procedure of developing new finance or investment services, products, or procedures. Modernized risk management, technology, , risk transfer, the creation of credit and equity, as well as several other advances, can all be part of these changes. Its measures include, one, Loan Collection Efficiency measured through Portfolio at Risk (30 Days). MFI's efficiency in collecting loans is demonstrated by PAR. The higher the PAR, the less effective the MFI is at collecting loans from its consumers. It demonstrates that loans with a maturity of more than 30 days are at a high probability of default (Tehulu, 2013). The second measure is the Lending Operations Efficiency measured through Operating Cost Ratio (OPA): - This ratio is a significant metric for assessing the efficiency of an MFI's lending operations. The lower the Operating Cost Ratio, the less efficient MFI will be (Abdur Rahman & Mazlan, 2014).

Further the third measure is the capital Sufficiency measured through Debt to Equity Ratio (DER). This the total liabilities divided by total equity yields the debt-to-equity ratio. Deposits, borrowings, accounts payable, and other obligations are all included in the MFI's total liabilities. Total equity is equal to total asset minus total obligation. Because it captures the institutions' total leverages, it is the simplest and most well-known measure of capital sufficiency (AEMFI, 2014). Finally there is the Borrowing Costs Efficiency measured through Cost per Borrower (CPB): - The cost per borrower is calculated by dividing an MFI's operating expenses by the average number of borrowers. According to Yoshi et al (2011), a lower cost per borrower indicates that an MFI is more efficient at lowering borrowing costs. As a result, MFIs with a lower ratio have a greater OSS, and the FSS and OSS of a

particular MFI are negatively connected, resulting in a negative sign for the coefficient.

Globally, firms have observed a huge increase in the number of returned products from an operational and competitive standpoint. Increased attention on customer happiness, a complete quality management initiative, and other firms embracing free return policies as a competitive advantage initiative have all contributed to this expansion (Chouinard, 2018). Costs such as the development and implementation of technology to carry out return policies should eventually lead to intangible benefits from a strategic sustainability standpoint. Profits from recovery actions, on the other hand, are considered direct advantages. Reduced material usage, for example, could contribute to intangible and competitive benefits such as strengthening an organization's image or providing a return service to customers of an organization's products. Indirectly, these activities should boost the company's image, as well as increase sales and profitability. While traditional cost-benefit assessments such as payback, return on investment, and net present value calculations should be examined, operational and business service elements that influence an organization's efficiency, productivity, and customer service dimensions should also be evaluated.

Regionally, Microfinance programs have provided formal financial services to millions of people in poor countries. Despite this, millions of prospective customers remain unserved, and the demand for financial services significantly outnumbers the supply. The expansion of microfinance programs remains a daunting task for the microfinance industry, given considerable capital limitations. Operating and financial costs are quite expensive, and revenues are on average lower than in other parts of the world. Efficiency in terms of cost per borrower is lowest for African MFIs.

MFIs in Africa, which includes Kenya, have lower levels of profitability as measured by asset return than MFIs in other parts of the world. Unadjusted returns are positive in 47 percent of African MFIs that provided data for the study. When compared to unregulated MFIs, regulated MFIs have the highest return on assets, averaging around 2.6 percent. African MFIs only fund 25% of assets with equity, according to the results. MFIs get their money from a variety of sources, including debt and equity (Mwangi & Brown, 2015)

The study's theoretical base will be built on three theories: the life cycle theory, financial intermediation theory and the Welfast school of thinking. The Life Cycle Theory suggests that MFIs improve in order to be financially sustainable. The development encompasses the use of commercial funds. The goal of financial intermediation theory is to explain why financial intermediaries exist in a given economy. The theory's key argument in favor of financial intermediaries is that information asymmetry causes market inefficiencies by preventing savers and investors from trading directly with one another in an efficient manner. MFIs, according to welfarists, can attain long-term viability without establishing financial viability. They contend that since donations constitute a form of equity, contributors can be thought of as social investors. Institutionalists, on the other hand, assert that the potential of MFIs to reduce global poverty will not be realized unless we build long-term MFIs that can run without subsidies (Brau, J.C., and Woller, G., 2004). They believe that a long-term MFI aids in expanding outreach and connecting with more impoverished people. The two schools of thinking are therefore not at opposition, despite the appearance that they are.

1.1.1 Financial Innovation

When new ideas, solutions, and instruments are adopted in order to change the conditions of a commercial entity and enhance its situation, it is called an innovation (Banerjee, 2018). The use of innovations improves a company's competitiveness and adds value to its owners (Dabic, et al., 2017 and Grudzewski, et al., 2018). It is impossible for a modern company entity to thrive sustainably without competent innovation management, as well as knowledge, information, reputation, and trust management.

Initially, the term "innovation" was used to characterize improvements in technological solutions that resulted in novel combinations of productive means, yielding higher-than-average rates of return, and therefore increasing the entire economy's dynamic development (Targalski, 2016). New goods, new techniques of production, creating new markets, new sources of raw materials, new organizational forms & company structures, and new management methods are among the categories of technical innovations identified by J. Schumpeter's classical approach (Dabic et al, 2018). It is well understood that financial and technological breakthroughs are inextricably linked and evolve together throughout time. On the one hand, financial innovations offer a way to fund innovative technical ventures when traditional sources of funding are unavailable due to significant investment risk.

Financial Innovation in this study is measured through loan collection efficiency (Portfolio at Risk (30 Days)), through lending operations efficiency (Operating Cost Ratio (OPA)), through capital sufficiency (Debt to Equity Ratio) and through borrowing costs efficiency (Cost per Borrower ,CPB)).

1.1.2 Operational Sustainability

Operational sustainability refers to a company's decision to pursue a long-term business strategy. Sustainable competitive advantage had a clear definition back then: a financially and strategically sound plan that could not be copied or imitated in the market in which the firm competed. This meant that the company was no longer focused solely on quarterly outcomes. Managers were instead required to implement rules that would secure the company's long-term financial prosperity. To this aim, operational sustainability ensures that a company has a sufficient size or market share to be able to rely on it to continue growing since it has a dominant position in its industry, which is a valuable asset in these trying times (Hussain, Bashir & Hussain, 2020).

Developing market economies are becoming more aware of how crucial sustainability is to their development. For the commercial sector, this means a new landscape of business opportunities as well as a desire for more social and environmental responsibility. The financial sector was slow to respond to this trend, but it is now emerging as a key driver across all economic sectors. New banking norms and codes of conduct encourage corporate accountability, transparency, and consideration of environmental and societal consequences. The Equator Principles, which are based on the IFC's social and environmental performance requirements and are being embraced by a growing number of developing-country banks, are a good example (Sinha & Ghosh, 2021).

Banks can only create long-term value for their businesses by properly managing social and environmental opportunities with risks. Risk alone will not be sufficient to create new markets and rewards. Pursuing market opportunities related to sustainability, on the other hand, does not guarantee that a bank will lower its social and

environmental risks. Banks must integrate a systematic approach—a social and environmental management system (SEMS)—into their processes and operations to manage both risks and opportunities strategically and thoroughly. Building and running a successful SEMS requires multiple operations to run in concurrently (Gonfa, 2020).

In this study operational sustainability will be measured by computing revenue expense ratio which is presented as $(\text{Financial Revenue} / (\text{Financial expense} + \text{impairment losses} + \text{operating Expenses}))$. It will also be measured through financial sustainability computed as $(\text{Adjusted Financial Revenue} / (\text{Financial expense} + \text{Loan loss provision} + \text{Operating expenses} + \text{Expenses adjustment}))$

1.1.3 Financial Innovations and Operational Sustainability

Individual financial institutions design their own unique approach and business case for sustainability in order to get the maximum long-term advantage from financial innovation. This is based on how they seek to align their corporate goals with market and sector developments in which they operate. In the private sector, sustainability is increasingly understood as the creation of long-term environmental and social value for a wide range of stakeholders, including shareholders, employees, customers, suppliers, communities, and public-sector partners, with special attention to the needs of future generations (Kibelioni & Ayuma, 2019).

Changing customer expectations and developing national and international legislation reflect the worldwide importance of operational sustainability. Companies' capacity to operate successfully and engage in international trade is becoming increasingly dependent on their ability to avoid social and environmental risks and capitalize on

innovative opportunities. Businesses can no longer disregard the importance of sustainability as a source of competitive advantage. As a result of this trend, many firms are attempting to incorporate sustainability into their operations (Mustafa, Khursheed & Fatima, 2018).

Furthermore, financial innovation encourages continuous improvement because financial institutions recognize the need to not only incorporate better standards in social and environmental risk management, but also to broaden their perspective on what generates long-term value for themselves, their clients, and society. As a result, financial institutions can take advantage of new opportunities and markets, resulting in increased environmental, social, financial, and economic benefits (Mustafa, et al., 2018)

1.1.4 Micro Finance Institutions in Kenya

Kenya has achieved tremendous progress in increasing access to financial services and products to 82.9 percent in 2019, up from 26.7 percent in 2006 and 75.3 percent in 2016. The quick adoption of mobile money, as well as the deployment of transformational financial technology and innovations, as well as government initiatives and legislation, all contribute to this outstanding result. Despite the slowing expansion of Kenya's economy in recent years, the microfinance business in various counties continues to grow. The fact that the number of MFIs in the country increased by 28.58 percent from in 2016 compared to 2019 demonstrates this (Joseph & Kibera, 2019).

This rapid expansion can be credited to County government's encouragement of innovation, notably in the area of communication technology. As a result, mobile money services are widely employed in the country. The Kenyan government's policy design

appears to have been outrun by the ingenuity and rapid development of various local efforts pushed by the demand side to provide financial services to microfinance consumers who are not reachable through formal channels (Kalekye, 2018).

At the macro level, the national government recently pushed the regulator to develop a microfinance regulatory framework through mandated performance requirements that help the financial sector transition from a less-regulated to a more tightly-regulated environment. The Kenyan microfinance sector is not at all like the formal banking sector or other microfinance sectors in the region. Different jurisdictions and legislation oversee and supervise the sector in Kenya (Kalekye, 2018). As a result, County's MFIs confront a variety of problems and limits that may limit their capacity to achieve the intended degree of outreach and sustainability.

1.2 Research Problem

Millions of impoverished individuals have benefited from microfinance in less developed and developing nations, and its rise has piqued the interest of many stakeholders who want to assess the financial viability of such firms (Beg, 2016). Microfinance institutions provide services to the poor, thereby broadening the economy's financial base and allowing financially disadvantaged people to participate in the growth process (Nyamsogoro, 2017). Any MFI's main issue right now is to become viable while expanding its scope. MFIs are under a lot of pressure to reduce their reliance on external financial resources, such as subsidized funding, grants, and so on, due to a variety of unavoidable conditions. Microfinance transactions with clients in the informal financial sector have a high transaction cost.

Many MFIs are currently financially unsustainable and rely on external financial resources like as contributions, grants, and loans to stay afloat. Because the primary goal of any MFI is to alleviate poverty, it must be financially viable. Because so many people in Kenya live in poverty, the health of MFIs is crucial to the economy's overall health. As a result, the goal of this research is to determine the effect of MFIs' on operational sustainability in Kenya, due to poverty levels in the country.

According to statistics from the (previous) Ministry of Planning, National Development, and Vision 2030, poverty in Kenyan Counties national average is at 45.9%. This calls for concern meaning almost half the population in most counties are poor. As a result, the researcher felt it was necessary to evaluate the Micro-finance institutions' operational sustainability in the country. Interventions through the provision of microfinance services are regarded one of the government's policy weapons for eradicating poverty in Kenya. Because sustainable MFIs are able to build their capital through retained revenues and thus greater capacity to reach more loan consumers, they should be sustainable for long-term poverty alleviation (Beg, 2016).

A lot of research on the long-term viability of MFs have been done. Rai and Rai (2017) found that the Portfolio at Risk and Operating Expense to Loan Portfolio ratio had a substantial impact on the financial sustainability of MFIs in India and Bangladesh. Ayayi and Sene (2015) found a link between management efficiency and portfolio risk in their research. Abdur Rahman and Mazlan (2016) found that the size of the MFI has a substantial impact on its financial sustainability, whereas the operating expense ratio and breadth of outreach have a negative impact. Using a panel data set of 179 MFIs from around the world, Nawaz (2020) found the factors of MFI profitability and sustainability. The evidence does not support the tradeoff between

outreach and long-term viability, but it does support the trade off between costs and long-term viability of MFIs. Size is positively and strongly related to financial performance, according to studies by Nyamsogoro (2017), Bogan (2018), Mersland and Storm (2017), showing the cost advantages associated with size (economies of scale).

On financial innovations, empirical by (Dabic, Cvijanovic, and Gonzalez-Loureiro, 2017 and Grudzewski, Hejduk, Sankowska, and Watuschowicz, 2018) were conducted noting that use of innovations improves a company's competitiveness and adds value to its owners but the value was not related to operational and financial sustainability to be covered in the study. On operational sustainability, empirical studies by (Hussain, Bashir & Hussain, 2020, and Sinha & Ghosh, 2021) were conducted noting that operational sustainability ensures that a company has a sufficient size or market share to be able to rely on it to continue growing since it has a dominant position in its industry, which is a valuable asset in these trying times but the role of financial innovation in this was not addressed which will be covered in this study.

In conclusion, previous empirical endeavors into the determinants of MFs' sustainability have provided mixed findings; on the other hand, the majority of studies have focused on West Africa and the developed world, with few focusing on Kenya, where poverty is a big problem. In light of this, the current study aims to look at the effects of financial innovation on the operational sustainability of MFs in Kenya.

1.3 Objectives of the Study

To investigate the effect of financial innovation on operational sustainability of micro-finance institutions in Kenya

1.3.1 Specific Objectives

The study was guided by the following specific objectives:

- i. To investigate the effect of Loan Collection Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya;
- ii. To determine the influence of Lending Operations Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya;
- iii. To explore the Capital Sufficiency on the financial and operational sustainability of micro-finance institutions in Kenya; and
- iv. To investigate the influence of Borrowing Costs Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya.

1.4 Value of Study

Policy, managerial, and theoretical implications will be derived from the study's findings. The study's findings may lead to policy recommendations that will assist the county and national governments in streamlining the banking sector while supporting sustainable businesses. To that aim, policymakers in Kenya may find this study useful in developing ways to improve financial intermediation efficiency among MFIs.

At the managerial level, the findings of the study could be extremely useful to Kenyan county governments in terms of encouraging financial innovation and sustainable financial practices among microfinance firms. County managers, in particular, will be able to explain many practices that affect the long-term viability and performance of microfinance operations, thereby providing the essential push for their proliferation in the county.

On a theoretical level, the study's conclusions may confirm or refute previous empirical findings on the long-term viability of MFIs. Furthermore, the research is the first to attempt to develop a conceptual framework for studying the effect of financial innovation on operational sustainability of MFI in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Based on the objectives of the study, this chapter presents a review of theoretical and empirical literature. The chapter can be decomposed into three parts; theoretical literature, empirical literature, and the conceptual framework of the study. The chapter begins by outlining the theoretical basis of the study by providing an understanding of the relevant theoretical models. The chapter then delves into a review of past empirical undertakings on the predictor and dependent variables. Major scientific journals, books and working papers constitute the bulk of the resources in this chapter.

2.2 Theoretical Review

The life cycle stages of MFIs can be used to explain their long-term viability, according to theory. As a result, MFI managers have been working on improving their processes over time, and as a result, they have perfected their businesses. They have learned from their mistakes, expanded their lending alternatives, and guided MFIs to financial sustainability. As MFIs grow into large, stable institutions with a broad reach, they become more financially sustainable (Cuza, 2019). According to Schneider and Greathouse (2015), MFIs must integrate into local financial systems in order to become financially sustainable institutions. Integration allows MFIs to improve leverage, take advantage of deposit collection, and access capital markets in order to raise funds for expansion and expand their reach. The study's theoretical framework will be built on four theories:

2.2.1 The Life Cycle Theory

The LCT hypothesis, developed by Porter (1980), is a significant concept that examines how firms and industries are born, grow, mature, and eventually perish. They share a set of market development, management capacity, and financial structure features at each level. The LCT, which is linked to the biological nature of human life as a maturational and generational process (ORand & Krecker, 1990), has been used to develop finance, marketing, costing, survival, growth, and production plans for businesses (Porter, 1980).

The LCT has been criticized for making the assumption that individuals are thoughtful and logical. According to behavioral economics, many people are motivated to avoid budgeting, people might lack the discipline to cut back on their spending now and set aside more money for the future, and people with higher salaries have easier lives overall. They have the "luxury" to be able to save, which makes them more likely to be financially savvy. People with modest earnings and significant credit card debt may believe they have no more money to save.

In relation to the study, the LCT suggests that MFIs improve in order to be financially sustainable. The development encompasses the use of commercial funds (private capital invested directly by the owners or through intermediaries) in financing operations, sound management, innovation, charging commercial interest rates on loans, lower operating costs, low portfolio at risk, as well as great stability and outreach MFIs pursuing financial sustainability can be either commercially oriented from the start or NGOs transitioning to full-fledged commercial MFIs. In this sense, the method of development takes into account the MFIs' basic charter.

2.2.2 Financial Intermediation Theory

This theory was advanced by Allen and Santemero (1997) revised by Pyle (2017) . One of the ideas that attempts to explain why financial intermediaries exist in an economy is the financial intermediation theory. Financial intermediaries are in charge of bringing the spending units, deficit spending units, and surplus spending units into balance. The theory's key argument in favor of financial intermediaries is that information asymmetry causes market inefficiencies by preventing savers and investors from trading directly with one another in an efficient manner.

The main critique of this argument is that it has to take into consideration and reflect the reality that financial systems have evolved significantly in many nations over the previous thirty years. Numerous established financial markets have grown throughout this time, and new markets have also emerged. Information has gotten cheaper and more readily available while transaction costs have decreased. These developments, however, have not been accompanied by a decline in intermediation, which the theory does not take into consideration. In actuality, the complete opposite has occurred. In both new markets, such as those for various forms of derivatives, as well as classic markets, intermediaries now play a far larger role in trading. It is challenging to reconcile the changes that have occurred with the transaction costs and asymmetric information-based intermediation hypothesis. Understanding the contemporary activities of intermediaries, in particular their emphasis on risk management, depends heavily on participation costs.

In relation to the study, the hypothesis is founded on information asymmetry and agency theory, with the following factors describing the existence of MFI: transaction costs, insufficient knowledge, and regulating mechanisms used (Cuza, 2019).

2.2.3 Welfarist School of Thought

This theory was advanced by Aidukaite, (2009). The theory states that MFIs can attain long-term viability without establishing financial viability. They argue that gifts are a type of equity, and that contributors can therefore be considered social investors. Unlike private investors who buy stock in a publicly traded company, social investors do not intend to make a profit, according to Barau and Woller (2016). Instead, the social intrinsic return is realized by these donor investors. Welfarists, according to Brau and Woller (2016), stress poverty alleviation, place a higher value on depth of outreach than breadth of outreach, and measure institutional effectiveness using social measures. This is not meant to suggest that the size of the outreach or the funding levels are inconsequential. Welfarists prioritize these challenges, but they are less willing than Institutionists to sacrifice outreach depth in order to accomplish them.

The idea is critiqued in that one objection, which specifically addresses pure welfareism, stems from the perception that improving the well-being of the poor is of greater importance. Therefore, one should help the poor when deciding whether to improve the well-being of the rich or the latter. This intuition appears to be founded on the notion that, contrary to what pure welfarism suggests, what matters is not merely a high overall well-being but also an equitable distribution. By rephrasing the issue in terms of resources rather than wellbeing, one might explain the initial intuition. Giving \$100 to a poor person would've been preferable to providing it to a rich person in this regard. Since the same quantity of assets would represent more to the poor individual and hence have a stronger impact on their well-being, pure welfare theory can be used to explain this.

The Welfarist theory believes in subsidizing microlending programs in order to reduce the cost of running microfinance institutions to subsequently lower loan interest rates. In

relation to the study, the theory sees microfinance as among the most effective tools for alleviating poverty and realizing a sustainable future (Morduch, 2000). The effectiveness of MFIs is assessed by household surveys that concentrate on each person's level of life, including the number of savings accounts, loans, increases in productivity, earnings, capital accumulation, and social service costs for things like education and health (Brouwer et al., 2005). Welfarist holds that MFIs can attain sustainability without adhering to the institutionalist idea of self-sufficiency (Tsuchiya et al., 2005).

2.3 Empirical Review

Suwarno & Mahadwartha, (2017) investigated portfolio risk management in Indonesia using the VAR Approach based on investor risk reference. Vector Auto regression was used in this investigation. In the composite VAR model, the Mean-Variance Model was also used, with investor risk preferences taken into account. Stock samples from the monthly data retrieval throughout the last 5 years, from January 2010 to October 2015, were used in the study. Risk taker investors, according to the study, benefit more and bear greater risk than risk averse investors. However, the lowest risk an investor takes is on the highest risk preference, according to a robustness test. As a result, variance is no longer the sole element that may contribute to an increase in VaR; data dispersion has become a more important issue.

Using the OLS model, Pal Narwal, Pathneja & Kumar Yadav (2015) evaluated the operational architecture of microfinance institutions in India. The efficiency of thirty-two microfinance institutions in India was investigated in this study. The research included a seven-year span from 2006 to 2013. The study used panel data and discovered that portfolio at risk and borrower per staff member have a favorable impact

on microfinance institutions' operational efficiency in India. MFIs' operating efficiency is negatively impacted by their cost per borrower.

According to Wolday (2015), the operational cost ratio is derived by dividing all expenses connected to the operation of the MFIs (including all administrative and salary expenses, depreciation, and board fees) by the period average gross portfolio, interest, and provision expenses (Wolday, 2015). Nyamsogoro (2017) discovered that the lower the ratio, all other things being equal, the more efficient the institution is, and that the ratio has a significant impact on the financial sustainability of microfinance organizations. This means that the more effective MFIs are at reducing operating expenses at a given level of outstanding loan portfolio, the more lucrative they become, ensuring financial and operational self-sufficiency and long-term viability.

In their study of Bangladeshi MFIs, Mohd et al. (2014) discovered a high near-perfect negative link between financial self-sufficiency and operational efficiency. In her research on the factors that influence microfinance institutions' operational self-sufficiency in Sri Lanka, she discovered that there is a statistically significant negative relationship between operating expenses ratio and operational self-sufficiency ratio.

Mugun, Odhiambo, and Momanyi (2019) investigated the impact of debt-to-equity ratio on microfinance institutions' financial performance in Kenya. Secondary data was acquired from a panel data set of 12 MFIs selected using a purposive sampling approach for the period 2009 to 2013, and secondary data was used in the study. The researchers used a fixed effect model based on the Hausman specification and

discovered that the debt-to-equity ratio had a negative but negligible connection with the return on assets ratio. The portfolio to assets ratio, on the other hand, had a favorable link with financial performance, but it was not substantial.

Veenapani (2017) used data from themix website to investigate the performance and sustainability of microfinance institutions in India. Case performance was evaluated using sixteen metrics. All parameter mean values were then compared between MFIs, and a one-way ANOVA was used to see if they differed substantially. A multiple regression analysis revealed that Return on Assets, Operating Expenses per Loan Portfolio, Debt Equity Ratio, and Portfolio at Risk all influence sustainability.

Ayele (2014) conducted research on inadequate loan outreach and the pursuit of financial viability. The study used the Structural Equation Model (SEM) on an unbalanced panel dataset of 31 MFIs collected from the three nations from 2003 to 2012. If operational expenses are controlled, the H-T estimates favor lending to the poor for increased viability. Operating-Expense-Per-Loan-Portfolio and Debt-to-Equity-Ratio have negative relationships with viability, however 'Real-Yield' has a direct relationship. The SEM found a link between lending to the poor and the level of operating expenses, which has an indirect impact on viability.

2.4 Determinants of Operational Sustainability

This section reviews the determinants of operational sustainability

2.4.1 Regulation on outreach of MFIs

In Ghana, Quartey and Kotey (2019) investigated the impact of regulation outreach on microfinance institutions. Initial hypotheses testing was conducted with 31 self-

regulated and 24 central bank-regulated MFIs using a mixed methods study approach. A qualitative research design including 13 central bank-regulated and 20 self-regulated MFIs was used to confirm the findings. The findings revealed that while rules boosted MFIs' client base, they decreased the number of disadvantaged clients served, primarily women.

Amin, Qin, Rauf and Ahmad (2017) evaluated the influence of MFI outreach on profitability in Latin America in their study. The research used the most complex technique for dealing with dynamic data, the generalized method of moment (GMM). For the ten years from 2005 to 2014, the selected sample included 405 MFIs from 21 Latin American nations. According to the study, there is a negative correlation between depth of outreach (ALB) and profitability, while breadth of outreach defined by number of active borrowers (NOAB) has a negative correlation with profitability, however the results are small. Using GMM, however, the study discovered that ALB and NOAB had a compatible relationship with profitability.

2.4.2 Donor Involvement

Adongo and Stork (2016) investigated the elements that affect MFIs' financial viability in Namibia. To determine the characteristics that influenced the financial sustainability of selected microfinance institutions in Namibia, the researchers applied the Ordinary Least Squares method to an Analysis of Covariance model comprised of cross-sectional data that captured various attributes of the organizations. A sample of 143 MFIs was chosen for the study from a population of 208 MFIs. All of Namibia's microfinance organizations were found to be financially unsustainable, according to the report. The study also found that term micro-lenders had the lowest level of financial

unviability, while multi-purpose co-operatives that provide microfinance had the greatest level.

2.4.3 Group Lending

Mabonga (2015) performed a descriptive survey in Kenya's TransNzoia West sub-county on the impact of finance institutions' group lending mechanism on rural women's enterprise development. The overall target population was 781 people, and the sample size was 260 people, according to the Krejcie and Morgan table for calculating sample size.

According to the findings, the shared liability mechanism was an effective mechanism for ensuring that borrowed funds were used responsibly, primarily for the development of women's businesses, and that women group members had developed numerous business links and networks as a result of it. The survey also discovered that the majority of the women in the group had not received any technical or entrepreneurial training on group borrowing for enterprise development, despite the fact that it had an impact on the growth of women-owned businesses in the Sub-County.

A comparative survey of group lending versus individual lending among Mongolian MFIs was conducted by (Attanasio et al., 2015). The study used a randomized field experiment with 1,148 disadvantaged women in 40 villages across rural Mongolia. The study found that having access to group loans has a favorable impact on food consumption and entrepreneurship. The likelihood of having a business increases by 10% among households that received group loans compared to households in control villages. Profits in the business world rise over time, especially for the less educated.

Individual financing, on the other hand, did not result in a significant increase in spending or business ownership, according to the findings of the study. These findings support notions that group lending has a disciplining effect: joint liability may dissuade borrowers from using loans for non-investment purposes.

2.4.4 Credit Collection Policy

Folefack, and Tegua (2016) evaluated the impact of credit collection policies on microfinance institutions' portfolio at risk in Tanzania. The study included participants from Dar es Salaam, Morogoro, and Dodoma. The findings of a multiple linear regression model analysis demonstrated that the loan amount to borrowers, the grace period of loans, and the interest rates paid to borrowers determine the microfinance institution's portfolio at risk. The study also found that loan size to borrowers and loan grace periods reduce the risk of microfinance organizations' portfolios. This meant that microfinance borrowers' high loan repayment rates were linked to grace periods and big loan sizes.

In their study, Papias and Ganesan (2009) found that microfinance firms that charge high interest rates are more likely to impair loan portfolio quality by raising default rates. As a result, it has a detrimental influence on MFIs' overall financial performance. Individual-based microfinance lenders charging higher interest rates, according to Ayayi & Sene (2010), are likely to be more profitable up to a certain point. Furthermore, due to an increase in client delinquency, the profitability of microfinance institutions tends to deteriorate. As a result, microfinance institutions must understand that charging high interest rates above a particular threshold is considered adverse to the MFI's financial viability.

Credit collection policy, according to Palladini and Golgberg (2020), is a set of practices used to collect accounts receivable that have been past due. Its goal is to maximize the rate of return on a microfinance loan portfolio in order to raise the value of the company's assets. The motivation for creating a set of policies is that not all clients fulfill their obligations on time and without repercussions. Some clients just forget to pay their bills, while others refuse to pay until they are persuaded to do so. Lending institutions with gradual customer repayment see a rise in bad debts in their loan portfolios. As a result, credit collection activities are focused on obtaining loans from consumers as quickly as possible. Microfinance management attempts to ensure proper collection procedures are followed; assists in keeping debtors alert and lowering portfolio risk (Warue, 2017).

2.5 Conceptual Framework

The conceptual framework developed for this study elaborates the interplay between the study variables. In the context of the research objectives, Meyer (2012) claims that operational sustainability occurs when operating income is adequate to cover operational costs such as salaries, supplies, loan losses, and other administrative expenses.

Loan Collection Efficiency measured through Portfolio at Risk (30 Days):- MFI's efficiency in collecting loans is demonstrated by PAR. The higher the PAR, the less effective the MFI is at collecting loans from its consumers. It demonstrates that loans with a maturity of more than 30 days are at a high probability of default (Tehulu, 2013).

Lending Operations Efficiency measured through Operating Cost Ratio (OPA): -

This ratio is a significant metric for assessing the efficiency of an MFI's lending operations. The lower the Operating Cost Ratio, the less efficient MFI will be (Abdur Rahman & Mazlan, 2014).

Capital Sufficiency measured through Debt to Equity Ratio (DER): -

Total liabilities divided by total equity yields the debt-to-equity ratio. Deposits, borrowings, accounts payable, and other obligations are all included in the MFI's total liabilities. Total equity is equal to total asset minus total obligation. Because it captures the institutions' total leverages, it is the simplest and most well-known measure of capital sufficiency (AEMFI, 2014).

Borrowing Costs Efficiency measured through Cost per Borrower (CPB): -

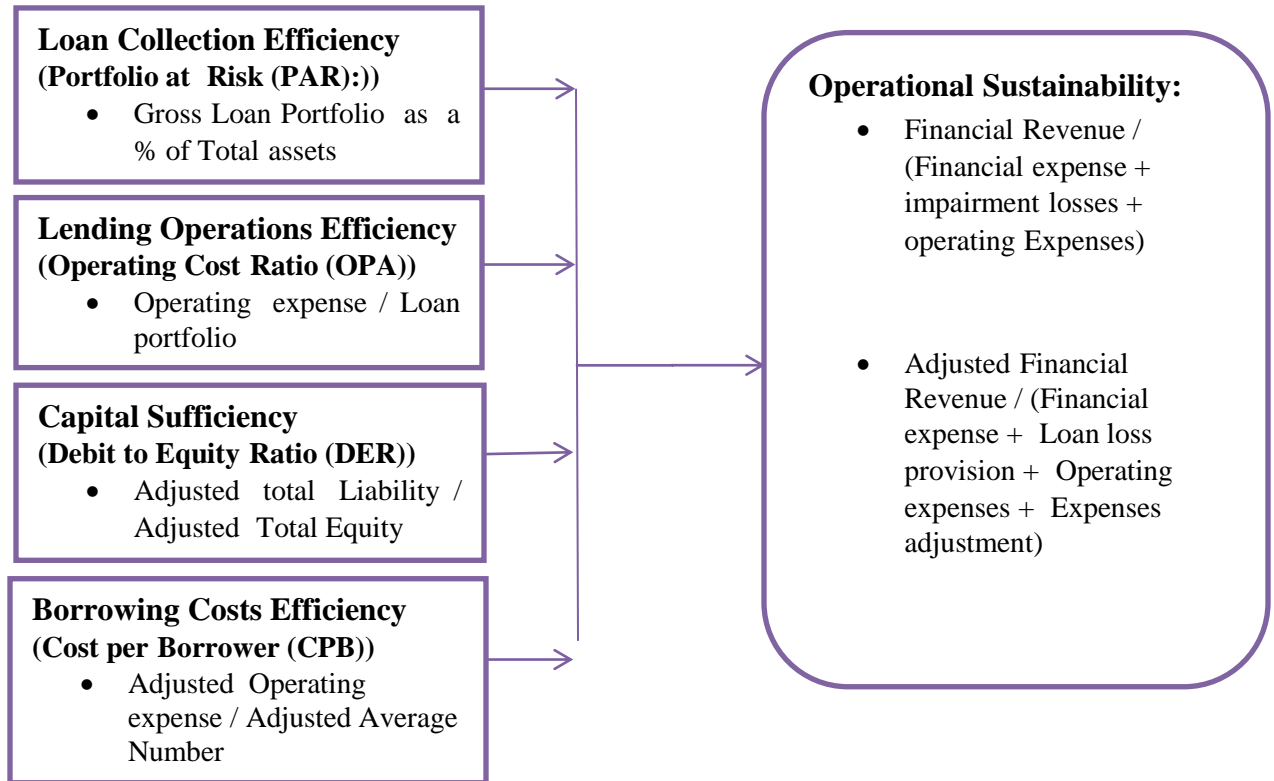
The cost per borrower is calculated by dividing an MFI's operating expenses by the average number of borrowers. According to Yoshi et al (2011), a lower cost per borrower indicates that an MFI is more efficient at lowering borrowing costs. As a result, MFIs with a lower ratio have a greater OSS, and the FSS and OSS of a particular MFI are negatively connected, resulting in a negative sign for the coefficient.

Figure 2.1 presents the conceptual framework of the study.

Figure 2.1 Conceptual Framework

Independent Variables

Dependent



2.6 Summary of the Literature Review

This chapter lays the theoretical foundation of the study by critically reviewing four theories; the life cycle theory, financial intermediation theory, Welfarist school of thought, and institutionist approach. The chapter then delves into past empirical findings on financial operational sustainability. Towards this end, literature from past research undertakings on; portfolio at risk, operating cost ratio, debit to equity ratio, and cost per borrower is reviewed has been reviewed. The chapter delves into a review on the determinants of operational sustainability of MFIs.

In view of the literature reviewed, it is clear that past empirical undertakings regarding the determinates of sustainability of MFs in have yielded mixed evidence; on the other

hand, most of the studies have focused on West Africa and the developed world with few focusing on Kenya where poverty is a serious problem, hence the current study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the research approach that were used in this study, as well as the relevant paradigms and specific research methodologies that were used. Following that, an overview of the key data sources is offered, along with specifics on data analysis, covering theoretical and practical components of the study. Deveci (2016) defines research methodology as a method for solving a problem in a systematic way. The techniques by which researchers go about their work of describing, explaining, and forecasting phenomena are referred to as research methodology (Yin, 2008). This chapter focused on; the research design, population, sampling frame and sample size, data collection methods, and data analysis methods that were used in the study

3.2 Research Design

The research design is the logical sequence that links empirical evidence to research questions, and then to the conclusion (Yin, 2013). In order to adequately answer the research issues, this study used a descriptive survey research approach (Creswell, 2009; 2014).

According to Kothari (2011), research design is the conceptual framework within which research is carried out; it is the blueprint for data collection, measurement, and analysis. As a result, the design comprises a description of what the researcher accomplishes, starting with formulating the hypothesis and its operational implications all the way through to data analysis (Donald, 2006). A descriptive

survey design allows a researcher to collect vast amounts of data from a big population utilizing questionnaires in a highly effective, simple, and cost-efficient manner. A descriptive survey also allows a researcher to collect quantitative data that he can evaluate using descriptive and inferential statistics (Creswell, 2014).

3.3 Population

A population, according to Mugenda & Mugenda (2003), is an amalgamation of all individuals who share certain features. All registered MFIs in Kenya were included in the current study's target population. There are six MFIs on the list according to (CBK report, 2021). Respondents in the survey were finance and credit managers. The current study used a Census sample technique because the target population was only 6 MFIs.

3.4 Data Collection

Secondary panel data from the audited financial statements of the individual MFIs in the country was used in the study. Portfolio structure, sustainability, and performance statistics were all included in the scope of the data. In addition to evaluating financial accounts and reports from MFIs for the last five years, five-year panel data was obtained utilizing a data collection instrument (between 2015 and 2019).

3.4.1 Diagnostic Tests

In statistics, assumptions are crucial because if the underlying assumptions are incorrect, the process was inaccurate, unexpected, and beyond the researcher's control (Stevens, 2009). The assumptions of linearity, normality, independence, and homoscedasticity, which were examined separately in the next sections, are included in the assumptions of multiple regression.

When relationships between variables are constant (Stevens, 2009) and directly proportional to each other, they are deemed linear (Stevens, 2009). Nonlinear interactions are common in the social sciences, thus it's critical to check your study for them (Kivilu, 2003; Steven, 2009). If this assumption is violated, the results of the study, such as R², regression coefficients, standard errors, and statistical significance, may be skewed, resulting in estimations that may not accurately reflect the underlying population values (Osborne & Waters, 2012). This underestimate of the findings could cause two issues: first, it could raise the chance of Type II error for that predictor variable, and second, it could increase the risk of Type I error (overestimation) for the other predictor variable(s) that share variance with that predictor variable (Osborne & Water, 2012). The linearity assumption was checked in this study by visually inspecting residual plots (Osborne & Waters, 2012; Stevens, 2009). A residual scatterplot is a graph that shows the standardized residuals (r_i) on one axis and the predicted values (y_i) on the other (Stevens, 2009). The standardized residuals scatter randomly around a horizontal line that depicts the standardized residuals equaling zero ($r_i=0$) if the linearity assumption is met (Stevens, 2009)

The homoscedacity assumption states that the variance of mistakes is constant and equal at all levels of the variables (Osborne & Waters, 2002; Stevens, 2009). Homoscedasticity is linked to the assumption of normalcy since the connection between the variables is homoscedastic when the assumption of normality is met. When the variance of errors differs for different values of the independent variables, this is known as heteroscedasticity (Osborne & Waters, 2002). When heteroscedasticity is mild, it has no effect on significance tests; however, when heteroscedasticity is

severe, it can cause major distortions in results and weaken the analysis, raising the risk of a Type 1 error for small sample sizes (Osborne & Waters, 2002).

The homoscedasticity assumption was examined in this study by visually inspecting the same standardized residual plots and predicted values given in the assumption of linearity part of this paper (Osborne & Waters, 2002). The residuals seem randomly spread around the horizontal line showing $r_i=0$ if the homoscedasticity assumption is met. Heteroscedacity can take numerous forms, two of which are bow-tie and fan shape (Osborne & Waters, 2002).

The explanatory variables, the X's, should be independent of (not perfectly connected with) one another to generate the best linear unbiased estimators (Rusvingo, 2015). As a result, multicollinearity was described in terms of deviations from the X's independence, or non-correlation, with one another (Reyes, 2017).

Because residuals are supposed to be regularly distributed, screening for normality is a critical first step when conducting multiple regression (Stevens, 2009; Tabachnick & Fidell, 2006). Non-normal distributions that are positively or negatively skewed, have a lot of kurtosis, or have a lot of extreme outliers might skew the results of the study, making the standard errors biased (Osborne & Waters, 2002). Prior to further interpretation of the regression analysis, graphical approaches such as histograms and normality plots was used to give a visual evaluation of the normal distribution of a data set (Tabachnick & Fidell, 2006). Histograms can provide essential details about a distribution's shape. A normal distribution arises when the majority of the scores cluster around the middle of the continuum and there is a progressive, symmetric decline in frequency on each side of the center score.

Skewed scores, on the other hand, are not symmetric and are spread out away from the majority. It is positively skewed if the 'tail' (a small portion of the distribution) is stretched out to the right, and negatively skewed if the 'tail' is spread out to the left. The shape of any or no peaks within a distribution is referred to as kurtosis (Tabachnick & Fidell, 2006). When the error term data in a regression are correlated, this is known as autocorrelation. Multiple regression assumes that the residuals between the actual score and the estimated score produced from the regression equation are independent and that there is no serial correlation (Stevens, 2009). Because there is no serial correlation between the residuals, the magnitude of one variable's residual has no bearing on the size of another variable's residual. As a result of the independence assumption, the variables and residuals must be independent, and the subjects must respond independently of one another (Stevens, 2009).

The independence assumption is a fundamental assumption that should be investigated before any interpretation of multiple regression analysis, since its violation could have serious consequences (Stevens, 2009). Even a little breach of the independence assumption should be considered carefully since it can dramatically raise the risk of Type 1 error, leading in a risk of incorrectly rejecting the null hypothesis several times higher than the test's expected level of error (Stevens, 2009).

The Durbin-Watson statistic was used to test for first-order autocorrelation using appropriate econometric software. The Durbin-Watson statistic can be used to determine whether or not there is serial correlation between residuals. Durbin-Watson statistics have a range of values from 0 to 4, however if the Durbin-Watson

statistic is between 1.5 and 2.5, the residuals are deemed uncorrelated. Even before it is estimated, the theoretical error term is a random variable that is part of the regression model.

This error phrase denotes a random "shock" to the model, or something that isn't there in it. However, the actual error word is never shown. To check for autocorrelation, we employ the error term observations or residuals ($\hat{\epsilon}$). The Durbin-Watson statistic, in summary, ranges from 0 to 4: Positive autocorrelation is shown by values near 0; no autocorrelation is indicated by values near 2; and negative autocorrelation is indicated by values near 4.

3.5 Data Analysis

Data collected was cleaned, edited, coded and keyed into SPSS computer software (version 24) and analyzed. Initially screening of data was done using sort functions. Data organization was based on the variables as per the objectives format.

3.5.1 Analytical Model

The association between numerous parameters and the financial and operational sustainability of Micro Finance Institutions were established using a multiple regression line. The model was as follows:

Sustainability in terms of finances and operations = f (portfolio at risk, Operating cost ratio, debt to equity ratio, and Operating expense ratio)

Amount financial revenue was divided by the total of financial expense, operating expense, and loan provision expense to determine operational self-sufficiency (OSS).

The various indicators were chosen based on the literature assessment, with OSS of 100% or more indicating that an MFI is operationally sustainable. The multiple regression line was computed as; $FOS = \beta_0 + \beta_1PAR + \beta_2OPA + \beta_3DER + \beta_4CPB + \alpha$

Where

FOS = Financial and Operational Sustainability

β_0 = Constant term

β_1PAR = coefficient of portfolio at Risk for MFI “i” for “t” time period

β_2OPA = Coefficient of operating cost ratio for MFI “i” for “t” time period

β_3DER = Coefficient of Debit to Equity ratio for MFI “i” for “t” time period

β_4CPB = Coefficient of Cost per Borrower for MFI “i” for “t” time period

α = Random error

3.5.2 Test of Significance

To test the hypotheses, simple and multiple regression was used. Where p value > 0.05 then the null hypothesis was accepted but when p < 0.05 the null hypothesis was rejected.

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRATATION

4.1 Introduction

This chapter sought to assess the organizational characteristics, analyse the specific objectives including investigate the effect of Loan Collection Efficiency on the financial and operational sustainability of micro-finance institutions in the country; determine the influence of Lending Operations Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya; explore the Capital Sufficiency on the financial and operational sustainability of micro-finance institutions in; and investigate the influence of Borrowing Costs Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya. The chapter also assessed the assumptions of regression and perform multiple regression to determine the relationship between the variables.

4.1.1 Response rate

The study sampled 6 micro-finance institutions in Kenya. From this, 5 year data responses were sought. There were therefore 30 cases of data expected and the study was able to collect data about all the 30 cases. The response rate for the study was therefore 100%.

4.2 Organizational Characteristics

The study sought to assess the organizational characteristics of the firms participating in the study. This was in an effort to ensure that there was no bias on the data being collected about the DTM. The organizational characteristic sought by the study included; Age of the DTM, Asset size of the DTM and the Market Shares controlled by the DTM in each of the respective years for each DTM.

Table 4.1 Organizational Characteristics of the DTM

	Frequency	Percentage
Age of the DTM		
Less than 10 years	0	0.00
11 - 20 Years	24	80.00
Over 20 Years	6	20.00
Total	30	100.00
Asset size		
Less than 10 Million	8	26.67
10 - 100 Million	18	60.00
Over 100 Million	4	13.33
Total	30	100.00
Market Share		
Less than 10%	12	40.00
11% - 20%	12	40.00
21% - 30%	4	13.33
Over 30%	2	6.67
Total	30	100.00

The study established that all the MFIs had operated for over 10 years in the last 5 years, there were 24 cases (80%) of instances where the MFIs in question had operated for between 11 – 20 years and 6 cases(20%) who had operated for over 20 years.

There were also 8 instances (26.67%) of cases where the MFIs had operated with less than 10 million, 18 instances (60%) where the MFIs had operated with between 10 – 100 Million assest size and 4 instance (13.33%) where the MFIs had operated withassests sizes of ver 100 Million.

There were also 12 (40%) instances where MFI controlled by less than 10% of the market share, 12 (40%) instances where the MFI had controlled between 11 – 20% of the markert share, 4 (13.33%) instances where the MFIs had controlled 21 -30% of the marker share ad 2 (6.67%) instances where the MFIs had operated for over 30%

This results were interpreted to mean that most of the MFIs shared almost similar characteristics. There were no outliers in the organizational characteristics of the MFIs operating in the region. This was important to avoid bias.

4.3 Analysis of Specific Objectives

The study sought to assess the the specific objectives including investigate the effect of Loan Collection Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya; determine the influence of Lending Operations Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya; explore the Capital Sufficiency on the financial and operational sustainability of micro-finance institutions in Kenya; and investigate the influence of Borrowing Costs Efficiency on the financial and operational sustainability of micro-finance institutions in Kenya.

4.3.1 Loan Collection Efficiency

To assess loan efficiency, data on Portfolio at Risk (PAR) was collected. The results were presented in table 4.2

Table 4.2 Loan Collection Efficiency (Portfolio at Risk (PAR) Data)

Descriptives									
PAR									
	N	Mean	Std. Dev	Std. Error	95% C.I		Min	Max	
					Lower Bound	Upper Bound			
Faulu Kenya DTM Limited	5	0.092	0.027	0.012	0.059	0.125	0.05	0.12	
KWFT DTM Limited	5	0.098	0.040	0.018	0.049	0.147	0.06	0.16	
EP DTM	5	0.172	0.029	0.013	0.136	0.208	0.14	0.21	
Rafiki DTM	5	0.080	0.021	0.009	0.054	0.106	0.05	0.10	
Uwezo DTM Ltd	5	0.114	0.039	0.017	0.067	0.161	0.05	0.15	

Jitegemee Trust Limited	5	0.090	0.026	0.012	0.057	0.123	0.06	0.13
Total	30	0.108	0.042	0.008	0.092	0.123	0.05	0.21

Study findings indicated that Faulu Kenya DTM Limited had a PAR mean of 0.092, KWFT DTM Limited had a PAR mean of 0.098, EP DTM had a PAR mean of 0.172, Rafiki DTM had a PAR mean of 0.080, Uwezo DTM Ltd had a PAR mean of 0.114 and Jitegemee Trust Limited had a PAR mean of 0.090.

Table 4.3: ANOVA results on Loan Collection Efficiency (Portfolio at Risk (PAR))

ANOVA					
PAR					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.028	5	.006	5.900	.001
Within Groups	.023	24	.001		
Total	.051	29			

Study findings further indicated that there were significant variations ($p= 0.001$) in the PAR means of the respective DTMs in Kenya. This meant that different MFIs had varying PARs.

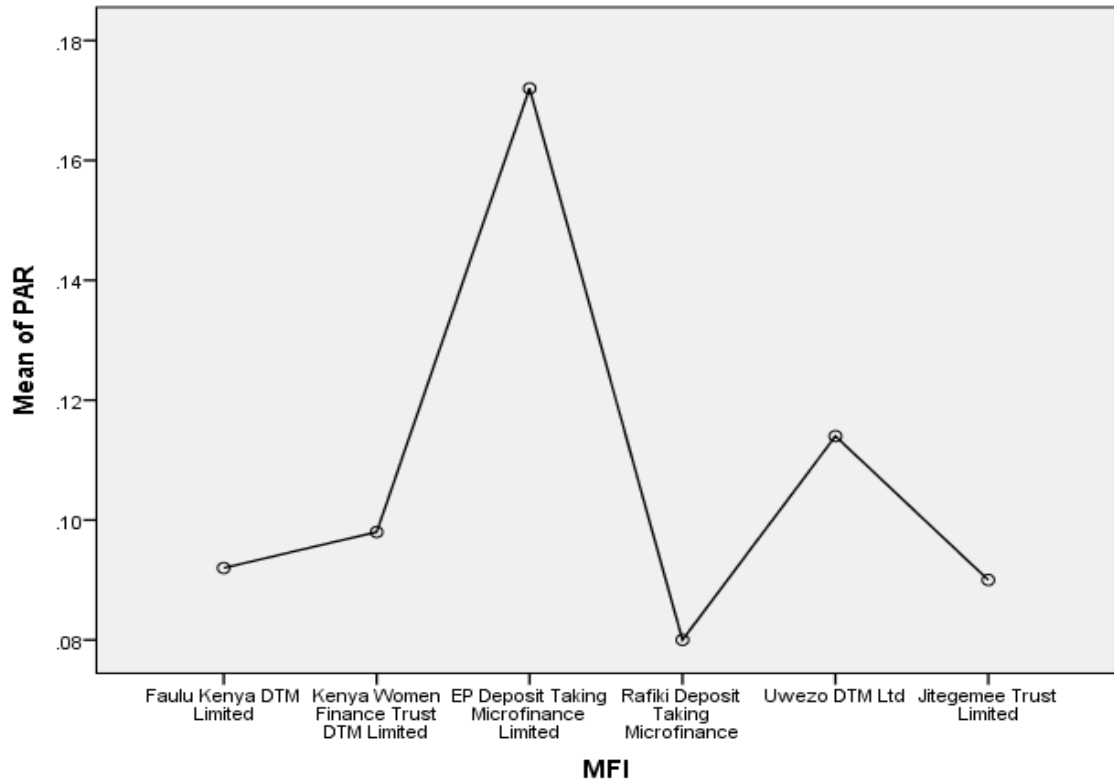


Figure 4.1: Loan Collection Efficiency (Portfolio at Risk (PAR) Data)

Graphically, EP DTM was shown to be the best performing MFI in the county with a PAR mean of 0.172 followed by Uwezo DTM with a mean 0.114. The least performing DTM was Rafiki DTM with a mean of 0.080

Overall the results were interpreted to mean that PAR ratios for the MFIs varied significantly and hence the MFIs had different levels of Loan Collection Efficiency. This varied between 8% – 17.2%

4.3.2 Lending Operations Efficiency

To assess lending operation efficiency, data on Operating Cost Ratio (OPA) was collected.

The results were presented in table 4.3

Table 4.4: Lending Operations Efficiency (Operating Cost Ratio (OPA) Data)

Descriptives								
OPA								
	N	Mean	Std. Dev	Std. Error	95% C.I.		Min	Max
					Lower Bound	Upper Bound		
Faulu Kenya DTM Limited	5	0.348	0.051	0.023	0.285	0.411	0.3	0.42
KWFT DTM Limited	5	0.238	0.033	0.015	0.197	0.279	0.19	0.27
EP DTM	5	0.242	0.019	0.009	0.218	0.266	0.22	0.27
Rafiki DTM	5	0.338	0.038	0.017	0.290	0.386	0.29	0.39
Uwezo DTM Ltd	5	0.116	0.022	0.010	0.089	0.143	0.09	0.15
Jitegemee Trust Limited	5	0.212	0.028	0.012	0.178	0.247	0.18	0.25
Total	30	0.249	0.085	0.016	0.217	0.281	0.09	0.42

Study findings indicated that Faulu Kenya DTM Limited had a OPA mean of 0.348, KWFT DTM Limited had a OPA mean of 0.238, EP DTM had a OPA mean of 0.242, Rafiki DTM had a OPA mean of 0.338, Uwezo DTM Ltd had a OPA mean of 0.116 and Jitegemee Trust Limited had a OPA mean of 0.212.

Table 4.5: ANOVA results on Lending Operations Efficiency (Operating Cost Ratio (OPA))

ANOVA					
OPA					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.185	5	0.037	32.942	0.000
Within Groups	0.027	24	0.001		
Total	0.212	29			

Study findings further indicated that there were significant variations ($p= 0.000$) in the OPA means of the respective DTMs in Kenya. This meant that different MFIs had varying OPAs.

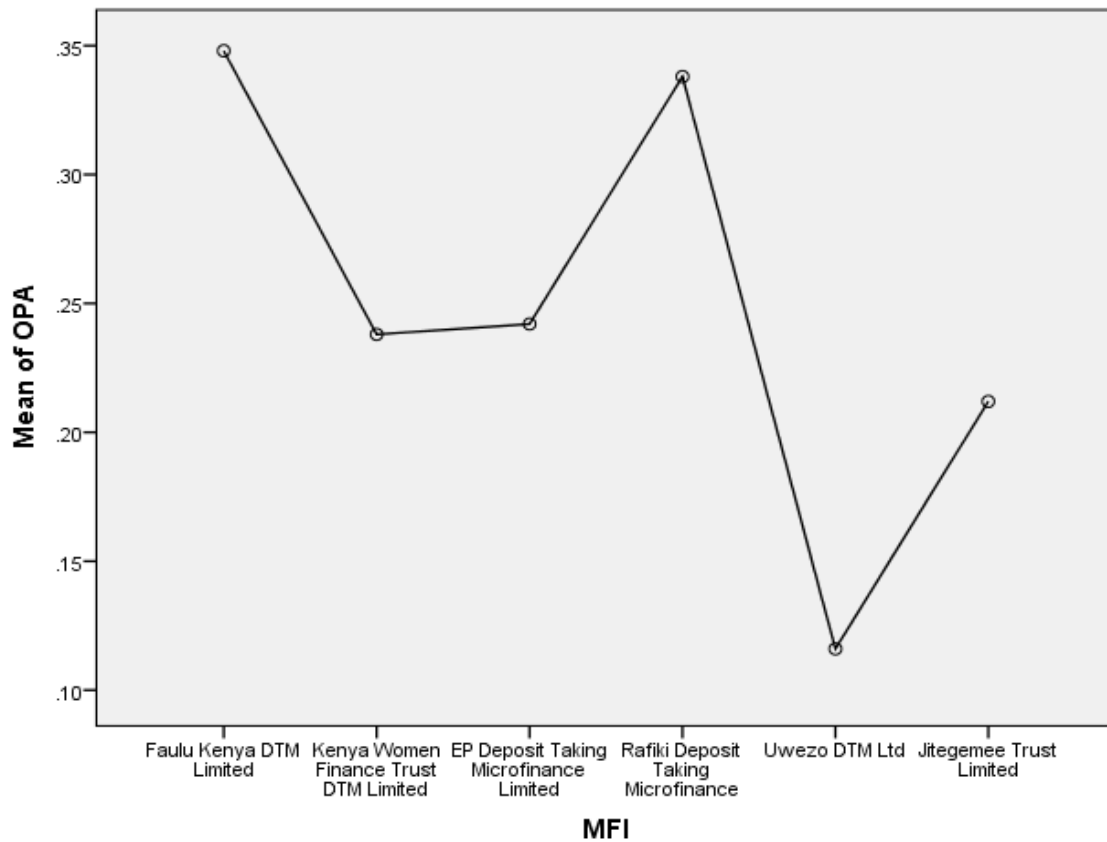


Figure 4.2: Lending Operations Efficiency (Operating Cost Ratio (OPA) Data)

The results indicated that Faulu Kenya had the highest OPA mean at 0.348 followed by Rafiki deposit taking at 0.338. The lowest was Uwezo DTM Ltd at 0.116

Overall the results were interpreted to mean that OPA ratios for the MFIs varied significantly and hence the MFIs had different levels of lending operations efficiency.

This varied between 11.6% – 34.8%.

4.3.3: Capital Sufficiency

To assess capital efficiency, data on Debit to Equity Ratio (DER) was collected. The results were presented in table 4.6

Table 4.6: Capital Sufficiency (Debit to Equity Ratio (DER) Data)

Descriptives									
DER									
	N	Mean	Std. Dev	Std. Error	95% C.I for Mean		Min	Max	
					Lower Bound	Upper Bound			
Faulu Kenya DTM Limited	5	7.82	1.432	0.641	6.041	9.599	5.6	9.2	
KWFT DTM Limited	5	8	2.296	1.027	5.150	10.850	4.4	10.7	
EP DTM	5	6.32	1.540	0.689	4.408	8.232	3.6	7.4	
Rafiki DTM	5	2.82	0.482	0.215	2.222	3.418	2.3	3.5	
Uwezo DTM Ltd	5	5	1.614	0.722	2.996	7.004	2.2	6.3	
Jitegemee Trust Limited	5	9.14	4.002	1.790	4.171	14.109	3.8	13.2	
Total	30	6.5167	2.925	0.534	5.424	7.609	2.2	13.2	

Study findings indicated that Faulu Kenya DTM Limited had a DER mean of 7.28, KWFT DTM Limited had a DER mean of 8.00, EP DTM had a DER mean of 6.32, Rafiki DTM had a DER mean of 2.82, Uwezo DTM Ltd had a DER mean of 5.00 and Jitegemee Trust Limited had a DER mean of 9.14.

Table 4.7: ANOVA results on Capital Sufficiency (Debit to Equity Ratio (DER)

ANOVA					
DER					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	133.926	5	26.785	5.629	0.001
Within Groups	114.196	24	4.758		
Total	248.122	29			

Study findings further indicated that there were significant variations ($p= 0.001$) in the DER means of the respective DTMs in Kenya. This meant that different MFIs had varying DERs.

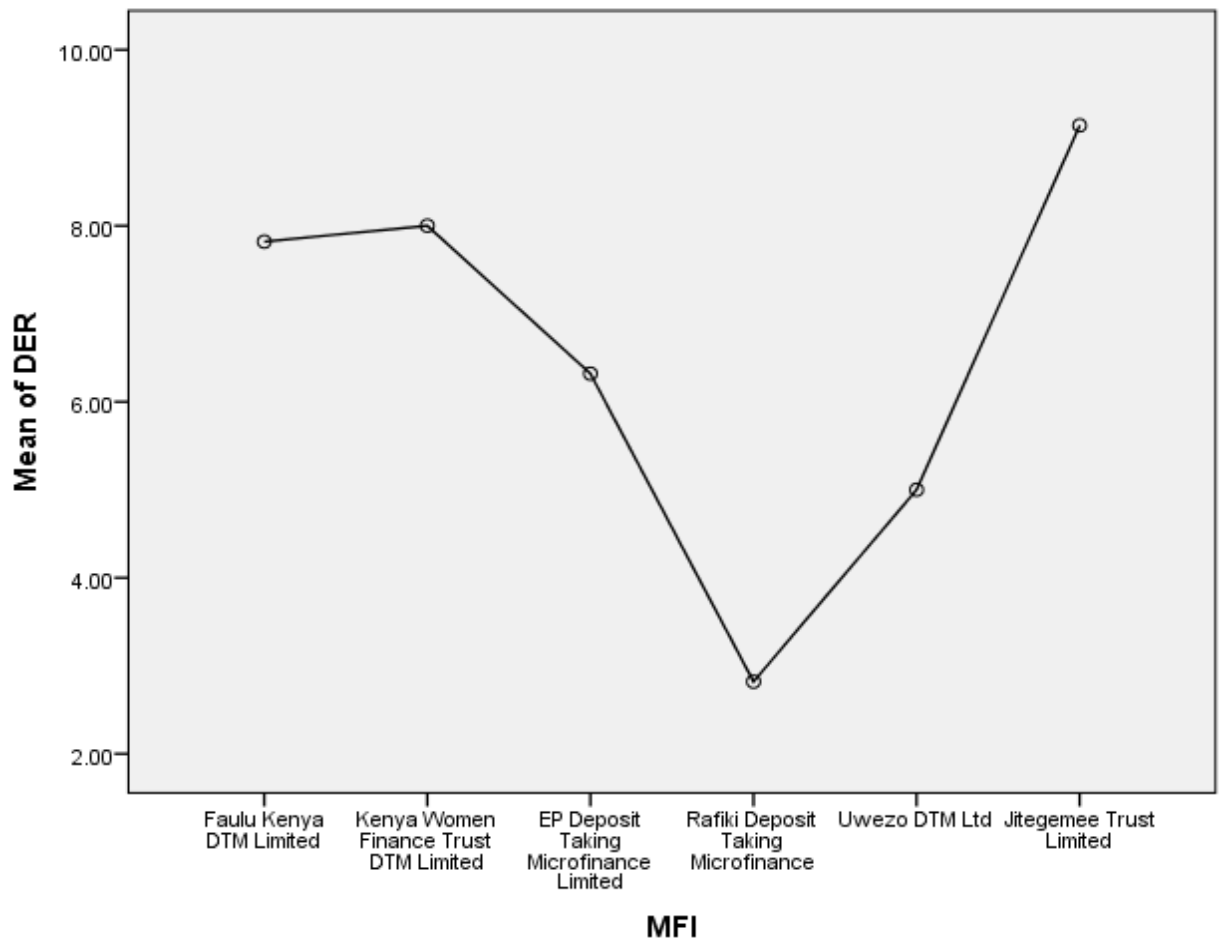


Figure 4.3: Capital Sufficiency (Debit to Equity Ratio (DER) Data)

Study results indicated that jitegemee Trust Ltd had the highest DER ratio at 9.14, followed by KWFT at 8.00. Rafiki Deposit taking Microfinance had the lowest DER at 2.82.

Overall the results were interpreted to mean that capital sufficiency for the MFIs varied significantly and hence the MFIs had different levels of debt equity ratio (DER). This varied between 2.82 – 9.14.

4.3.4 Borrowing Costs Efficiency

To assess borrowing cost efficiency, data on **Cost per Borrower (CPB)** was collected. The results were presented in table 4.8

Table 4.8: Borrowing Costs Efficiency (Cost per Borrower (CPB) Data)

Descriptives								
CPB								
	N	Mean	Std. Deviation	Std. Error	95% C.I. for Mean		Min	Max
					Lower Bound	Upper Bound		
Faulu Kenya DTM Limited	5	0.308	0.051	0.023	0.245	0.371	0.26	0.38
KWFT DTM Limited	5	0.198	0.033	0.015	0.157	0.239	0.15	0.23
EP DTM	5	0.202	0.019	0.009	0.178	0.226	0.18	0.23
Rafiki DTM	5	0.298	0.038	0.017	0.250	0.346	0.25	0.35
Uwezo DTM Ltd	5	0.298	0.038	0.017	0.250	0.346	0.25	0.35
Jitegemee Trust Limited	5	0.172	0.028	0.012	0.138	0.207	0.14	0.21
Total	30	0.246	0.066	0.012	0.221	0.271	0.14	0.38

Study findings indicated that Faulu Kenya DTM Limited had a CPB mean of 0.308, KWFT DTM Limited had a CPB mean of 0.198, EP DTM had a CPB mean of 0.202, Rafiki DTM had a CPB mean of 0.298, Uwezo DTM Ltd had a CPB mean of 0.298 and Jitegemee Trust Limited had a DER mean of 0.172.

Table 4.9: ANOVA results on Borrowing Costs Efficiency (Cost per Borrower (CPB))

ANOVA					
CPB					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.095	5	0.019	14.742	0.000
Within Groups	0.031	24	0.001		
Total	0.126	29			

Study findings further indicated that there were significant variations ($p= 0.000$) in the CPB means of the respective DTMs in Kenya. This meant that different MFIs had varying CPBs.

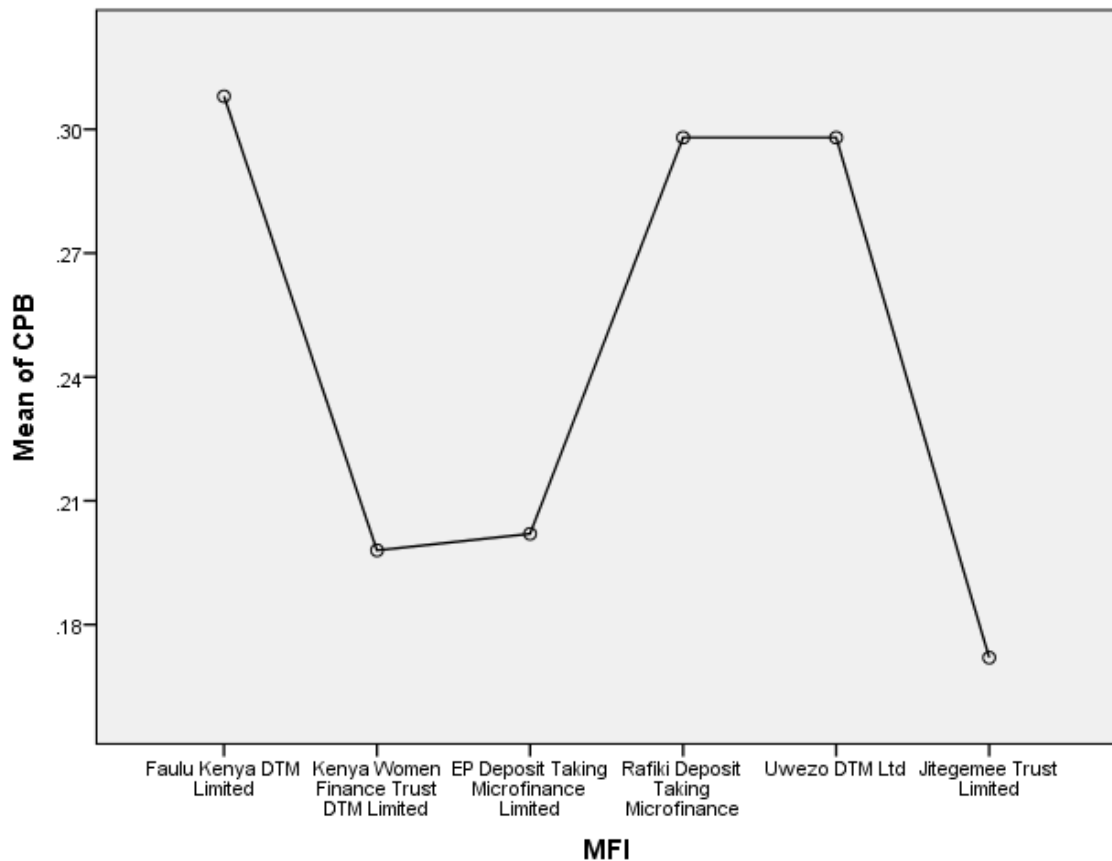


Figure 4.4: Borrowing Costs Efficiency (Cost per Borrower (CPB) Data)

Study results indicated that Faulu Kenya DTM had the highest CPB ratio at 0.308 followed by both Rafiki DTM and Uwezo DTM Ltd at 0.298. The least was KWFT at 0.198.

Overall the results were interpreted to mean that borrowing cost efficiency for the MFIs varied significantly and hence the MFIs had different levels of Cost per borrower ratio (CPB). This varied between 19.8%– 30.8%.

4.4 Inferential Statistics

Inferential statistics of the data were conducted. This was preceded by diagnostic tests and finally the multiple linear regressions.

4.4.1 Diagnostics Tests

Diagnostics tests for the data used in the analysis was done under this section.

Table 4.10: Normality

Tests of Normality				
		Shapiro-Wilk		
	Statistic	df	Sig.	
Loan Collection Efficiency	0.889	29	0.237	
Lending Operations Efficiency	0.820	29	0.103	
Capital Sufficiency	0.856	29	0.311	
Borrowing Costs Efficiency	0.817	29	0.503	
a. Lilliefors Significance Correction				

The null hypothesis for this test is that the data are normally distributed. If the p-value is greater than 0.05, then the null hypothesis is not rejected. The data hence meets normality criteria as all dimensions had $p > 0.05$

Table 4.11 Linearity test

		Sum of Squares	df	Mean Square	F	Sig.
Loan Collection Efficiency	Deviation from Linearity	12.795	29	6.398	18.401	.241
Lending Operations Efficiency	Deviation from Linearity	2.771	29	1.386	.952	.410
Market Share	Deviation from Linearity	4.538	29	2.269	2.309	.111
Borrowing Costs Efficiency	Deviation from Linearity	3.315	29	1.658	1.493	.236

$P > 0.05$ indicates that there is no significant deviation from linearity. The data hence meets linearity criteria as all dimensions had $p > 0.05$

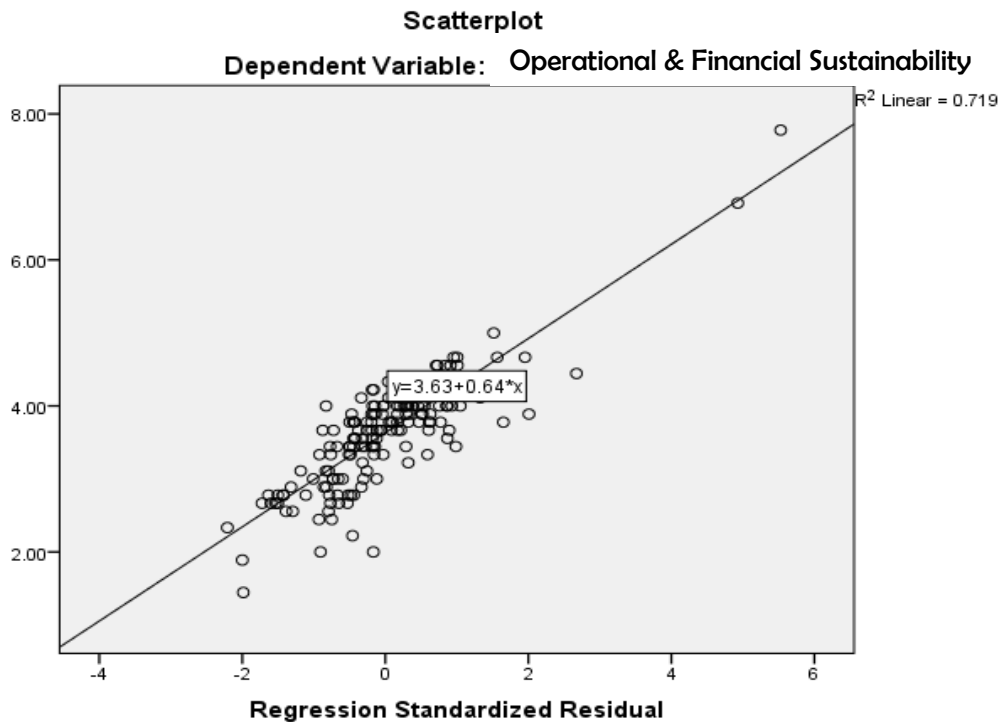


Figure 4.8: Homoscedasticity Plot Chart

From the scatter plots in fig 4.5 reveals an approximate linear relationship between the dependent and the independent variables. The data therefore was not heterodastic.

Table 4.12: Testing Autocorrelation

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.530 ^a	0.281	0.264	0.64499	1.938

a. Predictors: (Constant), Borrowing Costs Efficiency, Capital Sufficiency, Lending Operations Efficiency, Loan Collection Efficiency

b. Dependent Variable: Operational & Financial Sustainability

The Durbin-Watson score of 1.938 indicates that there was no autocorrelation from the data, which is consistent with values of >1.5 and 2.5 (Field, 2009).

Table 4.13: Multicollinearity Test

Coefficients^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Loan Collection Efficiency	0.683	1.464
	Lending Operations Efficiency	0.753	1.328
	Capital Sufficiency	0.712	1.405
	Borrowing Costs Efficiency	0.787	1.271

a. Dependent Variable: Operational & Financial Sustainability

VIF values ranged between 1.271 and 1.464 which were less than 10 implying that there was no multicollinearity.

4.4.2 Multiple Regression Results

The study computed the effect of the independent variables on the dependent variable. This was done by computing the multiple regression. This was presented in table 4.14

Table 4.14: Multiple Regression Results

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.861 ^a	0.741	0.70	0.0608		
a. Predictors: (Constant), CPB, PAR, DER, OPA						
ANOVA^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.265	4	0.066	17.897	.000 ^b
	Residual	0.092	25	0.004		
	Total	0.357	29			
a. Dependent Variable: Operational & Financial Sustainability						
b. Predictors: (Constant), CPB, PAR, DER, OPA						
Coefficients^a						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			

1	(Constant)	0.133	0.074		1.787	0.086
	PAR	0.396	0.281	0.149	1.407	0.172
	OPA	0.957	0.145	0.737	6.609	0.000
	DER	0.024	0.004	0.635	5.86	0.000
	CPB	0.918	0.199	0.545	4.607	0.000

a. Dependent Variable: **Operational & Financial Sustainability**

Study results presented indicated that over 74.1% of the data (R Square 0.741) participated in the study. This was above the 50% threshold hence the data was considered sufficient to compute the regression model.

The Goodness of fit test (ANOVA) also showed significant variations in the data collected $p = 0.000$ ($p < 0.05$) to imply that the data used in computing the model had not been computed by chance and hence the model was a good predictor of the relationship between the independent and the dependent variables.

On the coefficients of regression, the results indicated that there was no significant relationship $p < 0.05$ between Loan Collection Efficiency (Portfolio at Risk (PAR)) ($p = 0.172$), Lending Operations Efficiency (Operating Cost Ratio (OPA)) ($p = 0.000$), Capital Sufficiency, (Debit to Equity Ratio (DER)) ($p = 0.000$), Borrowing Costs Efficiency (Cost per Borrower (CPB)) ($p = 0.000$) and Operational & Financial Sustainability.

Findings further revealed that Lending Operations Efficiency (Operating Cost Ratio (OPA)) contributed most to Operational & Financial Sustainability (95.7%) followed by Borrowing Costs Efficiency (Cost per Borrower (CPB)) (91.8%), Loan Collection Efficiency (Portfolio at Risk (PAR)) (39.6%) and Capital Sufficiency, (Debit to Equity Ratio (DER)) (2.4%) to Operational & Financial Sustainability.

$$Y = 0.133 + 0.957 \text{ Lending Operations Efficiency} + 0.918 \text{ Borrowing Costs Efficiency} + 0.396 \text{ Loan Collection Efficiency} + 0.024 \text{ Capital Sufficiency} + 0.074 \text{ error}$$

4.5 Discussions of the Findings

According to the study's conclusions, there is no connection between operational and financial sustainability and loan collection efficiency. Despite the majority of loans made by MFIs being viewed as high risk due to the lack of collateral and the fact that they are typically given to vulnerable and low-income borrowers, Dante (2015) stated that these loans are routinely made. Despite this, the MFI loan repayment rate has historically shown to be high. Additionally, non-performing loan percentages and other metrics of how MFIs are able to make money from their assets are subjective, according to Karen (2017). According to Ledgerwood et al. (2013), these characteristics should typically be used when comparing similar institutions in the same industry as well as evaluating the overall financial performance, stability, and health of MFIs over time.

The study's results also revealed that the operational and financial sustainability of loans has a significant impact. Baker (2016), who noticed that poorly informed loan decisions had an impact on profits, backed these conclusions. Manual underwriting procedures that aren't necessary can lead to mistakes or inconsistent lending choices. Furthermore, the Obed (2017) study discovered that the impact of operational efficiency in lending on ROA is statistically significant at the 5% level. As a result, the study draws the conclusion that operational effectiveness and ROA are statistically related. The study also discovered that operational cost ratio, albeit not statistically significant, affects ROA of firms listed on the NSE.

A significant link between the findings on capital sufficiency and operational and financial sustainability was discovered. Barino (2018), who emphasized that capital sufficiency influences a bank's capacity in terms of satisfying time liabilities and other risks like credit risk, operational risk, etc., validated these findings. It safeguards the

interests of the bank's depositors and other lenders by assisting in cushioning the bank against potential losses.

Omanga (2016) also pointed out that sufficient capital requirements reduce the likelihood that banks will fail in the event of abrupt shocks. The minimal legislative fundamental requirements are as of the Finance Act of 2008. The CBK periodically reviews and continuously monitors these capital adequacy standards. Loss of license, liquidation, or merger of the commercial bank result from noncompliance.

Watts and Zimmerman (2016), Beatty, et al., (2017), and Omid, et al., (2018) all supported the findings that there was a significant correlation between borrowing costs efficiency and operational and financial sustainability. They also suggested a positive relationship between borrowing costs and lender performance. Furthermore, Waweru and Riro (2013) discovered evidence suggesting that managers in Kenyan enterprises with high levels of leverage earn more than those in unleveraged firms. Zamri, Rahman, and Isa (2013), in contrast, find that Malaysian managers in modestly leveraged enterprises conduct more earning management than those in leveraged firms.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter reviewed the summary of findings, provided the conclusion, recommendations, limitations of the study and the suggestions for further studies

5.2 Summary

To assess loan efficiency, data on Portfolio at Risk (PAR) was collected. Study findings further indicated that there were significant variations ($p= 0.001$) in the PAR means of the respective DTMs in Kenya. This meant that different MFIs had varying PARs. Graphically, EP DTM was shown to be the best performing MFI in the county with a PAR mean of 0.172 followed by Uwezo DTM with a mean 0.114. The least performing DTM was Rafiki DTM with a mean of 0.080. Overall the results were interpreted to mean that PAR ratios for the MFIs varied significantly and hence the MFIs had different levels of Loan Collection Efficiency. This varied between 8% – 17.2%.

To assess lending operation efficiency, data on Operating Cost Ratio (OPA) was collected. Study findings further indicated that there were significant variations ($p= 0.000$) in the OPA means of the respective DTMs in Kenya. This meant that different MFIs had varying OPAs. The results indicated that Faulu Kenya had the highest OPA mean at 0.348 followed by Rafiki deposit taking at 0.338. The lowest was Uwezo DTM ltd at 0.116 Overall the results were interpreted to mean that OPA ratios for the MFIs varied significantly and hence the MFIs had different levels of lending operations Efficiency. This varied between 11.6% – 34.8%.

To assess capital efficiency, data on Debit to Equity Ratio (DER) was collected. Study findings further indicated that there were significant variations ($p= 0.001$) in the DER means of the respective DTMs in Kenya. This meant that different MFIs had varying DERs. Study results indicated that Jitegemee Trust Ltd had the highest DER ratio at 9.14, followed by KWFT at 8.00. Rafiki Deposit Takig Microfinance had the lowest DER at 2.82. Overall the results were interpreted to mean that capital sufficiency for the MFIs varied significantly and hence the MFIs had different levels of debt equity ratio (DER). This varied between 2.82 – 9.14.

To assess borrowing cost efficiency, data on Cost per Borrower (CPB) was collected. Study findings further indicated that there were significant variations ($p= 0.000$) in the CPB means of the respective DTMs in Kenya. This meant that different MFIs had varying CPBs. Study results indicated that Faulu Kenya DTM had the highest CPB ratio at 0.308 followed by both Rafiki DTM and Uwezo DTM Ltd at 0.298. The least was KWFT at 0.918. Overall the results were interpreted to mean that borrowing cost efficiency for the MFIs varied significantly and hence the MFIs had different levels of Cost per borrower ratio (CPB). This varied between 19.8%– 30.8%.

On the coefficients of regression, the results indicated that there was no significant relationship $p<0.05$ between Loan Collection Efficiency (Portfolio at Risk (PAR)) ($p = 0.172$), Lending Operations Efficiency (Operating Cost Ratio (OPA)) ($p = 0.000$), Capital Sufficiency, (Debit to Equity Ratio (DER)) ($p = 0.000$), Borrowing Costs Efficiency (Cost per Borrower (CPB)) ($p = 0.000$) and Operational & Financial Sustainability. Findings further revealed that Lending Operations Efficiency (Operating Cost Ratio

(OPA)) contributed most to Operational & Financial Sustainability (95.7%) followed by Borrowing Costs Efficiency (Cost per Borrower (CPB)) (91.8%), Loan Collection Efficiency (Portfolio at Risk (PAR)) (39.6%) and Capital Sufficiency, (Debit to Equity Ratio (DER)) (2.4%) to Operational & Financial Sustainability.

5.3 Conclusions

The study found no correlation between effective debt collection and operational and financial viability. Due to the lack of collateral and the fact that MFI loans are typically given to vulnerable and low-income borrowers, they are considered high risk loans. Despite this, the MFI loan repayment rate has historically shown to be high. Non-performing loan ratios are arbitrary indicators of how well MFIs are able to profit from their assets.

The study also came to the conclusion that operational and financial sustainability are significantly impacted by lending efficiency. Profits are impacted by poorly informed loan decisions. Manual underwriting procedures that aren't necessary can lead to mistakes or inconsistent lending choices. It is statistically significant that operational efficiency in lending has an impact on ROA. As a result, the study draws the conclusion that operational effectiveness and ROA are statistically related. The study also discovered that operational cost ratio, albeit not statistically significant, affects ROA of firms listed on the NSE.

The study also found a significant association between capital adequacy and operational sustainability. A bank's ability to meet its obligations on schedule and to take on other risks, such as credit risk and operational risk, is determined by its capital sufficiency. It

safeguards the interests of the bank's depositors and other lenders by assisting in cushioning the bank against potential losses. Ample capital requirements reduce the likelihood that banks may go bankrupt if unexpected shocks happen. The minimal legislative fundamental requirements are as of the Finance Act of 2008. The CBK periodically reviews and continuously monitors these capital adequacy standards. Loss of license, liquidation, or merger of the commercial bank result from noncompliance.

Finally, the study found a significant correlation between operational sustainability and borrowing costs efficiency. The performance of lenders and borrowing costs are positively correlated. In Kenya, managers of highly leveraged companies tend to earn more than those of unleveraged companies. More earning management is used by managers in organizations with moderate leverage than in firms with high leverage.

5.4 Recommendations for Policy and Practice

The study suggests that, in terms of policy and practice, MFI management should be updated in light of contemporary financial innovations and implement them in their organizations in order to compete advantageously with other institutions that provide financial services.

The report also suggests that the government implement methods and laws to control MFIs' activities with regard to credit risk, so that when a borrower defaults on a loan, the government can step in to help those MFIs reduce the impact.

In order to reduce the likelihood of customer credit default due to higher interest rates, the government should also take into account the interest rates at which CBK and commercial banks lend money to MFIs. By lowering these interest rates, MFIs will then be able to offer loans to customers at lower rates.

5.5 Limitations of the study

The study limitations included; the inability to get all the secondary data needed. The researcher however employed generalization and in other cases estimates were used as data. This ensured the completeness of the data that was being sought and used for analysis.

The study also faced challenges in accessing the insituions which were to participate in the data. Most found the practice to be an audit practice and did not want to participate. The researcher however employed the assistance of management of school and also the institutional letters given by the authorities including the university and NACOSTI to show the purpose of collecting the data.

5.6 Suggestions for further studies

The study made the following recommendations for further studies; to assess the moderating effect financial innovations on operational sustainability and performance of MFIs in Kenya and to evaluate the role of financial management on financial innovations of MFIs

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