MODERATING EFFECT OF INCOME DIVERSIFICATION ON THE RELATIONSHIP BETWEEN FINANCIAL STRUCTURE AND FINANCIAL SUSTAINABILITY OF MICROFINANCE INSTITUTIONS IN KENYA

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A Thesis Submitted to the Institute of Postgraduate Studies of Kabarak University in Partial Fulfilment of the Requirement for the Award of Doctor of Philosophy in Business Administration (Finance)

KABARAK UNIVERSITY

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ABSTRACT

Microfinance Institutions (MFIs) play a critical role as a driver of socio-economic development promoting the achievement of Sustainable Development Goals (SDGs). MFIs in developing countries boost entrepreneurial activities and financial inclusion through the provision of microcredit. The MFI industry has seen a drop-in donor support threatening their ability to serve the impoverished or settle their operating expenses towards achieving financial sustainability. MFI literature also shows that financially sustainable MFIs are more competitive and effective in serving poor borrowers. Although studies have pointed out that financial structure affects the financial sustainability of MFIs, their findings have provided mixed results. In addition, recent microfinance literature suggests that income diversification affects MFI's financial sustainability and financing decisions. The general objective of this study was to determine whether income diversification has a moderating effect on the relationship between financial structure and the financial sustainability of the MFIs. The specific objectives were to determine the effect of deposits, debt, equity and donations on financial sustainability of the MFIs in Kenya. The study was grounded on the life cycle theory, the profit incentive theory, the modern portfolio theory and the pecking order theory. The study adopted the positivism paradigm and employed both the explanatory and longitudinal research design. The population of interest consisted of fifty-three (53) MFIs operating and registered in Kenya. However, after carrying out the survey of the MFIs and applying an inclusion/exclusion criterion, the final sample was 32 MFIs. The study used secondary data collected over ten years from 2010 to 2019. Data was extracted from the Microfinance Information Exchange (MIX) market database. The data were analysed through descriptive and inferential statistics. The study applied the hierarchical multiple regression and the outcome of the Hausman test informed the choice between the fixed effect model and the random effect model as the panel data estimation technique. The study established that deposits (β=0.349, ρ<0.05), and equity (β=0.186, ρ<0.05 had a significant and positive effect on financial sustainability of MFIs in Kenya whereas, debt capital (β=-0.187, ρ<0.05) and donations (β= -0.711, ρ<0.05) had a significant and negative effect on financial sustainability of the microfinance institutions. Moreover, the study found that income diversification significantly moderates the relationship between deposits (β= 0.098, ρ<0.05), debt (β=-0.24 ρ<0.05), equity capital (β=0.159, ρ<0.05), donations (β=0.118, ρ<0.05) and financial sustainability of MFIs. The results support the modern portfolio theory that proposes a positive association between income diversification and MFIs' financial sustainability. The study concluded that equity capital, debt capital, deposits and donations are significant determinants of MFI's financial sustainability and that income diversification has an influence on the relationship between financial structure and financial sustainability of MFIs. The study recommends that microfinance institutions should mobilize internal resources such as savings and equity and limit reliance on debt capital and donor support for better financial sustainability.

Keywords: *Financial Structure, Income Diversification, Financial Sustainability, Microfinance Institutions, Deposits, Debt, Equity, Donations.*

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LIST OF ACRONYMS AND ABREVIATIONS

AMFI	Association of Microfinance Institutions
CBK	Central Bank of Kenya
CGAP	Consultative Group to Assist the Poor
DTM	Deposit Taking Microfinance Institution
GDP	Gross Domestic Product
HHI	Herfindahl–Hirschman Index
IFI	International Finance Institution
ISERC	Institute of Scientific and Ethics Review Committee
MFI	Microfinance Institution
MIS	Management Information Systems
MLR	Multiple Linear Regression
MSME	Micro Small and Medium Enterprise
NACOSTI	National Commission for Science, Technology & Innovation
NGO	Non-Governmental Organization
OLS	Ordinary Least Squares
OSS	Operational Self-Sufficiency
PAR	Portfolio at Risk
ROA	Return on Assets
ROE	Return on Equity
SACCO	Savings and Credit Co-operatives
SME	Small and Medium Enterprise

CONCEPTUAL AND OPERATIONAL DEFINATION OF TERMS

Breadth of Outreach: This refers to the number of clients served by a microfinance institution (Hishigsuren et.al, 2014). Studies have used either the borrowers or number of clients as measures of breadth of outreach. For this study, the number of borrowers and the branch network shall be referred to as the breath of outreach of the microfinance institution.

Deposits: These are funds held by a financial institution in the form of savings, current accounts (demand deposit), long-term investments (time deposit) or funds held as collateral for a loan (Parvin et al, 2020). For this study, deposits denote the amounts held by MFIs for their clients in current accounts, demand savings, and time deposits.

Debt: This refers to the sum of money borrowed for a specific period to be repaid along with the due interest. The amount as well as the approval of the debt is usually guided by the credit worthiness of the borrower (Chikalipah, 2019). For this study, debt refers to funds borrowed by microfinance institutions, either short-term or long-term to finance working capital or for onward lending to its clients.

Depth of Outreach: This indicates the access of credit disbursement to the poor depending on the poverty level of the clients served (Hulme & Mosley, 2011). For this study, depth of outreach refers to the extent to which an MFI provides credit facilities to the lower-income strata of the population.

Donation: This refers to financial assistance or voluntary transfer of money by a donor for a specific purpose or project (Uddin et.al, 2022). For this study, donations refer to the financial support received by MFIs from non-governmental organizations, private individuals or the government.

Equity: This refers to the amount of money that the shareholder, investor, or owner puts into the company and is commonly referred as shareholders equity or owner's equity for privately owned corporations (Sekabira, 2013). For this study, equity describes members' ownership in the form of share capital and retained earnings.

Financial Structure: This refers to the mix of debt, equity, deposits and other forms of capital that a company uses to finance its operations (Bogan, 2012). For this study financial structure denotes the various sources of capital for microfinance institution which includes customer deposits, borrowings, equity and donor funding.

Financial Sustainability: This describes the ability of an institution to generate sufficient income to sufficiently cover operating expenses. It may also include the achievement of its mission, ownership and governance structure as required by the shareholders, promoters or equity providers (Bayai & Ikhide, 2018). For this study, MFI sustainability denotes the institution's long-term financial growth and stability.

Income diversification: This denotes the strategy used to manage risks by investing in diverse products or across a range of sectors, industries, or asset classes rather than concentrating money on a single line of business or company (Zamore, 2018). For this study, income diversification describes an investment decision where an MFI engages in non-lending activities such as insurance services, securities underwriting and trading, brokerage, advisory and other activities that generate non-interest revenue.

Microfinance Institutions: This comprises the institutions that provide credit, insurance or other financial services to small and micro enterprises, low- income households and others who have been excluded from the traditional formal banking system (Kinde, 2012). For this study, MFIs refer to institutions that provide credit facilities, insurance or other financial services to the poor who are outside the conventional banking system.

Micro Loans: Refers to very small loan products or micro credits extended to impoverished borrowers who typically lack collateral, steady employment or a verifiable history (Hulme & Arun, 2009). For this study, microloans are credit facilities offered to small and micro enterprises and low-income households commonly excluded from the formal banking system.

Portfolio at Risk: This reflects the combination of assets within the investments that may fail to meet financial objectives. Each investment within the portfolio carries its own level of risk and the different components and their weightings contribute to the extent to which the portfolio is exposed to various risks (Ayayi & Sene, 2010). For this study, portfolio at risk refers to the outstanding principal amount of all client loans of the MFI that have one or more instalments of principal, interest, penalty, fees or any other expected payments past due more than specified number of days.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Microfinance is defined as the extension of financial services mainly savings and credit to the low-income households that lack access to commercial institutions and banks (Raheem *et al*, 2020). The microfinance products are offered through Microfinance Institutions such as credit unions, registered deposit taking and non-deposit taking institutions and financial non-governmental organizations which offer small loans to poor people to cater for household needs and support their micro small businesses. The Microfinance Institutions (MFIs) besides extending credit facilities, also offer other financial services to small, micro enterprises and low-income households. According to Hartungi (2007), the microfinance institutions offer loans and technical support to low-income communities in developing countries as a way of empowerment and fighting poverty. These products include microloans, savings, deposit products, transfers, remittances, payment services and any other products or services that financial institutions do not provide to low-income consumers.

Internationally, microfinance is seen as a tool for promoting both peace and the battle against poverty. This was demonstrated in October 2006 when Mohammed Yunus, the creator of Bangladesh's Grameen Bank was awarded the Nobel Prize for being the brain child behind the success and positive impact of microfinance on poverty reduction in Bangladesh. Yunus (2010) argues that vast population groups must find ways to escape poverty in order to create enduring peace, and microfinance is one such strategy.

To ensure they have enough working capital, MFIs must be financially sustainable. While formalizing microfinance is still relatively new compared to the formal financial industry, the goal of reducing global poverty has compelled important stakeholders to

develop, test, and duplicate successful models across the world. Today, microfinance industry is prevalent across all age groups and is particularly prevalent in poor nations (Morduch, 2016).

A microfinance institution attains financial sustainability when the income derived from lending activities is sufficient to offset the operating costs (Sharma & Nepal, 2016). However, Shah (2017) employs a more comprehensive approach in defining MFIs sustainability, which include sourcing for funds at market rate and mobilization of resources locally. Consequently, the performance criteria for the financial viability of the microfinance includes repayment rates, operating costs, interest rates, loan book quality and 'demand driven' credit system in which borrowers seek loans for projects (Sharma & Nepal, 2016).

According to Nyamsogoro (2010), governments offer support through motivational systems for self-employment, training and educational courses at tertiary colleges and higher learning institutions. The institutional support authorities provide the necessary impetus for development and growth of the MFI sector hence stimulating establishment of small and micro businesses. At the macro level, the sustainability of MFIs may be influenced by government policies on unemployment, inflation, level of savings and environmental factors such as technological, cultural variables and government regulations. Further, the government influences the MFI sector by formulating policies which address challenges facing the micro lenders typically in rural areas and ensure better regulatory framework. Studies have also shown that MFIs require an appropriate policy, legal and regulatory framework for sustainability (Singhe & Louche, 2020; Quartey & Kotey, 2019).

Despite the important role played by MFIs in poverty reduction and financial inclusion, these entities ought to be adequately financed for them to attain both the social mission and financial sustainability. Sekabira (2013) asserts that sustainability of microfinance institutions largely depends on their financial structure. Similarly, Tadele (2013) emphasizes that the high prevalence of financial exclusion is caused by lack of strong financial intermediation based on sound financing. Intuitively, arresting poverty requires financially sustainable MFIs, which are in turn backed by informed financing strategies. Literature further confirms that financial structure affects MFIs sustainability and performance, though the findings are inconclusive (Bayai & Ikhide, 2018). Kyereboah & Colema (2007) found that highly leveraged microfinance institutions perform better by reaching out to more clientele, enjoy scale economies, and hence are better able to deal with moral hazard and adverse selection, enhancing their ability to deal with risk.

While Bogan, (2012) argues that increased use of grants by large MFIs decreases operational self-sufficiency, Hoque, Chishty and Halloway (2011) found that increased use of commercial debt and equity financing lowers MFIs effectiveness in meeting their client expectations, through lower conversion of savers to borrowers or the yield rate. Khachatryan, Hartarska and Grigoryan, A. (2017) contend that grants are linked with a better depth of outreach. They further argue concessional loans are useful in improving outreach without affecting financial results. Additionally, loans from social investors are associated to a lower return on assets but also an improvement in outreach to lower-income clientele. However, the study concluded that the impact of savings on MFIs financial performance is less clear. A study by Sekabira (2013) among Ugandan MFIs found that debt and grants had a negative effect on their operational and financial sustainability.

MFIs, just like banks and other financial institutions, are increasingly diversifying into non-lending activities to improve their income streams. The move has been triggered by increased competition from banks and FinTech companies offering mobile loans, which has led to deterioration of interest-based income. Non-interest income is generated from investment, fees and commissions, underwriting activities and securities brokerage. Duho, Duho and Forson (2023) found that income diversification is associated with better loan quality and credit risk management of MFIs. Using a global dataset Githaiga (2022) found that income diversification improves MFIs financial sustainability. Zamore (2018) also found that diversification across revenue streams improves sustainability and profitability of MFIs. This suggests that revenue diversification is an important strategy for the sustainability of microfinance.

Lately, most MFIs have ventured out to seek other sources of income besides the traditional interest earnings from lending. Ben S.A & Ben A.I (2023) contend that income diversification has largely contributed to decreased financial performance of MFIs in the Middle East and North African (MENA) countries. Both the financial structure and diversification have a long history of contention (Kaplan & Weisbach, 1992; Li & Li, 1996; Singh, Davidson & Suchard, 2003). For example, "a combination of diversification with low leverage leads to over-investment," according to Li and Li (1996), indicating that diversified businesses need to carry larger leverage to maximize company value. Empirical finding further show that diversified firms carry considerably more debt than non-diversified firms (Riahi-Belkaoui & Bannister, 1994; Li & Li, 1996). La Rocca *et al.,* (2009) found that related-diversification strategy, which is built on shared resources and organizational synergy and is connected with reduced debt ratios, has a detrimental effect on debt. Unrelated diversity, on the other hand, which is linked to more debt consumption based on financial synergies, benefits debt. The author

concluded that diversified firms with unrelated business sectors increase their usage of debt in order to benefit from tax incentives. Based on empirical literature, it can be argued that income diversification may influence the relationship between financial structure and financial sustainability of MFIs. Furthermore, Foong and Idris (2012) argues that depending on the degree of firm diversity, financial structure may be advantageous or detrimental to a firm's financial performance. Githaiga (2022) continues by saying that the long-term viability and competitiveness of MFIs depend on their financial sustainability.

According to the Sustainable Development Goals (SDGs) for the year 2030, the elimination of poverty is the first fundamental goal and a required prerequisite for progress that will be made over the long term. Microfinance institutions are generally seen as important drivers of sustainable growth in nations that are still in the process of developing. This function, however, can only be ensured if microfinance institutions (MFIs) broaden their financial reach and ensure their continued viability (Wadi, A et al., 2022). There are two goals that microfinance institutions strive to achieve simultaneously: financial sustainability and social mission (Hermes & Hudon, 2018). The term "financial sustainability" refers to the expanded financial autonomy of microfinance institutions (MFIs) and their reduced reliance on donor money. Consequently, social purpose is centred on social outreach or social sustainability as its primary objective. Research has recently focused on environmental sustainability, analysing the role that microfinance institutions (MFIs) play in green environments (Allet & Hudon, 2015; Mia et al., 2019).

This research examined sustainability in addition to social and financial sustainability. Nevertheless, it is possible to claim that achieving financial self-sufficiency is necessary for microfinance institutions (MFIs) in order to achieve social outreach and a green

environment. This is due to the fact that if MFIs are not financially self-sufficient, they would cease to exist as a going concern and will no longer provide assistance to the poor. Some people who support the concept of financial self-sufficiency argue that market-based business operations are an essential factor in determining the financial sustainability of microfinance institutions (MFIs) and their efficiency in alleviating poverty. Research indicates that a significant proportion of microfinance institutions (MFIs) around the world are not financially viable. The findings of a study conducted by Abdulhakim (2020) revealed that Ethiopian microfinance institutions (MFIs) had a financial sustainability score of 88.5%. This is in comparison to the global standard of a Financial Self-Sufficiency (FSS) ratio of one hundred percent. According to the research carried out by Naz et al. (2019), Pakistani microfinance institutions (MFIs) have an average sustainability index of -0.009, which indicates that they are not capable of operating independently. According to Bayai and Ikhide (2018), microfinance institutions (MFIs) in Sub-Saharan Africa have an operational self-sufficiency (OSS) of 63.92%, which is generally unsustainable from a financial point of view. The two writers reported that the average OSS in Swaziland was 83.33%, whereas in Angola it was 55.56%, Zimbabwe was 50%, and Madagascar was 43.40%.

As a result of the realization that well-managed institutions are capable of covering a considerable percentage of their expenses, international foundations and funders are advocating for a higher degree of self-sufficiency on the part of microfinance institutions. According to Woller (2017), the concept of financial self-sufficiency refers to the non-profit organization's counterpart of profitability. Kinde (2018) also brought up the issue that as opposed to obtaining financial assistance merely on a one-time basis, those who were economically disadvantaged required continuous access to funds. In addition, Meyer (2015) said that the inability to obtain the payments that were promised

by donors or a poor repayment rate are both factors that contribute to financial instability. On the other hand, the scant empirical literature that is currently available on the viability and effectiveness of microfinance produces findings that are contradictory to one another. According to the findings of a study conducted in Namibia, which investigated the various elements that contribute to the financial viability of microfinance institutions, including firm leverage, the generation of profits, and outreach, it was determined that virtually all microfinance businesses that were currently in operation were not sustainable (Nautwima, & Asa, 2021). Dhungana et al. (2016) conducted a study on the microfinance business in Nepal and found that the majority of rural microfinance institutions (MFIs) do not seem to be viable over the long run.

According to Dutta (2014), the demand for an MFI's services, the mission of the organization, the internal corporate governance structures, and the legal and regulatory framework in which the organization operates all have an impact on the multilateral financial institution's overall sustainability. As an illustration, Gupta and Sharma (2023) point out that in India, the sustainability of a microfinance institution (MFI) could not be sufficient on its own until a full-fledged microfinance industry is constructed in accordance with sustainable principles. According to the viewpoint of the bankers, a microfinance institution (MFI) is considered to have attained sustainability when the income from loans is adequate to offset the operational expenses.

An investigation into the Japanese banking industry was conducted by Shah (2017), who utilized an "integrated approach" to define sustainability. He found that the "accounting approach," which solely handles the financial aspect of the firm, was excessively restrictive. Among the many things that he asserts are included in the concept of sustainability are the acquisition of finances at market rates and the utilization of resources that are within the local community. In addition, he was of the opinion that the

criteria for evaluating the performance of any microloan should take into consideration the following driving factors: the frequency of repayment, the level of operating costs, the market interest rates, the quality of the portfolio, and the 'demand driven' rural credit system, which is a system in which borrowers apply for loans for their projects.

Accordingly, for the banker, MFI's sustainability entails both its financial viability and institutional sustainability, which is typically referred to as the lending institution's self-sufficiency (Gupta & Sharma, 2023). Therefore, the concepts used by bankers are more financial, administrative, and institutional frame of reference. In light of the fragility and lack of focus of subsidized loans, institutional sustainability is a crucial objective, according to the review of the literature on the sustainability of MFIs. Like Yunus (2010), others have claimed that subsidies undermine the effectiveness and scope of operations by distorting the incentives in the microfinance institution. Morduch (2016) contends that in the European market, subsidies need to be regulated and time-limited. If not, an institution might be viable on conventional criteria but exposed to rivalry from new credit sources.

Previously, a substantial number of MFIs relied on donor organizations and governments to supply them with a regular flow of subsidies and funds on favourable terms. The key reason given by donors for funding MFIs was to enhance general social welfare by offering credit to impoverished households (Quayes, 2017). As a result, donors have long justified their support for non-governmental entities that they believe can provide the most comprehensive outreach to the very poor (Makoba, 2002). Iganiga (2008) notes that donors, who include bilateral and multilateral institutions, non-governmental organizations, and missionaries with a pro-poor orientation, provide free or subsidized funding, donations, or technical help for the advancement of the microfinance sector. However, increasing emphasis on financial sustainability has caused concern in the

microcredit operations that may impair the aim of social outreach of providing credit access to the poor. Moreover, recent studies have reported a sharp reduction in donor funding, which has reignited academic and policy discussion regarding the ability of MFIs to sustain their operations and attain their social mission (Abdulai & Tewari, 2017).

The global microfinance landscape is shifting because of institutional transformation, product diversification, portfolio expansion and the need for MFIs to attain financial sustainability. Microfinance Institutions (MFIs) vary with regard to of ownership, organizational structure, and financing. MFIs have complex funding structure. Besides traditional shareholders, Some MFIs still rely on variety of entities such as donors, charity organizations, individuals, socially conscious financiers, commercial institutions, commercial investors, and retail savings (Hossain, 2013).

In this sector, there is a paradigm shift from a non-profit orientation to a more formal profit-based commercial orientation (Hartarska & Nadolnyak, 2007). The recent commercialization and transformation phase of MFIs implies that they are increasingly becoming more market oriented (Mersland &Strom, 2008). This transformation improves access to funds and mobilizes savings, which is critical for MFI sustainability because subsidized funds may not be available for a long period (Cull, Demirguc-Kunt & Morduch, 2008; Varottil, 2012). The diversity of MFIs, as well as their commercial orientation, forces them to choose alternative paths (Morduch, 2000; Labie, 2001). This however could expose the MFI to the risk of mission drift (Morduch, 2000; Merland & Strom, 2009).

In Sub-Saharan Africa region, MFIs exists in diverse entities for example non-governmental bodies, non-bank financial institutions, cooperative societies, savings, FinTech companies and postal institutions that offer financial products to low-income

households (Lafourcade et al., 2005). In accordance with Morduch (2014), financial sustainability is essential for MFIs to have enough working capital to exist in Africa. While formalizing microfinance is still relatively new compared to the formal banking sector, the goal of addressing poverty has compelled major stakeholders to develop and reproduce effective models all around the world.

The microfinance industry today includes a range of age groups, but it is a phenomenon that hardly needs an introduction. Owusu et al., (2013) suggests that the success and continued expansion of any microfinance institution depend on sustainability, as evidenced by the experience of Nigerian MFIs. Financial stability is increasingly important as the sector expands; regrettably, the potential market also expands. Growth can shift attention away from sustainability among its other effects, both positive and harmful. Some of the crucial elements that affect MFI sustainability in Uganda have been identified by Nyamsogoro (2010). These factors include the degree of government backing, the financing structure, the nature of the product, the scope of outreach, and operational effectiveness.

When evaluating the long-term viability of MFIs, the costs of funds, administrative expenses, loan provision losses, quality of portfolio and inflation are also some of the elements that frequently come into play. According to Amha (2004), each factor has a unique significance and can be managed in a variety of ways. Therefore, it is important that MFIs carefully balance expanding their clientele and sustainability, which entails lowering costs and risks, boosting productivity and profitability, enhancing portfolio quality, and meeting the financial needs of a large number of unbanked customers.

The improvement of rural residents' lives is a top goal for African governments this is in order to raise the levels of human development due to inequities resulting from Africa's socio-political history (Enaifoghe, Brown, Maramura & Ajede, 2021; Davis, 2017).

Microfinance is a crucial tool used in the pursuit of this objective to improve the standard of living for low-income households. According to these programs, low-income households that are involved in entrepreneurial activities, microenterprises, marginal or SMEs would be able to enhance their standard of living thanks to the financial services offered by microfinance organizations (Bongomin, Woldie & Wakibi, 2020). The advantages to these households and micro-businesses should have favourable effects on the overall African economy.

Majority of microfinance institutions in Africa commence with target groups being the MSMEs and therefore their achievement depends on the support received form those who benefit from it. Sustainability is considered to be attained when MFIs are able to cover for its routine expenses and meet any obligations that arise in the course of its operations. A review of the performance of microfinance institutions reveals that majority of the institutions are yet to achieve sustainable levels (Amha (2004).

Tehulu (2013) asserts that the majority of African nations have to eradicate poverty as a priority of their development strategies. One of the policy instruments for ending poverty is believed to be interventions that provide microfinance services. Microfinance must be financially viable if poverty reduction is to be sustained. East Africa is one of the least developed parts of the world, making microfinance services essential for enabling financial access for households with low incomes (Mlachila *et al.*, 2016; Triki & Faye, 2013). The need to identify the underlying variables that affect the sector's financial sustainability and the influence of stakeholders like the central bank, the government, and other financial authorities is necessary given the relationship between the sustainability of the microfinance sector and the objective of eradicating poverty. Hiratsuka et al., (2014) observes that for MFIs to contribute to sustainable economies, they should be financially sustainable.

In an effort to provide financial services to the populace, Wafula (2016) found that microfinance institutions in Uganda are constantly burdened by high operational costs. In line with Rahman and Mazlan (2014), when MFIs expand and take on more formal forms, each institution creates a distinctive operational structure and profile that dictate the kinds of controls that are necessary to improve financial sustainability. Due to an expansion in institutions providing microfinance services, such as commercial banks and profit-oriented businesses, the MFI sector in Tanzania recently saw phenomenal growth (Owusu A et al., 2013). Based on recent statistics, MFIs in Tanzania are now more financially sustainable because more than half of the institutions are self-financed with excellent cost control and operational efficiency (Tehulu, 2013).

According to Wambugu (2018), most of the MFIs in Kenya started as NGO's or informal groups but have developed over time to greater levels that pose a greater source of competition to the formal banking sector. Microfinance institutions in Kenya fall under semi-formal financial institutions since they have been subjected to minimal regulations but have in themselves embraced most of the formal banking practices in regard to lending and savings products.

Consequently, the government has endeavoured to establish formal legislation tailored to the sub-sector. To this end, Kenya established the Micro Finance Act 2006 (operationalized in 2008) which set out regulatory and supervisory framework for Deposit Taking Microfinance institutions (DTMs) or Micro Finance Banks (MFBs) as renamed in 2014. The Act outlines various regulatory measures which includes licensing conditions, capital adequacy, credit facilities management and classification of overdue loans, liquidity levels, and observance of various governance requirements. These regulations have opened up more opportunities for DTMs by formalizing their

operations, hence deepening their competitiveness against the existing formal financial institutions and enhancing financial stability of the microfinance sector.

According to the CBK annual report (2018), the Kenya microfinance institutions formed an advocacy body referred to as Association of Micro Finance Institutions (AMFI), which was formally registered in March 1999. Its membership stood at 59 in 2021 and includes large MFIs such as Kenya Women Finance Trust (KWFT) and Faulu Kenya, among others. The main focus of AMFI was to build capacity of the Kenyan microfinance industry, lobby government for favourable policies, share information and experiences and to link up and network with both local and international actors. The potential of seeking credit facilities from institutions and other services for poverty alleviation is quite significant. In the early 1980s, the Kenya microfinance industry began by providing small loans to emerging entrepreneurs to start or expand businesses. Opportunity International was one of the first non-profit organizations to recognize the benefits of providing capital to people to eradicate poverty. Over the years, they focused at providing flexible micro financial services for people to start business and personal development training. Opportunity International also offers savings and insurance to help clients to effectively navigate their daily hardships.

The Kenya vision 2030 has recognized micro financing as an important pillar for spurring and moving the economy up the value chain. According to Bitok (2019), micro-financing in Kenya has rapidly expanded the source credit for the small-scale business people. The MFIs mainly offer services for people living in slum areas and other marginalized areas and focus on group lending in providing microfinance. The group methodology focuses at a common project or lending to individual members but co-guaranteed by other members within the group. The group therefore becomes the basic unit of operation for the microfinance institution. In the event of default by a single

member, other members of the group will step in to recover from the affected member or in the worst case pay-up for the member who has defaulted.

The Annual Reports of the Central Bank of Kenya (2018) highlight the influence that microfinance has had in the country in terms of encouraging the establishment and growth of micro firms. When it comes to micro financing, Equity Bank is a name that immediately comes to mind as a household name. In October of 1984, the bank was established as a mortgage financing firm with the intention of catering to customers who were members of the community with low incomes. In spite of initial difficulties, such as being declared bankrupt in 1993, the bank had phenomenal growth in terms of the provision of microfinance services from 1993 to 2002. More than eight million customers are being served by Equity Bank, making it the largest bank in Africa in terms of user base. Additionally, Equity Bank is responsible for nearly half of all bank accounts in Kenya. Accessibility, ease, and adaptability are the cornerstones of the bank's business plan, which is based on microfinance and depends on the success of the bank. The success of Equity Bank can be attributed to its business model, which is low margin and high volume.

The Grameen Bank strategy of providing financial services to households with lower incomes and Micro Small Enterprises (MSEs), in which the MFIs target the unbanked groups, has been effectively replicated by a number of non-governmental organizations in Kenya that are involved in microfinance. One of the developing countries that has recently begun to reform and regulate its financial system, transform its institutions into effective intermediaries, and provide viable financial services to all aspects of the population on a sustainable basis is Kenya (Siebel, 2013). Kenya is one of the countries that has recently begun to improve its financial system. There have been certain rising countries that have been able to dramatically reduce poverty by gradually expanding the

reach of their financial institutions (Robinson, 2001; Aryeetey, 2008). This has been accomplished through lending, institutional strategies, and approaches related to the financial system methods. A whole new financial landscape has emerged as a consequence of this, one that is characterized by demand and savings and that satisfies the requirements that are necessary for dependable financial intermediation purposes. According to Omimo (2015), the lack of a specialized legislative system that would formulate criteria for ownership, governance, and accountability is the primary obstacle that stands in the way of the expansion of the microfinance sector in Kenya. He goes on to add that the absence of a supervisory framework has been a contributing factor in the underperformance of the majority of microfinance institutions (MFIs), as well as the emergence of other restrictions, such as management competency, restricted reach, and inadequate access to funding.

According to the published CBK Annual Reports for the years 2018-2020, majority of the microfinance institutions (MFIs) in Kenya are still at formative stages and have not attained self-sufficiency performance levels. A review of the MFIs financials for the period 2018-2020 as per attached Appendix II, shows that most of the licensed microfinance institutions, referred as Deposit Taking Microfinance Institutions (DTMs) registered poor performance. Losses were reported by twelve out of fourteen DTMs in 2018, which is equivalent to 86 percent of the total MFIs. The trend was further noted in 2019 where 11 DTMs, or 79%, reported losses. The dismal performance is also replicated in the year 2020, with 10 out of fourteen, or 71%, declaring losses. The total amount of money lost by the DTMs in 2018 was Kshs 1.19 billion, but dropped to Kshs 309 million in 2019. However, in the year 2020, the MFIs registered a significant increase in the overall loss to Kshs 2.12 billion.

It is possible that the negative impacts of the COVID-19 pandemic on the Kenyan economy in the year 2020 could have led to the considerable increase in the total sector loss registered by the MFIs. Further, the containment measures implemented by the government in order to prevent the disease from spreading could have had a negative impact on the businesses of the MFIs. The general poor performance of the MFIs in Kenya raises concerns about their ability to be financially sustainable and remain operational over the long-term period. The purpose of this study was to investigate the influence of financial structure on the financial sustainability of microfinance institutions (MFIs) in the country, as well as the moderating effect of income diversification.

1.1.1 Concept of Financial Sustainability of Microfinance Institutions

According to Said, Annuar, and Hamdan (2019), the term "financial sustainability" describes the capability of a microfinance institution (MFI) to survive on its cash flow, grow its capital and that of its members, and continuously serve its intended customers. Bayai and Ikhide (2016) further describe financial sustainability as the ability of an institution to capitalize on economies of scales, exercise cost-consciousness, and promote innovation, as well as advancing its outreach, while minimizing its losses. Bogan (2012), on the other hand, defines financial sustainability as having an operational self-sufficiency level of 110% or more. Similarly, Olasupo, Afolami, and Shittu (2014) state that the ability of microfinance institutions (MFIs) to maintain their financial health is contingent upon the efficiency with which they utilize their resources to provide services to the poor. This ensures that the MFIs fulfil both their financial and social promises to the impoverished.

The sustainability of microfinance institutions can be viewed and evaluated in a number of different ways, depending on client requirements (Nyamsogoro, 2010). Chowdhury (2009) states that the entire sustainability of a microfinance institution is impacted by the

sustainability of its mission, ownership and governance system, as well as the regulatory and legal framework within which it functions. Furthermore, the sustainability of a microfinance institution may not be adequate on its own to achieve self-sufficiency until a full-fledged microfinance industry is constructed on sustainable lines. Accordingly, Nyamsogoro (2010) highlights the four most important characteristics of sustainability; the mission sustainability, the sustainability of the program, market sustainability and financial sustainability. The sustainability of an organization's mission will ensure that it will continue to follow the path that it has chosen throughout the short and long term. Consistency between the activities of the organization and the purpose that it has articulated must be evaluated on a continuous basis. According to Ruben and Schers (2007), if the mission were to be changed, it would be done so through a process that is transparent and accessible to all members of the organization. When it comes to microfinance services, market sustainability encompasses both the demand and supply sides of the market. The obstacles that are associated with the many different types of clientele, the numerous kinds of requirements that they have, and the production of solutions that suit those needs. In order to ensure the demand is sustained throughout time, it is imperative that these requirements be satisfied in the most customer-friendly manner possible.

The ability of microfinance institutions (MFIs) to support their operations and expansion is assisted by four pillars, according to Ahmed and Williams (2013). These pillars are strategic and financial planning, income diversification, good administration and finance, and income production. In order for a company to achieve financial sustainability, it is imperative that the company prioritizes long-term profitability over any short-term benefits for the company. According to Ek (2011), in order for a firm to be sustainable, it is necessary to develop long-term goals that reflect the financial position that you want

your company to be in in the future. Financial sustainability is the consequence of improved financial results, which are described as the monetary measurement of a company's policies and activities (Dabi et al., 2023). Financial sustainability is viewed as the product of better financial performance metrics such as the firm's return on investment, return on assets, and value-added component. These are considered as key indicators of a company's ability to maintain its financial long-term stability.

Additionally, financial performance is utilized as a comprehensive evaluation of the entire financial health and stability of a corporation throughout the course of its operation. The company ought to make an effort to enhance its financial sustainability by implementing a variety of internal reconstruction strategies, including but not limited to the modification of its share capital, enhancement of working capital, regulation of liquidity position and the enhancement of administrative and operational management which ultimately results in reduction of its production and operating costs. It has been suggested by Hossan and Habib (2010) that the success of a firm is typically connected to the degree to which it is able to make effective use of its assets, shareholder equity and liability, income and expenses. According to the findings of a number of studies, financial ratio analysis is one of the most effective methods for monitoring and analysing the performance of any organization. This is done in order to determine how well the firm has been able to make use its assets and generate profits. The significance of maintaining a stable financial position has also been emphasized in non-profit making organizations.

According to Johnson et al. (2019), in order for microfinance institutions (MFIs) to be able to provide services in a manner that is sustainable, they need to be financially independent, pay all of their operational expenditures from revenue, and access monies acquired from clients and external sources at interest rates that are commercial enough to

be profitable. Keeping a healthy financial position requires charging an interest rate that is high enough to cover operating costs, loan losses, interest, and expense changes. This is the secret to maintaining a healthy level of financial stability. In spite of this assertion, the microfinance institution (MFI) needs to operate efficiently enough to enable the charging of interest rates that are reasonable, accessible, and competitive in order to cover operational costs. The management of delinquency, the maintenance of a low cost of capital (via the utilization of savings), the successful rotation of portfolios, the reduction of operating costs, and most importantly, the establishment of interest rates that cover all of these expenses are all necessary for the long-term sustainability of microfinance institutions (Morduch & Rutheford, 2003).

1.1.2 Financial Structure of Microfinance Institutions

The definition of financial structure and capital structure revolve around the kind of securities and the proportionate amounts that constitute a firm's capital. On one hand, Echekoba and Ananwude, (2016) define financial structure as "the way in which a firm's assets are financed, such as short-term borrowings, long-term debt, and owners' equity." The author further argues that financial structure covers all of a firm's liabilities, whereas capital structure includes only equity and long-term debt. On the other hand, Gangeni, (2010) argues that capital structure attempts to explain the mix of securities and financing sources used by corporations to finance real investment. Similarly, Pratiwa, (2016) opine that a firm's capital structure is the mix of long-term debt and equity maintained by the firm.

A firm's financial structure is anchored on the average maturity of the finance, cost and the effect of the finance on the firm's intrinsic value; therefore, an optimal financial structure comprises of a mix of funds that are considered cheap, relatively permanent and that adds value to the firm (Sundoro & Sukirman, 2021). Shareholders' funds (Equity)

mainly comprise paid-up share capital, share-premium, reserves and surplus or retained earnings (Peter Zacharia, Teru & Ugwu, 2020). Unlike debt capital, equity is contributed by shareholders of the firm and it is considered a permanent source of finance (Coleman & Robb, 2012.

According to Martin, (2015), debt capital denotes capital that is raised through borrowing with the expectation that the funds will be repaid at some future date. Therefore, debt capital encompasses borrowed funds from external parties (private entities, commercial entities and international organizations), and it could be short term or long-term (Peter, Teru & Ugwu, 2020). Proponents of the trade-off theory argue that firm should consider a reasonable debt to equity ratio that maximizes firm value since debt is a cheap source of financing, particularly to more profitable firms (Fama & French, 2002). Furthermore, debt financing affects organizational outcomes such as performance and sustainability (Nur, 2020; Maneerattanarungrot & Donkwa, 2018; Bayai & Ikhide, 2018). On the contrary, lending covenants are likely to exposes the firm to high financial risk and the possibility of bankruptcy; which offsets the benefits of external financing (Nazir, Azam & Khalid, 2021).

The mature firm with insufficient access to equity capital may opt for borrowings to finance profitable opportunities. Therefore, MFIs life cycle objective leads to commercialization and conventional debts. This assertion is supported by Dorfleitner, Röhe and Renier (2017), who reported that a firms' financing structure changes over its life cycle and the availability of growth opportunities. In the same vein, it has been argued that debt capital mitigates agency conflicts by reducing free cash flows (Guo, Legesse, and Tang & Wu 2021).

1.1.3 Income Diversification by Microfinance Institutions

Financial liberalization, competition and loosening of regulations have prompted financial institutions to explore alternative income generation activities to maintain their earnings and competitive advantage. As a result, banking and MFI institutions, engage in non-lending activities such as advisory, investments, brokerage, underwriting and other services for generation of non-interest income (DeYoung & Rice, 2004). The underlying theoretical argument favouring income diversification is that it results in steady operational income and decreased risk due to imperfectly correlated revenue streams as established by current portfolio theory (Markowitz, 1952: Shah, 2017). Studies have proposed that non-interest operations boost MFI earnings (Meslier et al., 2014), minimize risk and improve performance of the institution.

Conversely, shifting to income diversification can lead to income instability of the MFI and puts the institution at higher risk because non-traditional businesses and revenue streams are hard to predict (Dorfleitner & Renier, 2017: Singhe & Louche, 2020). However, research has shown that revenue diversity has no effect on MFIs business performance so institutions should concentrate on the core business of lending (Le et al., 2020: Lin & Fu, 2017). Accordingly, there is a greater shift towards linked financial services such as insurance, brokerage and advisory services hence making non-interest income become a larger share of the MFIs total revenue contributor (Le et al., 2020, Sanya & Walfe, 2011). Additionally, strategic management theorists advocate for institutions to undertake income diversification into similar or related businesses in order to identify, develop and harness resources and talents to gain competitive advantage and business growth (Mersland & Urgeghe., 2013).

Similarly, given the challenges confronting the MFIs relying on traditional lending, institutions should plan to capitalise on non-lending operations in order to compensate and cover for lost interest earnings. Studies have shown that expanding into similar fields improves the exploitation of existing resources and capabilities, but diversification to unrelated businesses or markets necessitates development of new resources and capabilities (Ahamed, & Williams 2013). Studies have also shown that income diversification influences financial structure decisions for the MFI. Park and Jang (2013) confirm that the interaction between financial structure and income diversification decisions may result in diverse income streams for the MFI. Winton (1997) contends that greater diversification may allow the institution maintain lower equity capital and opt for higher debt levels. Income and loan portfolio diversification in the financial industry increases systemic risk. This therefore advocates that more equity capital offsets the increased risk, implying a negative relationship between income diversification and financial structure.

Due to its extensive applicability across a wide range of fields, diversification is generally a multidisciplinary notion. For instance, Ramanujam and Varadarajan (1989) view diversification as establishment of new business ventures or acquisitions within an existing industry. While Ansoff (1957) considers diversification as "associated with a change in the characteristics of a company's product line and market, in contrast to market penetration, market development, and product development, which represent other types of change in product-market structure."

Ebrahim and Hasan (2008), assert that income diversification denotes creation of new income-generating endeavors aside from conventional financial intermediation. Additionally, Busch & Kick (2009), view diversification of income as a technique used by banks to expand their business activities away from lending and into non-lending

sectors like investment banking, trading, and insurance. While Meslier, Tacneng, and Tarazi (2014) assert that income diversification entails banks taking on new ventures including securities underwriting and trading, brokerage and investment banking, as well as other pursuits that bring in non-interest income.

1.2 Statement of the Problem

Financial sustainability of MFIs is an essential condition for institutional self-sufficiency and an important requirement for any MFI (Tehulu, 2013). The need for MFIs to be financially sustainable cannot be over-emphasised because of their importance in the fight against poverty and financial intermediation. Studies show that MFIs are generally financially unsustainable as demonstrated by Bayai and Ikhide (2018). In the Kenya context, the Central Bank of Kenya bank supervision report for the period 2018, 2019 and 2020 show that MFIs cumulatively reported losses of Kshs 1.2 billion, 309 million and Kshs 2.12 billion respectively. During that period, over 79 % of the MFIs reported losses in 2018 and 71% in 2019 and 2020 respectively. Various studies have pointed out that financial structure is a key determinant of financial sustainability of MFIs (Chikalipah, 2019; Mia & Lee, 2017). Bogan (2012) also stressed the importance of financial structure to MFIs financial sustainability. This assertion is supported by the sharp decline in donor funding and the shift by MFIs towards commercialization (Kipesha & Zhang, 2013; Parvin *et al.*, 2020). Consequently, MFIs are increasingly reliant on commercial loans, equity, and deposits (Deb, 2018; Githaiga, Soi & Buigut, 2023; Mia & Lee, 2017). Though, these studies have outlined the relationship between financial structure and financial sustainability of MFIs, the findings are inconclusive.

Prior studies have revealed an important connection between a firm's diversification strategy, investment and financing decisions (La Rocca *et al.,* 2009; Monteforte & Staglian, 2015). Various perspectives have been used to describe the effect of

diversification on financial structure such as the coinsurance effect (Lewellen, 1971), the transaction cost (Kochhar & Hitt, 1998), and the agency cost (Kochhar, 1996; Jensen, 1986). It has been argued that diversification exacerbates debt-related agency conflicts, such as asset substitution (Jensen & Meckling, 1979). Consequently, managers are driven to fulfil shareholders' interest, and will prefer diversification to meet the previously planned goals.

Recent studies have reported that MFIs are gradually shifting towards non- lending activities to cater for the declining interest income (Githaiga, 2022; Zamore, 2018; Lassoued, 2017). Taking into consideration the importance of financial structure and income diversification on MFI's performance and self-sufficiency, there is need to establish the nature of their relationship to long term sustainability of the firms. Within the Kenyan context, no study has been carried out to explain the effect of income diversification on financial structure and long-term sustainability of the microfinance institutions. Therefore, this study explored whether income diversification moderates the relationship between financial structure and financial sustainability of Microfinance institutions in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of this study was to establish the moderating effect of income diversification on the relationship between financial structure and financial sustainability of microfinance institutions in Kenya.

1.3.2 Specific Objectives of the Study

The study had the following specific objectives:

i. To determine the effect of deposits on financial sustainability of microfinance institutions in Kenya.

ii. To assess the effect of debt on financial sustainability of microfinance institutions in Kenya.

iii. To examine the effect of equity on financial sustainability of microfinance institutions in Kenya.

iv. To assess the effect of donations on financial sustainability of microfinance institutions in Kenya.

v. To determine the moderating effect of income diversification on the relationship between financial structure and financial sustainability of microfinance institutions in Kenya.

1.4 Hypotheses of the Study

The study tested the following null hypotheses:

$H0_1$: Deposits has no statistically significant effect on financial sustainability of microfinance institutions in Kenya.

$H0_2$: Debt has no statistically significant effect on financial sustainability of microfinance institutions in Kenya.

$H0_3$: Equity has no statistically significant effect on financial sustainability of microfinance institutions in Kenya.

$H0_{4:}$ Donations has no statistically significant effect on financial sustainability of microfinance institutions in Kenya.

$H0_{5:}$ Income Diversification does not have a significant moderating effect on the relationship between financial structure and financial sustainability of microfinance institutions in Kenya.

1.5 Justification of the Study

The research findings are useful to the government in crafting adequate policies that will foster growth and develop the microfinance industry. The study findings are envisaged to provide insightful information for supervisory authorities and regulators of the MFIs to enforce measures aimed at achieving financial integrity, fairness and long-term stability for the micro finance lenders. This will improve and strengthen public confidence in the financial institutions hence more inclusivity and deepening of the financial sector.

The study is also useful for enterprise owners and investors to appreciate the key challenges bedevilling MFIs hence consider them in their investment decisions. Further, it attracts and expands the investor bracket in the elusive micro finance sector resulting to positive impact in the economy. The study further serves as a source of literature for future studies on the financial structure, income diversification, and financial sustainability of microfinance firms. Finally, by highlighting the relationship between financial structure, income diversification and financial sustainability for MFIs, investors and corporate financial institutions are adequately guided on optimal financing model and non-lending activities that can guarantee MFIs' sustainability.

1.6 Limitations and Delimitations of the Study

1.6.1 Limitations of the Study

These are the potential weaknesses encountered during the research and are beyond the scope or control of the study.

The first limitation is the target institutions. The selection of Kenyan MFIs that report with the World Bank MIX market may not give a global picture of the microfinance sector. The study assumed that the findings based on the target institutions gives a picture of the microfinance sector which may lead to generalizations.

The second limitation is the selected period of review. The study focuses on performance of MFIs for the ten years period from 2010 to 2019.This period reflects specific interval which is just a snapshot dependent on economic conditions within the 10-year period. A review of MFIs sustainability may require a considerable amount of time.

Thirdly is the reliance on secondary information which may compromise on accuracy of the data. The study presumed that the information submitted to the MIX World Bank platform is accurate and fairly represents the underlying financial position of the microfinance institutions.

The fourth limitation is the non-consideration of different maturity periods of the loan portfolio. Future studies can investigate how different loan maturity periods might influence the relationship between financial leverage and financial sustainability of MFIs in Kenyan.

1.6.2 Delimitations of the Study

Delimitations denotes the choices, characteristics or elements selected to define the boundaries set for the study. It includes the factors and variables not included in the research.

The first delimitation is the population of study. The research comprised all the MFIs that submitted data to the World Bank MIX platform. This provided assurance in terms of accuracy and reliability of data. Exclusion criteria was applied for MFIs who failed to submit complete data as prescribed.

The second delimitation was the period under review (2010 – 2019). The delimitation period of 10 years was considered fairly adequate and manageable for the study. The period was also reasonable to determine performance during cyclic economic times and mitigate against unnecessary variances.

Thirdly, the context of the microfinance sector in Kenya and emerging SMEs play a critical role in economic growth (Tamanni & Haji, 2019; Girabi & Mwakaje, 2013). However, the scope of this study did not include some key financiers of SMEs such as Saccos and non-deposit taking micro lenders which equally play a critical role in financing low-income households and other financially excluded segments of the population. In addition, due to limited access to data, the study was based on the aggregate amount of non-interest income in computing income diversification; future study could explore the specific effect of the various non-interest income streams on the relationship between financial structure and financial sustainability of MFIs.

Finally, the Study presumed that the impact of COVID 19 pandemic did not adversely affect the microfinance sector compared to other sectors hence not considered in this study.

1.7 Scope of the Study

The study examined whether income diversification moderates the relationship between financial structure and financial sustainability of MFIs in Kenya. The study covered ten-year period from 2010 to 2019 and focused on the 53 MFIs in Kenya that report with the World Bank MIX market. However, after applying the inclusion / exclusion criterion, it was found that 32 MFIs fully submitted the required information. The study's geographic focus was Kenya, which is located at 00 N, 00 E in terms of latitude and

longitude. The study focused on Kenya's MFIs that are officially registered and report with the World Bank MIX market.

1.8 Assumptions of the Study

It was assumed that all the 53 MFIs submitted full and accurate information to the self-reporting MIX Market platform. Also, it was assumed that the collected data reflects the picture of the MFIs in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the insights provided by the relevant underpinning theories and review of literature related to this study. Thus, the chapter provides the theoretical framework for the study, the conceptual framework, the study variables as captured in the conceptual framework and the research gaps. The study used a financial sustainability framework to conceptualize and understand the MFIs financial sustainability.

2.2 Theoretical Literature Review

This study was hinged on the following theories: Life Cycle Theory (LCT), Profit Incentive Theory (PIT), Capital Structure Theory, Modern Portfolio Theory, Pecking Order Theory and Working Capital Management Theory. The life cycle theory was the main theory driving the study.

2.2.1 Life Cycle Theory

According to the Life cycle theory (LCT) proposed by Fehr and Hishigsuren in 2006, the capital structure of microfinance institutions changes as an MFI progresses through its life cycle. The limitations imposed by funding sources prevent MFIs from making many choices, but because they go through distinct MFI growth phases, financial sustainability is achieved through a progressive financing structure. The cost of capital may limit the types of funding available to MFIs at the various stages. In agreement, Hoque & Chishty (2011) states that the LCT captures the funding of MFIs as they develop into entities that can support themselves financially.

The significant stages, as described by Mueller (1972), are the start-up, expansion, consolidation, and integration stages, even though Hoque and Chishty (2011) recognized three MFI growth stages. MFIs are financed through donations and grant money during their first stages of development. Due to the funding constrains encountered in the formative stages of establishment, donations and subsidies from NGOs are the most effective for funding the MFIs. This feature of capital structure is therefore a critical factor in determining the microfinance institution's long term financial self-sufficiency.

The growth phase focuses on the extension of operations after establishment challenges in the inception stage have been resolved. A good business model enlarges microfinance institutions' operations and outreach. The expansion emphasizes the need for equity financing from NGOs and public investors to attain MFI sustainability. International Finance Institutions (IFIs) also come in as provider of seed capital. Nevertheless, subsidies in the form of soft loans and grants are still common and available for funding MFIs (Brau & Woller, 2014). The consolidation stage commercializes the operations of the microfinance institution.

During the integration phase, microfinance institutions join the conventional lending sector by converting into microfinance banks, and later on as commercial banks. Subsidies and grants are no longer part of the financing structure of microfinance institutions since MFIs are considered self-sufficient and profitable. The integration stage is synonymous with higher depth of outreach and commercialization. However, there is an ongoing argument that, as microfinance institutions acquire financial sustainability, they may neglect the core poor-a phenomenon referred to as mission drift (Morduch & Haley, 2012; Morduch, 2000). Scholars on MFIs financial sustainability, for instance Rhyne, (2001) content that as the microfinance institution progresses towards the integration stage, the loans granted to clients will enlarge- the average loan size.

Despite the popularity of the LCT in explaining MFIs growth and changing financing structure, empirical evidence is scanty, as little work has been done to validate the theory in respect to MFIs. In an effort to answer the question as to whether the MFIs develop towards financial sustainability, Bogan, (2012) used cross sectional data of the top 300 microfinance institutions. Results did not support the LCT, but underscored the importance of capital in determining financial sustainability. This is because capital constraints and costs limit the expansion of microfinance.

De Sousa-Shields & Frankiewicz, (2004) notes that MFIs are moving toward private capital. The authors further argue that MFIs survive any stage of the LCT is a function of their ability to attract the sufficient financing resources. Conversely, Fehr & Hishigsuren, (2006) assert that while market driven financing for MFIs is evident, these institutions are still using non-commercial financing, which contradicts the LCT evolution argument. Some financing programs such as Accion International link microfinance institutions with investors and commercial banks through credit enhancement hence lowering financing costs for MFIs as they turn into commercially viable entities, thus, defying the Life Cycle Theory.

The LCT theory highlights the growth stages that MFIs undergo as outlined by Mueller, (1972) which includes the start-up, expansion, consolidation and the integration stage. This is relevant for this study since some of the MFIs have been in operation for few years and may therefore require financing through donations and concessionary funds to cushion against losses associated with start-up businesses. Once the MFI overcomes the initial operational challenges, the LCT theory advocates for the growth phase which focuses on the extension of the business operations and consideration for a wider outreach to reach a stable customer base which is a key ingredient to achieve financial sustainability.

Some studies link changes in microfinance's capital structure to their growth requirements. In its early stages, the microfinance business was mostly controlled by microcredit NGOs that were mainly financed by external funding organisations. As the sector expanded, numerous NGOs faced funding constraints from donors (Fernando, 2004). Rhyne (2001) discussed the constraints of donors' funding as highlighted by Fernando (2004). The anticipated funds from donors seem insufficient to fulfil the growing requirements of MFIs. Secondly, donors' money were marked by significant uncertainty and delays. Finally, the desire for autonomy from funders adopted by several NGO-MFs.

2.2.2 The Profit Incentive Theory

This theory states that application of commercial funding sources at any stage of microfinance institution evolution allows MFIs to meet the microfinance promise (Bogan, 2012). The usage of commercial funding raises cost consciousness, efficiency and outreach. These are the constructs of interest for this study. In concurrence with the institutionalist paradigm, the PIT argues that donor funding is limited in amount, thus, cannot fund microfinance at a mega-scale given the increasing demand of microfinance. The theory upholds that microfinance institutions pursuing profits thrive to maximize revenue, whilst minimizing operational costs, so as to cover expenses and build surpluses.

Microfinance institutions funded by grants and subsidies do not respond to profit maximization and cost minimization pressures, thus, opt for outreach depth over efficiency by serving the poorest and rural clients which have extra lending costs (Bogan, 2012; de Aghion & Morduch, 2005). Evidence of the PIT, as put across by Bogan, (2012), notes that there is increasing international and internal pressure on microfinance institutions to shed-off subsidies and over-reliance on grant financing.

Institutions such as Accion International have made several efforts to link microfinance institutions with equity financiers, debt financing, as well as other commercial funding sources which has availed an avenue for microfinance institutions to seek independence from grants and subsidies.

In accordance with the PIT, microfinance institutions (MFIs) are able to fulfil the promise of microfinance when they make use of commercial funding sources at any point in their evolution (Bogan, 2012). This is the case regardless of the stage of their development. Utilizing commercial funding can result in a number of positive results, including expanded outreach, increased efficiency, and increased cost sensitivity. In accordance with the institutionalist perspective, the PIT acknowledges that donor funding is limited in quantity and, as a consequence, will not be able to provide funding for microfinance on a vast scale. Specifically, this is due to the fact that the demand for microfinance is expanding at an exponential rate. According to the idea, microfinance institutions (MFIs) that are interested in earning a profit work towards the goal of increasing their revenue while concurrently reducing their operational costs. It is because of this that they are able to fulfil their expenses and create surpluses. It has been demonstrated by Bogan (2012) and de Aghion and Morduch (2005) that microfinance institutions (MFIs) that receive money from grants and subsidies do not respond to both the restrictions of maximizing profits and minimizing costs because of this, they give greater importance to the breadth of their outreach than they do to the efficiency of their operations by catering to the most disadvantaged and rural customers, who pay additional costs for lending. The evidence of the PIT, which was presented by Bogan (2012), underlines the increased pressure that is being placed on microfinance institutions (MFIs) all across the world and inside their own institutions to minimize their reliance on grant financing and subsidies. There are many who believe that microfinance

institutions ought to work toward becoming self-sufficient in terms of grants and subsidies.

Due to the fact that the quantity of money that can be donated is limited, the PIT is unable to locate microfinance institutions (MFIs) on a massive scale. This is the case despite the fact that the need for microfinance is continuously increasing. This aligns with the institutionalist worldview, which is in agreement with this. Through the implementation of this concept, microfinance institutions (MFIs) that are working hard to flourish are given support. Their objectives are to ensure that they fulfil their expenses, maximize their revenue, minimize their operational costs, and generate surplus assets. As stated by Bogan (2012), microfinance institutions (MFIs) that are dependent on grants and subsidies do not react to the pressure that is placed on them to maximize revenues and minimize expenses. As a consequence of this, they place a higher priority on outreach capacity than efficiency by catering to the most economically disadvantaged and rural customers, who incur greater costs for the lender.

That being the case, commercial funding is able to satisfy the ever-increasing demand for microfinance (Bogan 2012, Barnett 2011). There is a widespread belief that commercial sponsorship will encourage the pursuit of profit, and this funding is not restricted to providing sufficient monies from donors. According to the trade-off hypothesis, which was developed by Myers in 1984, debt should be utilized in a sensible manner since the costs of utilizing it may surpass the gains in company value that it gives. This idea was developed to explain why debt should be utilized in a prudent manner. As a result of the marginal tax shield gains on increased debt being cancelled out by the growth in the present value of potential costs connected with financial distress11, there is a limit to the amount of money that corporations are able to borrow. This limit is achieved when the

limit is reached. In addition to this, the utilization of debt is detrimental to the value of the organization.

According to this theory, microfinance institutions (MFIs) that receive funding from commercial sources are more likely to respond positively to profit incentives. This is because MFIs are more likely to be able to maximize their profits. The implication of this is that they will increase their income while simultaneously cutting their expenses in order to generate sufficient finances to maintain their activities. Alternatively, microfinance institutions (MFIs) that are sponsored by donor funding may prioritise outreach over efficiency by delivering services to clients at a higher delivery cost. This is in contrast to the situation described above. The purpose of microfinance institutions, also known as MFIs, is to maximize revenue while concurrently minimizing operational costs. This is done in order to be able to cover expenses and reduce costs, which ultimately leads to the formation of surpluses. At long last, the AT places an emphasis on the relevance of debt in terms of the role it plays in bringing the performance of management into sync with that of capital suppliers. Consequently, increasing leverage is a significant approach that can be utilized to lower the risk of liquidation and unproductive cash flow. This can be accomplished by utilizing leverage. On the other hand, this will make it more challenging for management to create sufficient cash flow to pay their debt obligations, which will contribute to an increase in the amount of strain they are under.

2.2.3 Modern Portfolio Theory

The modern portfolio theory, proposed by Harry Markowitz (1952) in his seminal paper "Portfolio Selection," provides the theoretical foundation of income diversification. According to the theory, a risk-averse investor can maximize profits by investing in a well-diversified portfolio of uncorrelated securities at a given risk level. The portfolio

selection process involves a trade-off between desired high-anticipated returns and undesirable deviation from expected returns (Markowitz, 1952). According to Carroll and Stater (2009), choosing an optimal portfolio entails taking risks that maximize expected returns or foregoing some gains to minimize variation. Markowitz (1952) argues a security with an imperfectly correlated return has a lower risk than the aggregate risk, as measured by the portfolio's beta. Investors are willing to take on bigger risks in exchange for higher rewards. MPT is based on various assumptions, including that investor are rational, that information is widely available and free, that investors have uniform expectations, and that a risk-free borrowing and lending rate exists (Markowitz, 1952).

Banks can minimize income volatility and improve overall financial performance by engaging in a variety of revenue-generating activities such as vestment banking, advisory services, brokerage, and insurance underwriting, which is consistent with current portfolio theory (Saunders *et al.*, 2016). Valverde and Fernandez (2007) also assert that diversification of income increases a financial institution's operating income and its competitiveness. Non-lending activities counterbalance decreased interest revenue caused by loan competition (DeYoung & Rice, 2004). Lang and Stulz (1994) claim underperforming firms are more likely to diversify than profitable ones. Furthermore, Iqbal (2007), who studied Islamic banking, found that diversifying financial services and products reduces return volatility and the risk of displacement in imperfect markets.

Additionally, income diversification promotes financial intermediation by closing the information gap between those who deposit and those who borrow (Sanya & Wolfe, 2011). Depositors shift the responsibility of monitoring lending agreements to financial intermediaries since they save money through a contract characterized by information asymmetry. Furthermore, the intermediary absorbs the negative impact of information

asymmetry through cross selling. Williamson (1986) noted that when banks engage in unconventional activities, they protect depositors from potential losses. In addition, Ho and Saunders (1981) argue that by providing a variety of non-lending services, banks boost lending activities by lowering interest margins because of products cross-elasticity.

Non-lending activities, according to Chiorazzo, Milani, and Salvini (2008), resulted in economies of scale and scope due to joint production in the delivery of associated financial services. Landskroner, Ruthenberg, and Zaken (2005) conjecture that income diversification increases bank earnings and operational efficiency, particularly as the volume and breadth of operations rise. Thus, income diversification leads to stable earnings (Fang & Lelyveld, 2014; Berger, Hasan, & Zhou, 2010). The modern portfolio theory therefore strongly argues that income diversification moderates the relationship between financial structure and financial sustainability of MFIs.

2.1.4 Pecking Order Theory

The pecking order theory tries to capture the cost of asymmetric information. The proponent of this theory, Myers (1984) recognizes that, the internal resources and the external ones are not perfect substitutes in a world of asymmetric information between investors and managers. The theory argues that due to adverse selection, retained earnings are considered to be cheaper than debt and debt is preferred ahead of equity. A premium is required to compensate for the risk that provided information is not quite candid. The required premium is higher with respect to the stock investors as compared to the debt investors.

The pecking order theory states that, companies need to prioritize their sources of financing (from internal financing, to equity) according to the law of least effort, or of least resistance, preferring to raise equity as a financing means of last resort. After

internal financing, the firm should issue safe securities. Although investors fear mispricing of both debt and equity, the fear is much greater for equity. Corporate debt has relatively little risk as compared to equity because if financial distress is avoided, investors receive a fixed return.

Thus, the pecking order theory implies that, if outside financing is required, debt should be issued before equity. The firm should consider issuing stocks only when its debt capacity is reached. Since there are many types of debt such as convertibles and straight debt, and since the former is riskier than the later, the pecking order theory implies that, one should issue straight debt before issuing convertibles. The pecking order theory underscores the need for the capital structure of a firm to follow a particular pattern based on difficulties in obtaining financing at reasonable cost. Contrary to the MM propositions without taxes, the value of the firm could decrease if the firm does not prioritize financing of its projects from internal financing to debt and lastly to equity.

Managers, according to the Pecking Order Theory (POT), possess superior information compared to investors on asset values, risk, and growth prospects. Asymmetric information leads to agency and transaction costs when the information is difficult to transmit and verify. Consequently, corporations choose for internal financing over debt when borrowing costs rise, especially when the cost of debt is linked to knowledge asymmetry. Firms choose for debt over issuing additional equity due to the negative signal it sends to the market. Therefore, companies also favour internal funding, which does not include any issue expenses or communication concerns, unlike external finance. Firms prefer to issue additional equity for external finance only after utilising their debt capacity. Leverage should have a positive association with size and collateral, and a negative association with profit, dividend payments, and risk. Accounting information's value to donors in their decision-making process and donation amounts is based on the

concept of asymmetric information, as discussed by Parsons (2007). Donations are a distinct financial source for MFIs and are part of external financing. Managers possess information that donors lack, therefore rating scores provide donors with a more accurate understanding of a Microfinance Institution's performance and risk, which might impact the gift amount.

2.3 Empirical Literature Review

2.3.1 Deposits on Financial Sustainability of Microfinance Institutions

Deposits are an important source of financing for MFIs around the world, particularly in Africa, where deposits have risen faster than MFI loan portfolios (Bayai & Ikhide, 2016). Savings are thus a source of credit expansions as well as a means of increasing sustainability. High savings mobilization shows the ability to self-finance, achieving independence and stability. As a result, various research has been conducted to investigate the relationship between deposits and MFI financial sustainability.

Parvin *et al.,* (2020) found that the deposit to asset ratio (DAR) had a positive, though statistically insignificant; influence ROA under random effect model. Additionally, deposit to loan (DETL) also had a positive and insignificant effect on net Income to expenditure (NIER). The authors considered a sample of 187 MFIs operating in Bangladesh over the period 2005 to 2014. Bich (2016) found a positive and insignificant relationship between deposits and financial sustainability using a sample of 434 MFIs for the period 2010 to 2014 and data was analysed using the OLS regression model. Tehulu (2013) conducted an analysis on 23 microfinance institutions (MFIs) in East Africa from 2004 to 2009, and the findings suggested that the deposit-to-asset ratio had a positive and significant effect on financial sustainability. Data was analysed using probit regression.

Mwizarubi *et al.*, (2016) examined the effect of financing decisions on the financial performance and sustainability of MFIs. The study collected quarterly time series data

from the NMB website and the Bank of Tanzania (BOT) databases from the 1997 fourth quarter through the 2014 second quarter and used the Ordinary Least Squares method (OLS). According to the findings of this study, deposit mobilization is the most important driver of financial sustainability, next shareholder equity, debt (commercial borrowing), and finally going public. Khachatryan *et al.,* (2017) found a positive insignificant association between deposits and MFI performance (ROA) in sixteen countries across Eastern Europe and Central Asia (ECA) from 2005 to 2009. Data was analysed using the unrelated regression model.

Duguma and Han (2018) examine the effect of deposits on financial sustainability. The authors employed a sample166 rural savings and credit cooperatives operating in Ethiopia through 2014 to 2016. The author found that the deposit to loan ratio, deposit to total asset ratio, the volume of deposits and demand deposit ratio significantly and positively influenced financial sustainability. Henock (2019), who researched 46 SACCOs in Eastern Ethiopia in 2016, found that deposit mobilization had a negative impact on financial sustainability. The author concluded that the negative association could be ascribed to an excessive build-up of savings than loans in those saving and credit cooperatives, which could be the outcome of fewer net borrowers than savers. Using a worldwide sample of 1301 MFIs operating in 121 countries during the period of 2003–2014 and both the System GMM regression and random probit regression model, Al-Azzam (2019) reported that subsidies and donations had a negative and significant effect on operational self-sufficiency.

Mia and Lee (2017) found no significant association between savings/deposits and MFI operational self-sufficiency using a sample of 169 MFIs in Bangladesh from 2009 to 2014, and a two-step system generalized method of moments (SGMM). In addition, the author found that using client savings increases the depth of MFI outreach. Dabi *et al.*,

(2023) studies the effect of capital structure, financial performance and sustainability of Microfinance Institutions (MFIs) in Ghana. The study used a sample of 51 MFIs over the period from 2000 to 2019. They found that deposit as a ratio to loan is significant and relates negatively to return on assets and operational self-sufficiency.

A study conducted by Memon et al., (2022) investigated the financial sustainability of microfinance institutions (MFIs) within the framework of the economy. The purpose of this study was to determine the extent to which decisions made at the macroeconomic level influence the microeconomic decisions made within the microfinance sector in South Asia. This was accomplished by utilizing the data of 409 South Asian microfinance institutions (MFIs) in conjunction with the macroeconomic factors of the individual nations over the course of the period 1999–2017. The unbalanced panel data of microfinance institutions and macroeconomic variables were analyzed with a fixed-effect model (FEM) in the empirical study that was conducted. In order to address the potential endogeneity and over-identification bias, the research applied the two-stage least squares (2SLS) model for robustness and the System Generalized Method of Moment (GMM) for the purpose of addressing the issue. According to the findings, economic variables such as foreign investment (foreign deposit), human development, inflation, interest rate, private credit, and labor force participation have all had a negative impact on the sustainability of the financial system, with the exception of the growth of the GDP.

According to Duguma and Han (2018), expanding the capital of institutions through deposit mobilization maintained the cost of capital low, which ultimately led to financial sustainability. Both of these findings were published in 2018. The impact of deposit mobilization on the viability of the financial system, on the other hand, was not well understood. A balanced panel of data was collected from 166 rural savings and credit

cooperatives (RUSACCOs) in Ethiopia over the course of the years 2014–2016 with the purpose of conducting an investigation of the impact that deposit mobilization has on the financial sustainability of entities. The findings of the panel regression estimates demonstrated that, among the factors that were used to mobilize deposits, the ratio of deposits to loans, the ratio of deposits to total assets, the volume of deposits, and the demand deposit ratio all had a significant direct impact on the financial sustainability of the organization. According to the findings of the fixed effect regression analysis for the interest rate spread, there was a relationship that was inversely correlated between the interest rate spread and the financial sustainability. Furthermore, according to the findings of our robust fixed effect regression, the age of the institution and the rate of inflation are two of the control variables that have an impact on the institution's ability to maintain its financial stability. In contrast to what we had anticipated, neither the total number of members nor the proportion of female members emerged as statistically significant.

According to Mwangi et al., (2015), the research design that was utilized for the purpose of the study was an explanatory research design. The nine registered microfinance banks that are controlled by the Central Bank of Kenya were the population that was targeted for the study. A representative sample was chosen from among these institutions for the objectives of the research. In order to make conclusions about the study, the researchers used the SPSS statistical tool to analyse the cross-sectional data that was collected. The research concluded that the ratio of deposits to assets was statistically significant in influencing the financial sustainability of microfinance institutions (MFIs) (t values=2.374, p values=0.0005).

According to Henock (2019), cooperatives of creditors and microfinance organizations are examples of typical models that refute the conventional notion that people living in

poverty are not creditworthy and are unable to save money. The accumulation of savings and the establishment of a source of credit for members at an interest rate that is both fair and reasonable are the primary goals of cooperative societies that are established for the purpose of providing credit. In order to effectively serve the poor and provide sustainable financial solutions, SACCOs need to be financially sustainable and accessible to their members. The primary purpose of the research was to investigate the effectiveness of SACCOs in Eastern Ethiopia with regard to their operations of outreach and sustainability. The research design utilized in this study included both descriptive and causal approaches. For the purpose of the study, 46 SACCOs that have been in operation for a minimum of three years and had undergone audits of their financial reports were chosen.

The analysis relied mostly on audited financial statements of the society for the year 2016, which had been collected from secondary data sources. SACCOs in Eastern Ethiopia were found to be financially viable, and their outreach performance determined to be at a moderate level, according to the findings of the study. When it comes to assessing whether or not SACCOs are financially self-sufficient, there are a number of prediction variables that are statistically significant. These include return on assets, operational efficiency, debt equity ratio, gift, and deposit mobilization. In a similar vein, the characteristics of financial self-sufficiency, size, debt equity ratio, and gift are all statistically significant predictor factors that are utilized in the process of determining the outreach success of SACCOs.

According to Salau and Salau (2020), the significance of guaranteeing the financial sustainability of providers of financial services in order to guarantee the economic prosperity of any country or continent-wide cannot be overstated. It was determined that this study was essential in light of the fact that financial institutions in Africa are

currently struggling with the issue of liquidation in the 21st century. When it comes to long-term success and development, the financial sustainability of financial institutions is of the utmost importance. This is because they offer the possibility of satisfying the requirements of the present without jeopardizing the institutions' capacity to continue operating in the foreseeable future – a legal entity. Through the use of Nigeria as a case study, the research investigated the factors that determined the financial viability of Nigerian deposit money banks between the years 2009 and 2018. The research design utilized in this study was known as ex-post facto research, and the factors that were considered in the study were leverage, liquidity, company size, and the capital adequacy of the banks. As of the 31st of December in 2018, the population of the study consists of fourteen deposit money banks that are listed on the Nigerian stock exchange. The data were gathered through the use of secondary methods, and panel multiple regressions was utilized for the interpretation of the data. Based on the findings of the study, it was found that liquidity and capital adequacy have a positive and significant impact on the financial sustainability of banks. On the other hand, leverage and firm size had a beneficial but insignificant effect on the financial sustainability of deposit money banks in Nigeria.

It was stated by Han and Melecky (2013) that during times of crisis, depositors experience anxiety, which might lead them to run on finance institutions and withdraw their deposits. If bank deposits were more varied, meaning that they were held by a greater number of individuals, it would be possible to reduce the likelihood of withdrawals of bank deposits that are tied to one another. The purpose of this research is to investigate the relationship between a wider access to bank deposits prior to the financial crisis of 2008 and the dynamics of bank deposit growth during the crisis, while also adjusting for important factors. When the authors utilized the proxies of Honohan (2008) for access to deposits and of Demirguc-Kunt and Klapper (2012) for the use of

bank deposits, they got to the conclusion that increased access to deposits can make the deposit funding base of banks more resilient during times of financial stress. Therefore, policy attempts to improve financial stability should not just concentrate on macro prudential regulation, but they should also acknowledge the favourable influence that increased access to deposits has on the financial sustainability capability of financial institutions to maintain their financing capabilities.

As stated by Himawan and Pertiwi (2022), the research was conducted with the background knowledge that MFIs, as one of the supporters of the Indonesian economy, were required to experience financial sustainability. The financial sustainability ratio, also known as the FSR ratio, was utilized to ascertain the growth of the institution as well as to ascertain whether or not the institution is capable of maintaining its financial performance. The objective of the research was to ascertain the impact of inflation, exchange rates, non-performing financing (NPF), and financial deposit ratio (FDR) on the financial sustainability ratio (FSR) at Islamic Commercial Banks in Indonesia throughout the period of 2016-2020, with return on assets (ROA) serving as a mediating variable. The population of this study consisted of 14 registered BUS students.

This research was characterized as a quantitative study. A purposive sampling strategy was employed to determine the research sample, and the criteria that were used to establish the sample size resulted in thirteen samples being used. After that, 65 data were collected from the 13 samples that were collected during the observation period of 2016-2020. The data that was utilized was of the secondary variety. A multiple linear regression analysis using a PLS test was the method of analysis that was utilized, and the program applied was E-views 10. Based on the findings, it was determined that the variables of inflation, exchange rate, and FDR do not have any influence whatsoever on the FSR of Islamic banks. An effect that is both negative and significant was exerted by

the NPF variable on FSR. Additionally, the ROA variable's impact on FSR was both positive and statistically significant. It was also demonstrated by the findings that the factors of FDR, exchange rate, and inflation do not have any impact on ROA variables. The NPF variable, on the other hand, appeared to have a large and negative impact on ROA. The findings of the research indicated that ROA was only capable of acting as a mediator between the effect of NPF and FSR.

2.3.2 Debt on Financial Sustainability of Microfinance Institutions

According to Bogan (2012), debt has both beneficial and negative implications on the financial viability of MFIs. While commercial debt is a desirable source of low-cost finance for MFIs since it drives efficiency, it might disrupt domestic markets if it is offered at concessionary or subsidised interest rates. Studies that have assessed the impact of debt on financial sustainability of MFIs show mixed findings.

Chauhan (2021) utilized data from all Indian NGO-MFIs that report to the Microfinance Information Exchange (MIX) market from 2009-2010 and 2014-2015 and the Probit regression model found no significant association between debt financing and financial efficiency. Kinde (2012) examined the factors of MFI financial sustainability in Ethiopia using a sample of 16 MFIs from 2002 to 2010. The fixed effect and random effect regression models were used to analyse the data. The study found no significant relationship between debt and financial sustainability. The author concluded that among the various sources of capital available to MFIs, debt financing seems not to improve their financial sustainability; however, highly levered firms may be financially unsustainable because of the negative beta coefficient.

Rutanga *et al*., (2021) examined the relationship between capital structure on performance and financial sustainability of MFI in Rwanda. Panel data for the period

2014-2018 and the authors employed both the fixed effects OLS regression models. The results of this study indicated that debt financing had a negative effect on financial self-sufficiency and performance. Sekabira (2013) assed the impact of capital structure on performance of microfinance institution in Uganda. A sample of 14 MFIs was used and both the fixed effect and probit regression models. The author found that debt and grants were negatively correlated to operational and financial sustainability.

In their study among Bangladesh Microfinance institutions, Parvin *et al.,* (2020) found that debt to loan ratio (DTL) had a positive and significant impact on ROA under the random effect model. However, DTL had a negative and significant effect on net income to expenditure (NIER). The study used a sample of 187 MFIs operating in Bangladesh over the period 2005 to 2014. Bich (2016) studied the impact of capital structure on performance of MFIs in developing countries using a sample of 434 MFIs for the period 2010 to 2014 and data was analysed using the OLS regression model. The results of this study revealed that sustainability of MFIs in developing countries was significantly and negatively affected by capital structure.

Tehulu (2013) examined 23 East African microfinance institutions (MFIs) from 2004 to 2009, and the findings suggested that debt had a negative and significant impact on financial sustainability. Githaiga, Soi and Buigut (2023), who used a sample of 444 MFIs (global data set) for 2013–2018 and three panel data estimation models (namely the fixed effect, the random effect and the dynamic panel system generalized method of moments) found a negative relationship between leverage and financial sustainability. Ayele (2015) examined whether MFIs can increase their depth of their outreach whilst achieving financial viability using an unbalanced panel dataset of 31 MFIs (2003–12) drawn from the three countries (Ethiopia, Kenya and Uganda) and both the Hausman-Taylor and

Generalized Structural Equation Models. The authors reported an inverse relationship between financial leverage and financial sustainability of MFI.

Employing a sample of 169 MFIs in Bangladesh from the period of 2009 to 2014, Mia and Lee (2017) and three panel data estimation techniques (the Fixed Effect (FE) and Random Effect (RE) and a two-step system generalized method of moments (SGMM), found that commercial loans had a positive and significant effect on MFIs operational self-sufficiency. However, the author reported that use of commercial loans might lead to a mission drift. Using a sample of 15 Ethiopian MFIs operating between the years from 2011 to 2018 and fixed effect regression model, Abdulhakim (2020) found that debt capital had a positive but insignificant effect on financial sustainability of MFIs. Khachatryan *et al.,* (2017) found a negative but statistically insignificant relationship between equity capital and MFI performance in sixteen countries across Eastern Europe and Central Asia (ECA) from 2005 to 2009.

Using an unbalanced panel data set of 145 observations from 29 MFIs over the period 2008-2012 in Bangladesh, Hossain and Khan (2016) assessed the determinants of MFIs financial sustainability. They found that capital assets ratio and net write-off had a significant effect on microfinance institutions financial sustainability. However, they found that MFI size, Age of MFI, borrower per staff members, ratio of savings to total assets, debt equity ratio, outstanding loan to total assets and percentage of female borrowers had no significant effect on financial sustainability of MFIs in Bangladesh.

In order to investigate the connection between leverage and the financial stability of businesses, Agostino et al., (2024) utilized a large panel dataset consisting of Italian manufacturing small and medium-sized enterprises (SMEs). In particular, the research investigated whether or whether this link was influenced by the level of rivalry that is characteristic of the local credit market in which businesses operate, as well as the extent

to which this influence was exerted. By utilizing two different indicators of local banking competitiveness, namely the H-statistic and the Boone indicator, the study findings suggested that the negative impact of debt on the financial sustainability health of businesses is more pronounced for businesses that are operating in banking markets that are more competitive. As stated by Hossain and Khan (2016), microfinance is a type of banking service that offers financial assistance to individuals who are lacking employment or who belong to vulnerable groups. In order to alleviate poverty and empower women, the microfinance models placed an emphasis on boosting access to financial services and enhancing financial services.

It is important to note that the positive effects that microfinance institutions have on the welfare of the poor can only be maintained if the institutions are able to attain a satisfactory level of financial success. Identifying the elements that influence the financial sustainability of microfinance institutions (MFIs) in Bangladesh was the purpose of the study. For the purpose of this study, an econometric research methodology was utilized, and an unbalanced panel data set consisting of 145 observations from 29 MFIs in Bangladesh was collected during the course of the years 2008-2012. Out of the 29 MFIs, only four of them have discovered FSS that is less than 100%. As a result of the study, the financial viability of microfinance institutions (MFIs) in Bangladesh is influenced by the capital assets ratio, operational expense ratio, and write-off ratio. Nevertheless, the financial sustainability of microfinance institutions (MFIs) in Bangladesh throughout the study period was not significantly affected by factors such as the size of the MFI, its age, the number of borrowers per staff member, the ratio of savings to total assets, the debt equity ratio, the percentage of outstanding loans to total assets, or the percentage of female borrowers.

Researchers have avoided examining the connection between capital structure and the financial sustainability of microfinance institutions (MFIs), as information on the subject remains scarce, according to Bayai (2017). This is despite the fact that there has been a growing interest in microfinance throughout the years. The thesis fills this void by investigating the connection between the funding structure and the financial sustainability of a selection of South African Development Community (SADC) microfinance institutions (MFIs). This is done in light of the tendency towards commercialization. Having financially sustainable microfinance institutions (MFIs) that are able to regularly provide financial services to the marginalized and, as a result, advance outreach in the region that is plagued by poverty was the driving force behind this initiative.

A combination of four research papers are included in the thesis. These papers address the following topics: a conceptual review of the term "financial sustainability" as it is applied in microfinance; the essence of the life cycle theory (LCT) in explaining financial sustainability; the relationship between financing structure and financial sustainability; and the relationship between the financing structure and outreach (width and depth). In the study, a robust panel framework (fixed and random effects models) and binary–outcome models (probit and logit models) were utilized. The analysis was conducted over a period of six years and assumed panel data on sixty selected MFIs drawn from the MIX. According to the findings, the age of the MFI is not significant for providing an explanation for the level of financial sustainability. The ability to control default risk by reducing the portfolio that is at risk, as well as the ability to embrace cost–efficiency by minimizing both operational and finance expenses, are both factors that improve the likelihood of fiscal sustainability. In general, microfinance institutions (MFIs) are not financially sustainable, which is supported by evidence from past studies.

The emergence of 'young' microfinance institutions (MFIs) that are more financially sustainable represents a new trend variant from the propositions of the LCT. More research showed that the number of active borrowers and the sources of financing that microfinance institutions (MFIs) use are important factors in determining whether or not they are able to maintain their financial viability.

According to Parvin et al., (2020) findings, the capital structure of an organization played a significant effect in the performance of the organization. Microfinance institutions (MFIs) and efforts aimed at alleviating poverty are becoming increasingly concerned with the sources of money for MFIs, as well as their performance and the financial sustainability of their operations, in order to accomplish the United Nations' sustainable development goals. Following is a question that was investigated in the study: In terms of financial leverage, does the financial structure of microfinance institutions (MFIs) have an impact on their financial performance, namely their financial sustainability, depth, and breadth of outreach? The primary emphasis of our research was to investigate the connection between the capital structure of microfinance institutions and their financial performance. Additionally, we aimed to accomplish the goals of this program by getting in touch with clients who were deserving of financial assistance without the need for collateral. This study used a dataset consisting of 187 microfinance institutions (MFIs) to determine the association between the capital structure of MFIs and their performance. For the purpose of this investigation, a panel data regression analysis in conjunction with the Random Effect and Fixed Effect models were utilized. As a means of evaluating a company's financial performance, the Return on Asset (ROA) and the Net Income to Expenditure (NIER) ratios had been utilized. According to the research, the elements that have a significant effect on NIER include the Equity to Asset Ratio (EAR), the Debt to Loan Ratio (DTL), Risk, and Size.

Bayai and Ikhide (2018) conducted an analysis of a selection of Microfinance Institutions (MFIs) from the Southern Africa Development Community (SADC) in order to determine the relationship between commercialized financing structures and financial sustainability. This was done in light of the fact that it is necessary to control poverty through MFIs that are financially sustainable. A recent survey conducted by the South African Development Community (SADC) on microfinance advocated financial rescue packages for failing microfinance institutions (MFIs) in order to offer financial sustainability. In addition to the lack of conclusive evidence and the lack of specificity regarding the type of funding that supports financial sustainability, this survey did not indicate the type of financing that should be used. According to the findings of the study, microfinance institutions (MFIs) are generally not financially sustainable, despite the fact that the funding structure and the level of financial sustainability vary from country to country. The value of the function that financing structure plays in ensuring financial sustainability was validated by a rigorous probit model framework. The explanations for financial sustainability were the portfolio at risk, cost efficiency, and costs associated to deposit attraction.

It has been stated by Bitok et al., (2019) that microfinance institutions play a significant role in the process of economic development and the inclusion of financial services. The viability of the financial system was the most important factor in the expansion of microfinance organizations. This further demonstrated the significance of the financial viability of the organization. Therefore, the purpose of the study was to explore the impact that financial leverage has on the long-term financial viability of MFIs. One of the specific goals was to determine the impact that financial leverage has on the long-term financial viability of microfinance institutions (MFIs). In this work, the agency theory and life cycle theory served as the guiding principles. In this study, an explanatory

research design was utilized, and a panel approach was utilized in addition to the positivist paradigm. The census approach method was utilized for the research project. Using the data collection schedule, panel data was extracted from the mix market database for a period of time spanning from 2010 to 2018, and it was collected from thirty different MFIs. In the course of the research, descriptive and inferential statistical methods were utilized to examine the data with the assistance of the STATA program. Fixed effect model based on Hausman test ($X2 = 45.41$, $p= 0.000 \leq 0.05$). The outcomes of the study indicate that the financial leverage study had a favorable and significant impact on the financial sustainability of microfinance institutions (MFIs).

The determinants that have an effect on the Financial Sustainability (FS) of Micro Finance Institutions (MFIs) that are operating in Pakistan were estimated by Burki et al., (2012). Financing charges, the quantity of loans, the age of the company, the size of the Microfinance Institute, and the percentage of female borrowers were the factors that determined the rate of profitability. Microfinance institutions that are active in Pakistan are able to effectively maintain their financial sustainability thanks to the significant contribution that these variables recognize. A total of twenty-five microfinance institutions have provided their annual reports from 2008 to 2015, which were used to collect data. Using the determinants that were provided, the multiple regression method was utilized to determine the level of financial reliability. The findings of this research indicate that the levels of financing costs, the amount of the loan, the extent of outreach, and the percentage of female borrowers are significant variables that explain the financial sustainability of microfinance institutions (MFIs).

As stated by Rutanga (2018), a topic of concern ever since the microfinance crisis of 2008, the financial sustainability of microfinance institutions (MFIs) has emerged. Additionally, the commercial sources of funding, the expansion of financial services, and

the emergence of cooperative financial institutions and SACCOs have all attracted the attention of the microfinance industry towards the concept of financial sustainability. A quantitative approach was utilized to identify the factors that affect the financial sustainability of MFIs in Rwanda, and multiple linear regression was utilized to analyse and test the relationship between the dependent and dependent variables of the study. The purpose of the study was to investigate the effect of capital structure on the financial sustainability of microfinance institutions (MFIs) in Rwanda. The research data was obtained from audited financial statements of three MFIs and eight SACCOs. The data was evaluated with the help of multiple regression models, and the data analysis tool that was utilized was SPSS version 20. According to the results of the analysis of variance (ANOVA), the effects of the independent predictor variables on the dependent variable were not statistically significant at the 5% level of significance. At a level of 5%, debt, deposits, retained earnings, and ordinary share capital (Equity) were statistically insignificant factors among the four independent variables. However, the magnitude of these variables varied between MFIs and SACCOs according to their respective magnitudes. In the period between 2013 and 2017, the findings of this study demonstrated that debt has not consistently had an impact on the variables that pertain to financial sustainability among MFIs Ltd and SACCOs. OSS and ROA were negatively impacted when debt was present in MFIs.

The FSS, on the other hand, has been positively affected by it. Within the context of SACCOs, debt has had a beneficial impact on OSS and ROA, while having a negative impact on FSS. As a result of the analysis, between the years 2013 and 2017, all indices of financial sustainability, including OSS, FSS, and ROA, were not adversely impacted by deposits in MFIs by any meaningful amount. This is in contrast to the situation with SACCOs, where deposits have had a negative impact on OSS, FSS, and ROA.

Furthermore, retained earnings had a significant impact on all indices of financial sustainability, including OSS, FSS, and ROA, in MFIs. Equally important, by the same time period, retained earnings had a negative impact on OSS, FSS, and ROA in SACCOs as well.

According to Naz et al., (2019), ever since Pakistan gained its independence, poverty has emerged as one of the most pressing problems in the country. This problem, which can be alleviated with the assistance of the microfinance industry, has become one of the key concerns in Pakistan. Microfinance institutions (MFIs) in Pakistan were experiencing a drop in profitability, which made it impossible for them to continue existing. The purpose of this study was to investigate the factors that influence the financial performance of microfinance institutions in Pakistan, namely their profitability and their ability to remain in business. Additionally, the study attempted to determine whether or not achieving profitability and sustainability becomes a conflicting goal when it comes to serving the poorest economic strata. For the purpose of this study, MIX Market provided the researchers with an unbalanced panel data set consisting of 29 MFIs over the period of 2008–2014. For the purpose of this study, both fixed and random effects were utilized, and afterward, endogeneity was taken into consideration by employing instrumental variables techniques, specifically 2SLS and 3SLS. According to the findings, the most significant variables that determine the financial sustainability and performance of microfinance institutions (MFIs) in Pakistan are the size of the MFIs, the cost efficiency of the MFIs, the portfolio at risk, the average loan size, and the yield on the loan portfolio.

Research conducted by Da et al., (2019) indicates that microfinance is an essential component of the nation's system for providing financial inclusion. Therefore, the establishment of microfinance institutions (MFIs) is becoming an increasingly important

focus for governments, particularly in nations that are still in the process of establishing their economies. Microfinance institutions (MFIs) are measured in terms of their development based on a number of factors, one of which is their capacity to maintain their financial stability. In the course of this investigation, the institutionalist methodology is utilized with the objective of fabricating empirical evidence concerning the factors that influence the financial viability of microfinance institutions (MFIs) in the country of Vietnam. The evaluation criteria of investors and wholesale lending organizations are utilized in order to arrive at a conclusion on the financial sustainability of a company. For the purpose of determining the factors that influence the financial sustainability of microfinance institutions (MFIs) in Viet Nam, the Fixed Effect Model is utilized. Quantitative findings indicated that the financial sustainability of microfinance institutions (MFIs) is determined by five factors. These factors comprise; the rate of growth of MFIs' outstanding loans; the efficiency of MFIs' performance; the ratio of borrowers to the number of staffs of MFIs, which has a positive impact; the debt-to-equity ratio of MFIs and the incremental cost per client of the MFIs, which has a negative impact.

Tehulu (2013) asserts that the elimination of poverty was at the centre of the development plan the African continent was pursuing. One of the policy instruments that was thought to be effective in eradicating poverty was the provision of microfinance services through interventions. However, in order to alleviate poverty in a sustainable manner, microfinance institutions (MFIs) themselves should be financially sustainable. Given the connection that exists between the success of the microfinance industry and the objective of eliminating poverty, the objective of this study was to conduct an empirical investigation into the factors that determine the financial sustainability of microfinance institutions in East Africa, a region where poverty is a significant issue. For

the purpose of determining the characteristics that impact the financial sustainability of East African microfinance organizations, the study utilized both binary probit and ordered probit regression models. The results of the regression analysis, which were based on unbalanced panel data obtained from 23 microfinance institutions (MFIs) in East Africa between the years 2004 and 2009, showed that the financial sustainability of MFIs is positively and significantly driven by the amount and intensity of loans. However, the inefficiency of management and the riskiness of the portfolio had a major and detrimental effect on the company's ability to be financially sustainable. The scope of outreach and the amount of deposits collected are not significant factors in determining the financial sustainability of an organization. In light of the fact that previous research on the sustainability of microfinance institutions (MFIs) in general and the connection between capital structure and MFIs' sustainability in nations that are developing after the financial crisis was limited, the purpose of this study was to fill this gap by investigating the impact of various factors, including the impact of capital structure and legal standing on the sustainability of MFIs. We used a sample of 434 microfinance institutions (MFIs) that were active in developing countries between the years of 2010 and 2014. Multivariate regression techniques were utilized in order to examine the link between the dependent variables and the predictors. On the other hand, one-way analysis of variance was utilized in order to identify differences in the mean value of sustainability across MFIs that had varied legal statuses. Capital structure was found to have a considerable and detrimental impact on the long-term viability of microfinance institutions (MFIs) in developing nations, as observed by the findings. On top of that, the impact of legal status on the long-term viability of MFIs is significantly modest.

According to Kinde (2012), the theoretical frameworks of microfinance are cantered on the elimination of impoverishment through the enhancement of accessibility to financial services and financial resources. On the other hand, the beneficial effects that microfinance institutions have on the well-being of the impoverished can only be maintained if the institutions are able to achieve a satisfactory financial performance. Because of this, the objective of the study was to determine the elements that influence the financial sustainability of microfinance institutions (MFIs) in Ethiopia. The research was conducted utilizing a quantitative research methodology, and it utilized a balanced panel data set consisting of 126 observations from 14 MFIs conducted between the years 2002 and 2010. According to the findings of the study, the financial sustainability of microfinance organizations in Ethiopia is influenced by the breadth of outreach, the depth of outreach, the dependency ratio, and the cost per borrower provided by microfinance institutions. Despite this, the capital structure of microfinance institutions and the productivity of their personnel have no significant impact on the financial sustainability of MFIs in Ethiopia over the course of the study periods

2.3.3 Equity on Financial Sustainability of Microfinance Institutions

Equity capital comprises of the paid-up share capital, share-premium, reserves and surplus or retained earnings (Peter Zacharia, Teru & Ugwu, 2020). Equity is contributed by the owners (shareholders) of the firm and it is considered a permanent source of finance (Coleman & Robb, 2012). Conversely, capital structure theories argues that equity capital is a more expensive source of financing as compared to deposits and borrowing since debt is cheap source of financing due to tax shield of debt financing. On the other hand, the cost of equity capital is an important concept in corporate finance as it determines investment, financing, capital structure decisions and long-term financial sustainability of the firm (Sassi, *et al.*, 2019). Studies have also showed that equity

ownership has a significant effect on firm financial performance and value (Lin & Fu, 2017; Hasanudin *et al*., 2020).

Equity frees MFIs from making periodic contractual payments, which is also the problem with financial debt. Shareholders (profit-motivated MFIs) or both national and global donor agencies and development banks provide equity finance. Retained earnings are a kind of low-cost equity capital when compared to share issuance. Though the relationship between equity financing and MFIs' financial sustainability has been subject to extensive studies the findings are inconclusive.

Using data from MFIs in Africa, East Asia, Eastern Europe, Latin America, the Middle East, and South Asia over the years 2003 and 2006, Bogan (2012) studied the effect of capital structure on MFIs self-sufficiency. Data was analysed using the probit, OLS and fixed effect regression models. The author found that equity, grants, debt and deposits had a negative and statistically significant effect on financial sustainability. Bayai and Ikhide (2018) found no statistically significant relationship between equity and financial sustainability. The authors used a sample of 60 MFIs operating in the Southern Africa Development Community (SADC).

Chikalipah (2019) studied the impact of financing source on the financial performance of MFIs in the Sub-Saharan region. A sample of 471 microfinance institutions drawn from 36 sub-Saharan African countries over the period 1995 to 2012 and the Generalized Method of Moments (GMM) estimator was applied. The results of this study revealed a positive and robustly significant relationship between equity and the financial performance of microfinance institutions. Parvin *et al.,* (2020) analyzed data from 187 MFIs over the period 2005 to 2014 to establish the relationship between the capital structure and performance of MFIs in Bangladesh. Data was analysed through the random effect and fixed effect models. The author found that equity to asset ratio (EAR)

had a positive and significant effects on both net income to expenditure (NIER) and ROA.

Khachatryan, Hartarska and Grigoryan (2017) found a positive and significant association between equity capital and MFI performance in sixteen countries across Eastern Europe and Central Asia (ECA) from 2005 to 2009. Rutanga, Barayandema and Mutarindwa (2021) studied the effect of capital structure on the performance and financial sustainability of Rwandan microfinance institutions. A sample of 20 MFIs and SACCOS were considered. The authors used both fixed effects OLS regression models and data from 2014 to 2018. According to the findings of this study, the use of share capital had a significantly positive impact on MFIs' operational and financial sustainability, as well as their return on assets. Similarly, retained earnings boost the firm's financial sustainability marginally and positively

From Uganda, Sekabira (2013), who examined the effect capital structure and its role on performance of microfinance institution using a sample of 14 MFIs, found that equity positively influenced operational and financial sustainability. Nyamsogoro (2010) surveyed determinants of financial sustainability of ninety-eight Tanzanian's MFIs in 2008. By running multiple regression, the author concluded that equity but not debts might significantly improve financial sustainability of MFIs. Tehulu (2022) examined the impact of equity to asset ratio on financial sustainability of MFIs. The study used a panel dataset of 136 MFIs in 31 SSA countries over the period 2004 to 2018 and employed the Arellano-Bover /Blundell-Bond two-step Generalized Method of Moments (GMM). The author found no relationship between equity capital and financial sustainability of MFIs.

Utilizing a sample of 57 Indian MFIs from 2008-2009 to 2013-2014, Ghose, Paliar and Mena (2018) found that equity capital had a positive significant influence on all

performance parameters (ROA and OSS). Increased equity capital enhances MFI profitability, sustainability, and portfolio quality, presumably due to investor pressure to deliver a suitable return. The authors also observed that equity capital, in turn, negatively affects social performance (mission drift). Le *et al.*, (2020) investigated the factors that influence the operational self-sufficiency (OSS) of Vietnamese MFIs. The author used binary logistics and OLS regressions to analyze data from 34 MFIs from the Microfinance Information Exchange (MIX) market from 2011 to 2015. Based on the results of this study, equity capital has a positive and significant effect on financial sustainability.

Sha'ari (2023) investigated the possibility that businesses could achieve financial sustainability through the utilization of equity-based financing as opposed to debt-based financing. In order to achieve this goal, a conceptual framework that prioritizes equity-based financing above debt-based financing was developed in order to provide an understanding of the notion of equity-based financing among investors. This study then proceeded to conduct an analysis of the credit risk exposure amongst equity and debt for a number of different sectors identified in Malaysia. To be more specific, a Monte Carlo method was utilized in order to investigate the practicability of the equity-based financing model in terms of promoting the financial sustainability of companies. This was accomplished by simulating equity-based and debt-based financing models from the time period of the global financial crisis (GFC) to the time period of the Covid-19 phase. According to the findings of the study, equity-based financing had the potential to mitigate the burden of credit risk exposure when returns are linked to the success of the company. In addition, the data demonstrated that equity-based financing is capable of achieving financial sustainability regardless of the economic activity that may occur.

Ozili (2024) used annual data from 2005 to 2021 to investigate the impact that gender equality has on the sustainability of the financial system and the percentage of people who have access to financial services in 14 developing nations. A two-stage least squares regression estimate and a generalized linear model regression estimation were utilized in order to study the impact that gender equality has on the stability of the financial system and the inclusion of individuals in the financial system. In emerging nations, the equality of the sexes has an enormous and favourable impact on the establishment of financial sustainability and the inclusion of financial services. Equality between the sexes had a substantial and favourable impact on the financial stability and inclusion of African nations in the financial sector. There was a strong favourable impact that gender equality had on financial stability, but it did not have any influence on financial inclusion in countries that were not in Africa.

Gardini and Grossi (2018) argued that the international literature suggested that the factors that contribute to the insufficient financial sustainability of public organizations are dependent on both the external and the internal conditions of the organization. The external conditions were associated with demographic and socio-economic factors. On the other hand, the internal circumstances were connected with the political and managerial environments. As a result, the local government addressed the latter conditions in order to ensure that the organization would continue to be financially sustainable over the long term. The authors, on the basis of a survey of the relevant literature, provided an explanation of the most consolidated trend of such variables with regard to the impact of those variables on financial sustainability. At the same time, they revealed a disparity in what the literature has most recently investigated.

Microfinance Institutions (MFIs) in Bamenda, Cameroon was evaluated by Fonchamnyo et al., (2023) to determine the impact that capital structure has on the sustainable

operation of MFIs. During the course of the research, an ex-post facto causal research methodology was utilized, and panel data was collected from audited yearly financial statements of fifteen (15) microfinance institutions (MFIs) in Bamenda, Cameroon. These MFIs included both member-owned and shareholder-owned MFIs. A company's capital structure can be captured through the use of debt, equity, grants, and retained earnings. On the other hand, operational self-sufficiency can be used as a proxy for profitability. Methods such as the quantile-on-quantile methodology and the generalized least squares method were utilized in the process of data analysis. There is a substantial adverse connection between debt, grants, and the financial sustainability of microfinance institutions (MFIs), according to the findings of the study. On the other hand, there is a statistically significant positive relationship between retained profits and the financial sustainability of MFIs. Equity or share capital is discovered to have a positive link with MFI financial sustainability, despite the fact that this association is statistically insignificant because it is positive.

The purpose of the study conducted by Rutanga et al. (2021) was to determine the extent to which capital structure influences the financial sustainability of microfinance institutions (MFIs) in Rwanda. The researchers also evaluated the impact that capital structure has on the financial sustainability of MFIs. There was a collection of data that was gathered from the annual financial reports of MFIs and SACCOs for the period of 2014-2018. Using fixed effects OLS regression models, only a panel consisting of twenty MFIs and SACCOs was taken into consideration. This was due to the availability of data. The findings of this study came to the conclusion that the utilization of debt as a source of financing has a negative impact on the financial self-sufficiency and performance of businesses. When compared to this, the utilization of equity, also known as share capital, significantly enhances the operational and financial sustainability of

businesses, in addition to their return on assets. The firm's financial sustainability is improved when retained earnings are used in a manner that is both modest and positive. SACCOs are more likely to be negatively impacted by debt financing than their MFI counterparts, according to the findings of sample splits, which showed that SACCOs are more likely to be harmed than MFIs. Both of these groupings are significantly different from one another in terms of the amount of share capital they possess. The use of share capital to finance investments by microfinance institutions (MFIs) results in a substantially increased return on assets, as well as increased operational and financial self-sufficiency. In the case of SACCOs, the findings demonstrated that the utilization of equity, also known as share capital, as a method of financing the assets of the company has a detrimental and substantial impact on the return on total assets, as well as the operational and financial sustainability (self-sufficiency) of the aforementioned organizations.

With the help of data from the Federal Deposit Insurance Corporation (FDIC), Johnston-Ross et al., (2021) conducted an investigation on the role that private equity (PE) played in the resolution of bankrupt banks during the financial crisis of 2008. To fill the void left by weak and undercapitalized banking system, private equity investors made considerable investments in bankrupt banks that were underperforming and risky. These investments were undertaken in regions where local banks were also experiencing difficulties. The study demonstrated that private equity bought banks operated better ex post, with positive real impacts for the local economy. The study was conducted using a quasi-random empirical design that was based on precise bidding information. Through their participation in the resolution of failed banks, private equity investors played a positive role in the overall stabilization of the financial system.

It was the key feature of mobilizing financial sources and savings to small and medium-sized enterprises (SMEs) in the agribusiness sector and its supply chains that was of the utmost importance, as stated by Milosević et al., (2020). This was the initial motivation for the research that was conducted for this study. The literature study and the empirical research that was conducted in Serbia in 2019 were the basis for the key findings that were discovered when investigating the impact of two external sources of finance, namely trade credit and equity capital, on the long-term financial sustainability of businesses. In addition to the circumstances of this financing, it was established that the sources of financing that were investigated, which included equity capital and trade credit, had a favourable positive influence on the long-term financial sustainability of these businesses.

In their study, Dabi et al., (2023) investigated the impact that the capital structure of microfinance institutions in Ghana has on their financial performance and their ability to remain in business. In this study, we analyse the impact that the debt-to-equity ratio, equity-to-asset ratio, and deposit-to-loan ratio play in ensuring the financial success and sustainability of this organization. For the purpose of determining the nature of the connection that exists between the observed performance indicators and a group of factors that serve as explanations, the research utilized multiple regression techniques. The empirical study included 51 Ghanaian microfinance institutions (MFIs) that reported on the MIX market. There is a large and positive relationship between asset size and asset returns, self-sufficiency, and financial sustainability, according to the findings of our research, which provides solid empirical evidence for the theory. Additionally, the factors of capital structure, which include equity and debt, have a strong correlation with profitability, but they have a negligible impact on the operational self-sufficiency and financial instability of microfinance institutions (MFIs).

According to Dirse and Japee's (2024) findings, the meta-analysis, which was conducted by combining data from a wide variety of studies, aimed to investigate the impact of various sources of finance on the financial sustainability of microfinance institutions (MFIs) and to determine the optimal order in which these sources should be utilized. This was done in light of the trend toward commercialization of MFIs, which fundamentally reshapes their capital structure. Within the scope of the analysis, 166 effect sizes were derived from 64 different investigations. According to the findings, equity and deposit financing have a favourable impact on the financial sustainability of an organization, however the relationship between debt and gift financing is inverse. The MFI charters, on the other hand, can result in a variety of variations. There are several types of microfinance institutions (MFIs) that benefit from equity financing, despite the fact that it has a negative impact on the financial viability of MFI banks. Deposit funding had a similar detrimental impact on non-governmental organizations for microfinance institutions. Not to be confused with donation and deposit financing, debt and equity financing have an impact on both financial self-sufficiency (FSS) and operating self-sufficiency (OSS) when it comes to proxies for financial sustainability. There is a good impact that equity financing has on OSS, but there is a negative impact that it has on FSS. In contrast, debt financing has the opposite trend than equity financing. In addition, the meta-regression demonstrates that the sources of financing do not substantially explain the variations in the FSS of MFIs, but they do so for OSS. This is because the sources of finance are examples of capital structure variables.

The purpose of the study by Wirasedana et al., (2024), was to gain an understanding of the role that intellectual capital and capital structure play in the maintenance of the financial performance and cultural sustainability of village credit unions in Bali. These credit unions, which are locally referred to as Lembaga Perkreditan Desa (LPD), played

an essential role in the funding of cultural and religious activities that were carried out in traditional neighbourhoods. The Value-Added Intellectual Capital coefficient (VAIC) was utilized to quantify intellectual capital, and human capital, structural capital, and capital employed efficiency were utilized to measure and partially analyse intellectual capital. From the years 2020 to 2022, this study makes use of panel data sets consisting of 307 LPD that are representative of all nine regencies in Bali. The investigation was carried out with the use of multiple linear regression, and the results showed that intellectual capital had a beneficial impact on both financial performance and cultural sustainability, whereas capital structure showed an impact that was insignificant. In addition, the control factors indicate that age and financial health have a good impact on financial performance, whereas size has an inconsequential impact. This is the case despite the fact that size has a considerable impact. There is a significant contribution that microfinance institutions make to the strengthening of economies by permitting an increase in the flow of financial resources. However, in addition to this, they face difficulties that are caused by the actions of the government, volatility in the economy and unsuccessful loan repayments.

Onsase and Irungu (2024) investigated the impact that the capital structure of deposit-taking microfinance banks in Nairobi County, Kenya had on the financial performance of these institutions within the county. In this particular study, a descriptive research design was utilized as the employed methodology. The whole population of the thirteen regulated microfinance banks in Nairobi County was taken into consideration, and SPSS was used to conduct an analysis of secondary data obtained from a variety of sources, such as the Central Bank of Kenya and the Association of Deposit-Taking Microfinance Banks in Kenya. The results of the research indicated that the performance of

microfinance institutions that accept deposits is significantly impacted by the equity capital that is available to them.

2.3.4 Donations on Financial Sustainability of Microfinance Institutions

Donations are very vital for the financial sustainability of MFIs especially during the early period of establishment. It can, nevertheless, improve sustainability if it is accompanied by a high return on asset and operating efficiency. Otherwise, it would have the reverse effect (Henock, 2019). According to Uddin (2022), donation financing could assist MFIs in overcoming systematic business risk if they can strategically manage their asset-liability with donor funds. Nevertheless, unlike traditional deposit collections, donor funding is difficult since contributors have different expectations that require governmental support and oversight by regulators. MFIs provide financial services to the disadvantaged by channelling economic surplus through contribution mobilization, whereas banks do the same through deposit collecting. Empirical research on the relationship between donations and financial sustainability has yielded conflicting conclusions.

For instance, Kinde (2012) assessed the determinants of financial sustainability of MFIs in Ethiopia. The author used a sample of 16 Ethiopian MFIs over the period 2002 to 2010 and reported a negative and statistically significant relationship between donations and financial sustainability. The study's findings stressed the necessity for MFIs to reduce their reliance on donor funding to be operationally competent in the marketplace and thereafter financially sustainable. This, nevertheless, these findings should be interpreted cautiously given the impact of quitting donor funding and MFIs' sustainability, as the fate of most MFIs is dependent on donated equity or subsidized external funds, especially at the outset of their infant stage.

Bayai and Ikhide (2018) employed a sample of 60 MFIs operating in the Southern Africa Development Community (SADC) for the period 2005–2010 to assess the effect of financing structure on MFIs financial sustainability. The study used the probit regression model. The study reported a negative and significant association between donations and financial sustainability. Using a unique unbalanced panel data set of 253 microfinance institutions from 2000 to 2015, Bibi, Raza and Javid (2022) found that grants to assets increase operational self-sufficiency, while debt to equity increases the financial self-sufficiency of microfinance institutions.

Employing a sample of 50 Indian MFIs for the period 2005-2009, Nadiya, Olivares-Polanco and Ramanan (2012) reported a negative and insignificant effect of donations on MFIs' sustainability. Data was analysed using OLS. Khachatryan *et al*., (2017) analysed MFIs from sixteen countries in the Eastern Europe and Central Asia (ECA) region and found a positive and significant association between donations (grants) and MFI performance during a five-year period from 2005 to 2009, and the unrelated regressions (SUR) method.

Using an international sample of 1,519 MFIs in 55 countries during 1999–2019, Mohamed and Elgammal (2023) examined whether donor funds used effectively. The authors used the fixed effect model and two-step system generalized methods of moments models (with internal instrumentation). The authors found that, despite a concurrent drop in the breadth of their outreach, donations are associated with a rise in the depth of outreach of Islamic MFIs, allowing them to serve a poorer clientele. Contrarily, donations increase the breadth and depth of conventional MFIs' social performance. As for conventional MFIs, donations had a positive relationship with productivity, efficiency, and sustainability.

In the SACCO sector, Henock (2019) studied 46 SACCOs in Eastern Ethiopia in 2016 and found that donation and debt equity ratio had a negative effect on financial sustainability of SACCOs in Eastern Ethiopia significantly. Conversely, Abate, Borzaga and Getnet (2014) reported a negative and insignificant relationship between donations and financial sustainability. The study employed 30 sample MFIs from 2006 to 2010. Ghose *et al*., (2018) discovered that debt capital had a positive significant influence on two performance indicators (ROA and OSS). The authors used a sample of 57 Indian MFIs over a six-year period from 2008-2009 to 2013-2014 and the random effect estimation model.

2.3.5 Impact of Income Diversification on Financial Structure of Microfinance Institutions

Dabi *et al.,* (2023) notes that diversification of income streams can improve an MFI's profitability and ability to withstand financial crises and maximize shareholder value. The impact of income diversification on MFIs financial performance and sustainability has also been subject to several empirical studies. Practically, and just like other financial institutions, MFIs are shifting towards non-interest income to compensate for their shortfall in interest margins on lending activities. Notwithstanding the fact that revenue diversification is an important survival strategy for MFIs, its impact on performance and sustainability is debatable.

Zamore (2018) sought to assess whether revenue diversification affects financial performance of microfinance institutions (MFIs) using a global panel data set of 607 MFIs in 87 countries spanning 1998 -2015. Data was analysed using the fixed effect regression model. The findings of this study revealed that revenue diversification improves sustainability and profitability of MFIs. Duho et al. (2012) explored the impact

of revenue diversification on the financial performance of microfinance institutions (MFIs) in Ghana. The authors used the ordinary least squares (OLS) method to analyse quarterly data for all MFIs in Ghana for the years 2016–2018. The findings indicate that income diversification reduces return on asset and return on equity, suggesting that a focused strategy is preferable for MFIs.

Githaiga (2022) investigated how revenue diversification affects the financial sustainability of MFIs. A two-step system Generalized Method of Moments regression model on a worldwide data set of 443 MFIs from 108 countries from 2013 to 2018 were used in the study. The results of this study showed that income diversification considerably improved the financial sustainability of MFIs. Salem & Abdelkader (2023) used an unbalanced panel sample of 81 (Islamic and conventional) MFIs in MENA nations from 1999 to 2018, totalling to 743 MFI-year data, to study the effect of MFI diversification and business strategies on their performance and poverty outreach. The findings revealed that increasing income diversification in microfinance and focusing on rural areas reduces MFIs' financial performance in MENA nations. According to the authors, whereas traditional MFIs improve their depth of outreach by diversifying their revenue, Islamic MFIs have a lesser breadth of outreach due to a larger degree of income diversification.

More recently, Githaiga *et al*., (2023), who studied the effect of intellectual capital on MFIs financial sustainability while controlling for income diversification, using a global sample of 444 MFIs and data for 2013–2018 and three panel data estimation models (namely the fixed effect, the random effect and the dynamic panel system generalized method of moments) found a positive relationship between income diversification and financial sustainability of MFIs. Income diversification has additionally been demonstrated to reduce credit risk, hence improving the financial sustainability of MFIs.

For example, Lassoued (2017) investigated the determinants of MFI credit risk by analysing data from 638 MFIs in 87 countries from 2005 to 2015 and OLS estimation model. This study found that group lending strategy, the percentage of loans granted to women, and diversification activities lower credit risk.

Mahali & Ansari (2024) examined the relationship between income diversification and the financial performance and financial self-sufficiency of the top 10 listed Indian MFIs. The study included eight years of panel data ranging from 2016 to 2023. The investigation included the application of descriptive statistics, Herfindahl-Hirschman Index (HHI), and panel data regression models. The study results supported the banking studies' inclination towards focused strategies rather than diversification strategies. It demonstrated that increasing sources of income does not influence the financial performance (return on equity/return on asset) and the financial independence (FSS) of Indian MFIs.

Talel et al., (2024) studied how income diversification impacts the financial sustainability of microfinance firms in Kenya. The study utilized panel data from 32 MFIs collected between 2010 and 2019, resulting in 320 observations. The data was obtained from the MIX market, a World Bank Database that collects information from all Microfinance Institutions (MFIs) that report voluntarily. The data was analysed using ordinary least squares (OLS), the system generalized technique of moments, and the fixed effect and random effect models. The results showed that revenue or income diversification had a strong positive correlation with the sustainability of microfinance organizations in Kenya. The study found that the breadth of outreach, company size, average loan size, debt to equity ratio, and portfolio at risk (Par>30) significantly influenced the financial sustainability of microfinance companies in Kenya.

The study suggests that MFIs should incorporate income diversification to achieve financial sustainability.

Najam et al., (2022) emphasized the importance of achieving sustainable and balanced development in green financing to enhance financial sustainability and the capacity of MFIs. Financial institutions face challenges in attaining economic sustainability in the current fiercely competitive corporate climate. The study analysed how income diversification affects financial sustainability, measured by return on assets (ROA), using quantile regression on data from banks in ASEAN countries from 2008 to 2019. Furthermore, control variables such as liquidity risk, bank size, interest and non-interest incomes, and market capitalization were examined. Empirical evidence shows that income diversity has a favorable effect on return on assets (financial sustainability) across all quantiles across countries, despite variations in sizes.

Senyo et al., (2015) stated that in the financial space, it was commonly believed that revenues from fee-based products were more stable than those from loans, and that fee-based activities helped decrease bank risk through diversification. The study examined income diversification in the Ghanaian banking sector by studying the correlation between non-interest income and bank profitability from 2002 to 2011, while also assessing the risks linked to bank income diversification. Interest income was identified as the primary source of bank earnings in Ghana, according to the report. It was discovered that income from sources other than interest plays a supplementary role during periods of insufficient interest earnings.

Ondiege et al., (2021) state that Non-Governmental Organizations play a crucial role in education, health, social welfare, and economic development initiatives, particularly benefiting disadvantaged parts of society. These groups need financial resources to operate. Financial sustainability of local NGOs is a serious concern due to the high rate

of failure to maintain long-term operations, as well as the essential role finances play in running an NGO. Resource scarcity is a fundamental factor of financial sustainability in the organizational management processes of not-for-profit organizations like Non-Governmental Organizations (NGOs). Resource diversification programs aim to help donor-dependent NGOs achieve self-sufficiency by engaging in economic activities like agriculture, service provision, or trade. The idea is that self-reliance allows NGOs to sustain themselves without relying on donor support. The study examined how income diversification affects donor-dependent NGOs in Nakuru Town West Sub-County, Nakuru County, Kenya. A cross-sectional survey research design was utilized with a sample size of 104 respondents. Three sampling methods were employed: purposive sampling, proportionate stratified random sampling, and simple random sampling. Primary data was gathered by self-administered questionnaires. The study found a significant relationship between income diversification, supporting previous research advocating for income diversification to aid organizations in maintaining financial sustainability. It also emphasized the crucial role of resources and finances in ensuring the financial sustainability of NGOs. Income diversification's impact on financial sustainability showed a correlation coefficient of 0.334. It suggests a direct correlation between the two variables. The connection was significant with a p value of 0.009.

Githaiga (2021) sought to examine the impact of revenue diversification on the financial stability of microfinance institutions (MFIs). The research utilized a global dataset consisting of 443 Microfinance Institutions (MFIs) across 108 countries from 2013 to 2018. The analysis employed a two-step method Generalized Method of Moments estimation model. Research revealed that diversifying revenue streams has a notable and beneficial impact on the financial stability of Microfinance Institutions (MFIs). Octavianus & Fachrudin (2022) sought to enhance comprehension of revenue

diversification by banks and offer recommendations for future researchers investigating the correlation between income diversification and bank stability. This research utilized the Systematic Literature Review (SLR) approach to analyze and evaluate the results of past studies to inform future research. There was one article from conference papers and one article from working papers. The remaining 28 pieces originated from reputable publishers. 30 articles were acquired from reputable publications, all relevant to the issue of this literature study. This study's findings suggest that the primary reasons for adopting the income diversification strategy are enhanced performance, risk reduction, and rivalry among banks. This analysis revealed a significant research vacuum concerning the correlation between income diversification and bank stability.

The Herfindahl Hirschman Index (HHI) is routinely used to quantify income diversity, whereas the generalized method of moment (GMM) is a widely used statistical testing tool. Jiang & Han (2018) gathered data on Chinese listed commercial banks from 2008 to 2016 and discovered that bank rivalry is intensifying. Commercial banks have implemented diversification methods to enhance returns. Financial reports indicate that profits are increasingly derived from the non-interest revenue advantages of these tactics. Diversification entails risk. The study constructed a panel threshold model to analyse the impact of income diversification on a bank's profitability and risk. The Herfindahl–Hirschman index (HHI) was used to measure diversification, revealing a nonlinear relationship between diversification and profitability, indicating the presence of risk. The study presented a novel entropy-based index to assess the resilience of our model and identified a statistically significant threshold effect in both models. The study suggested that using both the entropy index (ENTI) and the Herfindahl-Hirschman Index (HHI) allows for a more effective analysis of the connection between diversity and profitability or risk.

Asif & Akhter (2019) conducted a literature review on the impact of income diversification on banking sector performance. The investigation includes determining the scope and empirically estimating income diversification, which will be synthesized with future research. The systemic literature review process utilized by Olasupo et al. (2014) is employed. After using specific review techniques, a total of 68 journal articles were analyzed. The data collected from the chosen articles is organized and condensed into designated tables and charts to facilitate comprehension. The extensive literature study revealed that a significant portion of the research in this field is conducted in the United States and the Asian region. Studying how revenue diversification affects banking performance in underdeveloped nations is an area that has not been thoroughly researched. The non-interest income ratio and Herfindahl-Hirschman index (HHI) revenue index are commonly used as proxies for revenue diversification. Other studies use the HHI (loans) index, number of ATMs, and number of branches as proxies for diversification.

Osei-Kuffour & Peprah (2020) stated that the COVID-19 epidemic poses a continuing danger to the financial stability of private tertiary institutions (PTIs). These institutions were restricted in fulfilling their missions and offering high-quality educational programs and resources to learners in various fields. Financial sustainability issues in educational institutions are exacerbated by reduced government support, declining enrolment, and school closures due to the epidemic. This study examined how income diversification correlates with the financial sustainability of private tertiary institutions, with institutional profile as a moderating factor. The study employed parametric inferential statistics using regression Process v3.2 by Andrew F. Hayes model 1. The study found a favourable and moderate correlation between income diversification and financial sustainability. Income diversification predicted financial sustainability by 17.6%. The

institutional profile has a notable moderating influence on the connection between income diversification and financial sustainability.

Quyen et al. (2021) examined the relationship between income diversification and financial performance, considering factors such as banks' size, ownership type, and the financial crisis. The study analysed financial information from 29 commercial banks in Vietnam between 2005 and 2018. The study utilized a Generalized Method of Moments (GMM) regression. The results did not show statistical proof of a direct impact of banks' income diversification on their financial performance. The study revealed that large banks and state-owned banks could enhance their profitability by utilizing diversification techniques based on criteria including the bank's size and ownership type. The study demonstrated that revenue diversification has a substantial favorable impact on banks' financial performance during times of crisis.

Widyarti & Sari (2022) studied how income diversification impacts performance and risk in digital banks. They also investigated how concentrated ownership affects the relationship between income diversification and bank performance (measured by ROA and Tobin's Q) and bank risk (measured by Z). Rating of digital banks in Indonesia. The research data was extracted from the financial statements of banks listed on the Indonesia Stock Exchange (IDX) for the period 2020-2021. This study utilized 70 samples selected by purposive sampling technique. The methodology employed includes Multiple Linear Regression and Moderated Regression Analysis. This study found that income diversification positively and significantly impacts bank performance, as indicated by ROA and Tobin's Q, as well as bank risk, as indicated by Z-Score. This study demonstrated that banks with concentrated ownership had a notable and adverse impact on mitigating the influence of revenue diversification on ROA.

In Luu et al., (2020) study, the researchers examined how revenue diversification affected the financial performance of commercial banks in Vietnam from 2007 to 2017. It then conducted further study to determine if the relationship between diversification and performance is influenced by bank experience and ownership structure. Financial data from each bank were gathered manually from their annual reports. The study used advanced econometric approaches such as panel OLS with fixed effects and a two-step system GMM estimator to meet its research goals. The results indicated that income diversification positively influences banks' performance. The impact differs among various categories of banks. The study revealed that diversification has positive effects on state-owned and foreign banks but has a negative impact on the financial performance of non-state-owned domestic banks. Furthermore, the authors discovered that diversification had a greater favorable effect on institutions that have more market experience.

2.3.6 Relationship between Financial Structure and Financial Sustainability of Microfinance Institutions

Empirical literature demonstrates that the different typologies of financial structure such as deposits, debt financing, donations, equity ownership structure; managerial, institutional, foreign, and government have a significant influence on the sustainability of the organization and strategic decisions such as risk taking, corporate social responsibility and tax planning Tijjani & Peter, (2020); (Sakawa, Watanabel, Duppati, & Faff, 2021). MFIs, particularly in the start-up stage, require both subsidies and donations to survive. One notable distinction is that the majority of subsidies are supplied by government agencies, whereas the majority of donations are made by private parties (for example, the IMF, World Bank, or individuals) (23). A donation is a voluntarily given gift or contribution to an individual or corporate body for a specific purpose.

Most studies have argued that at the inception stage, grants influence sustainability of the firm and are critical at the initial stages to enable accessibility to commercial funding with the aim of a wider outreach goal. This assists the MFIs to perform well and attracts more donor funds from government and NGOs. However as they grow, they are faced by challenge of balancing the social and financial objectives resulting to the idea of smart subsidies in form of soft loans and grants where they encourage financial innovations. In the same vein, donation showed a significant effect on sustainability of MFIs (Ledgerwood & White, 2006). Since their inception, MFIs in Kenya and Uganda have benefited greatly from donor funding, and they are recognized as two of Africa's MFI success stories. For instance, the Kenya Rural Enterprise Programme (K-REP) alone received US$23 million from its founding in the 1980s through 2000, while the Kenya Women Finance Trust (KWFT) received roughly US$6 million from 1995 to 2001 (Hospes, Musinga & Ong'ayo, 2002). Between 1998 and 2003, Uganda received an estimated $40 billion in US aid. Donor assistance has primarily been used for on-lending, technical support, and capacity building to maintain financial sustainability (MF Transparency, 2011).

Existing studies further argue that the existence of an active institutional donor serves as a monitoring mechanism for the effective deployment of resources, and the most efficient and profitable institutions are capable of attracting far more donations which enhances growth and sustainability of the firm. There is also the suggestion that MFIs with a higher amount of donor money versus subsidies have lower rates of portfolio risk, fewer delinquent loans, and less hazardous total portfolios (Chakravarty & Pylypiv, 2017). Donations, nevertheless, are not the only source of funding for pre-microfinance programs that are supposed to provide loans to the needy. Bogan (2012) investigated the relationship between capital structure and the sustainability of global MFIs over the

period 2003 to 2006. The study findings showed grants have negative effect on financial performance and self-sustainability. Furthermore, the author argued that grants are associated with inefficient operation due to the lack of competitive pressure related to interest accrued on the source of funding. Additionally, Tchuigoua, Durrieu, & Kouao, (2017) argued that donations have significant relationship with past due loans and tangible assets implying that donors are skeptical in decision making on grants disbursement. However, Caudill, Gropper, & Hartarska, (2009) showed that MFIs become more efficient over time, relying less on subsidies and more on deposits. Financially Sustainable MFIs and those with better outreach and are found to draw more international commercial debt (Mersland, & Urgeghe, 2013).

Sustainability of MFIs is greatly enhanced where the MFI has a stable deposit base. Generally, microfinance institutions serve low-income client thus deposits constitute small savings made by marginalized users of financial services. Moreover, owing to the stringent regulatory constraints accessing huge deposits is very expensive; which further clarifies why deposits remain unpopular source of capital for MFIs globally (Tehulu, 2013; Cull, Demirgüç-Kunt & Morduch, 2008). Nevertheless, the impact of guidelines across jurisdictions on deposits and savings attraction is largely debatable because the empirical debate points at both directions (Fehr & Hishigsuren, 2006). Although Bredberg and Ek (2011) argue that deposits are stable source of capital for microfinance institutions and ultimately financial sustainability and long-term survival, in reality MFIs cannot attract sufficient deposits. The legal framework in most countries prohibits the attraction of deposits and savings by MFIs; which limits the financing structure and decisions of MFIs to be limited. While the benefits of deposit mobilization in microfinance are clear satisfying regulatory requirements and retaining deposits can be

costly, and MFIs would face even greater losses if deposits were re-lent (Morduch, 2000).

Deposits necessitate the hiring of technical experts to create the requisite deposits platforms, system upgrades, data security management systems. Additionally, reporting requirements and supervisory standards pose additional costs to MFIs owing to the need to out-source accounting professionals. The need to meet capital reserves is a tax on MFIs thus MFIs might decide to issue bigger loans, hence mission drift (Cull *et al.,* 2011). Against these challenges, attracting the sufficient deposits is untenable, which further suppresses the effect of deposits on financial sustainability (Mwangi, Muturi & Ombuki, 2015).

The integration of different financial sources could impact the profitability and long-term viability of microfinance firms. The many sources of funding include loans, savings, deposits, and shares (Woller and Schreiner, 2002). Multiple researches have investigated whether the capital structure influences the sustainability of microfinance institutions. Kyereboah (2007) discovered that microfinance institutions with high leverage ratios are better equipped to handle moral hazards and adverse selection compared to those with lower leverage ratios. Ganka (2010) asserts that the structure of capital impacts financial sustainability, but having diverse capital sources does not enhance financial sustainability. Ganka noted that equity is a cost-effective financing option that enhances financial stability.

2.4 Control Variables

The study controlled for the other key variables that previous studies found to affect financial sustainability of MFIs. These variables are Depth of Outreach, Breadth of Outreach, Portfolio at Risk, Operational Efficiency and the Firm Size.

2.4.1 Depth of Outreach on Financial Sustainability of Microfinance Institutions

Depth of outreach is described as the provision of loans to the poor, with the poorer the borrowers, the higher the depth of outreach. According to Schreiner (2002), depth of outreach and financial sustainability are two desirables but diametrically opposed goals because depth of outreach signifies expanded service to the poor, whereas financial sustainability could force MFIs to scale back on the disbursement of smaller loans or depend more on subsidies. According to Navajas et al (2003), the depth of outreach refers to the value the society attaches to a net gain of a given client. Hulme and Mosley (2011) assert that without the poor, a supposed MFI is no longer different from a bank.

Quayes (2012) reported a positive complimentary link between financial sustainability and depth of outreach for high-disclosure MFIs in a study of 702 MFIs from 83 countries using a logistic regression model. Naz et al. (2019) found that depth of outreach had a negative but insignificant impact on operational sustainability among Pakistan MFIs using an unbalanced panel data set of 29 MFIs for the years 2008–2014 obtained from MIX Market and several panel data estimation models (fixed effect, random effect, 2SLS, and 3SLS).

Churchill (2018) used data from 206 MFIs in 33 African nations using the three-stage least square method to analyze the relationship between sustainability and depth of outreach to see whether there is a trade-off between the two. The findings revealed a trade-off between sustainability and outreach depth. Kinde (2012) studies the determinants of financial sustainability of microfinance institutions in Ethiopia. A sample of 16 MFIs and data over the period of 2002-2010 and both the fixed effect and random effect models were applied. The findings revealed a positive relationship between depth of outreach and financial suitability of MFIs.

Adhikary and Papachristou (2014) observed that the depth of outreach correlates positively with financial performance in a study of 133 South Asian MFIs, implying that MFIs on long-term financial expansion pathways can achieve their social goals with minimal risk. Furthermore, both the breadth and depth of outreach were found to be significantly and positively related to profitability and efficiency. The authors applied several regression estimation models: fixed effect, random effect, OLS and the general method of moments (GMM). Tehulu (2022) studied a sample of 136 MFIs across 31 SSA countries covering the year 2004 to 2018. Data was analysed using the Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM). The findings of this study revealed no significant relationship between depth of outreach and financial sustainability of MFIs.

Hulme and Musley (1996) argue that the Microfinance Institution (MFI) loses its distinction from a bank if it does not serve the poor. They argue that outreach should be evaluated based on the quantity of impoverished clients rather than simply the total number of clients. Furthermore, Ledgerwood (1999) states that outreach, when measured by the number of borrowers or customers, simply takes into account the total number of clients served by different products of MFIs, without considering their level of poverty. Therefore, the average loan amount has been utilised as an indicator of the extent of outreach based on the relative poverty level. Smaller loans are associated with lower-income consumers (Mersland and Strom, 2009; Cull et al., 2007). They contend that the average loan size fails to account for the proportion of the poorest individuals who have tiny loan sizes. Additionally, most microfinance clients could be considered either moderately poor or not poor, with loan amounts that are very substantial, potentially skewing the average loan size calculation.

The connection between the extent of outreach and financial self-sustainability is multifaceted, as stated by Woller and Schreiner (2002). The study revealed a positive correlation between the depth of outreach and financial self-sustainability. Woller and Schreiners' research contradicts the common perception that small loans are very hazardous and linked to lower financial stability. Additionally, Cull et al. (2007) found that banks offering small loans are equally profitable as those offering larger loans, while Paxton's (2003) study shows a negative correlation between outreach depth and subsidy dependency index. This demonstrates a direct correlation between profitability and the extent of outreach. Hulme and Musley (1996) argue that providing small loans to impoverished individuals and those who are difficult to access is fundamentally expensive.

2.4.2 Breadth of Outreach on Financial Sustainability of Microfinance Institutions

Numerous studies have used the number of clients or borrowers as indicators of the reach of MFIs (Woller & Schreiner, 2014). The more customers or borrowers, it is generally accepted that the greater the outreach will be, hence the number of borrowers is seen as a significant aspect in the sustainability factor. Morduch (2013) asserts that, sound banking practices including sustainability, ensures depth of outreach and impacts positively on alleviation of poverty. The long-term vision of MFIs should be to provide sustainable financial services to the economically active poor who lack access to these services from the main stream of financial services. Accordingly, the main objective of MFIs is to avail sustainable microfinance facilities to the poor. In developing countries, the microfinance institutions also give loans and technical assistance on how to start and develop business (Hartungi, 2007).

Microfinance Institutions basically have two goals: first is reaching the poor (outreach) also known as social impact goal and becoming sustainable, commonly referred to as

profitability objective. According to Schreiner (2006), profits are necessary but not sufficient for sustainability. Successful rural MFIs should have both profitability and outreach in its objective. Conning (2011) defines outreach as the ability of MFIs to reach the ever-wide audience and especially the poorest of the poor. It is "the social value of the output of a microfinance in terms of depth, worth to users, breadth, length and scope" and a means to improved social welfare. Outreach is a way to establish sustainability for MFIs, not its primary goal, according to Rhyne (2010). Yet, according to Armandriz and Morduch (2014), microfinance literature accepts the presence of the twin objectives of outreach and profitability.

A question that commonly arises is whether there is trade-off between sustainability and outreach. Sustainability is a means to reach the expanded outreach. Their argument is that the more sustainable an MFI is, the more possible for it to reach the poor people (Cull et al, 2017; Brau and Woller, 2014). CGAP's fourth key principle of microfinance states that "financial sustainability is vital to reach significant numbers of poor people who are not able to access financial services due to lack of strong retail financial intermediaries. Building financially sustainable institutions is not an end in itself. It is the only way to reach significant scale and impact far beyond what donor agencies can fund" (CGAP, 2014). Ledgerwood (2013), the number of clients as a measure of outreach considers only the total number of clients served from various products of an MFI without their relative level of poverty. Microfinance loan size (Average loan size) has been used as a proxy measure of depth of outreach. It is also noted that the smaller loan size the poorer the clients will be targeted and reached hence indicating the depth of outreach.

According to Schreiner (2006) the relationship between depth of outreach and financial sustainability is multidimensional. The study further revealed that the depth of outreach

has positive relationship with financial self-sufficiency. Furthermore, the study by Adongo and Stork (2006), reports that both loan size and number of loans are positively associated with financial sustainability. The cost of outreach refers to the interest rate charged and other costs incurred as a result of receiving financial services from an MFI. It is the cost of loan to a borrower. According to Navajas et al (2006), the cost of outreach is the highest amount the borrower would agree to bear to get the loan. It therefore follows that the lesser the cost of outreach the more the clients will be willing to join the MFI. Since financial sustainability is the ability to cover operating and financing costs from the revenue, the amount of return will depend on interest charged and the volume of loan outstanding. Therefore, the more the clients; the higher the revenue and therefore, better financial sustainability. Essentially, the higher the cost required to be paid means reduced number of clients and reduced profitability of the MFI.

The size of an MFI is a significant element that could have an impact on the extent of its outreach. The worth of its assets is typically used to gauge the level of outreach (Mersland & Strom, 2019). Cull et al. (2017) found a correlation between an MFI's financial success and size. According to Cull et al. (2017), larger microbanks typically have poorer outreach metrics. This could be linked to institutions expanding, whereby institutions, driven by larger profit incentives, just focus on richer clientele, leaving the most basic financial needs unmet (Berhe, 2018). This is in line with the idea that the trend towards financial sustainability could result in mission drift when the most vulnerable people are disregarded or not effectively serviced.

Bitok (2019) studied determinants of MFIs endeavoured to establish influence of ‘Depth of Outreach’ on MFIs sustainability. Evidence from microfinance institutions in Kenya had a target population of all 52 registered microfinance institutions under AMFI in

Kenya for the period 2010-2018. The study adopted the census approach method. Findings revealed that that depth of outreach had an antagonistic moderating effect on the relationship between financial leverage and financial sustainability.

Mutua, Jagongo and Simiyu (2020) did a research on financial outreach and financial sustainability of licensed deposit taking microfinance institutions in Nairobi County, Kenya. The study employed a positivism research philosophy to determine the relationship between financial outreach and financial sustainability. A population of 13 licensed Deposit Taking Microfinance Institution was considered for this study. A static linear regression model with fixed effect was developed for both operating self-sufficiency and financial self-sufficiency. The study found that the number of active clients (breath of outreach) had statistically significant relationship to sustainability while the average loan size (depth of outreach) had insignificant relationship to sustainability. Further, the age of the firm (experience of institution) had insignificant relationship on financial sustainability of the DTMs in Nairobi County. The moderating effect between credit risk management (portfolio at risk) and breadth of outreach (number of active clients) was positive while portfolio at risk and experience of institution (age) and depth of outreach (average loan size) was negative on the relationship between financial outreach and financial sustainability. Further the determinants capital structure, product profile, and operational efficiency were not considered.

Manos and Yaron (2009) found a strong short-term link between the breadth of outreach and financial viability, whereas the long-term association was fixed on the size of operations and lending innovation. According to proponents of financial sustainability, as microfinance institutions grow, so do their clientele; as a result, at the integration stage, loans given to clients shouldn't be given little amounts. According to Cull et al.

(2017), there are trade-offs involved with lending to low-income borrowers, and the outreach of microfinance institutions has a bad impact on their ability to remain solvent. According to Conning and Morduch (2018), corporate governance had positive effects on performance in terms of outreach and sustainability.

In Pakistan, India, and Bangladesh, Khan, Butt, and Khan (2017) examined the factors that affect MFIs' ability to support themselves financially. Panel data from MFIs in these countries from 2011 to 2015 was used in the study. The study revealed that the breadth of outreach has a negative impact on FSS, showing that a rise in the number of borrowers will lower MFI's ability to sustain its financial position. Tehulu (2022) examined a sample of 136 MFIs from 31 SSA nations from 2004 to 2018. The Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) was used to analyze the data. The study's findings demonstrated a positive and significant relationship between MFIs' breadth of outreach and their financial sustainability.

The breadth of outreach indicates the number of impoverished individuals assisted by a microfinance institution (Hishigsurem, 2004). Several researches have utilised the number of borrowers as an indicator of the extent of microfinance outreach (Ganka, 2010; Mersland and Strom, 2009; Harmes et al., 2008). Typically, a greater number of borrowers is believed to result in improved outreach.

Logotri (2006) indicated that a bigger number of borrowers is a key element for sustainability. In contrast, Ganka (2010) reported a negative and substantial association between the breadth of outreach and financial sustainability in Tanzanian microfinance firms. Ganka's conclusion is that an increase in the number of borrowers does not enhance the financial viability of microfinance firms. Possibly due to heightened inefficiency caused by a larger number of debtors. Hartarska (2005) found that the quantity of borrowers did not have a significant effect on financial sustainability.

2.4.3 Portfolio at Risk on Financial Sustainability of Microfinance Institutions

A high portfolio-at-risk would reduce profits from microcredit operations, decreasing the amount of loanable funds. This would culminate in credit rationing and, eventually, the inability to stably provide excellent services to clients, as well as a detrimental impact on MFIs' financial results and, as a result, their financial viability. Another negative consequence of the inverse relationship between financial self-sufficiency and portfolio-at-risk is that a decrease in financial sustainability, that also leads to credit rationing, hinders the MFI's ability to increase client outreach that results from the intensification of microloans, which is meant to significantly reduce poverty.

Rai and Rai (2012) examine the determinants of MFIs sustainability using data of 26 Indian microfinance institutions (MFIs) from the Year 2005-06 to the Year 2009-10 for both the countries. Reported a negative relationship between PAR and financial sustainability. Ayayi and Sene (2010) explored the drivers microfinance institution's financial sustainability by analysing data from MFIs operating across 101 countries between 1998-2006 and found a negative relationship between PAR<30 and financial sustainability.

Le *et al.*, (2020) assessed the determinants of the Operational Self-Sustainability (OSS) of Vietnamese microfinance institutions (MFIs). The author analysed data from 34 MFIs from Microfinance Information Exchange (MIX) market data for five years from 2011 to 2015 using both binary logistics and OLS regressions. The findings of this study revealed that PAR<30 had a negative and significant effect on financial sustainability.

Khan, Butt and Khan (2017) examined the factors influencing MFIs' financial self-sufficiency in Pakistan, India, and Bangladesh. The study employed panel data on these countries' MFIs spanning 2011 to 2015. This resulted in balanced panel data for 32

MFIs, generating 161 observations. The research showed that a portfolio at risk had a negative impact on financial self-sufficiency. Tehulu (2022) examined a sample of 136 MFIs from 31 SSA nations from 2004 to 2018. The Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) was used to analyze the data. The study's findings showed an inverse relationship between portfolio at risk and MFIs' financial sustainability.

Naz *et al.,* (2019) studied the variables affecting Pakistani microfinance institutions' financial sustainability. A sample of 29 MFIs self-reporting to MIX Market were used in an unbalanced panel data set by the authors and data for 2008 to 2014. The study employed fixed effect and random effect with subsequent endogeneity accounting utilizing the instrumental variables technique (2SLS and 3SLS). The results revealed that operational sustainability was negatively but insignificantly impacted by portfolio at risk.

2.4.4 Operational Efficiency on Financial Sustainability of Microfinance Institutions

According to Hartarska (2014), a key component of ensuring operational efficiency of microfinance institution is having a robust technological system. High operational costs and poor management information systems is commonly cited as a major impediment for growth of microfinance institutions and hinders long term attainment of financial sustainability. Gupta & Mirchandani, (2020), notes that governance and management structure of MFIs contributes significantly on growth and performance of MFIs. Data on the performance of microfinance institution is commonly inadequate and governance practices are not transparent. The governance mechanism is crucial because the MFI managers control significant resources and oversight by the board maybe inadequate. The key mechanism of an effective governance framework is ownership (including

institutional and managerial ownership), board and board structure, the chief executive, remuneration, auditing and information and the market for corporate control.

A study carried out by Tehulu (2013) on determinants of financial sustainability of microfinance institutions in East Africa, revealed that MFIs financial sustainability is positively and significantly driven by loan intensity and size. Using panel data collected from 23 MFIs across the region over a period of five years, the results further revealed that management inefficiency, portfolio at risk, loans intensity and size are important determinants of microfinance institutions' financial sustainability. The study however did not examine the influence of credit risk and lending behaviour as key variables that determine sustainability of MFIs citing inadequate data and information to facilitate the research.

Pedersen (2010) asserts that the management of MFIs is critical in ensuring long term growth and sustainability of MFIs. The management style depends on the approach and strategy adopted as long as all the organizational layers are striving for the same objectives. MFIs in some cases may use incentive schemes to ensure the right balance between poverty alleviation and financial sustainability. Pedersen (2010) further notes that a combination of repayment and audit-based incentive scheme can be the best management option. The age of individual microfinance institution is a key driver of efficiency. The CGAP report of 2019 indicates that higher numbers of loans may drive scale economies while a higher average loan sizes may improve the cost structure. The more knowledge of clients would also streamline loan processing and customer service. Gonzalez (2007), shows that MFI efficiency is strongly related to age and the effect was stronger in the first six years. This implied that MFIs build up a stronger customer base in the early years of existence which contributes significantly to efficiency and long-term sustainability.

In their 2013 study in Ghana, Bichanger and Aseya found that some of the reasons for loan defaults included banks' insufficient or non-existent monitoring of micro and small businesses, delays in processing and disbursing loans, diverting funds, and an excessive concentration of decision-making. For example, some banks require that all loans be approved by Area/Head Offices before they can be disbursed. Other reasons for loan default include inadequate financial analysis. Self Help Groups and microfinance institutions' poor management were both noted by Warue (2012) as contributing factors in default. He emphasized the importance of MFIs comprehending and concentrating more on the internal causes of delinquency over which they have more influence for effective management of delinquency.

Warue (2012) highlighted that the majority of defaults were from poor management processes, loan diversion, and unwillingness to repay loans. Kohansal and Mansoori (2009) concur with this finding. Over time, it has been clear that a key factor in determining success and sustainability for MFIs is the lending strategy they use. Most notably, loan repayment rates frequently vary greatly depending on the lending strategy used. Each member of the group backs the loans made by the other members of the group, thus if one member of the group fails to pay back their share of the loan, the other members are still responsible.

Despite the fact that most commonly groups do not use the financing for a single project but rather for separate business ventures, they nevertheless come together as a group to assist and advise one another. People who would be prone to default on loans are less likely to be involved in the system because group members are chosen and approved by their peers. On the other hand, individual loans lessen the issue of free riders that is present in the group model, especially when a peer monitoring system is in place (Zeller & Meyer, 2002). The safe borrower always produces a safe return. MFIs form groups

that are jointly liable for one another to address the issue of selecting the best borrower with better and safer returns and to address the issue of adverse selection. Group lending addresses adverse selection by employing local communication networks to achieve the equivalent of acquiring direct information on borrowers and exploiting variations in loan terms to distinguish between good and bad borrowers (Nawai, 2012).

Njeru (2012) also points out that MFIs use joint responsibility lending to get around the ex-ante and ex-post moral hazard issues. Because the borrowers in each group are jointly liable for one another's loans, they have an incentive to keep an eye on one another and reduce the likelihood of default. Because group financing uses a joint liability structure, borrowers are encouraged to select secure projects and are thus more likely to be credibly committed to making loan repayments. Due to the intricate connections between peers, borrowers, and the credit agents of the microfinance institutions, gathering and exchanging information from monitoring and auditing one another in groups is quite expensive.

Theoretically, prompt follow-up and flexibility in the repayment schedule are projected to have an impact on repayment compliance and subsequently financial sustainability, according to Conning & Morduch, (2011). This expectation highlights the trade-off between wanting to provide more flexible microfinance credit products for customer satisfaction while minimizing expenses of frequent collection and decreasing risk that must be made when establishing microfinance products from an institutional perspective.

It is argued that microfinance institutions shouldn't overlook the need for more robust loan delinquency control systems in their pursuit of lower costs for the microfinance institution through less frequent collection schedules and higher levels of customer satisfaction through more flexible repayment terms. Otherwise, moral hazard may set in and cause the microfinance institution to fail. Contrary to bank debt, most microfinance

agreements stipulate that repayments must begin as soon as the loan is disbursed and continue every day, every week, or every month after that.

Microfinance experts contend that the financial discipline enforced by frequent payback is essential to preventing loan default, despite economic theories suggesting that a more flexible repayment schedule would benefit customers and possibly improve their repayment capacity. In a study published in 2018, Field and Pande analysed data from a field experiment that randomly assigned clients to a weekly or monthly payback schedule. The study showed no conclusive relationship between the type of repayment schedule and customer default or delinquency. The results show that for microfinance clients who are ready to borrow at weekly or monthly repayment schedules, a more flexible timetable can dramatically cut transaction costs without raising client default.

Central Bank of Kenya, through the Micro Finance regulations (2008) require microfinance institution to implement an effective internal controls system that is consistent with the nature, complexity and risk inherent in its business operations. To enhance its operational efficiency, the DTM is required to install a reliable information system to cover all significant activities and operations including use of electronic data to capture, maintain, and provide accurate information to the management for timely and effective decision making. Meagher, (2002), further enhances management of operational risk through the requirement of know your customer procedures. The DTMs are directed to obtain and maintain proper identification of all customers wishing to open accounts, make transactions or engage with the institution directly or through a proxy. The management of the institution should have adequate assurance of the clients they are dealing with and ensure the nature of their business activities is well ascertained and documented. This will determine level of the business activity to guide the management on the expected level of operational risk to be accommodated by the institution.

2.4.5 Firm size on Financial Sustainability of Microfinance Institutions

Tehulu (2013) examined the factors influencing the financial sustainability of microfinance institutions in East Africa and analysed panel data from MFIs in East Africa between 2004 and 2009 to determine the factors affecting their financial viability. The result was an unbalanced panel dataset with 23 MFIs and 121 observations. The author discovered that the financial viability of MFIs is positively influenced by their size, based on data obtained from individual institutions reported to MIX market.

Bogan (2012) analyzed panel data from MFIs in Africa, East Asia, Eastern Europe, Latin America, the Middle East, and South Asia for the years 2003 and 2006 and discovered a correlation between the size of an MFI's assets, its capital structure, and its performance. For microfinance institutions (MFIs), the quantity of their assets significantly impacts their sustainability and capacity to reach clients. There is a significant negative correlation between grants as a percentage of assets and sustainability, but a positive correlation with MFI cost per borrowers.

Parvin et al. (2020) discovered that size positively and significantly impacts the operating performance of MFIs under a Random effect model. Size has a beneficial effect on profitability, albeit it is not statistically significant. The study utilized an unbalanced panel dataset consisting of 187 Microfinance Institutions (MFIs) in Bangladesh over a ten-year period from 2005 to 2014. Memon et al (2020) analyzed data from 409 South Asian MFIs along with the macroeconomic factors of their respective nations from 1999 to 2017. The empirical analysis employs a fixed-effect model (FEM) to examine the unbalanced panel data of microfinance institutions and macroeconomic variables. The analysis revealed that interest rates and foreign direct investment have a considerable favourable impact. Conversely, the larger the MFI, the more it negatively impacts the financial sustainability of the MFIs.

Research on the efficiency of banks and MFIs indicates that size has a crucial role in determining efficiency levels. Size indicates a firm's ability to compete in the market and its market awareness. Institutional size also plays a role in considering the impacts of technology, diversity, investment opportunities, and other size-related aspects (Berger & di Patti, 2006).

MFIs aim to achieve a dual bottom line, focusing on both financial and social outcomes. Studies have shown a growing trend of MFIs shifting their attention towards financial performance. Emphasising financial performance can impact their selection of target clients. By primarily targeting affluent individuals and overlooking the impoverished, microfinance institutions limit their capacity to alleviate poverty. Financial performance fluctuates based on factors such as cost per borrower, the ratio of total income to financial expenses (operation expense ratio), and the composition of loan portfolios (Fan et al. 2019). Economies of scale are crucial elements, as indicated by Hartarska et al. (2013) and Ranjani et al. (2022). Economies of scale occur when a firm's total cost decreases as its output increases, while keeping input prices constant. Research in the microfinance field commonly indicates that larger MFIs typically benefit from greater economies of scale compared to smaller MFIs (Hermes and Hudon, 2018; Wijesiri et al., 2017).

Lower Operating Expense Ratio (OER) calculates the expenses associated with providing loans for the average loan portfolio. The pattern of OER increasing or decreasing reflects the efficiency of a microfinance institution. Large enterprises have a lower Operating Expense Ratio, indicating that the cost is a small percentage of the total loan portfolio. This may have been accomplished by prioritising lending higher amounts of money to affluent consumers while giving less significance to serving the poorest individuals. Once large firms reach a stable point, they may consider returning to their

initial goal of helping the less fortunate. This is possible because they have the resources to broaden their services and implement policies that will better reach those in need (Mersland and Strøm, 2010). Big companies can reduce interest rates and fees when they no longer require high returns to support their expansion due to benefiting from economies of scale and having most fixed costs covered (Leite et al., 2019; Schmidt and Ramana, 2010).

Big companies typically demonstrate superior operational efficiency, as evidenced by Parameshwar et al. (2010) and Quayes (2012), perhaps resulting in a broader reach. They might be more inclined to reinvest excess funds rather than being solely motivated by profit maximisation for shareholders, as suggested by Hudon and Périlleux (2014). This would enable them to finance further investments to meet the needs of the most impoverished clients and prioritise their well-being. Small-sized enterprises may possess a competitive edge over large firms in specific areas. Promising enterprises that have significant growth rates in lending, although not earnings, may attract investments in the early phases (Parmeshwar et al., 2010). They can start investigating regions and demographics that have not been previously served by banks, resulting in decreased competition and advertising expenses. This may allow these companies to provide small loans to the most impoverished individuals. Small MFIs can establish protective measures against lending small sums by charging substantially higher interest rates on the little principal amount without excessively burdening the borrowers. Small loan borrowers may exhibit higher payback rates, reducing the danger of loan write-off or default.

2.5 Research Gap

The preceding comparative studies mostly focused on the direct impact of financial structure elements (debt, equity, deposits, and donations) on microfinance financial

sustainability. In a similar vein, most studies have examined the impact of these aspects in isolation, ignoring the possibility of a trade-off between various kinds of financing, as argued by the pecking order theory and the trade-off theory. Despite the fact that a significant number of these empirical studies have revealed the existence of a relationship between financial structure dimensions and financial sustainability of MFIs, the mixed findings necessitate further investigation into factors that may moderator the relationship or additional research in different institutional set-up.

An examination of the literature reveals that diversity can influence a company's financing decisions as well as its performance. However, few researches have used empirical evidence to connect these distinct pieces of literature. In light of declining NGOs and government support, commercialization of MFI activities and an unprecedented shift toward non-interest income activities, this study seeks to fill the gap by determining whether income diversification moderates the relationship between financial structure and MFI sustainability in Kenya. The table below shows the different significant research on the financial structure and financial sustainability of microfinance institutions, as well as the gaps identified.

Table 1

Summary of Comparative Studies on Microfinance Institutions in Kenya

Author / Researcher	Study	Methodology	Findings	Knowledge Gap
Parvin *et al.,* (2020)	Capital structure, financial performance, and sustainability of micro-finance institutions (MFIs) in Bangladesh.	Random & Fixed effect Model and Descriptive statistics.	Equity to asset ratio had positive effect on incomes	Methodological issues and use of descriptive statistics only. Limited geographical scope
Khachatryan *et al.,* (2017)	Performance and capital structure of Microfinance institutions in Eastern Europe and Central Asia.	Probit regression model	Positive correlation between equity & MFI performance	Lack of underpinning theoretical framework and limited selection in geographical scope.
Bich (2016)	The effect of capital structure and legal status on financial sustainability of MFIs in developing countries	OLS regression model	Sustainability of MFIs in developing countries was negatively affected by capital structure	Methodological issues. The author used OLS and failed to do robust statistical analysis or apply panel data regression model.
Bitok (2019)	Determinants of MFIs sustainability, Depth of Outreach	Census Approach	Depth of outreach had antagonistic moderating effect on relationship between debt and financial sustainability	No underpinning theoretical framework & limited determinants considered.
Kinde (2012).	Financial sustainability of microfinance institutions (MFIs) in Ethiopia.	Fixed effect and random effect regression models	No significant relationship between debt and financial sustainability	Lack of underpinning theoretical framework & limited

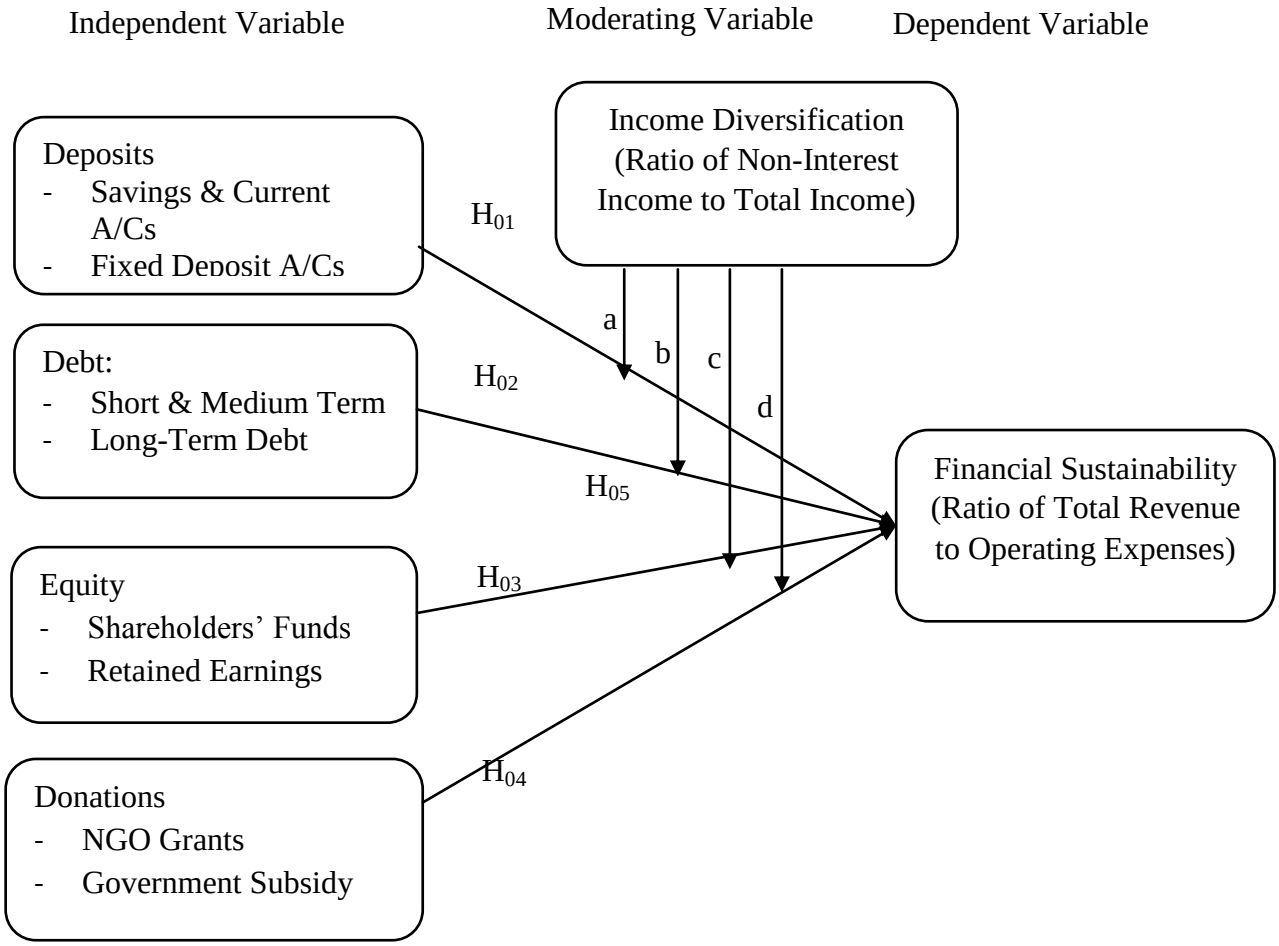
				determinants considered.
Tehulu.T.A (2013)	Determinants of Financial Sustainability of MFIs in East Africa.	Two step Generalized Methods of Moments	No relationship between equity capital and financial sustainability	No underpinning theoretical framework and limited determinants.
Rutanga *et al.,* (2021)	Capital structure and financial sustainability of Microfinance Institutions (MFIs) in Rwanda.	Fixed effects OLS regression model	Share capital had positive impact on MFIs sustainability	Failed to incorporate control variables
Ayele (2015)	Microfinance institutions in Ethiopia, Kenya and Uganda: Loan outreach to the poor and quest for financial viability.	Hausman and Generalized Structural Equation Models	Inverse relationship between financial leverage and financial sustainability.	Limited scope and failure to use panel data estimation model. No theoretical underpinning framework.
Sekabira (2013)	Impact of capital structure on performance of microfinance institutions in Uganda.	Fixed effect and probit regression model	Debt and grants were negatively correlated to financial sustainability.	No model derived for the determinants and limited selection of determinants.
Mwizarubi *et al.,*	Effect of financing decisions on the financial performance and sustainability of MFIs	Ordinary Least Squares (OLS) Method	Deposit mobilization is an important driver of financial sustainability	Limited scope and no theoretical underpinning framework.

2.6 Conceptual Framework

According to Mugenda & Mugenda (2003), a conceptual framework is a hypothesized model of the study under consideration that illustrates and explains the link between the dependent and independent variables. The framework depicts the relationship between the predictor variables, intervening variables and the outcome variable. A conceptual framework aids in idea definition, research terrain mapping and conceptual scope analysis, systematization of relationships between concepts, and identification of knowledge gaps (Kombo & Tromp, 2009). In this study, financial sustainability is the dependent variable. The financial structure comprises of deposits, equities, debt, and donation as independent variables. The study uses income diversification as a moderator. The study further took into account several control variables that comprised of depth of outreach, breadth of outreach and PAR >30, which literature suggests that may affect MFIs' financial sustainability. The diagram is shown in Figure 1 below;

Figure 1

Conceptual Framework



Source: Author (2024)

When a Microfinance Institution (MFI) successfully garners adequate deposits from its clientele, it has the potential to enhance its liquidity status and broaden its scope of services, thereby achieving financial sustainability. The pecking order theory posits that debt serves as a more cost-effective means of financing for enterprises. Excessive debt can potentially subject microfinance institutions (MFIs) to the risk of bankruptcy due to the obligations of repaying both interest and principal amounts. On the other hand, employing debt judiciously can contribute to achieving financial sustainability over the long term. Microfinance institutions (MFIs), similar to other financial institutions, are required to maintain sufficient capital in order to effectively carry out their activities and

provide a safety net for depositors. Therefore, microfinance institutions (MFIs) that possess adequate cash from their owners are more inclined to achieve financial sustainability.

While microfinance institutions (MFIs) often rely heavily on donor funds and subsidies in their initial stages, these financial resources are associated with agency conflicts, including opportunistic behaviors by managers. MFIs that rely heavily on donor support are less likely to achieve financial sustainability. Income diversification may have an impact on the association between various elements of financial structure and financial sustainability. Participating in non-interest activities has the potential to generate a greater need for external funds in order to sustain the expanded scope of these activities. In a similar vein, income diversification could enable microfinance institutions (MFIs) to allocate extra funds towards profitable undertakings.

2.7 Operationalization of Variables

According to Mugenda and Mugenda (2003) operationalization of variables entails the process of describing the definition that the research intends to apply in the measurement of the study. The dependent variable in this study was financial sustainability, conceptualized as operational self-sufficiency. This study had four independent variables: deposits, debt, equity and donations. The moderating variable is income diversification. While the control variable were depth of outreach, breadth of outreach, Par>30 and firm size. The operationalization of all the variables is shown in Table 2 below;

Table 2

Summary of Measurement of Study Variables

Variable	Nature of variable	Operational Definition	Measurement	Source
Financial sustainability	Dependent variable	Operational self-sufficiency	The ratio of total revenue to operating expenses (Bayai & Ikhide, 2018; Githaiga *et al.*, 2023).	World Bank Mix Market
Deposit	Independent variable	Savings mobil ized from its members.	Ratio of deposits to total assets(Henock, 2019: Duguma, & Han, 2018)	World Bank Mix Market
Equity	Independent variable	Members funds (shares and retained earnings)	Ratio of owner's equity to total assets (Khachatryan *et al*., (2017)	World Bank Mix Market
Debt	Independent	Commercial bank loans	Ratio of total debt to total assets Umar et al., 2022	World Bank Mix Market
Donation	Independent	Funds from NGOs and government subsidies	Ratio of NGOs support and subsidies to total assets (Henock, 2019)	World Bank Mix Market
Income diversification	Moderation	Share of non-interest income	HHI (Duho *et al.*, 2021: Githaiga, 2022)	World Bank Mix Market
Depth of outreach	Control	Average loan size	Average loan size divided by the gross national income per capital ((Hartarska & Nadolnyak, 2007; Kipesha & Zhang, 2013	World Bank Mix Market
Breadth of outreach	Control	Number of customers served	The natural logarithm of active borrowers (Adusei, 2021; Khalaf & Algebaly, 2023).	World Bank Mix Market
Par>30	Control	Quality of loan portfolio	Loans overdue past 30 days (Tehulu, 2013; Ayayi & Sene, 2010)	World Bank Mix Market
Firm size	Control	MFI's asset base	Natural logarithm of its total assets (Abate *et al.*, 2014; Bogan *et al.*, 2007	World Bank Mix Market

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter covers research methodologies and design that was used to conduct the study. The chapter includes the population of study as well as the sample size, sampling technique, data collection tools, data analysis and reporting of the factors influencing financial sustainability of microfinance institutions in Kenya.

3.2 Research Philosophy

A research philosophy, also known as paradigm is a term that comes from the history of science. It was used to describe a set of ideas that guided what should be studied, how research should be conducted and how results should be interpreted (Bryman, 2014). The researcher's worldview (ontology) and epistemological convictions are reflected in the paradigm they chose. It serves as a lens through which to view the world, analyse the subject matter under study, and provide guidance on who should undertake research and to what extent, according to Rubin, (2015).

A research paradigm offers direction and commits the researcher to a specific methodology, data presentation, and interpretation of findings as a means of thinking about the nature of truth (Ogula & Onsongo, 2009). The positivist theory, used in the study, holds that firms and other social entities are real in the same way that physical things and natural events are real. The fact that reality is independent of humans highlights the value of developing and discovering ideas based on actual study (Walliman, 2017).

This is summarized in the reasoning that logical reasoning and mathematical proof are rationally justified rather than focusing on subjectivity and interpretation. The argumentation discussed above was connected to this study since it was statistically tested. Furthermore, positivism paradigm is frequently associated with quantitative, traditional, scientific, and objective research, particularly when the data is predetermined and highly structured, as it would be in the context of comprehending this research. Only phenomena that are observable and measurable result in the generation of reliable and significant data, according to Scotland (2012). Epistemology focuses on finding observable and measurable facts and regularities. Generalizations that resemble laws made by scientists was developed as a result of causal linkages in the data (Gill & Johnson 2002).

The study made use of general principles and regulations that aid in analyzing and predicting the financial sustainability of MFIs. This epistemic closeness to positivism is consistent with neo-empirical research or positive accounting theory, both of which are grounded on empiricism or objective positivism. While not entirely, this study analyzed social phenomena by looking for laws, causal linkages, and regularities between the elements of the social environment. Regarding this, the current study investigated the relationship between the financial structure, revenue diversification, and the financial sustainability of MFIs in Kenya.

3.3 Research Design

The study used mixed research design. This comprised of explanatory approach and longitudinal research design. The explanatory design is the general approach that a researcher selects to integrate the various study components in a coherent and logical way, thereby ensuring that the research problem is effectively addressed. It serves as the guide for the data collection, measurement, and analysis processes. Its foundation is the

idea that if two variables have a statistically significant association, it is possible to forecast one variable using knowledge of the other variable (Babbie, 2020). An explanatory design is ideal because it provides rigorous and replicable procedures for understanding relationships. Also, the design helps in assessing whether and to what degree a relationship exists between the quantifiable variables. The design further seeks to gain insight into a phenomenon as a means of providing basic information in the area of study. On the other hand, a longitudinal research design is useful when a study's unit of analysis is followed over lengthy period of time, at predetermined intervals. Panel studies' main characteristic is that they gather repeated measurements from the same sample at several intervals in time (Laurie, 2008). This research design was suitable because the study focused on 53 MFIs from the year 2010 to 2019.

3.4 Target Population

Otzen & Manterola, (2017), defines a study's population as the entire number of the subjects that the researcher is interested in, while Kothari & Wathen (2013) suggests that a target population is the group of people to which a researcher aims to apply the findings of a study. This study target population comprised of 53 microfinance institutions that self-report to the World Bank's Microfinance Information Exchange (MIX) market and are indicated in Appendix C. The study was done from 2010 to 2019.

3.5 Sampling Procedure and Sample Size

The study applied an inclusion and exclusion criteria in determining the final sample. First, the MFI should have been in operation throughout the study period 2010 and 2019. Second, the MFIs should have reported consistently to the World Bank MIX-market over the period. Upon applying the criteria, the final sample was 32 MFIs. The remaining 21 institutions had not consistently reported their financials to the World Bank MIX market.

3.6 Data Collection Procedures

This study used secondary data and the objective of this research was to analyze the relationship between financial structure, income diversification and financial sustainability of MFIs. The study employed secondary data extracted from Microfinance Information Exchange Market, a web-based platform, which contains extensive information about MFIs. Prior studies have used data from MIX market and highly consider as reliable Quayes, (2012); Churchill, & Marr, (2017).

3.7 Data Analysis and Presentation

The study used financial sustainability as the dependent variable while financing structure (equity, debt, deposits and donations) was applied as the independent variable. The study also included several control variables.

The effect of a moderating variable was evaluated by using hierarchical multiple regression. To evaluate moderation, the interaction effect between the independent variable and the moderator was used to determine whether or not such an effect is significant on the dependent variable.

To show antagonistic and enhancing the moderating effect, the study used modgraph as recommended (Jose, 2008). In order to understand the nature of the interaction of income diversification on the relationship between equity capital, debt capital, deposits and donations on financial sustainability. Aiken & West (1991) suggested that the moderated results be presented on a moderation graph. Additionally, indicated that it is insufficient to conclude that there is an interaction without probing the nature of that interaction at different levels of the moderator. Consequently, the significant of the coefficient of the income diversification was assessed at low, medium and high levels of equity capital, debt capital, deposits and donations.

A moderation effect could be enhancing, which means that increasing the moderator increases the effect of the predictor (independent variable) on the outcome (dependent variable), buffering, which means that increasing the moderator decreases the effect of the predictor on the outcome, or antagonistic, which means that increasing the moderator reverses the effect of the predictor on the outcome. Proof of the relationship between the independent and dependent variables is a necessary prerequisite for moderation.

The choice between fixed effect and random effect regression model was based on Hausman test. Three regression models were used; where model 1 tested the control variable, model 2 the main effect while model 3 tested for moderating effect. The data for the microfinance was compiled, edited and coded into categories using numeric values after assessing its consistency and relevance to the study. Hausman test has two hypotheses; the null hypothesis (H_0) supporting fixed effect and the alternative hypothesis (Ha) favoring the random effect regression model. Data was analyzed using descriptive and inferential statistics the dependent and independent variables and the outcomes of the panel data regression analysis. Descriptive statistics involved percentages, mean and standard. Inferentially data was analyzed using correlation and multiple regression models.

The independent variable comprised of deposits, debt, equity and donations.

Deposits are the cheapest source of funding and easier to obtain than other forms of funds. Deposit signifies an MFI's capacity to mobilize savings from its members. The higher this value, the more likely it is that the institutions may meet lending needs. Consistent with (Tchuigoua, 2015: Henock, 2019: Duguma, & Han, 2018) deposits was measured as the ratio of total deposits to total assets.

$$Deposits = \frac{Total\ Deposits}{Total\ \ Assets}$$

Debt capital is the phrase used to describe long-term bonds or debentures that a company uses to finance its investment choices while generating principal and interest payments. Debt capital was measured as the ratio of total debt to total assets (Umar et al., 2022).

$$Debt = \frac{Total\ Debt}{Total\ Assets}$$

Equity capital refers to the funds of the firm that are held by the shareholders. It is the permanent source of capital. Based on empirical literature, the study measured equity capital as the ratio of owner's equity to total assets (Khachatryan *et al*., 2017).

$$Equity = \frac{Owners\ Equity}{Total\ Assets}$$

Donations denote funds received from NGOs or support from private individual or government. Donations was measured as the ratio of grants to total assets (Henock, 2019: Chikalipah, 2019).

$$Donation = \frac{Grants}{Total\ \ Assets}$$

MFI financial sustainability was measured by Operational Self-Sufficiency (OSS) as the ratio of total revenue to operating expenses, and calculated as follows:

$$OSS = \frac{Total\ Revenue}{Operating\ Expenses}$$

Where, OSS is operational self-sufficiency of microfinance institutions (Bayai & Ikhide, 2018; Githaiga *et al.,* 2023). Operating revenue involves interest income from both current and past loans, interest from restructured loans, interest from all investments, fares, service charges and penalties from late settlement of loans. Expenses include financial, operating and loan loss expenses (Cull et al. 2009).

The study's moderating variable is income diversification. Following earlier studies, this variable was measured by the Herfindahl-Hirschman Index (HHI) (Meslier, Tacneng &

Tarazi, 2014; Chiorazzo *et al*., 2008, Githaiga, 2022). The HHI index is developed as indicated below.

$$HHI = \left[\left\{\left(\frac{NON}{NOI}\right)^2 + \left(\frac{NII}{NOI}\right)^2\right\}\right]$$

Where

NON is the amount of non-interest income;

NII denoted that amount of net interest income and;

NOI is the sum of NON and NII.

HHI ranges between 0.0 and 1.0, suggesting that as HHI increases, the MFI firm is considered less diversified and more focused on lending. As a result, the magnitude of an MFI income diversification is calculated as follows:

$$Income\ Diversification\ (DIV) = 1 - \left[\left\{\left(\frac{NON}{NOI}\right)^2 + \left(\frac{NII}{NOI}\right)^2\right\}\right]$$

To isolate the effects of financing structure and financial sustainability of MFIs, the study controlled for several factors as suggested in the microfinance literature.

Depth of outreach refers to the extent to which an MFI can go within the poor community (helping the comparatively poor and the underprivileged). Depth of outreach was measured as the average loan size divided by the gross national income per capital (Hartarska & Nadolnyak, 2007; Kipesha & Zhang, 2013).

$$\text{Depth of outreach} = \frac{\text{average loan size}}{GNI}$$

Breadth of outreach is an indicator of the number of borrowers MFIs. Breadth of outreach was measured by the natural logarithm of active borrowers (Adusei, 2021; Khalaf, Kouki & Algebaly, 2023).

Breadth of outreach= $Natural \log active\ borrowers$

PAR 30 is an indicator of MFIs loan portfolio quality. The portfolio at risk measures how effective an MFI is at collecting money. The greater the PAR, the lower the repayment rates and, as a result, the less financial sustainability. Par>30 is principal amount (net after repayments) of open loans overdue by 30 days or open loans where no repayment has been made for 30 days). Portfolio at risk was measured as the PAR 30 (Tehulu, 2013; Ayayi & Sene, 2010).

Portfolio at risk = $PAR > 30$

The social and financial performance of an MFI may be impacted by its size. Following earlier studies, MFI size was measured as the natural logarithm of its total assets (Bogan, Johnson, Mhlanga, 2007; Abate, Borzaga & Getnet, 2014).

Firm Size = $\text{Natural log of } total\ assets$

The study tested the hypotheses using multiple regression analyses and panel data. Therefore, several diagnostic tests were performed as discussed below;

Regression models assume that the residual is normally distributed for valid hypothesis testing. This assumption was tested using the Shapiro-Wilk test for normality. The test hypothesizes that the distribution is normal, implying that the null hypothesis predicts that the distribution of the residuals is normal. The guiding principle implies that if 'p' value is greater than 0.05, it means that the data is normally distributed.

Multicollinearity is defined as a strong linear relationship between two or more explanatory factors. In some cases, a higher degree of correlation between variables can lead to major issues with the reliability of the model's estimations and incorrect regression results. The Variance Inflation Factor (VIF) was used in this study to test for

multicollinearity; a VIF value greater than 10 shows the presence of multicollinearity in the data (Alin, 2010). To address the presence of multicollinearity, either the measurements is changed or the variable is dropped.

The correlation between successive observations, particularly time data, is known as autocorrelation (Berhe, 2018). When one observation has an impact on the subsequent observations, autocorrelation arises. The Woodridge test for autocorrelation was utilized in the study since it is more straightforward to apply and is used in a wide range of settings. The test's null hypothesis is stated as 'there is no first-order autocorrelation' while the alternative hypothesis states autocorrelation.The guiding principle is that when $p>0.05$ indicates no autocorrelation.

When the error term in the model fails to have a constant variance, heteroscedasticity arises (Wamono, von Rosen, & Singull, 2022). The error term must have a constant mean and variance in econometric models. The Breusch-Pagan/Cook-Weisberg test was used to determine heteroscedasticity. The threshold of Breusch-Pagan/Cook-Weisberg test is that if the p-value is more that 0.05 , there is no constant variance of the error term.

If statistical characteristics like mean, variance, and covariance are constant throughout time and in any sample of data, then a time series of data is said to be stationary (Salles, Belloze, Porto, Gonzalez, & Ogasawara, 2019). All econometric investigations, according to Gujrati (2003), should test time series for stationarity. Spurious regression, or pseudo-regression, results from non-stationary data. The study used the model of Levin-Lin-Chu (2002) and Breitung (2001) to test for unit root test in the variables. The panel was assumed to be stationary in the null hypothesis for both tests. If the unit root was found, the issue was then resolved via first differencing. The null hypothesis supports stationarity, while the alternative supports the existence of unit root. Hence, if

the p<0.05 we fail to reject the null hypothesis and conclude that the data does not suffer from unit root.

Testing for omitted variables in regression is vital because it assumes that the model's error term and independent variables are not correlated. Therefore, the study determined whether the model is mis-specified using the Ramsey RESET test. The guiding threshold of Ramsey RESET test is that if p> 0.05 the model does not have omitted variables. If there are omitted variables, then the study should incorporate more variables or observations.

In testing hypotheses, the study adopted the following set of multiple regression equations.

Model 1. Testing the effect of control variables on the financial sustainability.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \varepsilon_{it}$$

Model 2. Testing the effect of independent variable (financial structure) on financial sustainability.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \varepsilon_{it}$$

Model 3. Testing the moderator (income diversification) on financial sustainability.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \varepsilon_{it}$$

Model 4. Incorporating the first interaction term of income diversification and equity.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \beta_9 ID \times EQT + \varepsilon_{it}$$

Model 5. Adding the second interaction term of income diversification and debt.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \beta_9 ID \times EQT + \beta_{10} ID \times DBT + \varepsilon_{it}$$

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \beta_9 ID \times EQT + \beta_{10} ID \times DBT + \varepsilon_{it}$$

Model 6. Adding the third interaction term of income diversification and deposits.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + \beta_4 EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \beta_9 ID \times EQT + \beta_{10} ID \times DBT + \beta_{11} ID \times DEP + \varepsilon_{it}$$

Model 7. Adding the fourth interaction term of income diversification and donations.

$$FSS_{it} = \beta_0 + \beta_1 DOU_{it} + \beta_2 BOU_{it} + \beta_3 FS_{it} + \beta_3 PAR30_{it} + EQT_{it} + \beta_5 DBT_{it} + \beta_6 DEP_{it} + \beta_7 DON_{it} + \beta_8 ID_{it} + \beta_9 ID \times EQT + \beta_{10} ID \times DBT + \beta_{11} ID \times DEP + \beta_{12} ID \times DON + \varepsilon_{it}$$

Whereby:

FSS = financial Sustainability

EQT= Equity

DBT= Debt

DEP= Deposits

DON =Donation

FS =Firm size

ID= income diversification

DOU= Depth of outreach

BOU= Breadth of outreach

PAR30=portfolio at risk more than 30 days

β_0 = constant

β_1 , β_{12}= are beta coefficients of the regression model

ε_{it} = represent error term

3.8 Ethical Considerations

The goal of ethical considerations is to ensure that the study is done in a way that protects participants, while instilling trust in them (Gajjar, 2013). Ethical considerations center on the respondents' privacy as well as the intended use of the data obtained. Because of the following reasons, the study did not raise major ethical concerns; first, the study relied on publicly available data, neither questionnaires nor respondents were necessary for data gathering. Second, the data was publicly accessible through the World Bank (MIX market). Nonetheless, the study adhered to the following ethical concerns: First, data was collected in an objective manner, as described in the data collection schedule, to ensure that the results are unbiased. Secondly, to ensure data integrity, the analysis was made strictly on the data collected from the World Bank Mix market, secured and strictly employed for this study. Thirdly, the study followed all of the necessary protocols, which includes obtaining authorization from the University and the National Commission for Science, Technology, and Innovation (NACOSTI) before going to the field to gather research data. Finally, the researcher checked that all sources of information were appropriately cited in the document.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis as well as the findings of the study based on the research objective and research methodology. The results presented here are organized under eight key sections: descriptive statistics, diagnostic tests, correlation analysis, fixed and random effect, Hausman test, hypothesis testing, and moderation results.

4.2 Descriptive Statistics

This section illustrates descriptive statistics for both dependent and independent variables. The mean was used as a measure of central tendency while the standard deviation was used as a measure of dispersion.

4.2.1 Financial Sustainability

Financial sustainability was the dependent variable which was measured as the operational self-sufficiency as shown in Table 3 below;

Table 3

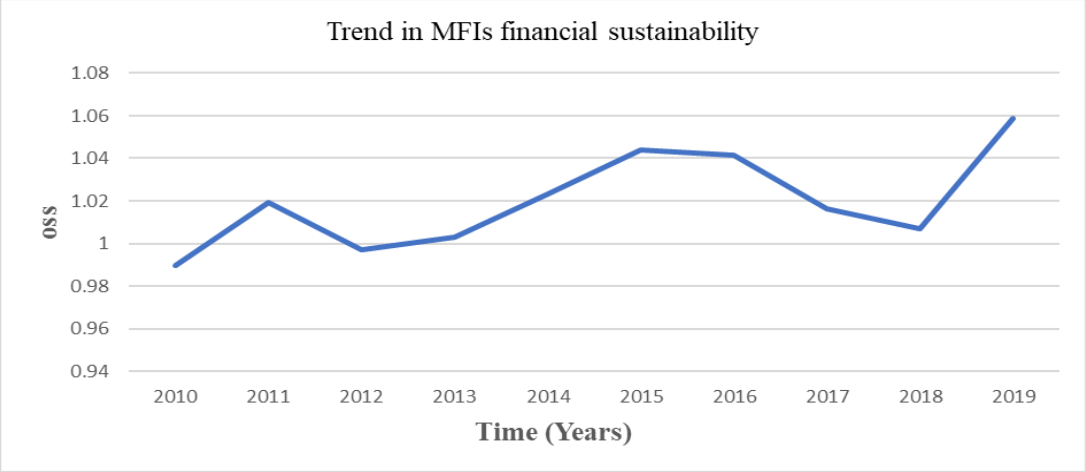
Descriptive statistics for financial sustainability measure by OSS from 2010 to 2019

Year	Mean	Std. Dev.	Min	Max	N
2010	.9898154	.3534412	.4657	1.5563	32
2011	1.019302	.2664272	.56304	1.5327	32
2012	.9970248	.2722805	.4536	1.448	32
2013	1.002932	.2656978	.54	1.505	32
2014	1.023193	.2575329	.46	1.5377	32
2015	1.043854	.2304604	.61	1.557	32
2016	1.041558	.2316075	.566	1.4428	32
2017	1.016525	.2690077	.47896	1.5335	32
2018	1.006995	.2549122	.4381	1.4428	32
2019	1.058745	.2409724	.5109	1.459	32
Total	1.019994	.2532837	.4381	1.557	320

Basing on the findings in Table 3, the mean value of OSS for the ten years is 1.019994, and the standard deviation is 0.2533, which implies low variability in OSS quality across the selected MFIs. The table further shows that year 2010 and 2012 recorded the lowest level of financial Sustainability. In addition, Figure 2 below shows some of the significant improvement in OSS of MFIs throughout the study period;

Figure 2

Trend in Financial Sustainability from 2010 to 2019



However, some periods were characterized by declining financial sustainability. The decline in in the year 2011 to 2012 can be adduced to the cautiousness associated with the electioneering period while the decline noted in the period 2016 - 2018 can be attributed to increased expenses related to financial costs aimed at attracting deposits, and additional provisions made by the sector to comply with the requirements of the newly implemented International Financial Reporting Standard (IFRS) 9. The 2017/2018 period was also characterized by sluggish growth in the market since it was an electioneering period. The increase in performance in 2018 and 2019 may be attributed to increased demand for credit by the various economic sectors, as well as increased adoption of technology as a lending platform.

4.2.2. Deposits to Assets Ratio

Deposits were among the study's independent variable, and the proxy measure for this variable was the ratio of total deposits to total assets. The summary statistics for this variable are presented in Table 4 below;

Table 4

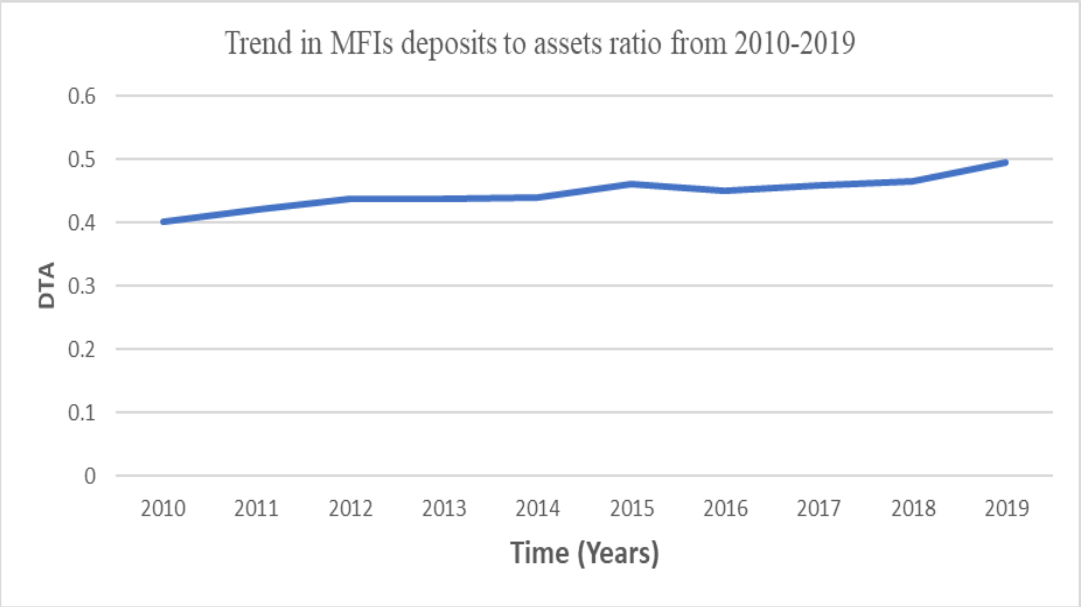
Descriptive Statistics for deposits to assets ratio from 2010 to 2019

Year	Mean	Std. Dev.	min	Max	N
2010	.4029186	.2532681	0	.9236	32
2011	.4215768	.2435541	0	.9236	32
2012	.4381134	.2530033	0	.99281	32
2013	.4379131	.2459845	0	.9776	32
2014	.4400791	.2443367	0	.99421	32
2015	.4610732	.2586598	0	.997421	32
2016	.4507006	.2516953	0	.9028	32
2017	.4594506	.2662348	0	.9925	32
2018	.4651098	.2440666	0	.888004	32
2019	.4950597	.2451748	0	.99903	32
Total	.4471995	.2483118	0	.99903	320

The mean value of deposits to assets ratio for the ten years is 0.4471995, and the standard deviation is 0.2483, suggesting moderate variability in deposits to assets ratio across the selected MFIs. The table further shows that some MFIs have very little deposits, while others were able to mobilize high volumes of savings and deposits from their client. Based on Figure 3 below, the growth in deposits was relatively low but constant across the study period with 2019 recording the highest level of deposits mobilization. The study period with 2019 recording the highest level of deposits mobilization.

Figure 3

Trend in deposits to assets ratio from 2010 to 2019



The gradual growth in deposits can be attributed to the expansion of MFIs through the establishment of new branches, marketing units and increased workforce.

4.2.3. Debt to Equity Ratio

Table 5 below presents the descriptive statistics for debt-to-equity ratio of Kenyan MFIs across the period ranging from 2010 to 2019.

Table 5

Descriptive statistics for debt-to-equity ratio from 2010 to 2019

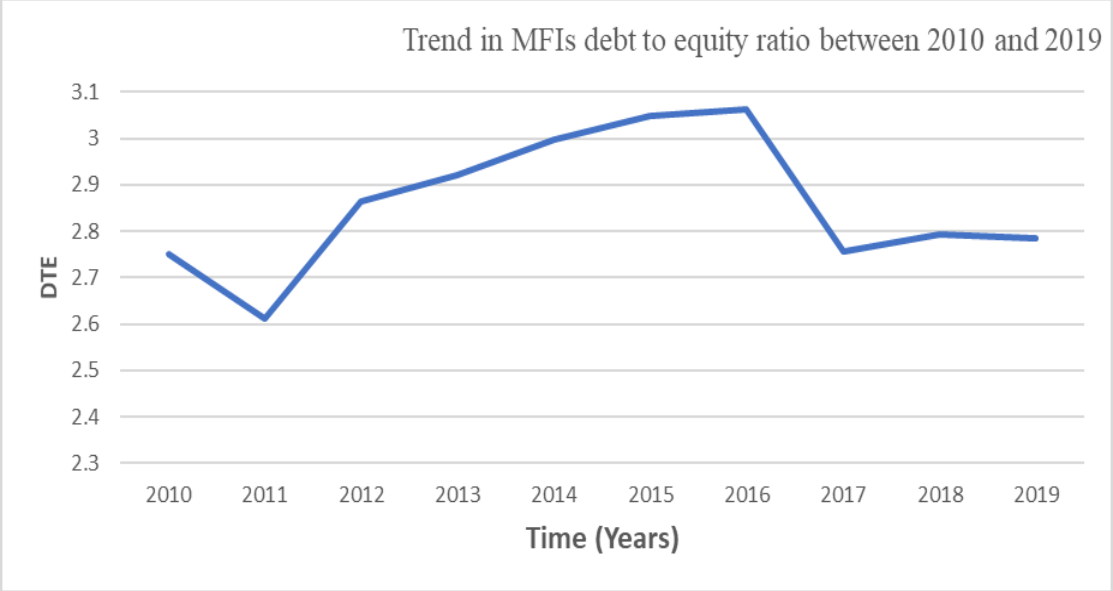
Year	Mean	Std. Dev.	Min	Max	N
2010	2.751731	2.197014	.03	8.67	32
2011	2.610927	2.07248	.02	7.29	32
2012	2.865386	2.261694	.03	8.24	32
2013	2.921171	2.267093	.12	8.24	32
2014	2.997562	2.526103	.12	9.64	32
2015	3.049021	2.319105	.12	8.24	32
2016	3.062677	2.388671	.12	8.24	32
2017	2.755789	2.107421	.12	6.35	32
2018	2.792841	1.965167	.12	6.65	32
2019	2.784962	1.9177	.12	6.53	32
Total	2.859207	2.182666	.02	9.64	320

The average debt to equity ratio of the study period was 2.859207. It evident that some MFIs used little amount of debt to finance their operations as reflected by the minimum value of 0.02, while others were highly geared with debt being nine times their equity. The nature of MFIs business where depositors' funds are treated as debt or liabilities also contributes to the greater than one ratio between debt and equity.

Figure 4 demonstrated the trend in debt-to-equity ratio across a 10-year period.

Figure 4

Trend in Debt-to-Equity Ratio from 2010 to 2019



The period 2010-2011 was characterised by reduced utilization of debt after the introduction of deposit taking MFIs. Lending and business growth was mainly financed by capital and the MFIs were challenged to grow customer deposits and equity by leveraging on strategic positioning and re-engineering deposit mobilization strategies. It can also be seen that there was a steep rise in the use of commercial debt between 2011 and 2012 and gradually increased up to the year 2016. The increased regulation of MFIs and the reduced government and donor support prompted MFIs to seek external financing to support the increased demand of micro-loans and related products. The 2016-2017 drop was due to electioneering precaution taken by financial markets. The decline was followed by a non-growth period ranging from 2018-2019 mainly attributed to the post electioneering period recovery.

4.2.4 Equity to Assets Ratio

Table 6

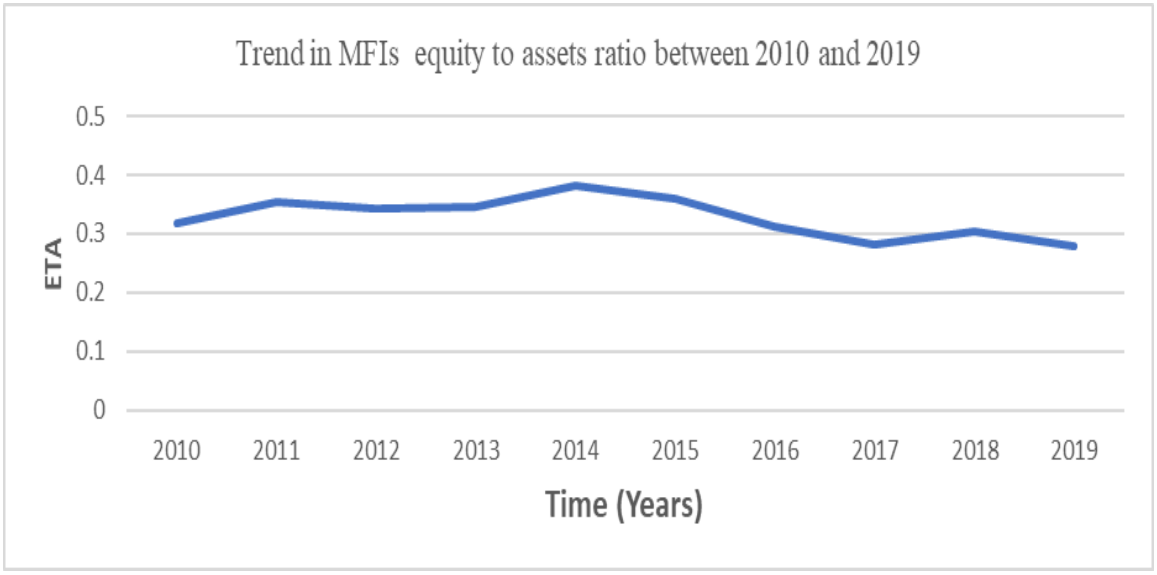
Descriptive statistics for equity to assets ratio from 2010 to 2019

Year	Mean	Std. Dev.	min	Max	N
2010	.3181563	.264841	.0903123	.7392337	32
2011	.3530438	.2062528	.1017313	.9808895	32
2012	.3430231	.212821	.0619354	.8947754	32
2013	.3448805	.2052682	.0519514	.7751259	32
2014	.3818287	.2471406	.0433507	.8932362	32
2015	.3581477	.2191616	.0885879	.8590724	32
2016	.3120466	.2191514	.0348476	.9674072	32
2017	.2822888	.1589333	.069218	.8005245	32
2018	.3048324	.206059	.0582625	.8406591	32
2019	.2787383	.1888965	.0294808	.7243998	32
Total	.3276986	.205735	.0294808	.9808895	320

Based on the table 6, the average equity and assets ratio was 0.3276986, indicating low capitalization. While the minimum variable of 0.02948 show that some MFIs had a very low level of capital. The maximum value of 0.9809 is an indicator that some MFIs are well capitalized. Figure 5 below demonstrated the trend in equity to assets ratio across the 10-year period;

Figure 5

Trend in equity to assets ratio among Kenyan MFIs from 2010 to 2019



The figure reveals a slight decline in microfinance use of equity financing, particularly between 2014 and 2017. However, there is minimal growth in equity financing over the years. The decline from 2014 can explained by the increased use of commercial borrowing, thus lowering reliance on equity financing.

4.2.5 Donations to Assets Ratio

Table 7 below shows the descriptive statistics for the ratio of donations to assets from 2010-2019.

Table 7

Descriptive statistics for donations to assets ratio from 2010 to 2019

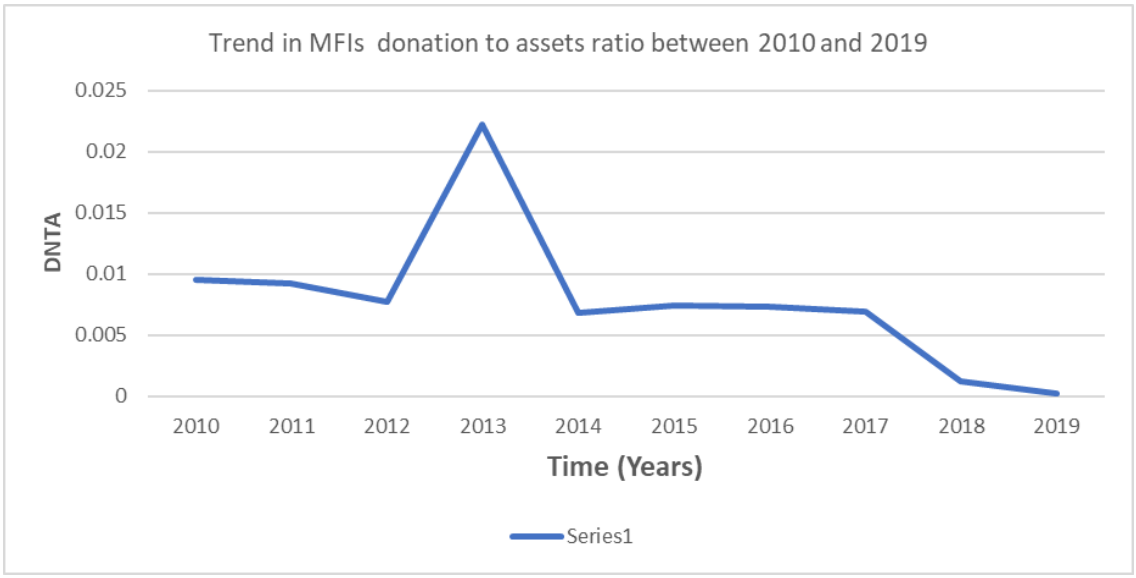
Year	Mean	Std. Dev.	Min	Max	N
2010	.0095374	.0619106	0	.1437262	32
2011	.0092559	.0313237	0	.1407219	32
2012	.0077014	.0278266	0	.1280899	32
2013	.0222116	.1164715	0	.6590802	32
2014	.006847	.0302455	0	.1658463	32
2015	.0074022	.0381008	0	.2157384	32
2016	.0073628	.0381042	0	.2157384	32
2017	.0069527	.0381111	0	.2157384	32
2018	.0012156	.0053949	0	.030004	32
2019	.0002644	.0010421	0	.005547	32
Total	.0078751	.0461865	0	.6590802	320

Based on the Table 6, the mean ratio of donations to assets was 0.00788, implying low level of donation-based funding. The minimum level of donation was zero, confirming that some MFIs were not receiving any donations or subsidies.

Figure 6 shows trend of donations to asset ratio for the ten-year period under consideration;

Figure 6

Trend in MFIs donation to assets ratio between 2010 and 2019



The sharp rise from 2012-2013 can be attributed to the formation of MFIs' umbrella body, Association of Microfinance Institutions (AMFI), which successfully lobbied to change the name of Deposit Taking Microfinance Institutions to Microfinance Banks MFBs). Also, MFIs were allowed to increase the range of financial services that MFBs can offer. These developments improved the image and confidence of MFIs, thus attracting additional support from donors and other investors. However, it was followed by a sharp decline between 2012-2014 mainly attributed to loss of investor and donor confidence during the 2013 prolonged presidential elections and political uncertainty. Thereafter, MFIs experienced constant decline in donor support and they sought other financing methods.

4.2.6 Income Diversification

Income diversification was the study's moderating variable and it was measure using the HHI. Table 8 below shows the descriptive statistics for income diversification for the ten-year period under consideration.

Table 8

Descriptive statistics for income diversification from 2010 to 2019

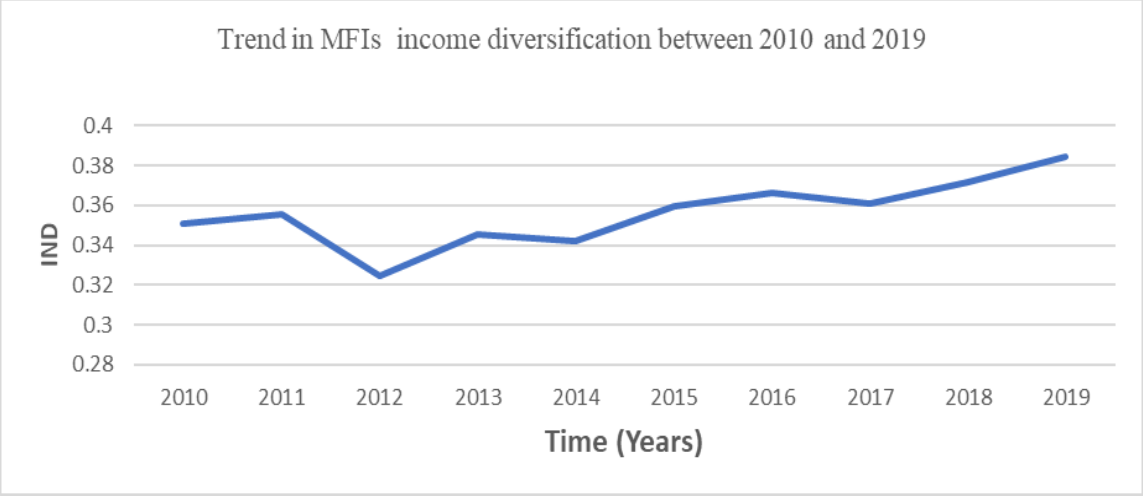
Year	Mean	Std. Dev.	Min	Max	N
2010	.3509251	.0952583	.1472219	.4705387	32
2011	.3556434	.0852914	.1367654	.4589147	32
2012	.3244212	.0919946	.1711737	.4714544	32
2013	.3455604	.1019581	.1412783	.4779553	32
2014	.3421462	.0916313	.112359	.4830895	32
2015	.3597491	.0817492	.1748889	.4683937	32
2016	.366221	.0690678	.2179464	.4761473	32
2017	.3611366	.0888047	.12175	.4787919	32
2018	.3716041	.0833375	.1916877	.457517	32
2019	.3846717	.0841157	.2011436	.4771089	32
Total	.3562079	.0879399	.112359	.4830895	320

The mean value of 0.3562079 is a clear indicator that MFIs are engaging in non-interest incomes, while the standard deviation reveals low variability in the level of income diversification. The maximum figure of 0.483 reveals that non-interest income is gradually becoming an important stream of revenue for MFIs.

Figure 7 shows the trend in MFIs income diversification over the period 2010-2019.

Figure 7

Trend in MFIs Income Diversification between 2010 and 2019



There was a gradual increase in income diversification among MFIs, with 2019 reporting the highest amount of non-interest income. The decline in non-interest income between 2011 and 2012 can be attributed to economic decline during electioneering period. The roll out of agency banking by the CBK and information sharing with CRBs, may have created a positive image among MFIs towards lending, which lowered their focus on non-lending activities. The introduction of mobile banking technologies may explain the gradual rise in non-interest income, as MFIs may have diversified to other line of revenue generation.

4.2.7 Summary table of Variables

The summary table of the study variables is illustrated in the Table 9.

Table 9

Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
OSS	320	1.019855	.2559336	.4381	1.557
DTA	320	.4478356	.249807	0.000	.99903
DTE	320	2.859207	2.182666	.02	9.64
ETA	320	.3276986	.205735	.0294808	.9808895
DNTA	320	.0101543	.0539706	0.00	.630004
IND	320	.3558446	.0888589	.112359	.4830895
BOUT	320	3.946666	.8156843	2.130334	5.876042
FS	320	9.087128	.9828981	6.769699	11.66768
PAR>30	320	.1079395	.1186542	.0002	.5868
ALS	320	1.65099	.452756	.9188007	2.623271

Whereby:

OSS = Operational Self-Sufficiency (Financial Sustainability).

DTA =Deposits to Total Assets

DTE = Debt to Equity Ratio

ETA = Equity to Total Assets

DNTA = Donations to Total Assets

IND = Income Diversification

BOUT = Breadth of Outreach

FS = Firm Size

PAR>30=Portfolio at Risk more than 30 days

ALS = Average Loan Size

Based on the findings, the financial sustainability among MFIs realized a mean of 1.02 (minimum 0.438 and maximum 1.557; standard deviation 0.256), implying that the selected sample of MFIs can be said to be financially sustainable. The average OSS is close to 1.8 reported by Dabi *et al*., (2023) among Ghanian MFIs. The minimum variable of 0.256 is an indicator that some MFIs may not be financially sustainable. The breadth of outreach had a mean of 3.947 (minimum 2.13 and maximum 5.876; standard deviation .816). The standard deviation demonstrates low variability in MFIs outreach programmes. The mean firm size was 9.087 (minimum 6.77 and maximum 11.668 standard deviation 0.983). The standard deviation is an indicator of small variation in MFIs size in Kenya.

The average loan size had a mean of 1.651 (minimum 0.919 and maximum 2.623; standard deviation 0.452). Further, the average PAR>30 was at 0.119 (minimum 0.000 and maximum 0.5869; standard deviation 0.119). The above statistics shows that the NPLs stands at 11.87% of the total loans and advances, while the standard deviation is an indicator of high variability in loan portfolio quality among Kenyan MFIs. Moreover, the mean of equity capital to assets ratio was at 0.328 (minimum .0295 and maximum .981; standard deviation .206). While the average debt capital to equity ratio was at 2.859

(minimum 0.02 and maximum 9.64; standard deviation 2.183) demonstrating that the selected MFIs are highly leveraged, while the standard deviation shows high variability in the use of debt capital among MFIs in Kenya.

The results further indicate that the average deposits to assets ratio was at 0.448 (minimum 0.000 and maximum 0.999; standard deviation 0.25) and this shows that MFIs are not effective in mobilization of deposits and savings. The average donations to assets ratio was .0102 (minimum= 0.000 and maximum = 0.679; standard deviation 0.054). The mean is a clear indicator of the declining donations and subsidies to MFIs, while the standard deviation reveals a high variability in donations across MFIs in Kenya, which is further supported by the minimum and maximum figures. Income diversification had a mean of .356 (minimum= .112 and maximum = .483; standard deviation .089) this shows that MFIs in Kenya are moderately engaged in non-interest income activities.

4.3 Diagnostic Tests

The data sets were tested for the classical linear regression model assumptions and their diagnostic tests. Some diagnostic tests that were carried out include normality tests, multicollinearity, unit root test, test for heteroscedasticity, autocorrelation test, and specification error test.

4.3.1 Normality Test

The Shapiro-Wilk test is a statistical test of the hypothesis that the distribution of the data as a whole deviate from a comparable normal distribution. If the test is significant ($p>.05$) it tells us that the distribution of the sample is not significantly different from a normal distribution. If, however, the test is insignificant ($p < .05$) then the distribution in question is significantly different from a normal distribution. The results of the Shapiro Wilk test are shown in Table 10. Since the ρ-value (0.0897) is larger than 0.05, the null

hypothesis of normality cannot be rejected. Hence, it was concluded that the residuals followed a normal distribution.

Table 10

Shapiro Wilk Normality Test

Variable	Obs	W	V	Z	Prob>z
My residuals	320	0.98710	1.950	1.538	0.0897

4.3.2 Multicollinearity Test

Multicollinearity is a phenomenon whereby a high correlation exists between the independent variables. It occurs in a multiple regression model when high correlation exists between these predictor variables prompting questionable assessments of regression coefficients (Keith *et al.,* 2006). Variance inflation factor (VIF) is a method of testing multicollinearity. Multicollinearity is present if the VIF value is higher than 10 (Gujarati, 2012). The results of the VIF test are shown in Table 11 below;

Table 11

Multicollinearity

Variable	VIF	1/VIF
FS	3.70	0.270167
BOUT	3.29	0.303741
ETA	1.79	0.557716
ALS	1.42	0.703169
DTA	1.36	0.733106
IND	1.36	0.734289
DTE	1.28	0.780548
PAR>30	1.21	0.829650
DNTA	1.13	0.888502
Mean VIF	1.84	

The results show that the values range between 1.13 and 3.70; which, are less than 10, implying the research variables do not suffer from multicollinearity.

4.3.3 Autocorrelation Test

The study used the Wooldridge test to check for autocorrelation. The results shown in table 12 indicate that ρ-values are greater that 0.05; implying that the null hypothesis was not rejected. Therefore, the data did not suffer from autocorrelation.

Table 12

Wooldridge test for Autocorrelation in Panel Data

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
F (1, 31) = 2.644
Prob > F = 0.1141

4.3.4 Test for Heteroscedasticity

The Breusch-Pagan/ Cook-Weisberg test were used to test for heteroscedasticity, and the results are presented in Table 13.

Table 13

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: fitted values of OSS
chi2(1) = 0.97
Prob > chi2 = 0.3239

The findings indicated that the Chi2 (8) value was 0.97 and ρ-value of 0.3239, implying that the null hypothesis was not rejected. Thus, the assumption of constant variance was not violated.

4.3.5 Panel Unit Root Test

A time-series is said to be stationary if its mean and variance are constant over time (Gujarati, 2004). Hence, the series tend to drift around its mean due to the limited variance. In contrast, a nonstationary time–series or a random walk model is one where the mean and variance continually change over time and has a simple correlation coefficient between the *X* variable and its lagged variable which is influenced by factors other than solely the length of the lag between the two (Studenmund, 2011). In the field of economics and finance, time related or seasonal shocks in one-time period may strongly influence subsequent periods. The study applied Levin-Lin-Chu test and fishers type test. The following hypothesis was considered for this test

Null hypothesis (Ho): All panels contain a unit root.

The alternative hypothesis (H1): At least one panel is stationary.

The *p*-values are reflected in the Table 14.

Table 14

Unit Root Test

	Levin-Lin-Chu	Harris-Tzavalis
OSS	-5.0838	-9.8611
p value	0.001	0.000
DTA	-4.8251	-2.8794
p value	0.000	0.002
DTE	-11.3579	-7.9370
p value	0.000	0.000
EAT	-3.4369	-8.8241
p value	0.000	0.000
DNTA	-14.2984	-19.8995
P value	0.000	0.000
IND	-9.2009	-10.7661
p value	0.000	0.000
ALS	-11.4095	-5.495
p value	0.000	0.000
BOUT	-3.1063	-5.7506
p value	0.000	0.000
FS	-4.7883	-1.7577
p value	0.000	0.004

From the table above, the p-values are less than 0.05; hence, the null hypothesis cannot be rejected, which means that there was no unit root. Thus, the mean and variance of the panel data did not depend on time. The application of panel data estimation techniques produces meaningful regression results (Gujarati, 2012).

4.3.6 Model Specification Error Test

Table 15 highlights the results of the Ramsey RESET test.

Table 15

Ramsey RESET (test using powers of the fitted values of OSS)

Ramsey	RESET test using powers of the fitted values of OSS
Ho: model has no omitted variables	
F(3, 303) = 0.18	
Prob > F = 0.9097	

The findings in the table show that null hypothesis cannot be rejected. The probability values of the computed statistic in the Ramsey RESET test 0.9097 is more than the threshold value of 0.05; implying that the model is not mis-specified. Hence, there were no omitted variables in the study.

4.4 Inferential Statistics

Inferential statistics is the processes of making inference or drawing conclusions and or generalization about certain characteristics considering the nature and appearance of the sample. It uses various analytical tools to draw conclusions about a population by examining various samples. Since the data used were in ratio scales, the study applied two parametric inferential statistics which comprise of correlation and regression analysis.

4.4.1 Correlation Analysis

Correlation analysis shows the nature and magnitude of the relationship between research variables. The coefficients of the correlation analysis are presented in a matrix, as shown in Table 16.

Table 16

Pairwise Correlation Analysis

	OSS	BOU	FS	PAR>30	ALS	DNTA	DTE	DTA	ETA	IND
OSS	1.0000									
BOUT	0.3051*	1.0000								
FS	0.3343*	0.7687*	1.0000							
PAR>30	-0.2906*	-0.1718*	0.0641	1.0000						
ALS	0.3954*	0.0271	0.2734*	0.0267	1.0000					
DNTA	-0.2588*	-0.0949	-0.2065*	-0.1199*	-0.2059*	1.0000				
DTE	-0.3839*	-0.1251*	-0.1034	0.1410*	-0.1764*	-0.0569	1.0000			
DTA	0.4137*	0.3292*	0.4321*	-0.0121	0.2824*	-0.1846*	-0.2289*	1.0000		
ETA	0.2367*	-0.4798*	-0.4370*	-0.1092	0.2216*	0.0373	-0.2618*	-0.1482*	1.0000	
IND	0.4747*	0.3307*	0.4075*	-0.0614	0.1947*	-0.1875*	-0.2610*	0.3106*	0.0189	1.0000

*p<0.05

The table shows that breadth of outreach (BOUT) is positively correlated with financial sustainability (OSS) (*r=0.3051: p<0.05).* The table further revealed that the firm size (FS) and financial sustainability are positively correlated *(r=0.3343: p<0.05*). The correlation results also indicated that the Portfolio at Risk (PAR>30) was negatively correlated with OSS (*r=-0.2906: p<0.05).* The correlation between average loan size and financial sustainability was positive and significant (*r=0.3954: p<0.05*). The results further revealed that the correlation between donations (DNTA) and financial sustainability was negative and significant (*r=-0.2588: p<0.05*).

The tabulated findings also shows that debt (DTE) was negatively correlated to financial sustainability (*r=-0.3839: p<0.05*). Moreover, deposits (DTA) and financial sustainability had positive and significant correlation *(r=0.4137: p<0.05*). Additionally,

equity and financial sustainability were positively correlated (*r=0.2367: p<0.05*). The correlation matrix further showed that income diversification was positively correlated with financial sustainability (r=0.4747: p<0.05). Finally, all the correlation coefficients were less than 0.8, confirming the absence of multicollinearity.

4.4.2 Regression Analysis

The study performed 7 regression models. Model 1 shows the results for the control variables. Model 2 presented the results of the control variables and the independent variables while Model 3 depicts the moderator, the control variables and the independent variables. Model 4 incorporates the interaction term of income diversification and equity. Model 5, provides the interaction term of income diversification and debt capital. Model 6 shows the interaction term of income diversification and deposit. Finally, Model 7 introduces the interaction term of income diversification and donations. Hypotheses H1-H4 were tested using the results of model 2, while hypothesis H5 was tested using the results of model 7.

4.4.2.1 Testing the Effect of the Control Variables

The purpose of Model 1 was to examine the effect of the control variables which comprised breadth of outreach, average loan size, PAR>30 and firm size on microfinance institutions' financial sustainability. The control variables predicted 16.05 % variability in MFIs financial sustainability and the regression results are tabulated in Table 17 below. The Wald chi2 value of 68.08 and prob> chi2 of 0.000 confirmed that the model was fit.

Table 17

Regression results for Control Variables-Model 1

Random-effects GLS	No. of observations	= 320

regression	(obs)					
Group variable: ID	Number of groups	= 32				
R-sq: within = 0.1605	Obs per group: min	= 10				
between = 0.3220	Avg	= 10.0				
overall = 0.2813	Max	= 10				
	Wald chi2(4)	= 68.08				
corr(u_i, X) = 0 (assumed)	Prob > chi2	= 0.0000				

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.056662	.0284842	1.99	0.047	.0008341	.11249
FS	.0666848	.0208916	3.19	0.001	.025738	.1076316
PAR>30	-.3130628	.0944024	-3.32	0.001	-.4980881	-.1280374
ALS	.198087	.0395568	5.01	0.000	.120557	.275617
sigma_u	.18231815					
sigma_e	.1213522					
Rho	.69298515	(fraction of variance due to u_i)				

Table 17 above shows that average breadth of outreach positively and significantly affects financial sustainability *β=0.057, ρ<0.05*). On average, a unit increase in breadth of outreach is associated with a 5.7 % increase in financial sustainability of MFIs. Similarly, firm size has a positive and significant effect on MFIs' financial sustainability (*β= 0.067, ρ<0.05*). A 1% increase in firm size is likely to cause 6.7% increase in financial sustainability. Dabi *et al.,* (2023) also found a positive association between size and financial sustainability of MFIs. Conversely, Hossain and Khan (2016) found no relationship between MFIs size and financial sustainability. The findings suggest that large MFIs are more likely to be financially sustainable owing to economies of scale and the ability to diversify in related businesses.

Similarly, the average loan size has a positive and significant effect on MFIs financial sustainability ($\beta= 0.198, \rho<0.05$). The results reveal that a 1% increase in the average loan size (depth of outreach) can trigger a 19.8% rise in financial sustainability of MFIs in Kenya. On the contrary, Portfolio at Risk (PAR>30) has a negative and significant effect on the financial sustainability of microfinance institutions in Kenya ($\beta= -0.313, \rho<0.05$). Specifically, a unit increase in PAR>30 would lead to 31.3% decrease in MFIs financial sustainability.

4.4.2.2 Testing the Direct Hypotheses

Table 18 presents the regression results of Model 2, where financial sustainability was regressed against financial structure and the selected control variables.

Table 188

Financing structure and Financial Sustainability - Random Effect-Model 2

Random-effects GLS regression	Number of obs	= 320				
Group variable: ID	Number of groups	= 32				
R-sq: within = 0.4172	Obs per group: min	= 10				
between = 0.4616	Avg	= 10.0				
overall = 0.4455	Max	= 10				
	Wald chi2(8)	= 223.12				
corr(u_i, X) = 0 (assumed)	Prob > chi2	= 0.0000				
OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0410164	.0246371	1.66	0.096	-.0072714	.0893042
FS	.0678537	.0180272	3.76	0.000	.0325211	.1031863
PAR>30	-.3033084	.0804724	-3.77	0.000	-.4610314	-.1455853
ALS	.1150864	.0352455	3.27	0.001	.0460065	.1841662
DNTA	-.7110888	.1568887	-4.53	0.000	-1.018585	-.4035926
DTE	-.1869961	.046998	-3.98	0.000	-.2791106	-.0948817
DTA	.3493934	.0637348	5.48	0.000	.2244754	.4743114
ETA	.1863442	.0497603	3.74	0.000	.0888157	.2838727
sigma_u	.15786409					
sigma_e	.10152112					
Rho	.70743011	(fraction of variance due to u_i)				

The results of the Hausman test support the use of the random effect regression model. The overall model explains 44.55% change in financial sustainability of microfinance institutions in Kenya. In addition, the Wald chi2 value of 223.12 and prob>chi2 of 0.000 revealed that the model was fit. The regression results revealed a change in R^2 of 25.67% from model 1. The findings show that deposits to total assets (DTA) had a positive and significant effect on financial sustainability of MFIs in Kenya ($\beta= 0.349, \rho<0.05$).

Specifically, a unit increase in deposits leads to 34.9% increase in financial sustainability of MFIs. The regression results further confirm that the ratio of debt to equity (DTE) has a negative effect on financial sustainability (β=*-0.187,* ρ*<0.05*). Thus, a unit increase in debt capital is likely lead to a -0.187 unit decrease in MFIs financial sustainability. Conversely, the ratio of equity to assets had a positive effect on financial sustainability (β*= 0.186,* ρ*<0.05*). A unit increases in equity result to 18.6% increase in financial sustainability of MFIs. However, the results showed that donations negatively and significantly affect financial sustainability (β*= -0.711,* ρ*<0.05*). Specifically, one unit increase in donations caused financial sustainability to decrease by 0.711 units. The direct hypotheses were tested as follows.

H_{o1}: Deposits has no significant effect on financial sustainability of microfinance institutions in Kenya.

However, the findings presented in model 2 shows that deposits had a beta coefficient that was significant basing on ($\beta = 0.349$, $p < 0.05$), implying that deposits had a positive and significant effect on financial sustainability of microfinance institutions in Kenya. Consequently, the null hypothesis was rejected and the study's conclusion was that deposits had significant effect on financial sustainability among Microfinance institutions in Kenya. The findings agree with those of earlier studies (Parvin *et al.,* 2020; Tehulu, 2013; Khachatryan et al., 2017; Duguma and Han, 2018). However, the findings disagree with Bich (2016), who found a positive though statistically insignificant relationship between deposits and financial sustainability of microfinance institutions, while Dabi *et al.,* (2023) found a negative relationship between deposits and financial sustainability of MFIs in Ghana. Although there is continued regulatory interventions on the extent MFIs can attract deposits, the findings of this study confirm

that deposits, though relatively small, are stable and can support MFIs lending operation over an extended period, consequently ensuring their sustainability and solid growth.

H_{o2}: Debt capital has no significant effect on financial sustainability.

The findings, demonstrated in model 2, showed that debt capital had beta coefficients of the estimate which was significant basing on ($\beta = -0.187$, $p < 0.05$). Hence, the null hypothesis was rejected and was concluded that debt capital had a significant but negative effect on financial sustainability of microfinance institution in Kenya. The findings are supported by those of earlier studies (Chikalipah, 2019; Rutanga *et al.,* 2021; Sekabira (2013; Githaiga *et al.,* 2023). However, Mia and Lee (2017) and Abdulhakim (2020) found a positive association between debt capital and financial sustainability. While Hossain and Khan (2016) found no relationship between debt-to-equity ratio and financial sustainability of MFI in Bangladesh. Similarly, Dabi *et al.,* (2023) found no statistically significant association between debt and financial sustainability of MFIs in Ghana.

Whilst it is important for MFIs to explore the importance of commercial debt in financing for MFIs operation, financial leverage aggravates financial burden of MFIs, further leading to liquidation or takeover, as MFIs are compelled to spend or suspend fragile future cash flows to meet debt obligations. Siddik et al. (2017) employed panel data of 22 banks in Bangladesh from 2005 to 2014 to conclude that excessive debt worsens capital structure. They recommend banking to optimize capital structure by reducing reliance on debt. Adusei and Obeng (2019) carried out a dataset of MFIs from a global perspective to investigate the nexus between capital structure and performance. Their findings stand on the position of pecking order theory with some credence that profitability is negatively associated with leverage level.

Although the agency theory contends that the usage of debt may improve MFI efficiency in the deployment of resources and ensuring financial sustainability, debt comes with the obligation of servicing it, regardless of whether MFI operations are profitable or not. Commercial debt is largely expensive in developing countries like Kenya, given financial underdevelopment, illiquid markets and the information opacity of the microfinance sector in most countries.

The trade-off theory supports that lower cost of debt stimulates the use of leverage, while pecking order theory endorses an aversion to leverage based on consideration of information asymmetry. Although these theories clarify the determinants of capital leverage from different perspectives, the impact of financial sustainability on capital leverage is still considerable. However, from the perspective of survival, financial sustainability undoubtedly has a crucial impact on use of capital leverage. This study combining with reality advocates capital leverage as the least preferred way of funding and expects less use of debt in line with sustainability, because the downward economy should boost self-financing by MFIs in priority to keep free capital flow and avoid stepping into financial distress rather than access to extreme leverage.

$H_{o3:}$ Equity capital has no significant effect on financial sustainability among microfinance institutions in Kenya.

The results presented in model 2 indicate that equity capital had a beta coefficient that was significant basing on ($\beta = 0.186$, $p < 0.05$), therefore, the null hypothesis was rejected and the study concluded that that equity capital had a significant effect on MFIs financial sustainability. The findings collaborate those of earlier studies (Chikalipah, 2019; Parvin *et al.,* 2020; Khachatryan, Hartarska & Grigoryan, 2017). On the contrary they contradict Dabi et al., (2023) and Bayai and Ikhide (2018) who found no significant

association between equity capital and financial sustainability of MFIs. Equity financing relieves MFIs from making contractual periodical payments, which is associated with debt financing. Equity capital is provided by owners (profit-motivated MFIs) or by national and international donor organizations and development banks (NGOs). Additionally, retained earnings form part of cheap equity capital compared to share issue.

$H_{o4:}$ Donation had no significant effect on financial sustainability microfinance institutions in Kenya.

The above hypothesis was rejected based on the findings, presented in model 2 which shows that donations had a negative and significant effect on financial sustainability of microfinance institutions in Kenya ($\beta = -0.711$, $p < 0.05$). Thus, H04 was rejected and the conclusion made was that donations significantly affect MFIs financial sustainability in Kenya. However, the findings contradict the results of studies carried out by Bogan, (2012), Sekabira, (2013), Bayai and Ikhide (2018) and Nadiya et al., (2012) who found a positive relationship between donations and MFIs financial sustainability. In contrary, Kinde (2012) found donations had insignificant effect on financial sustainability of MFIs, while Khachatryan *et al*., (2017) found a positive relationship between donations and MFIs financial sustainability. Despite the fact that donors offer donations at reduced rates, there are still conditions that must be met by MFIs before donors may extend loans. While donations are beneficial for new MFIs (de Aghion & Morduch, 2005), they have been associated to inefficiency, unreliability, corruption, abuse, and a smaller scale of operations (Mueller, 1972, Manos & Yaron , 2007), which limits the growth of MFIs.

4.4.2.4 Testing the Effect of Income Diversification on Financial Sustainability.

Income diversification was the moderating variable. According to Baron and Kenny (1986) it is important to ensure that the moderator has an effect on the dependent

variable before interacting it with the predictor variable to test for moderation. Consequently, the study performed this test by regressing financial sustainability on income diversification while controlling for the predictor variables and the control variables as presented in Model 3. The Hausman test supported the use of random effect regression and the results are presented in Table 20 below. The overall R^2 indicates that income diversification had an effect on financial sustainability of MFIs (β= 0.346, ρ<0.05). The overall model accounts for 43.2 %, which was an increase in R^2 of 1.48% from the direct effect (model 2) that explains 41.72% change in financial sustainability in MFIs. The Wald chi2(9) =223.12 and the Prob > chi2= 0.0000 confirms the validity of the estimation model.

Table 19

Regression of OSS on financial structure and income diversification-Model 3

Random-effects GLS regression	Number of obs	=	320
Group variable: ID	Number of groups	=	32
R-sq: within = 0.4320	Obs per group: min	=	10
between = 0.4990	Avg	=	10.0
overall = 0.4786	Max	=	10
	Wald chi2(9)	=	239.77
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.04404	.0243216	1.81	0.070	-.0036296	.0917095
FS	.0498203	.0186645	2.67	0.008	.0132386	.0864019
PAR>30	-.2947149	.0793395	-3.71	0.000	-.4502174	-.1392124
ALS	.1172264	.0347788	3.37	0.001	.0490611	.1853916
DNTA	-.6753303	.1549824	-4.36	0.000	-.9790902	-.3715703
DTE	-.1629565	.0469389	-3.47	0.001	-.2549551	-.0709579
DTA	.3424157	.0629109	5.44	0.000	.2191126	.4657188
ETA	.1858459	.0490293	3.79	0.000	.0897502	.2819415
IND	.346279	.1088563	3.18	0.001	.1329246	.5596335
sigma_u	.15733231					
sigma_e	.10040797					
Rho	.71058712	(Fraction of variance due to u_i)				

4.3.2.5 Testing the Moderating Hypotheses

The main objective of the study was to examine whether income diversification moderates the relationship between financial structure and financial sustainability of MFIs in Kenya. This objective was decomposed into four sub-hypotheses to take care of the four dimensions of financial structure that comprised of deposits, debt, equity and donations. Following Baron and Kenny (1986) the interaction terms were entered into

the regression model in a sequential manner, from model 4 to model 7 as earlier discussed in the model specification.

These hypotheses were tested using the results of model 7 and the preferred panel data estimation model was the random effect as supported by the Hausman test results across the seven regression models. The moderating effect was tested by examining the beta coefficients of the interaction term and through the aid of modgraphs. A summary for the regression results (from model 1 to model 7) and the respective hypotheses were tested as follows:

The moderating effect of income diversification on the relationship between deposits and financial sustainability of MFIs

In model 4, the interaction term of income diversification and the ratio of deposits to total asset were entered. The regression results of Model 4 are presented in table 21 below. The table indicate that the R^2 of the model was 44.03% approximately 0.83% Δ in R-squared. While the Wald chi2(10) = 251.95 and the Prob > chi2= 0.0000 demonstrates the validity of the estimation model. The beta coefficients of the interaction term were positive and significant $\beta = .098$ $p < 0.05$ thus null hypothesis was rejected. These findings found that income diversification did moderate the relationship between deposits and financial sustainability among MFIs in Kenya.

Mobilising deposits is an essential aspect of the MFI's operations. It serves as a crucial source of operational funds for the bank. Enhancing deposit mobilisation is crucial for MFIs to broaden their funding channels and enhance their operational effectiveness in serving customers. Efficiently mobilising deposits is crucial for ensuring the provision of satisfactory services to all sectors of the economy. The efficacy of the finance industry heavily relies on the efficient accumulation of deposits.

MFIs' performance is dependent on deposits, which are often regarded as a cost-efficient method of acquiring working capital. Deposits are classified into various kinds, each having a distinct maturity date and corresponding interest rates. The ability to accumulate deposits is contingent upon the cost associated with acquiring these deposits.

The mobilisation of deposits is crucial for microfinance institutions (MFIs), akin to the necessity of oxygen for human beings. Banks implement cost reduction initiatives and strive to attract low-cost deposits to improve their profitability. The given citation is Sylvester (2010).

Microfinance institutions (MFIs) can enhance their ability to attract additional deposits and generate higher value for depositors by implementing income diversification strategies, as depositors expect a financial return on their deposited funds.

Table 20

Introducing the first interaction term-Model 4

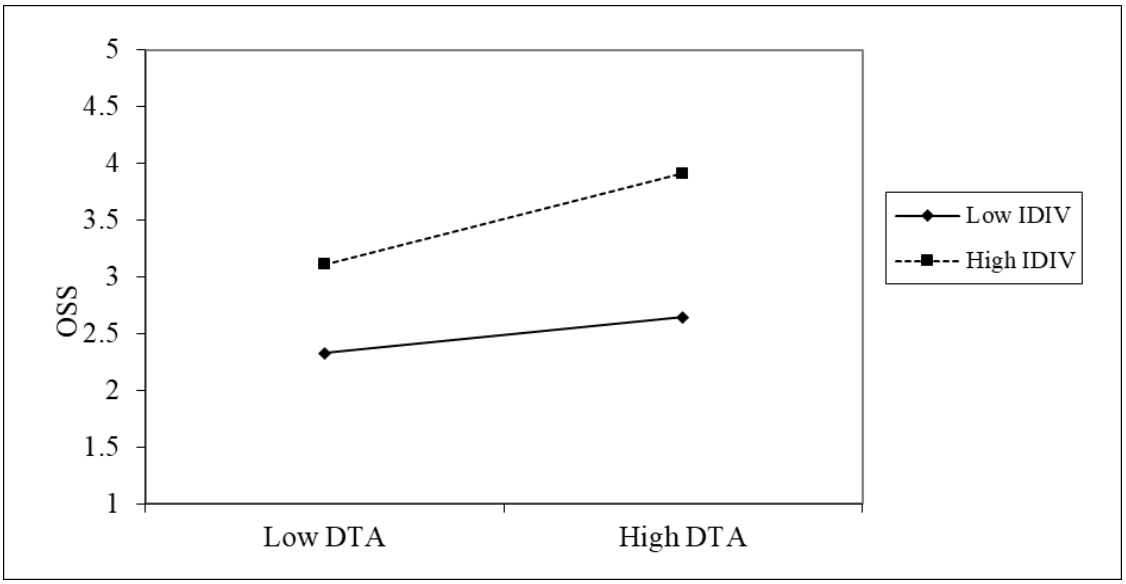
Random-effects GLS regression	Number of obs	=	320
Group variable: ID	Number of groups	=	32
R-sq: within = 0.4403	Obs per group: min	=	10
between = 0.5297	Avg	=	10.0
overall = 0.5049	Max	=	10
	Wald chi2(10)	=	251.95
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0469137	.0238552	1.97	0.049	.0001582	.0936691
FS	.050999	.0185204	2.75	0.006	.0146997	.0872983
PAR>30	-.2640735	.0800733	-3.30	0.001	-.4210143	-.1071327
ALS	.1119548	.0340456	3.29	0.001	.0452266	.178683
DNTA	-.5974255	.1572331	-3.80	0.000	-.9055968	-.2892542
DTE	-.1479728	.0467779	-3.16	0.002	-.2396558	-.0562897
DTA	.3229085	.0617974	5.23	0.000	.2017878	.4440293
ETA	.1947951	.0488392	3.99	0.000	.0990721	.2905181
IND	.3729415	.1086531	3.43	0.001	.1599853	.5858977
DTA*IND	.0980697	.0378339	2.59	0.010	.0239166	.1722228
_cons	.0362994	.1752479	0.21	0.836	-.30718	.3797789
sigma_u	.14086687					
sigma_e	.09963523					
Rho	.66654482	(fraction of variance due to u_i)				

In addition, the modgraph shown in figure 8 below, reveals an enhancing moderating effect of income diversification on the relationship between deposits and financial sustainability of MFIs. At high level of deposits financial sustainability increases with all levels of income diversification. However, low deposits mobilization decreases financial sustainability with all levels of income diversification. The modgraph below demonstrates influence of income diversification on the relationship between deposits to assets ratio and financial sustainability;

Figure 8

Modgraph for Income Diversification on the Relationship between deposits to assets ratio and Financial Sustainability



The moderating effect of income diversification on the relationship between debt and financial sustainability of MFIs

In model 4, the interaction term of income diversification and the ratio of deposits to total asset were entered. The regression results of Model 4 are presented in table 21 below. The table indicate that the R^2 of the model was 44.03% approximately 0.83% Δ in R-squared. While the Wald chi2(10) = 251.95 and the Prob > chi2= 0.0000 demonstrates the validity of the estimation model. The beta coefficients of the interaction term were positive and significant β= .098 $p < 0.05$ thus null hypothesis was rejected. These findings found that income diversification did moderate the relationship between deposits and financial sustainability among MFIs in Kenya.

Mobilising deposits is an essential aspect of the MFI's operations. It serves as a crucial source of operational funds for the bank. Enhancing deposit mobilisation is crucial for MFIs to broaden their funding channels and enhance their operational effectiveness in serving customers. Efficiently mobilising deposits is crucial for ensuring the provision of

satisfactory services to all sectors of the economy. The efficacy of the finance industry heavily relies on the efficient accumulation of deposits.

MFIs' performance is dependent on deposits, which are often regarded as a cost-efficient method of acquiring working capital. Deposits are classified into various kinds, each having a distinct maturity date and corresponding interest rates. The ability to accumulate deposits is contingent upon the cost associated with acquiring these deposits.

The mobilisation of deposits is crucial for microfinance institutions (MFIs), akin to the necessity of oxygen for human beings. Banks implement cost reduction initiatives and strive to attract low-cost deposits to improve their profitability. The given citation is Sylvester (2010).

Microfinance institutions (MFIs) can enhance their ability to attract additional deposits and generate higher value for depositors by implementing income diversification strategies, as depositors expect a financial return on their deposited funds.

Table 19

Introducing the First Interaction Term-Model 4

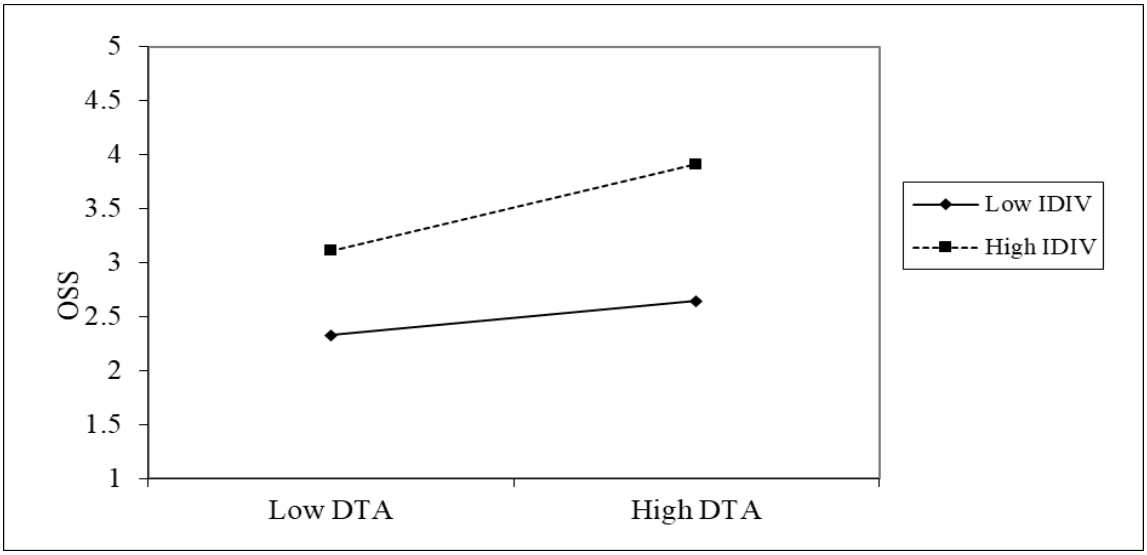
Random-effects GLS regression	Number of obs	=	320				
Group variable: ID	Number of groups	=	32				
R-sq: within = 0.4403	Obs per group: min	=	10				
between = 0.5297	Avg	=	10.0				
overall = 0.5049	Max	=	10				
	Wald chi2(10)	=	251.95				
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000				
OSS	Coef.		Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0469137		.0238552	1.97	0.049	.0001582	.0936691
FS	.050999		.0185204	2.75	0.006	.0146997	.0872983
PAR>30	-.2640735		.0800733	-3.30	0.001	-.4210143	-.1071327
ALS	.1119548		.0340456	3.29	0.001	.0452266	.178683
DNTA	-.5974255		.1572331	-3.80	0.000	-.9055968	-.2892542
DTE	-.1479728		.0467779	-3.16	0.002	-.2396558	-.0562897
DTA	.3229085		.0617974	5.23	0.000	.2017878	.4440293
ETA	.1947951		.0488392	3.99	0.000	.0990721	.2905181
IND	.3729415		.1086531	3.43	0.001	.1599853	.5858977
DTA*IND	.0980697		.0378339	2.59	0.010	.0239166	.1722228
_cons	.0362994		.1752479	0.21	0.836	-.30718	.3797789
sigma_u	.14086687						
sigma_e	.09963523						
Rho	.66654482		(fraction of variance due to u_i)				

In addition, the modgraph shown in figure 8 below, reveals an enhancing moderating effect of income diversification on the relationship between deposits and financial

sustainability of MFIs. At high level of deposits financial sustainability increases with all levels of income diversification. However, low deposits mobilization decreases financial sustainability with all levels of income diversification. The modgraph below demonstrates influence of income diversification on the relationship between deposits to assets ratio and financial sustainability;

Figure 9

Modgraph for income diversification on the relationship between deposits to assets ratio and financial sustainability



The moderating effect of income diversification on the relationship between debt and financial sustainability of MFIs

In model 5, the interaction term of income diversification and the ratio of debt to equity was entered. The regression results of model 5 are presented in table 22 below. The table shows that the overall R2 of the model was 49.87 % approximately 5.84 % Δ in R-squared from model 4. While the Wald chi2(11) =331.07 and the Prob > chi2= 0.0000 demonstrates the validity of the estimation model. The interaction term had a negative effect on financial sustainability of MFIs (β= -.241, P < 0.05). Therefore, these findings

suggested that income diversification significantly moderate the relationship between debt capital and financial sustainability.

Empirical research has shown that the evaluation of an institution's financial health is closely linked to its capital structure. However, it is important to note that the corporate strategic decisions can have an impact on the capital structure (Goddard et al., 2008; Margaritis and Psillaki, 2010). This implies that both financial decision and strategic choice are made concurrently. The impact of diversification on capital structure can be elucidated by the coinsurance effect (Lewellen, 1971), transaction costs (Kochhar and Hitt, 1998), and agency costs (Kochhar, 1996; Jensen, 1986). Kochhar and Hitt (1998) verify that corporate strategy can serve as a foundation for comprehending the decision-making process behind capital structure. The implementation of a diversification strategy exacerbates the agency difficulties that are linked to debt, such as asset substitution, as stated by Jensen and Meckling in 1976. Therefore, if managers prioritise the interests of shareholders, they are likely to opt for diversification as a means to accomplish the established objectives (Jensen, 1986).

Financial entities generally own a greater amount of liquid assets compared to non-financial firms, enabling them to promptly modify their leverage in comparison to non-financial enterprises (Memmel and Raupach, 2010). In addition, financial institutions are subject to regulatory restraints that mandate them to maintain a certain amount of capital and impose a maximum limit on their leverage ratio (Schandlbauer, 2014). By diversifying their income, MFIs can effectively utilise additional financial resources to achieve financial sustainability. Furthermore, leverage can limit the freedom of managers to make investment decisions. However, a diversification can counterbalance the impact of leverage on investment by giving managers the ability to allocate debt service as they see fit. Therefore, while the limitations of increased debt can be advantageous in

companies with limited growth prospects, a portion of this advantage may be diminished in a diversified organisation. In their study, McConnell and Servaes (1995) found that there is a positive link between leverage and value in low-growth organisations, while there is a negative link between leverage and value in high-growth firms. Therefore, it can deduce be deduced that the use debt capital through income diversification has a positive effect on MFIs financial sustainability.

Table 20

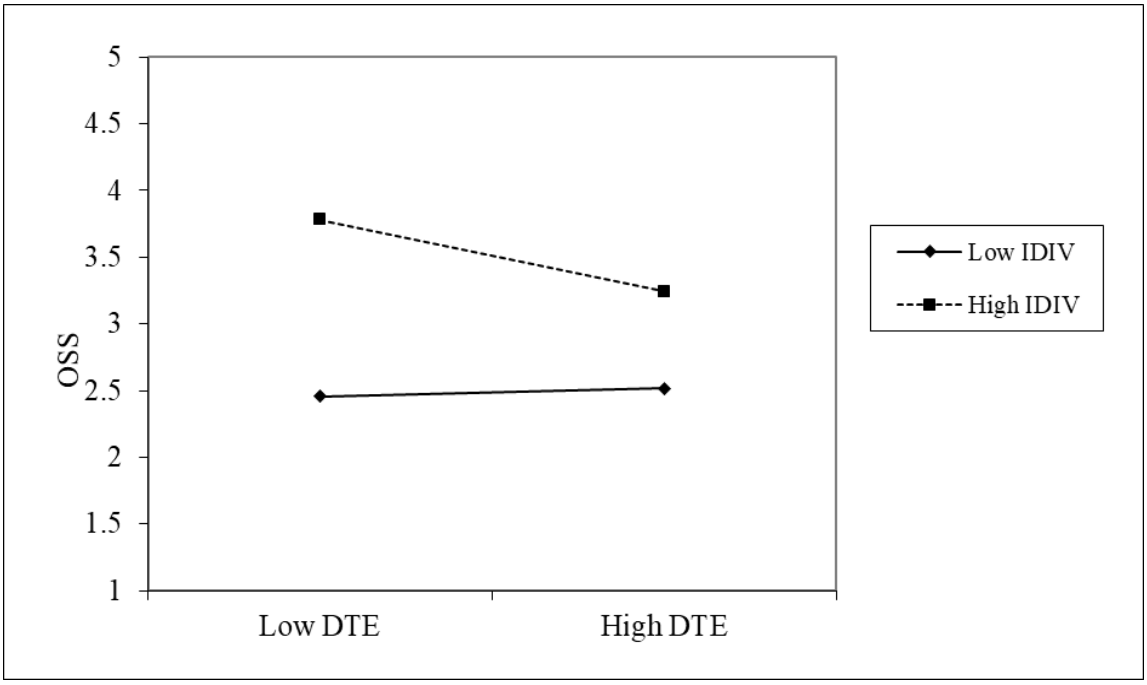
Introducing the Second Interaction Term-Model 5

Random-effects GLS regression	Number of obs	=	320			
Group variable: ID	Number of groups	=	32			
R-sq: within = 0.4987	Obs per group: min	=	10			
between = 0.6344	avg	=	10.0			
overall = 0.6012	max	=	10			
	Wald chi2(11)	=	331.07			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000			
OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0339952	.0222662	1.53	0.127	-.0096456	.0776361
FS	.0354606	.0174864	2.03	0.043	.0011879	.0697333
PAR>30	-.2748425	.0752509	-3.65	0.000	-.4223315	-.1273535
ALS	.0942599	.0317289	2.97	0.003	.0320724	.1564473
DNTA	-.4415631	.1498033	-2.95	0.003	-.7351722	-.147954
DTE	-.1160841	.0440615	-2.63	0.008	-.2024429	-.0297252
DTA	.2316642	.0589371	3.93	0.000	.1161495	.3471788
ETA	.1599319	.0462988	3.45	0.001	.0691879	.2506758
IND	.3309761	.1024857	3.23	0.001	.1301077	.5318444
DTA*IND	.1406743	.0361915	3.89	0.000	.0697403	.2116083
DTE*IND	-.2407639	.0365867	-6.58	0.000	-.3124726	-.1690553
_cons	.2934324	.1665461	1.76	0.078	-.0329919	.6198566
sigma_u	.12530426					
sigma_e	.09459412					
Rho	.63698435 (fraction of variance due to u_i)					

The findings in figure 9 below shows a buffering moderating effect since at the low level of debt capital and high level of income diversification leads to more financial sustainability.

Figure 10

Modgraph for Income Diversification on the Relationship between Debt to Equity Ratio and Financial Sustainability



The Moderating Effect of income Diversification on the Relationship Between Equity and Financial Sustainability of Mfis

In model 6, the interaction term of income diversification and the ratio of equity to assets was entered. The regression results of model 5 are shown in table 23 below. The overall R2 of the model was 52.69 % approximately 2.82 % Δ in R-squared. While the The Wald chi2(12) =373.46 and the Prob > chi2= 0.0000 demonstrates the validity of the estimation model. The interaction term had an estimated positive beta coefficient of 0.159; $p<0.05$. Based on the finding, income diversification had a positive moderating effect on the relationship between equity capital and financial sustainability. The

findings in figure 10 show enhancing effect on the moderating effect of income diversification on the relationship between equity and financial sustainability of MFIs. At high level of equity financial sustainability increases with all levels of income diversification.

Extensive research has been carried out on the subject of diversification, focusing specifically on the strategic allocation of newly acquired resources by a corporation. Implementing income diversification can be costly and usually requires significant resources, whether they are acquired internally or from external sources. Engaging in diversification within related activities leads to the acquisition of more specialised assets, whereas unrelated diversification entails acquiring assets that are less specific to the company.

High degree of specialization implies that potential fund providers may incur significant costs in the course of the firm's bankruptcy. Lenders face a greater expected decline in value because they have limited control over managerial actions. Conversely, unrelated diversification decreases the projected loss for possible lenders due to its lower level of specificity. Equity investors possess the capacity to constantly examine and evaluate managerial activity. Equity financing is the optimal option for related diversification, whereas debt financing is better suited for unrelated diversification. The composition of a company's capital is affected by the firm's resource attributes, which are partially dictated by its strategy of diversification. The results of this study support the transaction cost theory of capital structure in diversified firms.

Table 21

Introducing the Third Interaction Term-Model 6

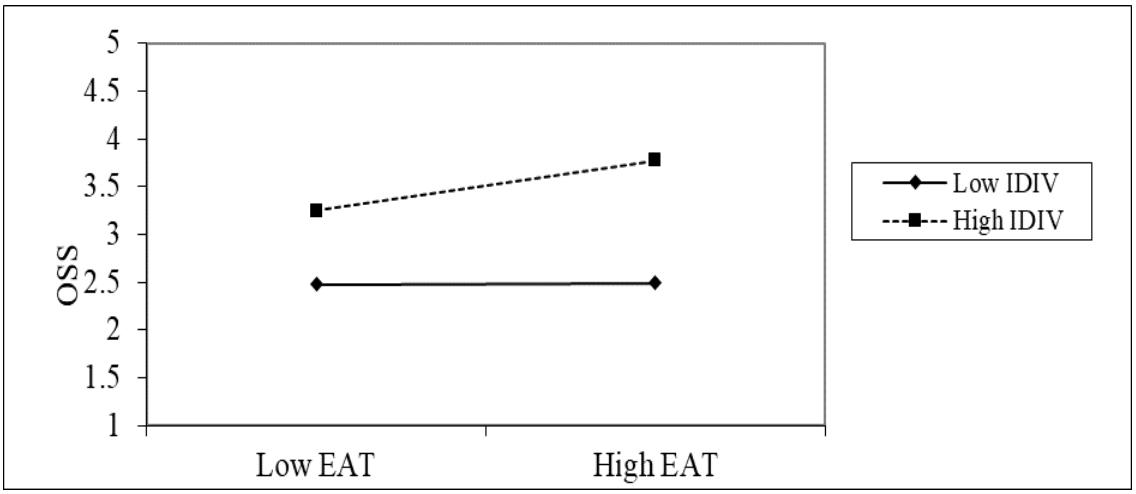
Random-effects GLS regression	Number of obs	=	320
Group variable: ID	Number of groups	=	32
R-sq: within = 0.5269	Obs per group: min	=	10
between = 0.6719	avg	=	10.0
overall = 0.6356	max	=	10
	Wald chi2(12)	=	373.46
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0194391	.0216884	0.90	0.370	-.0230694	.0619475
FS	.0340857	.0169466	2.01	0.044	.0008711	.0673003
PAR>30	-.2560405	.0732807	-3.49	0.000	-.399668	-.112413
ALS	.0992829	.0305255	3.25	0.001	.039454	.1591118
DNTA	-.4241381	.1457877	-2.91	0.004	-.7098767	-.1383996
DTE	-.1011545	.0428043	-2.36	0.018	-.1850495	-.0172596
DTA	.210239	.0568767	3.70	0.000	.0987627	.3217152
ETA	.1422618	.0452598	3.14	0.002	.0535543	.2309694
IND	.3490515	.099751	3.50	0.000	.1535432	.5445598
DTA*IND	.1492508	.0352921	4.23	0.000	.0800796	.2184221
DTE*IND	-.1953532	.0371639	-5.26	0.000	-.2681931	-.1225132
ETA*IND	.1586533	.0357243	4.44	0.000	.0886351	.2286716
_cons	.3381032	.1600552	2.11	0.035	.0244008	.6518056
sigma_u	.11550742					
sigma_e	.0920775					
Rho	.6114493	(fraction of variance due to u_i)				

The findings demonstrated in figure 10 below shows buffering moderating effect since at the high equity to total assets and high level of income diversification leads to more financial sustainability.

Figure 11

Modgraph for income diversification on the relationship between equity to assets ratio and financial Sustainability



The moderating effect of income diversification on the relationship between donations and financial sustainability of MFIs

In model 7, the interaction term of income diversification and the ratio of donations to assets was added into the regression model and the results presented in table 24 below. This was also the final model, with all the independent variables, the controls, the moderating variable and all the interaction terms. The overall R^2 of the model was 54.16 % approximately 1.47% Δ in R-squared. While the The Wald chi2(13) of 390.71and the Prob > chi2= 0.0000 demonstrates the validity of the estimation model. The interaction term had an estimated positive beta coefficient of 0.118, $p<0.05$.

These findings suggested that donations lead to decline in financial sustainability however when moderated with income diversification the direction change to enhancing financial sustainability among microfinance institutions in Kenya. Securing funding for Microfinance Institutions (MFIs) can be difficult, especially due to the vulnerability of MFIs to significant revenue uncertainties caused by variations in the business cycle, intensified competition, and a decrease in donations and government subsidies. Ensuring

consistent income is crucial for Microfinance Institutions (MFIs) to sustain their financial viability. Revenue stability can be influenced by the diversification of revenue sources. Microfinance institutions (MFIs) depend on a combination of three kinds of revenue: interest income and non-interest income. Organisations excessively dependent on contributions, such as the one mentioned, may exhibit greater vulnerability to economic downturns compared to organisations with a more diverse funding base. Engaging in income diversification can greatly enhance financial stability and reduce reliance on donations.

There are numerous justifications for the implementation of a diversification strategy in revenue sources within MFIs. The reasons for choosing several and varied options for capital input by these companies are based on two basic assumptions. One pertains to the comprehensive examination of matters regarding the independence and autonomy of MFIs in carrying out their social mission, while the other focuses on guaranteeing their financial viability. It is important to emphasise that the organisations analysed have two closely interconnected reasons for diversifying their revenue. This diversification is aimed at limiting risk and reducing dependence on financial sources (Mikołajczak, 2017). MFIs exhibit greater intricacy and adaptability, possessing distinct principles and incentives for their operations, in comparison to other profit-driven organisations. They actively engage in identifying the issues affecting both the local and national population. This scope is often global, as well. It is crucial, particularly in the context of carrying out independent acts and achieving self-determined goals, which the organisation was created for (Froelich, 1999). By diversifying its funding sources, an organisation can reduce its dependence on public and private contributors, particularly when one donor dominates in terms of capital contributions. Consequently, it enhances the independence of organisations in carrying out their public objectives and simultaneously reduces the

likelihood of MFIs/managers being influenced to alter or abandon the organization's priorities (Frumkin & Keating, 2011).

Table 22

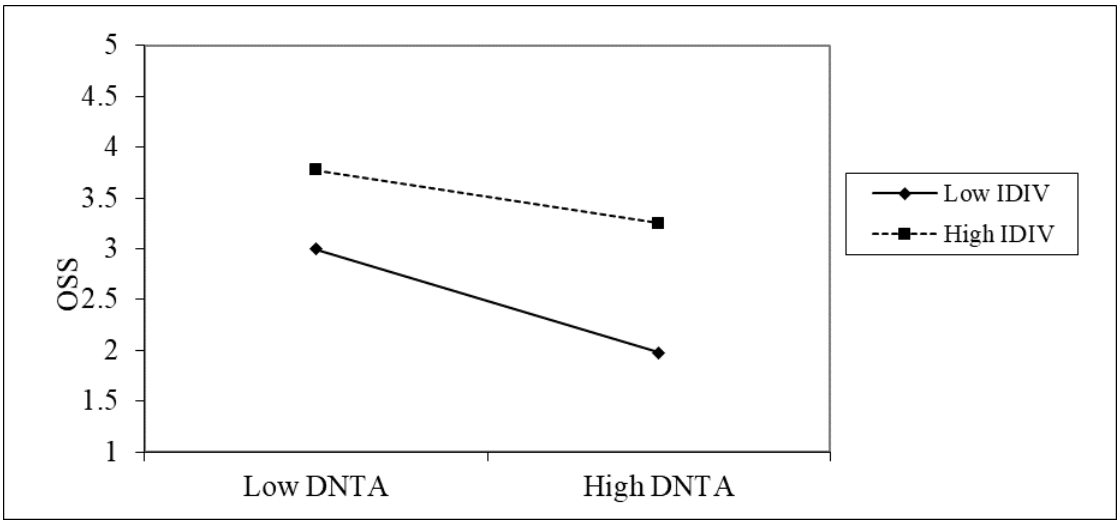
Introducing the Fourth Interaction Term-Model 7

Random-effects GLS regression	Number of obs	=	320			
Group variable: ID	Number of groups	=	32			
R-sq: within = 0.5416	Obs per group: min	=	10			
between = 0.6714	avg	=	10.0			
overall = 0.6396	max	=	10			
	Wald chi2(13)	=	390.71			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000			
OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0159431	.0215404	0.74	0.459	-.0262752	.0581615
FS	.0417263	.0169166	2.47	0.014	.0085704	.0748823
PAR>30	-.2557121	.0723052	-3.54	0.000	-.3974278	-.1139965
ALS	.0942316	.0303476	3.11	0.002	.0347513	.1537119
DNTA	-.344645	.1462576	-2.36	0.018	-.6313045	-.0579854
DTE	-.1139162	.0425172	-2.68	0.007	-.1972484	-.0305839
DTA	.215946	.0564288	3.83	0.000	.1053476	.3265444
ETA	.1482448	.0446832	3.32	0.001	.0606674	.2358222
IND	.5590245	.1211206	4.62	0.000	.3216325	.7964165
DTA*IND	.1437169	.0348013	4.13	0.000	.0755076	.2119263
DTE*IND	-.1750989	.0371977	-4.71	0.000	-.248005	-.1021928
ETA*IND	.1441274	.0354912	4.06	0.000	.0745659	.2136889
DNTA*IND	.1183976	.0393452	3.01	0.003	.0412824	.1955128
_cons	.2262686	.1630521	1.39	0.165	-.0933076	.5458449
sigma_u	.11730597					
sigma_e	.09070435					
Rho	.62582814	(fraction of variance due to u_i)				

The findings shown in figure 11 below shows antagonistic effects on the moderating effect of income diversification on the relationship between donations and financial sustainability. When there is lower donor support financial sustainability increases compared to high donations received by MFIs at all levels of income diversification. On the other hand, when there are high donations financial sustainability decline at all levels of income diversification. Therefore, findings show antagonist effects on the moderating role of income diversification between donations and financial sustainability.

Figure 12

Modgraph for income diversification on the relationship between donations to assets ratio and Financial Sustainability



4.3.2.6 Summary Hypothesis Testing

A summary on how the hypotheses were tested is provided in table 25 below. The tables show the hypothesis, the beta coefficient, the p-value and the decision.

Table 23

Summary of Hypotheses Testing

Hypotheses	B	P<0.05	Decision
$H0_1$: Deposit has no statistically significant effect on financial sustainability among microfinance institution in Kenya.	0.349	0.000	rejected
$H0_2$: Debt has no statistically significant effect on financial sustainability among microfinance institution in Kenya.	-0.187	0.001	rejected
$H0_3$: Equity has no statistically significant effect on financial sustainability among microfinance institution in Kenya.	0.186	0.005	rejected
$H0_4$: Donations has no statistically significant effect on financial sustainability among microfinance institution in Kenya	-0.711	0.004	Rejected
$H0_{5a}$: Income diversification does not moderate the relationship between deposits and financial sustainability among microfinance institution in Kenya	0.098	0.000	Rejected
$H0_{5b}$: Income diversification does not moderate the relationship between debt and financial sustainability among microfinance institution in Kenya	-0.24	0.012	rejected
$H0_{5c:}$ Income diversification does not moderate the relationship between equity and financial sustainability among microfinance institution in Kenya	0.159	0.008	Rejected
$H0_{5d}$: Income diversification does not moderate the relationship between donations and financial sustainability among microfinance institution in Kenya	0.118	0.000	Rejected

Table 26

Summary of Regression Results

	Model 1 Coef. (Std. Err.)	Model 2 Coef. (Std. Err.)	Model 3 Coef. (Std. Err.)	Model 4 Coef. (Std. Err.)	Model 5 Coef. (Std. Err.)	Model 6 Coef. (Std. Err.)	Model 7 Coef. (Std. Err.)
_cons	-.103(0.175)	0.4172	.080(0.178)	.036(0.175)	.126(0.205)**	0.189(0.200)**	.028(0.204)
BOUT	.057(0.028)**	.041(0.025)	.044(0.024)	.047(0.024)**	.044(0.27)	.027(0.026)	.027(0.026)
FS	.067(0.021)**	.068(0.018)**	.050(0,019)**	.051(0.019)**	.051(0.019)**	.048(0.019)**	.059(0.019)**
PAR>30	-.313(0.094)**	-.303(0.080)**	-.295(0.079)**	-.264(0.080)**	-.249(0.079)**	-.233(0.077)**	-.235(0.075)**
ALS	.198(0.040)**	.115(0.035)**	.117(0.035)**	.112(0.034)**	.089(0.038)**	.096(0.037)**	.094(0.036)**
DNTA		-.711(0.157)**	-.675(0.155)**	-.597(0.157)**	-.470(0.154)**	-.462(0.150)**	-.388(0.150)**
DTE		-.187(0.047)**	-.163(0.047)**	-.148(0.047)**	-.122(0.048)**	-.105(0.047)**	-.120(0.046)**
DTA		.349(0.064)**	.342(0.063)**	.323(0.062)**	.280(0.069)**	.274(0.067)**	.280(0.066)**
ETA		.186(0.050)**	.186(0.049)**	.195(0.049)**	.139(0.048)**	.123(0.047)**	.131(0.046)**
IND			.346(0.109)**	.373(0.109)**	.278(0.105)**	.292(0.103)**	.512(0.124)**
DTA*IND				.098(0.038)**	.122(0.037)**	.127(0.036)**	.123(0.035)**
DTE*IND					-.213(0.038)**	-.172(0.038)**	-.149(0.038)**
ETA*IND						.159(0.036)**	.129(0.036)**
DNTA*IND							.118(0.040)**
sigma_u	.182	.158	.157	.141	.149	.141	.143
sigma_e	.121	.102	.100	.100	.095	.092	.091
Rho	.693	.707	.711	.667	.713	.701	.714
R-squared	0.1605	0.4172	0.4320	0.4403	0.4987	0.5269	0.5416
△ R-square	-	0.2567	0.0148	0.0083	0.0584	0.028	0.0147
F/chi2	68.08	223.12	18.34	251.95	331.07	373.46	390.71
Prob >F/chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
chi2	4.60	4.65	15.67	4.79	30.08	79.14	91.92
Prob>chi2	0.331	0.794	0.074	0.905	0.000	0.000	0.000

**significant at 0.05 level; figures in parenthesis are std .error.*

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, conclusions derived from the findings, and the recommendations.

5.2 Summary of Findings and Discussion

The general objective of the study was to determine whether income diversification moderates the relationship between financing structure and financial sustainability among microfinance institutions in Kenya. The study found that financing structure is significant determinant of financial sustainability among microfinance institutions in Kenya.

The study targeted a population of 53 MFIs in Kenya, however only 32 were studied due to availability of complete data. The study used panel data for the period from 2010 to 2019. Diagnostic tests were conducted to ascertain whether the panel data met the assumptions of the regression model. The findings indicated that there was no violation of the assumption of normality, homoscedasticity, multicollinearity, unit root and autocorrelation.

5.2.1 Deposits on Financial Sustainability of Micro finance in Kenya

MFI deposits as a source of funding have largely been unexplored in the arena despite its importance. Thus, the first objective sought to examine the effect of deposits on financial sustainability among microfinance institutions in Kenya. Findings showed that deposit had coefficients of the estimate which were significant and had positive effect on financial sustainability among microfinance institutions in Kenya ($\beta = 0.349$ $p<0.05$). The study found that the deposits mean was (0.447) indicating an average level to assets.

The positive beta suggests that by increasing mobilization of deposits, MFIs have a higher chance of attaining financial sustainability.

5.2.2 Debt Capital on Financial Sustainability of Micro finance in Kenya

MFIs are gradually moving towards commercial borrowing to support their operations. Thus, the second objective sought to examine the effect of debt on financial sustainability among microfinance institutions in Kenya. Findings showed that debt capital had coefficients of the estimate which were significant and had negative effect on financial sustainability among microfinance institutions in Kenya ($\beta = -0.187$ $p<0.05$). The study found that the mean was 2.859, suggesting high leverage. Therefore, reducing over dependence on commercial debt and going for alternative financing (for instance retained earnings and equity), MFIs can achieve financial sustainability because debt financing is associated with increased obligations such as repayment of principal and interest and other restrictive covenants.

5.2.3 Equity on Financial Sustainability of Micro finance in Kenya

Just like banks, MFIs must maintain a minimum amount of capital to meet their liquidity obligations and comply with regulatory requirements. Thus, the third objective sought to examine the effect of equity on financial sustainability among microfinance institutions in Kenya. The study found that equity had a mean of 0.328 and a significant and positive effect on financial sustainability among microfinance institutions in Kenya ($\beta= 0.187$, $\rho <0.05$). The lower equity mean clearly shows that MFIs are undercapitalized. The findings therefore point to the need for increased mobilization of owners' equity to improve financial sustainability.

5.2.4 Donations on Financial Sustainability of Micro finance in Kenya

The fourth objective sought to determine the effect of donations on financial sustainability among microfinance institutions in Kenya. The study found that donations had a mean of 0.008 and a negative and significant effect on financial sustainability among microfinance institutions in Kenya (β= -0.711, ρ <0.05). The mean value at 0.8% is very low and insignificant which clearly indicates that most MFIs are not relying on donor funding. The regression results is a further indicator that donor funding impair MFIs financial sustainability. Consequently, there is need to reduce dependence on donor funds or external financing to enhance long term sustainability of the MFIs.

5.2.5 Moderating effect of Income Diversification on the Relationship between Financial Structure and Financial Sustainability of Micro finance

The general objective was to establish whether income diversification moderates the relationship between financing structure and financial sustainability. Therefore, the study analysed the effect of income diversification on financing structure. The findings showed that the effect of income diversification on financing structure (R^2 of 43.3%) was significant and positive on financial sustainability of MFIs in Kenya.

5.2.5.1 The Moderating effect of Income Diversification on the relationship between Deposit and Financial Sustainability of Micro finance in Kenya

There was negative and significant moderating effect of income diversification on the relationship between deposits and financial sustainability (β = 0.098, ρ<0.05), implying that the impact of deposits on financial sustainability of MFIs in Kenya is more pronounced for MFIs with high level of income diversification.

5.2.5.2 The Moderating effect of Income Diversification on the relationship between Debt and Financial Sustainability in Kenya

Income diversification had a negative and significant moderating effect on the relationship between debt capital and financial sustainability (β= -0.24, ρ< 0.05). Based on the findings, the interaction between debt capital and non-interest earning activities is likely to impact negatively on the financial sustainability of the microfinance institutions.

5.2.5.3 The Moderating effect of Income Diversification on the relationship between Equity and Financial Sustainability of Microfinance Institutions in Kenya

There was positive and significant moderating effect of income diversification on the relationship between equity and financial sustainability (β = 0.159, ρ< 0.05). The findings revealed that the impact of equity financing on MFIs financial sustainability will be more beneficial as they engage more in non-lending activities.

5.2.5.4 The moderating effect of Income Diversification on the relationship between Donation and Financial Sustainability of Microfinance Institution in Kenya

The donations had a positive and significant moderating effect of income diversification on the relationship between donations and financial sustainability (β = 0.118, ρ< 0.05). Going by the findings the study claims that the relationship between donations and financial sustainability can be profitable if the MFIs diversify into other income generating activities. Arguably, income diversification may lower the information asymmetry or inefficiencies associated with donations.

5.3 Conclusions

The study sought to determine the moderating effect of income diversification on relationship between financing structure and financial sustainability among microfinance

institutions in Kenya. Based on the findings, the study concluded that financing structure has a significant and positive influence on MFIs financial sustainability in Kenya.

The relationship between deposits and financial sustainability stands out as positive and quite significant. MFIs should develop strategies aimed at increasing deposit mobilization. Deposits provide a cheaper source of finance and MFIs should focus on growth of customer savings to attain self-finance, independence and long-term financial self-sufficiency. The positive association between deposits and financial sustainability of MFIs communicates to establishment of measures aimed at lessening regulatory costs associated with deposit attraction by the Kenyan MFIs to enhance the role of deposits in stimulating financial sustainability.

In establishing the influence of debt on financial sustainability of MFIs, the study revealed that most of the institutions were highly leveraged, indicating over reliance on commercial debt. This poses risk on financial sustainability because debt capital brings in liquidity and cash flow pressure associated with loan repayments and other financial obligations. Some commercial debts may include binding covenants that could inhibit growth and business expansion. The study points to the fact that to enhance growth and sustainability, MFIs should minimize reliance on debt capital and consider other sources of funds such as equity capital and mobilization of customer deposits.

Considering the pecking order theory that suggests that debt is a cheaper external source of funding, it is noted that interest paid on debt is tax-deductible and lenders' expected returns are lower than those of equity investors (shareholders’ funds). However, this study concludes that MFIs should consider using debt for its operations where other cheaper sources of capital are not available. The MFIs should be cautious of the side effect of excessive leverage such as bankruptcy, debt covenants and financial distress.

On Equity Capital, the findings showed positive and significant effect on financial sustainability. The study revealed that most MFIs are undercapitalized and therefore calls for injection of more equity capital to enhance the MFIs capital base and improve on financial sustainability. Furthermore, the positive effect of equity capital on MFIs financial sustainability concludes that equity remains a viable financing option for MFIs. Equity capital is permanent to MFIs and helps to absorb credit risks while cushioning them during economic slowdown. It also provides a safeguard to accommodate unforeseen losses in difficult economic times and provide buffer to enable expansion and opening of new business outlets.

The negative relationship between donation and financial sustainability, implies that MFIs should target alternative sources of capital because donations have strings attached as donors require that MFIs meet certain conditions prior to the extension of donations. This may delay implementation of strategic business plans and impair long term sustainability. Furthermore, this conclusion is collaborated by the profit incentive theory (PIT) which argue that donor funding is limited in amount and cannot fund MFIs at mega scale given the increased demand for MFI loans.

From the findings, it is revealed that income diversification moderated the relationship between financing structure and financial sustainability of MFIs in Kenya. The study concluded that owing to stiff competition, declining interest income and soaring NPLs, MFIs should consider other revenues other than interest income to boost revenues to support growth and attain financial sustainability. Based on the moderating results, the study concluded that income diversification may enable MFIs leverage the various sources of financing to achieve operational and financial self-sufficiency.

5.4 Recommendations

5.4.1 Recommendations for Policy and Practice

Based on the positive impact of equity and deposits, management should consider utilizing the use of these funding options to attain financial sustainability. This incorporates devising broader ways to attract deposits which includes membership drives, providing incentive to depositors such attractive interest rate on deposits, as well as security for the saving. Also, collateralizing deposits can boost deposits. In addition, there is need for regulators to offer a favourable deposit ratio to MFIs to boost deposit mobilization. Also, the regulator should check on taxation regime touching on withholding taxes on income raised through savings/deposits to encourage saving culture among the MFI clients.

Over reliance on debt capital had a negative effect on MFIs. Debt has restrictive covenants, stringent conditionalities and financial distress associated with loan repayments. Therefore, it is necessary for MFIs to focus on mobilization of internal resources and deposits to attain financial sustainability. Regulators should explore ways of raising cheaper commercial loans for MFIs, which positively impact onward lending. This includes establishment of statutory financial institutions to fund MFIs which are socially driven owing to the socio-economic goals of MFIs. Also, the government should cushion MFIs from stringent collateral requirements, considering that most MFIs' clients are small scale borrowers without requisite collaterals or loan securities commonly demanded before extension of credit facilities.

Because of the positive influence of equity on sustainability of MFIs, there is need to strengthen equity financing. The shareholders should be encouraged to inject more equity for MFIs during their early years of establishment, contrary to the life cycle theory that presupposes the need for donor support. Equity financiers should support the MFIs

until they attain financial sustainability levels. Furthermore, for MFIs to expand, equity financing is more ideal because, unlike debt financing, it is permanent and there are no restrictive covenants. Also, there is need to have more socially conscious equity investor owing to uniqueness of MFIs to improve the livelihoods of socially disadvantaged persons in the society. To enhance accessibility to equity, the government should consider creating special capital markets for MFIs to issue their securities and attract more socially conscious investors.

The findings of this study revealed that use of donations is associated with decreased financial sustainability of MFIs. This implies that MFIs should not over rely on donations and funding from development agencies since these funds are associated with stringent conditions. MFIs should shift their focus away from donor funding and explore other sourcing of funding that are reliable, cheaper, long-term and with minimal restrictive covenants. However, the government should set favourable environment for socially conscious donors who can fund projects with socio-economical orientation that mainly target the most disadvantaged or the poorest in the society.

The study found that income diversification enhanced the effect of financial sustainability on MFIs. Therefore, efforts should be made by MFIs to diversify their income streams for financial sustainability. The connection between firm's diversification strategy, investments and financing decisions point to the need to explore other sources of revenue besides interest income. The positive influence of income diversification on financial structure strongly supports introduction of related businesses and supportive products such as co-insurance, transactional fees, agency commissions and other non-lending revenue streams.

While accelerating loan turnover and arranging loan maturities reasonably, MFIs should also innovate income diversification products, improve liquidity and revitalize

outstanding loans to reduce non-performing loans. Regulators should establish efficient policies that encourage diversification to non-lending activities within the MFIs operating scope which results in the improved financial health and long term financial sustainability of the firms.

This study contributes to the theory by establishing that financing structure influences financial sustainability of MFIs. Theoretically, the life cycle theory shows that MFIs funding strategies change across their life and thus donations are key during their early life of establishment. This study's findings show that the use of donation has a negative effect on MFIs sustainability. Based on this, the study recommends that donations should be left to those institutions primarily focused on social objectives, and perhaps the most vulnerable households. However, for commercial viability of MFIs, focusing on other funding strategies may help them attain sustainability. The profit incentive theory negates the need for donor funding due to its unavailability and restrictions. This study supports the PIT showing need to focus on profit maximization, operational cost control and proper portfolio management from the time of establishment and throughout the life cycle of the MFI.

As suggested by the pecking order theory, debt financing offers MFIs a leeway towards attaining financial sustainability owing to its low cost and availability compared to equity and other financing alternatives. The results of this study however point to the fact that MFIs should be cautious when taking commercial loans to finance its products because of the negative effects of debt on long term sustainability of the MFIs. Hence, the findings refute the theoretical arguments of the pecking order theory in terms of MFIs financing. Based on the findings, equity, retained earnings and deposits lead to better financial sustainability of MFIs. Hence, MFIs should focus on mobilizing these

sources of capital, which can cushion the firm during economic downturn and confront negative effects of financial distress.

The pecking order theory propose a hierarchy of financing from internal to equity according to the law of least effort and prefers equity as the last resort. The theory contends that retained earnings are cheaper than debt and debt cheaper than equity. Conversely, this study puts equity ahead of debt in MFIs financing. The study conflict the theory by confirming that corporate debt is riskier compared to equity in the context of MFIs. Hence, equity should be issued before debt. This can be explained by the uniqueness of MFIs operating environment, which requires both social and economic considerations. Furthermore, in the event that equity and deposits are unavailable then the MFIs can explore commercial debt as a last resort.

Theoretically, the life cycle theory shows that MFIs funding strategies change across their lives and thus donations are key during their early stages of establishment. However, this study's findings show that the use of donations has a negative effect on MFIs sustainability; hence contradicting the life cycle theory. This can be explained by the restrictive conditions and the decreasing level of donor funds over the years. The lifecycle theory seems to be overtaken by modern theories such as the profit incentives theory. Though, the theory may be relevant to non-profit MFIs focussed on the poorer segment and underprivileged persons in the society. Based on this, the study recommends that donations should be left to those institutions primarily focused on social objectives, and perhaps the most vulnerable persons in the society. However, for commercial viability of MFIs, focusing on other funding strategies that may help in attaining sustainability. The profit incentive theory negates the need for donor funding due to its unavailability and restrictions. This study therefore supports the PIT that points to a positive link between deposits and equity on financial sustainability of MFIs.

The study further found that income diversification moderates the relationship between financing structure and financial sustainability of microfinance institutions. These findings support the main assertions of the Markowitz's modern portfolio theory, that diversification mitigates risks and improves firm performance, hence better chances of attaining long-term sustainability. Therefore, MFIs which engage in non-interest business activities and income streams such as insurance, agency, fees and commissions, which are uncorrelated with interest income streams, can minimize risks associate with their main revenue lines. This fully supports the argument of Markowitz that perfectly uncorrelated assets and business activities have lower risk than the firm's aggregate risks.

5.4.2 Recommendations for Further Research

The main objective of this study was to determine the moderating effect of income diversification between financing structure and MFIs financial sustainability in Kenya. Further studies may consider the moderating effect of other variables such as corporate governance dimensions, regulatory operating environment and macro-economic factors. Additionally, future studies may examine the influence of other key factors such as board and management structures and disposal income among MFI clients in different geographical locations. Future studies could also expand the research scope to include sectors such as Community-based Financial Organizations (CBFOs), commonly known as "Chamas", insurance firms and Savings Credit Cooperative Societies (SACCOs) which offer similar MFI products so that their results can revalidate the findings of this study.

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APPENDICES

Appendix I: List of Micro Finance in Kenya

1. AAR Credit Services
2. Adok Timo
3. African Community Development Foundation
4. African Provident Limited t/a Real People Kenya
5. Bungoma Family Development Programme
6. Business Initiative and Management Assistance Services
7. Century Microfinance Bank Limited
8. Digital Resource Center Microfinance
9. Ebony Foundation
10. Equity Bank Kenya
11. Fadhili Africa Limited
12. Family Bank Limited
13. Faulu Microfinance Bank Limited
14. Greenland Fedha Ltd
15. Jamii Bora Kenya Ltd
16. Jitegemea Credit Scheme
17. Juhudi Kilimo LLC
18. Kenya Ecumenical Church Loan Fund
19. Kenya Entrepreneurship Empowerment Foundation
20. Kenya Post Office Savings Bank
21. Kenya Women Microfinance Bank Limited
22. Letshego Kenya Limited
23. Makao Mashinani Housing Microfinance Limited
24. Mayiana Investments Ltd
25. Milango Financial Services Ltd
26. Molyn Credit Limited
27. Musoni Kenya Ltd
28. Opportunity Kenya Ltd
29. Pamoja Women Development Programme
30. Platinum Credit

31. Rafiki Microfinance Bank Ltd
32. Remu DTM Ltd
33. Riverbank Credit Limited
34. Rupia Micro-Credit Limited
35. Rural Agency for Development
36. Samchi Credit
37. SEED Development Group
38. Sidian Bank Limited
39. SISDO
40. SMEP Microfinance Bank Limited
41. Springboard Capital Limited
42. Sumac Microfinance Bank
43. Taifa Option
44. U & I Microfinance Bank Limited
45. Ubiashara Kenya
46. Ufanisi Afrika
47. Unaitas
48. Uwezo Microfinance Bank Ltd
49. Vision Fund Kenya
50. Wakenya Pamoja Sacco Society Limited
51. Women Economic Empowerment Consort
52. Yehu Microfinance Trust
53. Youth Initiatives-Kenya

Appendix II: Trend Performance Analysis of Microfinance Institutions (Deposit Taking) in Kenya for the period 2018-2020

Figures Kshs 'Millions'

Microfinance Bank	**Net Profit (After Tax)**		
	Year 2018	**Year 2019**	**Year 2020**
Kenya Women MFB	(827)	(402)	(1,485)
Faulu MFB	181	312	(399)
Rafiki MFB	(192)	(3)	(42)
SMEP MFB	(22)	6	(69)
CARITAS MFB	(85)	(51)	5
Maisha MFB	(119)	(38)	65
U & I MFB	8	4	12
Sumac MFB	5	9	7
Remu MFB	(14)	(13)	(34)
Uwezo MFB	(27)	(31)	(18)
Century MFB	(25)	(43)	(60)
Daraja MFB	(32)	(32)	(40)
Muungano MFB	(15)	(15)	(15)
Choice MFB	(42)	(29)	(26)
Total	**(1,192)**	**(309)**	**(2,120)**

Source: *CBK Bank Supervision Annual Report (Years 2018 – 2020)*

Appendix III: Data Collection Schedule

Dependent variable

OSS= Ratio of Total Financial Revenue to Operating Expense

Independent Variables

(i) EQT = Equity capital (Ratio of owner's equity to total assets)

(ii) DBT= Debt capital (Ratio of total debt to total assets)

(iii) DEP = Deposits (ratio of deposit to total assets)

(iv) DON= Donations (ratio of grants to total assets)

MFI ID		Micro Finance Name	Fiscal Year	Gross Loan Portfolio Shs'000'	Total Assets Shs'000'	Total deposit Shs'000'	Equity Shs'000'	Donations Shs'000'	Debt to equity ratio	OSS
100124	1	RAFODE	2010	22,800	41,534	7,916,380	22,800	-	0.8	0.39
100170	2	Vision Fund	2010	413,100	691,800	223,243	272,000	99,427	1.6	0.47
100240	3	Kenya Faulu MFB	2010	3,007,000	4,307,000	1,995,433	652,000	-	5.6	0.91
100456	4	Equity Bank KENYA	2010	62,050,000	226,500,000	201,578,000	23,300,000	-	3.1	1.56
100550	5	KPOSB	2010	62,050,000	17,440,000	11,459,824	1,940,000	-	8.0	1.09
100609	6	Sidian Bank	2010	6,193,000	8,169,000	4,501,935	1,110,000	-	6.3	0.77
100731	7	SMEP MFB	2010	1,854,000	2,659,000	1,451,548	533,000	-	4.0	0.80
100829	8	KWFT MFB	2010	22,680,000	31,860,000	17,806,554	4,690,000	-	5.8	1.07
100853	9	Letshego KENYA	2010	689,100	739,800	204,628	118,000	-	2.8	1.27
100866	10	Opportunity	2010	437	715	233	120	3,215	1.8	0.86
101074	11	Kenya Jamii Bora	2010	387	858	364	238	-	1.4	0.78
101834	12	BIMAS	2010	400,700	537,900	201,981	184,000	-	1.9	1.24
101841	13	SISDO	2010	306,000	466,500	221,960	184,000	-	1.4	1.04
101926	14	Yehu	2010	271,100	486,700	137,833	105,000	-	1.3	1.02
102178	15	KEEF	2010	8,306	1,120,000	317,184	939	3,000	1.4	0.78
102337	16	PAWDEP	2010	657,400	703,600	524,674	63,547	-	0.9	1.01
102680	17	Family Bank	2010	21,890	42,818	33,312	4,425	-	8.7	1.13

104156	18	KENYA Juhudi Kilimo	2010	1,153,000	1,724,000	490,995	327,000	-	4.3	1.05
104401	19	ECLOF - KENYA	2010	451,300	779,800	205,633	176,000	-	3.0	1.05
114953	20	Musoni	2010	73,106	70,966	18,713	(7,509)	-	(10.5)	0.57
116001	21	Platinum Credit	2010	1,715,000	1,934,000	1,451,080	701,000	-	0.7	1.74
120086	22	Jitegemea Credit	2010	33,674	996	272	9,011	-	7.0	1.08
145988	23	Remu	2010	42,444	126,300	28,392	93,363	-	1.4	1.10
145989	24	Sumac MFB	2010	73,669	108,000	99,748	108,000	-	1.5	1.41
145992	25	Rafiki MFB	2010	4,438,000	7,729,000	4,191,436	1,040,000	-	6.4	1.03
145994	26	Uwezo MFB	2010	33,801	58,668	9,592	46,848	-	0.3	0.46
147609	27	Greenland Fedha	2010	2,085,000	2,221,000	363,133	409,000	-	5.9	1.43
152705	28	AAR Credit Services	2010	1,175	5,884	1,592	5,439	-	0.4	0.99
159492	29	Unaitas	2010	75,170	53,209	35,458	31,901	-	2.8	1.07
159764	30	Century MFB	2010	1,482	88,765	9,320	85,924	-	0.0	0.13
165395	31	U & I MFB	2010	27,622	52,693	9,400	43,195	-	0.8	0.42
170612	32	WPS	2010	643,300	1,237,000	471,791	269,000	-	3.5	1.26

Moderator Variables

Income diversification

Control variables

i. Depth of outreach

ii. Breadth of outreach

iii. Portfolio at risk

iv. MFI size

MFI ID		Micro Finance Name	Fiscal Year	borrowers	Interest income Shs'000'	Non-interest Income Shs'000'	Total income Shs'000'	PAR >30
100124	1	RAFODE	2010	1,330	2,540	228	2,768	0.01
100170	2	Vision Fund Kenya	2010	19,000	89,834	28,081	118,000	0.17
100240	3	Faulu MFB	2010	102,371	785,000	174,000	959,000	0.09
100456	4	Equity Bank KEN	2010	715,969	8,290,000	7,460,000	15,700,000	0.18
100550	5	KPOSB	2010	6,215	34,144	143,000	177,000	0.00
100609	6	Sidian Bank	2010	66,215	1,130,000	435,000	1,570,000	0.22
100731	7	SMEP MFB	2010	27,186	420,000	149,000	569,000	0.18
100829	8	KWFT MFB	2010	222,790	6,220,000	1,110,000	7,330,000	0.10
100853	9	Letshego KENYA	2010	13,845	164,000	50,248	215,000	0.08
100866	10	Opportunity Kenya	2010	9,340	35,782	14,608	50,390	0.03
101074	11	Jamii Bora	2010	81,989	44,445	9,294	53,739	0.05
101834	12	BIMAS	2010	10,221	2,540	228	2,768	0.06
101841	13	SISDO	2010	10,522	89,834	28,081	118,000	0.10
101926	14	Yehu	2010	14,558	57,892	9,678	67,571	0.02
102178	15	KEEF	2010	4,516	21,563	40,668	62,232	0.04
102337	16	PAWDEP	2010	39,024	169,000	84,782	254,000	0.03
102680	17	Family Bank KEN	2010	32,516	310,000	65,785	375,000	0.22
104156	18	Juhudi Kilimo	2010	28,138	5,670,000	3,450,000	9,120,000	0.05
104401	19	ECLOF - KEN	2010	18,947	125,000	36,837	162,000	0.06
114953	20	Musoni	2010	6,052	6,569	3,523	10,092	0.07
116001	21	Platinum Credit	2010	23,918	910,000	362,000	1,270,000	0.17
120086	22	Jitegemea Credit Scheme	2010	1,737	147,000	38,416	185,000	0.00
145988	23	Remu	2010	310	13,618	3,187	16,806	0.16
145989	24	Sumac MFB	2010	2,164	6,569	3,523	10,092	0.21
145992	25	Rafiki MFB	2010	10,662	763,000	627,000	1,390,000	0.09
145994	26	Uwezo MFB	2010	135	5,899	1,588	7,487	0.33
147609	27	Greenland Fedha	2010	6,276	99,988	5,121	115,000	0.06
152705	28	AAR Credit Services	2010	202	186	33	220	0.08
159492	29	Unaitas	2010	210	602,000	345,00	947,000	0.15
159764	30	Century MFB	2010	354	219	2,526	2,746	0.20
165395	31	U & I MFB	2010	1,428	3,906	1,533	5,439	0.13
170612	32	WPS	2010	27,216	45,969	21,144	67,114	0.15

Appendix IV: Regression Output

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.5470	Obs per group: min	= 10
between = 0.5994	Avg	= 10.0
overall = 0.5851	Max	= 10
	F(13,275)	= 25.54
corr(u_i, Xb) = -0.1494	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0266506	.0259337	1.03	0.305	-.0244031	.0777044
FS	.0588889	.0186867	3.15	0.002	.0221018	.095676
PAR>30	-.2345509	.0754147	-3.11	0.002	-.3830143	-.0860875
ALS	.0940073	.0361632	2.60	0.010	.0228154	.1651992
DNTA	-.3877945	.1498631	-2.59	0.010	-.6828192	-.0927698
DTE	-.1201919	.0460786	-2.61	0.010	-.2109035	-.0294803
DTA	.2803876	.0659667	4.25	0.000	.1505237	.4102515
ETA	.1314082	.0461514	2.85	0.005	.0405532	.2222632
IND	.5121453	.124068	4.13	0.000	.2679016	.756389
DTA*IND	.1227815	.0352301	3.49	0.001	.0534265	.1921366
DTE*IND	-.1494142	.0384886	-3.88	0.000	-.2251839	-.0736445
ETA*IND	.1291388	.0358851	3.60	0.000	.0584944	.1997833
DNTA*IND	.1238332	.0403474	3.07	0.002	.0444042	.2032623
_cons	.0280165	.2042306	0.14	0.891	-.3740376	.4300706
sigma_u	.14336126					
sigma_e	.09070435					
Rho	.71412936	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 275) = 15.23 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
BOUT	.0266506	.0159431	.0107075	.0144419
FS	.0588889	.0417263	.0171626	.0079385
PAR>30	-.2345509	-.2557121	.0211612	.0214319
ALS	.0940073	.0942316	-.0002243	.0196672
DNTA	-.3877945	-.344645	-.0431495	.0326753
DTE	-.1201919	-.1139162	-.0062757	.017763
DTA	.2803876	.215946	.0644416	.0341672
ETA	.1314082	.1482448	-.0168366	.0115486
IND	.5121453	.5590245	-.0468792	.0268825
DTA*IND	.1227815	.1437169	-.0209354	.0054799
DTE*IND	-.1494142	-.1750989	.0256847	.0098844
ETA*IND	.1291388	.1441274	-.0149886	.0053024
DNTA*IND	.1238332	.1183976	.0054357	.008937

b = consistent under Ho and Ha; obtained from x treg

B = inconsistent under Ha, efficient under Ho; obtained from x treg

Test: Ho: difference in coefficients not systematic

chi2(13) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 91.92

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.5315	Obs per group: min	= 10
between = 0.6043	avg	= 10.0
overall = 0.5862	max	= 10
	F(12,276)	= 26.09
corr(u_i, Xb) = -0.0639	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0266621	.0263263	1.01	0.312	-.0251637	.0784879
FS	.0480418	.0186272	2.58	0.010	.0113724	.0847112
PAR>30	-.233271	.0765552	-3.05	0.003	-.3839773	-.0825648
ALS	.0961093	.0367041	2.62	0.009	.0238538	.1683648
DNTA	-.4615844	.1501613	-3.07	0.002	-.7571915	-.1659773
DTE	-.1048858	.0465014	-2.26	0.025	-.1964283	-.0133433
DTA	.2744291	.0669363	4.10	0.000	.1426585	.4061998
ETA	.1232078	.0467715	2.63	0.009	.0311336	.2152821
IND	.2916023	.1026715	2.84	0.005	.0894836	.493721
DTA*IND	.1265438	.0357418	3.54	0.000	.0561825	.196905
DTE*IND	-.1720894	.0383447	-4.49	0.000	-.2475745	-.0966042
ETA*IND	.1456316	.0360176	4.04	0.000	.0747274	.2165358
_cons	.1892305	.200348	0.94	0.346	-.2051739	.583635
sigma_u	.14089145					
sigma_e	.0920775					
Rho	.70071779	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 276) = 15.30 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
BOUT	.0266621	.0194391	.007223	.0149227
FS	.0480418	.0340857	.0139561	.0077322
PAR>30	-.233271	-.2560405	.0227695	.0221504
ALS	.0961093	.0992829	-.0031736	.020381
DNTA	-.4615844	-.4241381	-.0374463	.0359776
DTE	-.1048858	-.1011545	-.0037313	.0181706
DTA	.2744291	.210239	.0641902	.0352919
ETA	.1232078	.1422618	-.019054	.0117952
IND	.2916023	.3490515	-.0574492	.0243142
DTA*IND	.1265438	.1492508	-.0227071	.005652
DTE*IND	-.1720894	-.1953532	.0232638	.0094423
ETA*IND	.1456316	.1586533	-.0130218	.0045877

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 79.14
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.5037	Obs per group: min	= 10
between = 0.5659	Avg	= 10.0
overall = 0.5492	Max	= 10
	F(11,277)	= 25.56
corr(u_i, Xb) = -0.1414	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0437545	.0266949	1.64	0.102	-.0087961	.0963051
FS	.0508045	.0191234	2.66	0.008	.0131588	.0884502
PAR>30	-.2494108	.0785406	-3.18	0.002	-.404023	-.0947986
ALS	.088527	.037658	2.35	0.019	.0143947	.1626593
DNTA	-.4697938	.1542514	-3.05	0.003	-.7734477	-.1661399
DTE	-.1224398	.0475637	-2.57	0.011	-.2160721	-.0288076
DTA	.2977075	.068511	4.35	0.000	.1628392	.4325759
ETA	.1391447	.0478789	2.91	0.004	.0448919	.2333975
IND	.2777262	.1054187	2.63	0.009	.0702025	.4852498
DTA*IND	.1218938	.0366997	3.32	0.001	.0496481	.1941395
DTE*IND	-.2129881	.0379974	-5.61	0.000	-.2877884	-.1381879
_cons	.1260995	.2051979	0.61	0.539	-.2778459	.5300449
sigma_u	.14901911					
sigma_e	.09459412					
Rho	.71278698	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 277) = 16.12 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
BOUT	.0437545	.0339952	.0097593	.0147253
FS	.0508045	.0354606	.0153439	.0077415
PAR>30	-.2494108	-.2748425	.0254318	.0224928
ALS	.088527	.0942599	-.0057329	.0202831
DNTA	-.4697938	-.4415631	-.0282308	.0367757
DTE	-.1224398	-.1160841	-.0063558	.0179135
DTA	.2977075	.2316642	.0660434	.0349309
ETA	.1391447	.1599319	-.0207871	.0121991
IND	.2777262	.3309761	-.0532499	.0246937
DTA*IND	.1218938	.1406743	-.0187805	.0060865
DTE*IND	-.2129881	-.2407639	.0277758	.0102573

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 30.80

Prob>chi2 = 0.0012

(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.4474	Obs per group: min	= 10
between = 0.4687	avg	= 10.0
overall = 0.4545	max	= 10
	F(10,278)	= 22.51
corr(u_i, Xb) = -0.3595	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0627753	.0278894	2.25	0.025	.0078741	.1176765
FS	.0694645	.019835	3.50	0.001	.0304186	.1085104
PAR>30	-.2378253	.0826975	-2.88	0.004	-.4006181	-.0750324
ALS	.1106071	.0394473	2.80	0.005	.0329538	.1882605
DNTA	-.6095579	.1603351	-3.80	0.000	-.9251829	-.2939329
DTE	-.1467618	.0498896	-2.94	0.004	-.2449711	-.0485526
DTA	.3954403	.0697861	5.67	0.000	.258064	.5328166
ETA	.1680666	.0501368	3.35	0.001	.0693706	.2667626
IND	.3181587	.1107765	2.87	0.004	.1000914	.5362259
DTA*IND	.0881538	.038132	2.31	0.022	.0130896	.163218
_cons	-.1994491	.2072955	-0.96	0.337	-.6075173	.2086191
sigma_u	.1764514					
sigma_e	.09963523					
Rho	.75824089	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 278) = 18.51 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
BOUT	.0627753	.0469137	.0158616	.014448
FS	.0694645	.050999	.0184655	.0071009
PAR>30	-.2378253	-.2640735	.0262483	.0206674
ALS	.1106071	.1119548	-.0013477	.0199245
DNTA	-.6095579	-.5974255	-.0121324	.0313858
DTE	-.1467618	-.1479728	.0012109	.0173434
DTA	.3954403	.3229085	.0725318	.0324218
ETA	.1680666	.1947951	-.0267285	.011333
IND	.3181587	.3729415	-.0547829	.0215853
DTA*IND	.0881538	.0980697	-.0099159	.0047589

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 4.79

Prob>chi2 = 0.9045

(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.4368	Obs per group: min	= 10
between = 0.4532	avg	= 10.0
overall = 0.4403	max	= 10
	F(9,279)	= 24.04
corr(u_i, Xb) = -0.3514	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0569899	.0279923	2.04	0.043	.0018869	.1120928
FS	.0656025	.0199178	3.29	0.001	.0263942	.1048108
PAR>30	-.2705411	.0821096	-3.29	0.001	-.432174	-.1089081
ALS	.1166563	.0396657	2.94	0.004	.0385743	.1947383
DNTA	-.6824802	.1584208	-4.31	0.000	-.9943321	-.3706284
DTE	-.1594761	.0499701	-3.19	0.002	-.2578423	-.0611099
DTA	.4049466	.0702051	5.77	0.000	.2667476	.5431456
ETA	.1637614	.0504908	3.24	0.001	.0643702	.2631527
IND	.299652	.1113437	2.69	0.008	.0804715	.5188325
_cons	-.1244972	.2063323	-0.60	0.547	-.530663	.2816686
sigma_u	.17832605					
sigma_e	.10040797					
Rho	.75928145	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 279) = 20.55 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
BOUT	.0569899	.04404	.0129499	.0138574
FS	.0656025	.0498203	.0157822	.006954
PAR>30	-.2705411	-.2947149	.0241738	.0211477
ALS	.1166563	.1172264	-.00057	.0190735
DNTA	-.6824802	-.6753303	-.00715	.0328268
DTE	-.1594761	-.1629565	.0034804	.0171389
DTA	.4049466	.3424157	.062531	.0311605
ETA	.1637614	.1858459	-.0220844	.0120602
IND	.299652	.346279	-.046627	.0234037

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 15.67

Prob>chi2 = 0.0740

Random-effects GLS regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.4172	Obs per group: min	= 10
between = 0.4616	avg	= 10.0
overall = 0.4455	max	= 10
	Wald chi2(8)	= 223.12
corr(u_i, X) = 0 (assumed)	Prob > chi2	= 0.0000

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.0410164	.0246371	1.66	0.096	-.0072714	.0893042
FS	.0678537	.0180272	3.76	0.000	.0325211	.1031863
PAR>30	-.3033084	.0804724	-3.77	0.000	-.4610314	-.1455853
ALS	.1150864	.0352455	3.27	0.001	.0460065	.1841662
DNTA	-.7110888	.1568887	-4.53	0.000	-1.018585	-.4035926
DTE	-.1869961	.046998	-3.98	0.000	-.2791106	-.0948817
DTA	.3493934	.0637348	5.48	0.000	.2244754	.4743114
ETA	.1863442	.0497603	3.74	0.000	.0888157	.2838727
_cons	.0788195	.1803562	0.44	0.662	-.2746721	.4323111
sigma_u	.15786409					
sigma_e	.10152112					
Rho	.70743011	(fraction of variance due to u_i)				

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.4222	Obs per group: min	= 10
between = 0.4198	avg	= 10.0
overall = 0.4099	max	= 10
	F(8,280)	= 25.57
corr(u_i, Xb) = -0.3763	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0555289	.0282973	1.96	0.051	-.0001736	.1112314
FS	.0826892	.0190881	4.33	0.000	.0451147	.1202636
PAR>30	-.2760527	.082994	-3.33	0.001	-.4394241	-.1126812
ALS	.1136031	.040089	2.83	0.005	.034689	.1925173
DNTA	-.7130884	.1597638	-4.46	0.000	-1.027579	-.3985978
DTE	-.1808096	.0498843	-3.62	0.000	-.2790054	-.0826138
DTA	.412126	.0709322	5.81	0.000	.2724979	.5517541
ETA	.1613166	.0510423	3.16	0.002	.0608413	.2617919
_cons	-.1403256	.208535	-0.67	0.502	-.5508211	.2701698
sigma_u	.18583504					
sigma_e	.10152112					
Rho	.77015474	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 280) = 21.91 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
BOUT	.0555289	.0410164	.0145125	.0139195
FS	.0826892	.0678537	.0148355	.0062751
PAR>30	-.2760527	-.3033084	.0272557	.0203026
ALS	.1136031	.1150864	-.0014832	.019102
DNTA	-.7130884	-.7110888	-.0019996	.030173
DTE	-.1808096	-.1869961	.0061865	.016722
DTA	.412126	.3493934	.0627326	.0311327
ETA	.1613166	.1863442	-.0250276	.0113676

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 4.65

Prob>chi2 = 0.7938

(V_b-V_B is not positive definite)

Random-effects GLS regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.1605	Obs per group: min	= 10
between = 0.3220	avg	= 10.0
overall = 0.2813	max	= 10
	Wald chi2(4)	= 68.08
corr(u_i, X) = 0 (assumed)	Prob > chi2	= 0.0000

OSS	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BOUT	.056662	.0284842	1.99	0.047	.0008341	.11249
FS	.0666848	.0208916	3.19	0.001	.025738	.1076316
PAR>30	-.3130628	.0944024	-3.32	0.001	-.4980881	-.1280374
ALS	.198087	.0395568	5.01	0.000	.120557	.275617
_cons	-.1033139	.1750214	-0.59	0.555	-.4463494	.2397217
sigma_u	.18231815					
sigma_e	.1213522					
Rho	.69298515	(fraction of variance due to u_i)				

Fixed-effects (within) regression	Number of obs	= 320
Group variable: ID	Number of groups	= 32
R-sq: within = 0.1626	Obs per group: min	= 10
between = 0.3006	avg	= 10.0
overall = 0.2644	max	= 10
	F(4,284)	= 13.79
corr(u_i, Xb) = -0.2190	Prob > F	= 0.0000

OSS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
BOUT	.0728168	.0334407	2.18	0.030	.0069937	.1386399
FS	.0793323	.0224962	3.53	0.000	.0350518	.1236128
PAR>30	-.2817559	.0980891	-2.87	0.004	-.4748299	-.0886819
ALS	.1967261	.0450972	4.36	0.000	.1079589	.2854932
_cons	-.2830795	.2124555	-1.33	0.184	-.7012668	.1351078
sigma_u	.19192153					
sigma_e	.1213522					
Rho	.71438537	(fraction of variance due to u_i)				

F test that all u_i=0: F(31, 284) = 21.50 Prob > F = 0.0000

	---- Coefficients ----			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
BOUT	.0728168	.056662	.0161548	.0175195
FS	.0793323	.0666848	.0126475	.008344
PAR>30	-.2817559	-.3130628	.0313069	.0266395
ALS	.1967261	.198087	-.0013609	.0216568

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 4.60
Prob>chi2 = 0.3305

Appendix V: Ethical Clearance Letter

KABARAK UNIVERSITY RESEARCH ETHICS COMMITTEE

Private Bag - 20157
KABARAK, KENYA
Email: kurec@kabarak.ac.ke

Tel: 254-51-343234/5
Fax: 254-051-343529
www.kabarak.ac.ke

OUR REF: KABU01/KUREC/001/09/10/23

Date: 17th October, 2023

Cheboi Livingstone Talel,
REG No. GDB/M/1079/09/13
Kabarak University,

Dear Livingstone,

RE: MODERATING EFFECT OF INCOME DIVERSIFICATION ON THE RELATIONSHIP BETWEEN FINANCIAL STRUCTURE AND FINANCIAL SUSTAINABILITY OF MICROFINANCE INSTITUTIONS IN KENYA.

This is to inform you that ***KUREC*** has reviewed and approved your above research proposal. Your application approval number is ***KUREC-091023.*** The approval period is ***17/10/2023 – 17/10/ 2024.***

This approval is subject to compliance with the following requirements:

i. All researchers shall obtain an introduction letter to NACOSTI from the relevant head of institutions (Institute of postgraduate, School dean or Directorate of research)
ii. The researcher shall further obtain a RESEARCH PERMIT from NACOSTI before commencement of data collection & submit a copy of the permit to **KUREC.**
iii. Only approved documents including (informed consents, study instruments, MTA Material Transfer Agreement) will be used
iv. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KUREC***:
v. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***KUREC*** within 72 hours of notification;
vi. Any changes, anticipated or otherwise that may increase the risk(s) or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KUREC*** within 72 hours;
vii. Clearance for export of biological specimens must be obtained from relevant institutions and submit a copy of the permit to KUREC;
viii. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal and;
ix. Submission of an executive summary report within 90 days upon completion of the study to ***KUREC***

KABARAK UNIVERSITY
INSTITUTIONAL RESEARCH ETHICS COMMITTEE
16 OCT 2023
APPROVED
P O. PRIVATE BAG - 20157, KABARAK

Sincerely,

for

Prof. Jackson Kitetu PhD.
KUREC-Chairman

Cc Vice Chancellor
DVC-Academic & Research
Registrar-Academic & Research
Director-Research Innovation & Outreach
Institute of Post Graduate Studies

Appendix VI: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **114296**

Date of Issue: **10/November/2023**

RESEARCH LICENSE

This is to Certify that Mr.. Livingstone Talel Cheboi of Kabarak University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Moderating effect of Income Diversification on the relationship between Financial Structure and Financial Sustainability of Microfinance Institutions in Kenya. for the period ending : 10/November/2024.

License No: **NACOSTI/P/23/31356**

114296

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VII: Evidence of Conference Participation

Certificate of Participation

This is to certify that

Livingstone Talel Cheboi

Participated in the Education Management Society of Kenya (EMSK) 10th International Research Conference Held in Collaboration with the Kenya Highlands University and the Education and Social Sciences Research Association of Kenya (ESSRAK) on Thursday 3rd & Friday 4th OCTOBER, 2024. The Theme of the Conference was: ***Innovating the Future: Reshaping Education and Social Sciences Research for a Transformative World***

He Presented a Paper Entitled: ***FINANCIAL STRUCTURE AND FINANCIAL SUSTAINABILITY OF MICROFINANCE INSTITUTIONS IN KENYA***

Dr. Eliud Nyakundi
Chair- EMSK

Prof. Henry Onderi
Chair- Conference Committee

Appendix VIII: List of Publication

Journal of Management Science (JMAS)
Volume 7, No. 2, April 2024, pp 301-308 ISSN 2684-9747 (Online)
www.exsys.iocspublisher.org/index.php/JMAS Published by: Institute of Computer Science (IOCScience)

Financial structure and financial sustainability of Microfinance Institutions in Kenya

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ABSTRACT

This study investigated the effect of financial structure on microfinance firms' financial sustainability. The study utilized panel data from 32 Microfinance Institutions (MFIs), resulting in 320 firm-year observations for the period of 2010-2019. The dataset was obtained from MIX market, a global database that collects self-reported information from MFIs. The study used a battery of panel data regression methods to test the hypotheses. The regression analysis indicated a statistically significant negative association between debts and donations and the financial sustainability of MFIs in Kenya. In contrast, there was a positive relationship between deposits and equity and the sustainability of microfinance firms in Kenya. Therefore, MFIs are strongly advised to prioritize internal financing in order to achieve financial sustainability. In addition, it is advisable for MFIs to avoid excessive dependence on donations and commercial funding, as these sources of funds often come with strict requirements and conditions that could impede their progress towards achieving financial stability. The results of this study can offer valuable insights to MFIs managers and regulators in formulating financing strategies that can assist MFIs in achieving financial sustainability.

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1. Introduction

Microfinance Institutions (MFIs) are crucial actors in promoting financial inclusion and reducing poverty, making them significant contributors to achieving sustainable development goals (García-Pérez *et al.,* 2018; Githaiga & Bitok, 2023). However, to achive both their economic and social objectives MFIs must financially sustainable to continue serving financially excluded population poor (Schreiner, 2000). There are several ways to define financial sustainability. Financial sustainability, according to Henock (2019), is the ability of financial institutions to run smoothly, produce profits, and have enough liquidity to avoid insolvency. Dunford (2003) and Kinde (2012) define financial sustainability as an MFI's ability to achieve its aims without donor funding. Harelimana (2017) views a sustainable MFI as one that makes money without subsidies. MFIs need profitability to attract private funding, according to Harelimana. MFIs must generate enough profit to cover transactional, operational, and financial costs without subsidies. OSS, FSS, and ROA as some of the indicators of MFIs financial performance (Nasrin *et al*., 2018). However, empirical evidence suggests that most MFIs are unsustainable, notwithstanding their role in financial inclusion and economic growth. According to Abdulhakim (2020), Ethiopian MFIs are unsustainable with an OSS score of 0.85. According to Jasmi (2021), MFIs in Sub-Saharan Africa and East Asia and Pacific (EAP) are the most non-financially sustainable. Kumar (2012) concluded that 143 Namibian MFIs were unsustainable. According to Kenyan Central Bank of Kenya the microfinance industry reported loss before tax of Ksh.339 million on

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Income Diversification and Financial Sustainability of Microfinance Institutions In Kenya

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ABSTRACT

The purpose of this paper was to investigate the effect of income diversification and financial sustainability of microfinance institutions in Kenya. The study used panel data drawn from 32 MFIs over the period 2010-2019 that yielded 320 observations. The data was sourced from the MIX market, a World Bank Database for all MFIs that self-report. Data was analyzed through the ordinary least squares (OLS), the system generalized method of moments, the fixed effect and random effect model. The findings revealed that income diversification had a positive significant relationship to the sustainability of microfinance institutions in Kenya. The results further revealed that breadth of outreach, firm size, average loan size, debt to equity ratio and portfolio at risk (Par>30) had a significant effect on financial sustainability of microfinance institutions in Kenya. Based on the findings this study recommend that MFIs should consider income diversification in their effort towards attaining financial sustainability.

INTRODUCTION

When it comes to safeguarding the long-term financial sustainability of microfinance institutions (MFIs), one of the most important strategies is to diversify their sources of income (Yaş and Chen, 2023). The landscape of microfinance is robust, and it serves the purpose of meeting the financial requirements of individuals and enterprises with modest incomes. Microfinance banks, savings and credit cooperatives (also known as SACCOs), and non-governmental organizations (also known as NGOs) are some of the entities that are included in its scope (Feather and Meme, 2019). The economically vulnerable portions of the population are the ones who benefit from these organizations' provision of critical financial services such as credit, savings, insurance, and financial education.

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FINANCE & ACCOUNTING

FINANCIAL LEVERAGE, INCOME DIVERSIFICATION AND FINANCIAL SUSTAINABILITY OF MFIS IN KENYA

Livingstone Talel, Stella Korir and Robert Otuya

November 2024

Abstract

Background: Microfinance institutions are essential for promoting economic development and ensuring financial inclusion. Financial sustainability is crucial for the expansion of microfinance institutions and their ability to serve underprivileged borrowers.

Research Objective: The primary aim of this study was to determine the impact of financial leverage on the financial stability of MFIs, and to examine how revenue diversification influences this relationship.

Methodology: The study was conducted based on the pecking order theory and the contemporary portfolio theory. Data was collected from 32 Microfinance Institutions (MFIs) over 2010-2019.

Results and Findings: The study revealed that financial leverage has a negative and significant effect on the financial sustainability of MFIs. Conversely, income diversification had a positive effect on the financial sustainability of the MFI. Furthermore, the between the use of financial leverage and the diversification of income has an adverse effect on the financial MFIs.

Conclusions and Recommendations: The study advised that managers of Microfinance Institutions (MFIs) should have a clear understanding of the negative effect of debt financing on the MFIs' endeavours to achieve sustainability. Additionally, it is crucial for managers to comprehend the detrimental impact that arises from the interplay between leverage and non-interest earning activities. The results have significant implications for management of MFIs and policymakers, considering their crucial role in service delivery and the constraints that prohibit the sector from achieving financial sustainability in the economy.

Keywords: *Microfinance, Financial Sustainability, Leverage, Income Diversification, Kenya.*