Determinants Of Financial and Operational Sustainability of Selected Micro Finance Institutions in Ethiopia

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Abstract

The concepts of MFI are designed to increase access to financial resources and reduce poverty. However, the benefits that microfinance institutions have on the welfare of the poor can only be maintained provided the organizations have strong financial results. The purpose of this study is to examine the factors that influence the financial and operational sustainability of selected MFIs in Ethiopia. This study used secondary data for a sample of 10 MFIs for the years 2013–2022 and a balanced panel data random effect GLS regression model. It was based on a quantitative research strategy. Breadth and liquidity ratio of the MFIs were all positively and strongly correlated with financial self-sufficiency, according to regression results. Additionally, risk coverage ratio and return on equity has a favorable and statistically significant impact on operational self-sufficiency. The study discovered that both operational self-sufficiency and financial self-sufficiency were negatively and statistically significantly impacted by operating expense ratio. While write off has a negative and statistically significant impact on financial self-sufficiency, liquidity ratio has a positive and statistically significant impact on financial self-sufficiency. Based on the results of this research, it can be said that cost per borrower is insignificant explanatory variables in determining both the dependent variables of financial self-sufficiency and operational self-sufficiency. This research also reaches the conclusion that MFIs in Ethiopia are operationally independent but not financially independent.

Keywords: MFIs, sustainability, FSS, OSS, Ethiopia.

Introduction
1.1 Background of the Study

The ability to continue any recognized activity into the future within the practical boundaries of an organization's available resources, as part of its continuous budgeting and management processes, is referred to as the microfinance institution's sustainability (Kimando, 2012). MFIs must therefore aim for excellent financial and operational performance in order to contribute significantly to the reduction of poverty and achieving their major goals. Determinants of the financial and operational sustainability of microfinance organizations in Ethiopia are the focus of this study. Microfinance institutions were created to make it easier for the poor and marginalized to receive financial services, but due to several challenges they face, they have not been able to fully meet those requirements. Microfinance institutions were established in order to make it simpler for the poor and marginalized to receive financial services, but due to several obstacles they face, they have not been able to fully satisfy demand. Members and

community-based financial and operational sustainability must receive a lot of attention if the nation's micro finance institutions are to be helped. So, the study's objective is to identify the factors that determine Ethiopia's operational and financial sustainability.

In Ethiopia, microfinance institutions play a significant role in grassroots initiatives for rural development, poverty reduction, industrial growth, food security measures, and financial mediation (Ganka, 2010). Microfinance institutions, in particular, are locally based financial organizations that serve to the financial requirements of the community, particularly those who lack access to collateral or a property. Customers find local microfinance institutions more inviting, and they are more established in the financial systems of many nations (Info, 2018). In comparison with traditional financial institutions, microfinance firms might lend money with lower interest rates. On the other hand, due to their lending conditions and limitations, commercial banks and other formal institutions are unable to meet the credit needs of small enterprises. Also, microfinance organizations have the potential and opportunity to reach out to customers in areas where banks are not present, such as rural or underdeveloped regions.

In Ethiopia, microfinance institutions were introduced after the downfall of "Dergue" following the free market economy policy was pronounced. Microfinance is taken as a shift from government-subsidized credit programs to financial services run by specialized financial institutions. With this shift, some government microcredit programs were transformed into microfinance institutions. For their license and supervisory activities the central bank was issued proclamation No. 40/1996. The regulatory framework was put in place as part of the government's effort to liberalize the financial sector and lay down an alternative institutional framework.

The major purpose of these institutions is to assist rural poor people in increasing agricultural production, enabling food self-sufficiency, and reducing poverty. These institutions experienced a number of difficulties, such as a lack of management effectiveness, an uncontrolled credit system in the past, and issues with their resources, goods, organizational structure, authority, and lack of pertinent data to guide management decision-making. They also struggle to develop into sensible organizations that deliver appropriate financial services in response to client demands (IFAD, 2001). There is strong agreement that these organizations, federal organizations, and regional governments should stop providing credit to microfinance companies for farmers (IPRSP, 200). Therefore, the very important aspect of designing and operating microfinance services that support the poor in a sustainable way requires the building of viable institutions.

5.5 million Active borrowers are now served by the 35 regulated microfinance institutions operating in the nation. They were initially registered as share businesses and have since been converted to microfinance. To meet with the proclamation's condition, all are taken into consideration to be share companies. They continue to struggle to develop into viable organizations that provide the proper financial services that customers want. The demand for financial services in the nation is also very great, and it is officially up to these institutions' success and sustainability to provide for that demand.

The following capital amounts were recorded by the microfinance organizations in 2018 despite their historical beginnings and current circumstances:

1. Amhara Credit and Saving Institution- 5.2 Billion Birr
2. Oromia Credit and Saving Institution - 2.3 Billion Birr
3. Addis Credit and Saving Institution- 1.2 Billion Birr
4. Dedebit Credit and Saving Institution – 975 Million Birr

5. Omo Microfinance Institution- 450 Million Birr

1.2 Statement of the Problem

The primary means the microfinance business differs from other financial sectors is by serving consumers that are less financially worthwhile or are not in the interest of conventional banks. MFIs provide microfinance services, such as small loans to underprivileged populations that are unable to place any collateral or other financial assets (Reno-Weber, 2008). According to Robinson, the two fundamental objectives of MFIs—teaching the poor how to help themselves—are what determine their success (2001

In the first stage, which dominated in the 1960s, the emphasis was on giving poor people subsidies. The purpose of this type, which was mostly implemented by governmental organizations, was to support farmers in increasing their productivity and achieving food security (CGAP, 2003). Throughout the 1960s and 1970s, it consideration was that the poor were "unbankable" (Campion and White, 1999). According to Embodiment (2005), being "bankable" refers to a person or an organization's ability to gain from financial services. By earning money, they can repay debts, save money, or accumulate assets.

The first microfinance innovators worked with small loans given to poor women for small companies in the early 1970s. These institutions included the South American ACCION International and the Bangladeshi Grameen Bank. Early through the 1970s, NGOs assumed responsibility for providing credit to the underprivileged and created increasingly innovative methods, such group lending, to satisfy their needs. Microcredit is seen as having begun at this time. Many MFIs were more effective in the 1980s, were able to recover their costs, and even attracted deposits, business loans, and investment money (Helms, 2006). The third stage next came into play in the mid-1990s, when NGOs were changed into formal financial organizations such as commercial banks (Getu and Kempton)

A variety of studies have been carried out to determine factors affecting financial sustainability and cost efficiency of MFIs using the level and type of MFIs in different nations, even though the level and importance of the determinant factors affecting the operational efficiency and financial sustainability of MFIs differ with countries (Cull et al., 2007) and (Christen et al., 1995). These and other scholars quarrel that the MFIs' financing structure (such as: size, capital to asset ratio, debt to equity ratio, deposit to loan ratio, gross loan portfolio to total asset, and others), institutional characteristics or level of MFIs (such as age of MFI, number of employees, and many others), and their outreach capacity indicators (such as: Number of active borrowers, gross loan portfolio, and the like) are the key factors that will determine whether MFIs are able to sustain themselves (such as rate of inflation and real GDP growth rate).

According to Degefe (2009) and the IFAD report from 2001, demand for financial services, including MFIs, is not particularly high in Ethiopia and is mostly based on the viability and sustainability of the MFIs. For these and other reasons, the researcher believed that more comprehensive studies are needed on the topic of sustainability and the factors that influence it in Ethiopian MFIs.

A number of researches have been conducted to identify the elements that Ethiopian MFIs need to be financially sustainable. For instance, Tilahun (2013) studied the basics that determine the financial sustainability of microfinance institutions in East Africa, including Ethiopia, and his study examined the loan portfolio, size, and management efficiency. Both less significant internal variables and external macro variables were not taken into account in this investigation. However, Sileshi Mirani (2015) considered the performance, size, staff productivity ratio, debt to equity ratio, cost per borrower, average

loan per borrower, and age of MFI as explanatory variables for the OSS in his study on the factors influencing the operational and financial sustainability of Ethiopian MFIs.

Further studies on other MFI research topics in Ethiopia have been conducted over time by Kereta (2007), Abebaw (2014), Bayeh (2012), Abenet& Dr. Venkateswarlu (2015), Odowa& Ali (2019), and Melesse (2019). Although a lot of work has been done on sustainability, efficiency, performance development, and other related topics MFIs in Ethiopia, there is still much to discover. The majority of this study was concentrated on MFI profitability, outreach, and sustainability with limited and internal explanatory variables and excluded the effect of macroeconomic variables, the risk indicators, and productivity indicators such as borrower per loan officer. By using FSS and OSS as proxies and adding additional variables that are not included in the previous studies such as Wright-off and liquidity Ratio and taking more explanatory financial and operational variables such as risk, efficiency, profitability, productivity, capital structure, outreach indicators, and macroeconomic variables.

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1.3. Objectives of the study

1.3.1 General Objective

The main objective of this study will be the determinants of financial and operational sustainability of selected microfinance institutions in Ethiopia.

1.3.2 Specific Objectives

The specific objectives of this study are:

- To examine the relationship between (Breadth, debt to equity ratio, Cost per Borrower, liquidity ratio, Write-Off, Operating Expense Ratio) and financial sustainability.
- To determine the effect of (Return on Equity, Risk Coverage Ratio, Operating Expense Ratio, Portfolio> 30 days, Cost per Borrower) and operational sustainability.

1.4. Literature driven Hypotheses

More studies from the Alain et al. (2007) study supports the idea that increasing the number of borrowers per MFI would result in lower average operating costs and a less pronounced increase in overall operating costs as a function of borrower volume. The sustainability statistics in FSS and OSS would rise if there were more borrowers per field officer, as this is a clear signal. Increasing the number of borrowers per field officer appears to be the most promising strategy to cut expenses, especially in group-based delivery models, Alain et al. (2007) also found that, particularly in group-based delivery models, increasing the number of borrowers per field officer appears to be the most promising strategy for reducing costs.

Despite a potential reduction of the monitoring, this would not harm repayment. If level economies can be achieved, it will be mainly through an increase in the number of borrowers rather than a decrease in the breadth of coverage, or not by abandoning the focus on the poor. This conclusion implies that the number of active borrowers has a positive impact on the operational and financial sustainability of microfinance organizations. Another finding from Merslandetal's (2007) research on the impact of the number of active borrowers suggests that, even though they do not explicitly state it, there may be a connection between the sustainability of microfinance institutions and the number of active borrowers. In contrast to the previous study, Khan et al. (2017), Nyamsogoro (2010), and Hulme& Mosley (1996) found a negative correlation between the number of borrowers and financial sustainability since

inefficiency rises with a higher borrower population. Therefore, the researcher expects the number of active borrowers is positively related to the sustainability of MFIs.

H1: There is Positive and significant relationship between Breadth and Financial self-Sufficiency

In accordance with the study, ROE has a valuable impact on operational self-sufficiency. In order to improve the financial sustainability of MFIS, the Sekabira (2013) study on capital structure and its impact on microfinance performance in Uganda advocated increasing the use of equity and reducing dependency on grants and subsidies. Also, a study by Conning (1999)showsthat sustainable MFIs that can help the poor should be heavily reliant on equity financing. Due to the fact that dividend payments are not required, equity has low costs. Additionally, the Hartaska & Nadolnyak (2007) study supports the use of equity in FSS stimulation. Further, the study by Hartaska & Nadolnyak (2007) approves equity in stimulating FSS. However, a study by Remer & Kattilakoski (2021) found that return on equity is not a significant variable to determine the sustainability of MFIs. Based on the above review the researcher expects a return on equity is positively related to the sustainability of MFIs.

H2: There is Positive and significant relationship between Return on Equity and Operational self-sufficiency

Mersland and Storm conducted research on the effects of the number of active borrowers in 2007. Their findings provide credibility to the notion that there is a link between the number of active borrowers and the flexibility of microfinance organizations. However, the findings of the researchers' study don't really show this. However, Ganka's (2010) econometric research showed an adverse correlation between the number of borrowers per employee and the financial viability of microfinance companies. According to research, an increase in the number of borrowers per employee had a considerable negative influence on the financial viability of microfinance companies in Tanzania. The operational and financial self-sufficiency of microfinance institutions is consequently expected to be positively and significantly impacted by the number of active borrowers in an MFI.

H3: There is Positive and significant relationship between Cost per Borrower and Financial self-sufficiency

Prices and money earnings have a persistent tendency to rise. The consumer price index or GDP deflators are two typical price indexes that can be used to evaluate inflation over time, according to the economics dictionary. Inflation happens when the overall level of prices is rising. According to the definition of inflation in the world development indicator, it is calculated using the consumer price index, which shows the annual percentage change in the average consumer cost of a group of products and services over a given period of time. In previous studies on bank profitability, inflation was one of the topics that had received the relatively less attention. Although it is important to note that scholars have paid relatively little attention to the impact of inflation on commercial bank profitability, Revell (1979), as cited by Devinaga(2010), has stated that inflation may be a component in the causation of differences in bank profitability. The central bank can increase borrowing costs and limit the ability of commercial banks to create credit during an inflationary period. Therefore, it is anticipated that inflation will have a negative impact on profitability.

H4: There is no negative and significant relationship between Inflation and Financial self-Sufficiency

Abdel-Ménaf Ibrahim (2015) argues that write-offs are an important indicator of the value of a portfolio. This indicator simply shows the loan that the institution removed from its records due to a significant doubt that it will be repaid. A loan is written off as part of an accounting transaction to stop assets from being unnecessarily inflated by loan loss reserves. To explore the connection between writing-off and MFI profitability, Wolday et al. (2012) additionally included write-off. Amanuel discovered that write-offs significantly and negatively impacted the financial success of MFIs in Ethiopia. Thus based on this the researcher develop this thesis.

H5: There is negative and significant relationship between write-off and financial self-Sufficiency

The portfolio at risk metric shows how effective microfinance institutions are in recovering debts. Lower repayment rates are correlated with a bigger portfolio at risk, which is an indication of an effective MFI. Simply put, a high portfolio at risk ratio would restrict the income from microfinance operations and hence decrease the quantity of funds that might be loaned. This would lead to credit rationing, which would ultimately affect the ongoing provision of high-quality loan services and have a negative effect on the financial viability of MFIs. Thanh and co. (2020). A portfolio at risk has a strong significant predictor variable of both operational and financial self-sufficiency, according to research by Naz et al. (2019). D'Espallier et al. (2011) and Nadiya's research

H6: There is negative and significant relationship between portfolio at risk >30 days and Operational self-sufficiency

Microfinance organizations must exercise vigilance in order to recover any losses brought on by bad debts. The risk coverage ratio indicates the level of readiness of an MFI for such losses. In order to cover any outstanding amounts that remain after a given period, MFIs typically set aside a portion of their revenues for this purpose. Again, depending on the degree of risk they are subject to in the unpaid amount, this change from one MFI to another. Loan-loss reserves contain the amount that has been designated for this use (CGAP, 2003). The longer the loan is paid off, the more money will be placed aside to cover the loss when it comes. The portion of the portfolio that is at risk after a certain period of time defined by an MFI based on their experience with loan losses is divided by the loan-loss reserve to get the risk coverage ratio. According to Ibrahim's (2017) findings, MFIs' risk coverage ratios are positively correlated with sustainability, meaning that a microfinance institution's sustainability will increase if its risk coverage ratio is higher.

H7: There is positive and significant relationship between Risk Coverage Ratio and Operational self-sufficiency

The operating expenditure ratio measures total operating costs in relation to the total amount of outstanding loans. The lower the ratio, all others being equal, will indicate efficiency. (2016) Hossain and Dr. Khan Operating expense ratio was shown to be highly significant and to have a detrimental effect on the financial sustainability of Bangladeshi microfinance institutions (MFIs). Another study by Rahman & Mazlan (2014) showed an adverse correlation between the sustainability of MFIs and the state operating expense ratio. According to Ganka's (2010) econometric research, the operational expenses ratio has a significant effect on the sustainability of microfinance firms. By lowering operating

costs to a target level of an outstanding portfolio, MFIs become more profitable and achieve financial sustainability. A strong significant negative correlation between the Operating Expense Ratio and the Operational Self-Sufficiency Ratio was found by Dissanayake (2012) in her study of MFIs in Sri Lanka. He came to the conclusion that a statistical significant prediction variable for OSS is the Operational Expense Ratio. The research by Hossain and Dr. Khan (2016), GIBSON (2012), and Yoshi Fukasawa (2011) shows a substantial negative correlation between operational expense ratio and the FSS of MFIs. However, a 2017 study by Fraol & Salehu did not identify a statistically significant relationship between OSS and MFI sustainability. The researcher expected operating expense ratio to have a negative correlation with the sustainability of MFIs according to the previously mentioned empirical review.

H8: There is negative and significant relationship between Operating Expense Ratio and Operational self-sufficiency

According to Nyamsogoro's (2010) research, the cost per borrower and the financial viability of microfinance organizations in Tanzania have a negative relation, but it is statistically insignificant in Tanzania. Contrary to the conclusions of the study, the employees cost per borrower has a limited impact on the financial sustainability. Based on these and his findings, Nyamsogoro (2010) concluded that, if all remained the constant, higher staff pay might encourage them to spend more time relaxing rather than working harder to advance the main business of the MFI, particularly in areas where field visit facilitation is very low. A higher cost per unit of the loan had a significantly negative financial performance on MFIs in India, Ethiopia, and Tanzania, according to the findings of a study by Nyamsogoro (2010). Kipesha& Zhang (2013) found out that cooperative MFIs in East Africa were able to achieve financial sustainability attributed to the decline in cost per borrower. The researcher anticipates that cost per borrower will have a negative, significant impact on the sustainability of MFIs. Contrary to the earlier study, one conducted in 2021 by Remer & Kattilakoski showed no relationship between cost per borrower and operational sustainability. As a result, the researcher hypothesized that cost per borrower has a negative impact on the sustainability of MFIs.

H9: There is negative and significant relationship between Costs per Borrower and Operational self-sufficiency

Liquidity refers to the speed in the transfer of assets into cash, liquidity ratios primarily focus on the cash flows, and it is an indicator to measure a company's ability to meet its short-term liabilities. Liquidity management is achieved through the effective use of assets (Robinson et al., 2015). Quick ratio only includes the most liquid of current assets to current liabilities. The rise in the value of this ratio expresses high liquidity of the company. This ratio excludes prepaid expenses and inventory from current assets being difficult conversion into cash (Sinha, 2012).

According to K. H. I. Madushanka and M. Jathurika (2018) Liquidity ratios have positive and significantly related to the firm profitability. Another research conducted by Devraj Arjan Sanghani (2014) liquidity has a positively effect on the financial performance of non-financial companies.

H10: There is Positive and significant relationship between Liquidity Ratio and Financial self-sufficiency

1.5 Significance of the study

Microfinance institutions play a significant role in meeting the financial requirements of poor peoples. Typically the financial resource flows out from the micro finance institutions help to improve living standard, educational level, health and financial position of the poor section of the society and reduce poverty. Therefore micro finance helps in contributing a lot towards the overall development of the economy. To achieve this stated mission continually micro finance institutions themselves have to be sustainable both operationally and financially. So, this study will help the decision makers of MFIs to be cautious the determining factors for their sustainability in general and in specific and give due focus for the factors.

Majority of Ethiopian population is poor and hence depend on MFIs as source of funds and general finance. Since the study will look for to establishing factors of sustainability of MFIs and it will be provide helpful information to them indirectly, so that it will finally help the MFIs to manage the factors that significantly influence their sustainability. Furthermore, the study will be a huge significance for future researchers & academicians as a base to modify the models and variables considered and do their scholarly.

1.6 Scope of the Study

Any discussion of the performance of microfinance in reducing global poverty should measure boththefinancialsuccessoftheorganizationalongwithitssuccessinreachingthepoorestofthe poor and improving the lives of borrowers and, hopefully, through a multiplier effect, the lives of many others. However due to certain limitations like constraints of time and the higher cost of gathering primary data from the users, for instance, to measure the impact of microfinance institutions on the lives of the poor. It excludes from investigation the outreach and its impact on the lives of the poor, as well as to compare their financial performance with their global peers and with themselves. This study only focuses on determining the factors affecting the financial and operational sustainability of Ethiopian MFI. This study limits the scope only to the available secondary data for 10 years (2013-2022), only 10 sample MFIs have been selected out of a total population of 41 MFIs.

1.7 Limitation of the study

This study primarily considered and used secondary quantitative data to test the financial and operational determinants of sustainability of MFIs in Ethiopia. However, the researcher believes that this study would be stronger if it was supported by additional qualitative factors that affect the sustainability of microfinance institutions. The researcher limits the scope only to the available secondary data for 10 years.

1.8 Organization of the study

This study is organized into five chapters. The first chapter presents an introduction, a statement of the problem, the objectives of the study, the significance of the study, the limitation of the study, and the scope of the study. The second chapter covers details of the related and important literature used in the study. The third chapter deals with methodology in general. It described the data collection mechanism, data analysis tool, measurements for the variables used in this study, and the expected effects of the explanatory variables on sustainability. The fourth chapter presents results and discussions. Finally, the last chapter presents the conclusion and recommendations.

Chapter: Two

Literature Review

This chapter contained various sections that described the topic in various ways. As a result, the first two sections will discuss the overall concept, definition, and sustainability measurements of MFI. The remaining parties discuss the definition of MFI and its evolution in Ethiopia, theories, viewpoints, empirical reviews, and lastly the research gap.

2.1 Theoretical literature

2.1.1 Definition of microfinance

Microfinance institutions (MFIs) are still a relatively new topic in economic research. The most important financial discovery in the last two decades did not come from the world of the rich or the relatively affluent. More important than the hedge fund or the liquid-yield option note was the discovery that the poor can save, borrow (and indeed decide on loans to fellow poor), and repay loans (Srinivasan & Sriram, 2007).

Lack of credit is widely regarded as one of the primary reasons why many people in developing economies remain impoverished. The poor, in general, do not have access to banking system loans because they cannot provide acceptable collateral or because the costs banks incur in screening and monitoring the poor's activities and enforcing their contracts are too high to make lending to this group profitable. However, since the late 1970s, the poor in developing economies have had greater access to small loans through so-called microfinance programs. (Niels &Robert, 2007).

Microfinance definitions have evolved, in the region, and among academics. For instance, consider the definition of microfinance provided by (Robinson, 1998) is ‒Micro finance refers to small-scale financial services for both credits and deposits provided to persons who breed or fish or breed; manage small or micro-enterprises where goods are produced, recycled, repaired or exchanged; provide services; work for salary or commission; earn from the rental of small amounts of land, vehicles, draft animals, or machinery and tools; and to other individuals and local groups in developing countries, in both rural and urban areas‖.

Many authors in the field, however, define microfinance as the provision of financial services to low-incomepeople.Referstoamovementthatenvisionsaworldinwhichlow-incomefamilies have continuous access to high-quality, low-cost financial services to finance income-generating activities, build assets, stabilize consumption, and protect against risks. The microfinance sector differs from other financial sectors primarily in that it serves clients who are less financially rewarding or are not in the best interests of traditional banks. MFIs provide microfinance services to poor people who cannot provide collateral or other financial security, such as small loans of $100 or less, known as microcredits. (Reno-Weber, 2008). As mentioned by Robison (2001) and as cited by (Yoshi Fukasawa, 2011), MFIs' success is based on two main goals: group lending and teaching poor people how to help them. Microfinance is a relatively new term that is commonly used to address issues such as poverty reduction, financial assistance to micro- entrepreneurs, gender development, and so on. There is, however, no legal definition of microfinance. Microfinance is defined by the task force on supportive policies and the Regulatory Framework for Microfinance as the "provision of thrift, credit, and other financial services and products in very small amounts to the poor in rural, semi-urban, or urban areas to enable them to increase their income levels and improve their lives." The term "micro" literally translates to "small." However, no quantity has been defined by the working group. Meanwhile, narrower definitions attempt to equate microfinance with microcredit, as early NGO credit programs did. Microcredit is the provision

of small loans to low-income households and small business owners, with or without collateral. (Degefe, 2009)

Many scholars argue, however, that the term microcredit was originally closely associated with microfinance, which is a very small loan to unsalaried borrowers with little or no collateral. This viewpoint is shared by (Montgomery, Dehejia, & Morduch, (2011).)Who argue that many people have the misconception that microfinance and microcredit are synonymous? They realized that, while microfinance encompasses a wide range of financial services such as credit, savings, and insurance, micro-credit is the provision of credit by non-bank financial intermediaries or commercial banks that is typically used as capital for small businesses.

2.1.2 Micro finance Institutions and their Development in Ethiopia

Microfinance in Ethiopia began formally in the years 1994-1995 (Ramanaiah & Mangala, 2011). The government's licensing and supervision of institutions proclamation, in particular, aided the spread of micro finance institutions (MFIs) in both rural and urban areas by allowing them to legally accept deposits from the general public to diversify sources of funds, draw and accept drafts, and manage funds for the microfinance business.

The establishment of sustainable microfinance institutions that serve large numbers of disadvantaged people is a fundamental component of Ethiopia's development strategy. While non-governmental organization (NGO) credit schemes and informal sources of finance have existed in Ethiopia for many years, Proclamation 40/1996 established a legal and policy frame work for MFIs(Gebrehiwot, 2002)as cited by(SIDA, 2007). According to (MoFED, 2002), Ethiopia is one of the 70 countries that developed a poverty reduction strategy paper (PRSP). This PRSP is evolving into the operational framework for converting global MDG targets into national actions. This document serves as a practical foundation for addressing the country's challenges. According to UN declarations, the country's poverty level should be cut in half by 2015, compared to 1999. Institutions and the political economy of society are viewed as critical in influencing economic growth and its impact on poverty in the PRSP document. It also suggests that reforming the legal system, enforcing contracts, ensuring property rights, reducing conflicts (internal/external), and improving bureaucracy efficiency can generate a growth pattern that ensures faster poverty reduction and achievement of the country's Millennium Development Goals (MoFED, 2002)

Microfinance is mentioned in the document as one of the specific means that is given more emphasis and is expected to play an important role in reducing poverty in rural areas of the country, where the majority of the population lives. As a result, the majority of microfinance service providers have articulated creating a small and easily accessible loan to the poor as their primary goal, with the expectation of fostering pro-poor growth. As a result, dealing with the sustainability of MFIs in Ethiopia is critical to making the MDG objectives attainable about the emphasis placed on the MFIs sector.

2.1.3 Definition of sustainability

The term "sustainability" has been defined in a variety of ways. Scholars and experts have recently come together to propose two levels of sustainability: operational and financial self- sufficiency (Iezza, 2010)

Generally, sustainability has been defined as permanent (Navajas, Schreiner, Meyer, Gonzalez–Vega, & Rodriguez–Meza, 2000), also the ability to repeat performance through time (Schreiner, 2000). It allows the continued operations of the microfinance provider ongoing provision of the financial service to the poor‖ (CGAP, 2004). This will depend on the sustainability of the microfinance institution itself

also known as institution sustainability, the sustainability of their market, the sustainability of legal policy as an enabling environment, and the sustainability of their impact on the poor.

Microfinance institutions, according to history, did not begin as businesses, but rather as a tool to alleviate poverty by assisting the poor in creating their livelihoods (Harper, 2003). As a result, donor-funded organizations provided the majority of microfinance services to the poor. As microfinance developed between 1970 and 1990, the widespread belief that the poor were unbankable was dispelled. Microfinance has the potential to reach millions of people (e.g. Geemanbank). Furthermore, it appeared that even at unsubsidized interest rates, the poor were able to save and repay the loan. However, one question remained: what is the best way to reach the poor: through the financial system or poverty lending? While the financial system strategy aimed for microfinance institutions to be self-sustaining, the poverty lending model relied on subsidies, emphasizing the provision of low-cost credit. (Johnson, 2009);(Robison, 2001). After the 1990s as more donor support become less reliable, most microfinance institutions started to think about how to sustain their operation without subsidy. This was only possible if they could earn more from their operation than their spending could require in absence of the subsidy. Moreover, reaching the poorest within the framework of sustainability, as (Johnson, 2009) has put it, seemed impossible.

2.1.4 Measurements of sustainability

Operational and financial sustainability are the two levels of sustainability. Financial sustainability is used to determine whether an institution's loan revenues are sufficient to cover operating expenses, financing costs, provision for loan losses, and cost of capital, which are not included in the operational sustainability. The cost of capital is a measurement of the capability to care for the value of equity against inflation (Bogan L. , 2012). According to the MIX Market explanation of sustainability, described an MFI as operationally sustainable when operational self sufficiency reaches 100% and financially sustainable when operational sustainability reaches 110%. Total financial revenue/ (Financial expense + operating expense + Loan loss provision expense) is used to calculate operational sustainability (Operational Sustainability).

Meyer (2002) defines operational sustainability as the ability of a microfinance institution (MFI) to cover its operating costs from its operating income, regardless of whether it is subsidized or not. On the other hand, MFI is financially self-sufficient when they can cover from their own generated income, both operating and financing costs and other forms of subsidy valued at market price. That is, to cover its cost if its activity were not subsidized and if it raised capital at commercial rates (Balkenhol, 2007). The self-sustainability requires the MFI to be able to cover at least the opportunity cost of all factories of production and asset from self-generated income (Chaves & Gonzalez–Vega, 1996). MFI self-sufficiency is a non-profit equivalent of profitability (Woller & Schreiner, Poverty Lending, Financial Self–Sufficiency, and the Six Aspects of Outreach. The SEEP Network: Poverty Lending working Group, Washington, DC.,, 2002).

Generally, operational self-sufficiency and financial self-sufficiency are the same the difference is that FSS uses adjustment data. The adjustments are goes to subsidy, inflation, and loan loss provisions the following section briefly discussed adjustments to financial data.

2. 1.5 Adjustments to financial data
Subsidy adjustments

Adjustments to subsidies have two goals. First, the amount of subsidy received by MFIs varies greatly. Some MFIs receive no funding at all. As a result, adjusting for subsidies will allow for a more relevant

comparison of performance between MFIs with varying levels of subsidy. Second, the industry has agreed that MFIs should be able to operate without government subsidies, in the long run, relying instead on commercial sources and private investment at market rates. An adjustment that eliminates the effects of current subsidies will disclose how close the MFI is to create a business that could expand sustainably in a commercial environment free of subsidies. Subsidy adjustments are not reflected in an MFI's usual financial statements; rather, they are fictitious revenues or expenses that managers and analysts use when calculating certain indicators and ratios ("Microfinance Consensus Guidelines: Guiding Principles on Regulation and Supervision of Microfinance". Consultative Group to Assist the Poor)

Inflation Adjustment

Inflation reduces the purchasing power of monetary assets. Inflation erodes the real worth of an MFI's equity if it has net monetary assets. The inflation cost is derived using the yearly inflation rate multiplied by the difference between equity and fixed assets in the FSS approach. The concept is that an MFI should keep the real value of equity in mind while calculating sustainability. The inflation adjustment is justified by the fact that an MFI should, at the very least, protect the value of its equity against inflationary erosion. The real worth (purchasing power) of stock depreciates as a result of inflation. This loss is recognized and quantified by the inflation adjustment (Yaron & Manos, 2007)

Adjustments for non-performing loans

AMFI's treatment of non-performing (that is, delinquent) loans can have a large impact on how sound its financial results appear. MFIs differ widely in their accounting policies with respect to loan-loss provision expense, write-offs, and accrual of interest income. Analysts adjust these accounts to compare MFIs consistently and/or to eliminate a material distortion in financial statements resulting from unrealistic accounting treatment of the non-performing portfolio (CGAP, 2003).

2. 1.6 Microfinance poverty reduction approach theory

The approach to poverty reduction used by two microfinance institutions is discussed in this section. As previously stated, microfinance institutions are thought to be a method for reducing poverty by increasing access to financing and financial services. Improved access to finance and financial services generate income-generating capability, allowing the poor to access all development needs to escape the multi dimensional dimensions of poverty and lessen their vulnerability to unforeseen events. Microfinance's contribution to this objective has thus been measured using a process called microfinance outreach. That is, an MFI's ability to reach out to the poorest of the economically active poor.

There are two competing views as to which goal of microfinance should be given higher priority as far as poverty reduction is considered. These are Institutionalists (also known as financial system) and Welfarist (poverty lending) approaches (Arun, 2005); (Basu & Woller, 2004) and Welfarists approach.

2.1.6.1 Welfarists

They argue that MFIs can be sustainable even if they are not financially sustainable. They argue that gifts are a type of equity and that contributors can therefore be considered social investors. Unlike private investors who buy stock in publicly traded companies, social investors do not intend to make money, according to (Woller & Basu, Microfinance a Comprehensive Review of Existing Literature, 2014)Instead, the social intrinsic return is realized by these donor investors(Woller & Schreiner, Poverty Lending, Financial Self–Sufficiency, and the Six Aspects of Outreach. The SEEP Network: Poverty Lending working Group, Washington, DC.,, 2002)Think that welfarists prioritize poverty alleviation, place a higher value on the depth of outreach than the breadth of outreach, and measure institutional

effectiveness using social indicators. This is not to argue that the scopes of outreach or financial measures are unimportant. Welfarists believe these issues are vital, but they are less prepared to compromise the depth of outreach to achieve them than institutionalists. Welfarists emphasize the breadth of outreach in general. They make it clear that they want to improve participants' well-being right away. They are more interested in using financial services to directly alleviate the worst effects of severe poverty among participants and communities than in banking people, even if some of these activities require subsidies. Their objective tends to be the self-employment of the poorer of the economically active poor, especially women, whose control of modest increases in income and savings is assumed to empower them to improve the conditions of life for themselves and their children. The centre of attention is the "family." The most prominent examples of Welfarist institutions are the German Bank in Bangladesh and its replicas elsewhere, and the Foundation for International Community Assistance (FINCA)-style village banking programs in Latin America and, more recently, in Africa and Asia.

2. 1.6.2 Institutionists Thought

Institutionalists, on the other hand, contend that unless we construct sustainable MFIs that can run without subsidies, the promise of MFIs to reduce global poverty will not berealized (Wol14). They argue that long-term MFIs help to broaden outreach and reach out to more underprivileged people. As a result, even if the two schools of thought appear to be at odds, they are not. Its mission is to end poverty. The difference between them is in how they approach it(the approaches to alleviating poverty).

According to Welfarists, the poorest people should be targeted, and profit should be secondary. They want to use donor cash to charge subsidized or cheap interest rates. Institutionalists, on the other side, contend that donor funding is unreliable and that MFIs must earn enough revenue on their own to reach more poor people in the future. They like moderately poor consumers. They charge higher interest rates and place a greater emphasis on MFI efficiency to earn profit and reach more disadvantaged people.

The argument between the two schools of thinking is endless, and many players in the MF business now evaluate MFI performance using both the Welfarist and Institutionalists views (Placeholder1), the MFI business relied on donor and government subsidies for many years, but there is now pressure on these organizations to be financially self-sufficient; nevertheless, it appears that assisting the poor and being financially self-sufficient are mutually exclusive.

Various justifications are advanced: the poor cannot afford high-interest rates if they consume money for which they have no collateral; supplying the poor has a high transaction cost. However, in the last 20 years, these assumptions have been debunked, and the poor have been seen as capable of paying high-interest rates because the ROI of small projects is higher than that of large projects, the poor don't consume the money but use it to fund their businesses, transaction costs are mitigated by group lending, and the lack of physical collateral is mitigated by social capital. As a result, contrary to predictions, the MFI industry has demonstrated a high repayment rate, even though strong repayment rates cannot be translated to financial sustainability. However, there appear to be numerous unresolved issues. Many MFIs are unable to serve a large portion of the world's poor because they are not subsidy-free. The influence of microcredit on the lives of the impoverished has produced mixed results. Is it possible for MFIs to help the needy while remaining financially self-sufficient? Is MFI's model accurate? If that's the case, what's keeping them from meeting their goals? What is the most effective strategy for a microfinance institution to reach out to the underprivileged while maintaining financially and operationally self-sufficient?

2.1.7 Micro finance financing theories

Although the capital structure theory of Modigliani and Miller (M&M) is widely used in corporate finance, its application to microfinance remains unknown. The traditional business envisioned by the M&M theory is at odds with lending institutions that can attract deposits, thus the theory must be tweaked to fit lending institutions governed by the double bottom lines (Cohen, 2003). The agency theory, the life cycle theory, and the profit motive theory are the three theories we propose.

2.1.7.1 Agency cost theory

The agency theory is a useful capital structure theory. It alludes to debt's function in aligning management's performance with the owners'. According to (Kumar, 2012), MFI debt usage boosts profitability metrics and improves cost-efficiency. Higher leverage, according to the theory, is a helpful governance tool that helps to minimize unnecessary cash flow by threatening liquidation. This may put more pressure on management to create sufficient cash flows to meet debt obligations. However, the gains are offset by agency expenditures for monitoring management actions.

Because microfinance institutions are by their very nature informational opaque, agency costs may be high (Hudon & Traca, 2011). Debt is used as a mechanism to discipline the manager from engaging in self-serving activities for example perquisite consumption, empire-building activities, etc. Therefore, according to this theory, high leverage/debt ratios help a firm to reduce its agency cost and mitigate agency conflicts. This debt ratio also pushes managers to act more in the interests of shareholders. As a result, the firm's value increases. Therefore, according to this theory, a positive relationship is expected between debt and sustainability. However, due to agency conflicts; companies use more leverage, thus affecting their performance negatively.

2.1.7.2 Life cycle theory

According to (Fehr & Hishigsuren, 2006) the capital structure of MFIs changes with the loan to cost phases. Because capital suppliers limit MFIs' options, certain MFI growth phases resemble a specific financing structure. MFIs' funding options may be limited due to the associated cost of capital. The LCT, according to (Hoque & Chisty, 2011)), illustrates how MFIs finance themselves as they grow into financially sustainable entities. (Kapper, 2007) Listed four important stages: start-up, expansion, consolidation, and integration.

MFIs are initially funded through donations and concessionary funds. This is because it is too risky for private investors (equity). Donors want to control the lending, and having equity in the MFI allows them to do so. Setting up systems and developing blunt business models during the start-up phase are constraints. Because of the subsidies and grants they receive, NGOs are the most successful during this phase. The expansion phase focuses on the extension of operations once the operational challenges from the previous phase have been resolved. A good business model allows MFIs to expand their operations and reach. To achieve MFI stability, the expansion stage introduces equity from NGOs and public investors. IFIs (International Finance Institutions) step in to provide seed capital. The capital of IFIs sits between donor funds and commercial funding. However, MFIs can still receive subsidies in the form of soft loans and grants (Basu & Woller, 2004)

The consolidation stage commercializes an MFI's operations. MFIs invest in acquiring sustainability by formalizing operations and adhering to regulations that allow for deposit attraction. Deposits increased lending, but at a low cost. Commercial debt is introduced into the funding structure during the consolidation phase. The achieved stability allows funds to be obtained from banks (domestic). Foreign funds are used as guarantees for debt acquired in the domestic market by MFIs. More private capital is

now available. However, only large MFIs can afford such funding because they are low risk and thus attract private investors looking for high returns. Domestic debt is now the primary source of financing, as foreign debt carries the risk of exchange rate fluctuations and capital flow restrictions, making it expensive. Commercial banks involved in microfinance do not go through this transition period, whereas NGOs are more likely to do so (Kapper, 2007)

During the integration phase, MFIs become microfinance banks and enter the mainstream financial sector. Subsidies and grants are no longer part of MFI financing structures, and the majority of MFIs are financially stable and profitable. The integration stage is associated with extensive outreach. However, there is a fear that as MFIs gain financial stability, they will neglect the core poor (Morduch & Haley, 2002); (Mor; Morduch & Haley, 2002)Proponents of sustainability, such as (Rhyne, 1998), argue that as the MFI grows, so do its clients and that at the integration stage, the loans granted to clients will no longer be small. In practice, there will be no mission drift in terms of loan size. However, it is worth noting that more clients are served by sustainable MFIs.

2.1.7.3 The profit incentive theory

According to the PIT, using commercial funding sources at any stage of MFI evolution allows MFIs to meet the micro finance promise (Bogan L. , 2012)). The use of commercial funding increases cost awareness, efficiency, and reach. In agreement with the institutionalist paradigm, the PIT states that donor funding is limited and thus cannot fund microfinance on a large scale, despite the increasing demand for microfinance. According to the theory, MFIs seeking profits thrive to maximize revenue while minimizing operational costs to cover expenses and build surpluses. MFIs 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 (Aghion & Morduch, 2005).

Evidence of the PIT, as put across by (Bogan, Johnson, & Mhlanga, 2007), notes the increasingly international and internal pressure on MFIs to shed-off subsidies and grant financing. Institutions such as ACCION International have made frantic efforts to link MFIs with equity financiers, debt financing, as well as other commercial funding sources. This has availed an avenue for MFIs to seek independence from grants and subsidies.

2.1.8 Performance of MFIs

Performance of an institution or a company shall be measured not only from the objectives of the organizations angel, but also from the industry average. As indicated by parts of this paper, the goal of MFIs is to reduce or eradicate poverty by giving access to the poor financial resource and by creating awareness for resource utilization. In the early days when MFI started, they were financed by donor funds that have a poverty eradication goal. As explained by (Wolday &Anteneh, 2013)hence the performance of the MFI was measured on how much MFI reach to the poor (outreach) and impact (how far the lives of those who get financial services are changing as compared to those who don't get these services).

However, those days, the performance of microfinance institutions was being measured by different parameters. For instance Richard Rosenberg (CGAP) has indicated Core performance indicators of microfinance institutions written for staffs who design or monitor projects that fund microfinance institutions (MFIs). He offers basic tools to measure performance of microfinance institutions in a few core areas: Breadth of Outreach: number of clients being served, Depths of Outreach: poverty level of the clients, Collection performance: performance of an MFI in collecting its loans, Financial

sustainability: profitability to maintain and expand services without continued injections of subsidized donor funds, Efficiency; performance in controlling the administrative costs. These are general measures in which the performance should be considered and these can be further elaborated in detail based on (Ledger Wood, 1999).

2.1.9 Sustainability of MFIs

In micro-finance, sustainability can be considered at several levels of institutional, group, and individual and can relate to organizational, managerial, and financial aspects (Rao, 2001)) as cited by (Kimando, 2012). However, the issue of financial sustainability of microfinance institutions has attracted more attention in mainstream analysis for its contribution to poverty reduction. Sustainability is loosely defined as the ability of a MFI to cover its operating and other costs from generated revenue and provide for profit. It is an indicator which shows how the MFI can run free of subsidies (Melkamu, 2012). This change in emphasis has created a different perspective on the analysis of performance of the MFIs. Today many key players in the industry use sustainability as one core criteria to evaluate the performance of MFI besides the outreach other impact measures described earlier.

According to Meyer, (2012), there are two kind of sustainability that we could observe in assessing MFIs sustainability: financial self-sufficiency and Operational self- sufficiency. Financial self-sustainability is when MFIs can also cover the costs of funds and other forms of subsidies received when they are valued at market prices. A more popular definition of financial self-sustainability suggested by Micro-Banking Bulletin, CGAP, Mix Market and others by which financial sustainability is defined as total adjusted revenue as a percent of total adjusted expenses such that the result should be greater than or equal to 100%. On the other hand operational self-sufficiency is when the operating income is sufficient enough to cover operational costs like salaries, supplies, loan losses, and other administrative costs.

Thus, as mentioned by AEMFI, (2014),financial sustainability is MFIs' ability to cover all costs on adjusted bases and indicate its capability to operate without ongoing subsidies including soft and grants. The adjustment goes to inflation, loan loss provisioning and cost of capital. Meyer, (2012) believed that financial self-sufficiency is a high standard measure of sustainability and brings long term perspectives for MFI operations than operational self-sufficiency. According to him the poor needed to have access to financial service on long-term basis rather than just a one-time financial support.

Microfinance is said to be an effective instrument discovered in 21st century to mitigate rural poverty in the world (Ramanaiah & Mangala, 2011)

In the early days when MFIs established their finance was from donation or grants from those donors who have set their goal as eradication or reduction of poverty. Diverse literatures noted that sustainability is one of the areas that need to be assessed to enhance the full functioning of microfinance institutions. This brought the need for MFIs to be measured on how much MFI reach to the poor and how far the lives of those who get financial services are changing as compared to those who don't get these services. But as the MF industry grows in size, the need for increased financing coupled with unpredictability of donor funds trigger the issue of building a sustainable MFIs that stand on their own leg.

According to the explanation of Meyer (2002) also stated that the financial un-sustainability in the MFI arises due to un-materialization of funds promised by donors or governments. Hence MFIs shall start covering their own cost of operation from their program revenues. Thus we can loosely define sustainability as the ability of an MFI to cover its operating and other costs from generated revenue and

provide for profit. It is an indicator which shows how the MFI can run independent of subsidies. Also as indicated by (Basu & Woller, 2004)), this change in emphasis has created a different perspective on the analysis of performance of the MFIs.

2.1.10 Financial Viability Indicators

Financial viability refers to the ability of the MFI to cover its costs with earned revenue. A financially viable MFI will not rely on donor funding to subsidize its operation. Common indicators here include financial spread, Operational Self Sustainability (OSS), Financial Self Sustainability (FSS) and Subsidy dependence index (Ledger Wood, 1999).

Furthermore, many scholars mentioned that the common financial viability indicators used in past studies are Financial Self-Sufficiency (FSS), Operational Self-Sufficiency (OSS), and even the profitability ratios such as Return on Asset (ROA), Return on Equity (ROE). Transition to viability is from operationally unviable (unable to cover operational costs from operational revenues) to operationally viable (able to cover operational costs from operational revenues) to financially viable (able to cover operational costs without subsidy). Failure to achieve OSS means lesser funds to loan to borrowers, hence, endangers the long-term existence of a MFI as an institution. OSS requires instituting strategies to optimize yield and/or achieve cost efficiency. Although FSS is superior to other indicators (Cull, R., Demirgüç–Kunt, & Morduch, 2007) for its comprehensiveness as it passes several adjustments to bring a more complete picture, for the purpose of this paper OSS is also used because it is a straight forward measure and it allows easy verification by donors and governments.

2.1.11 Dimensions of Operational Sustainability of MFIs

2.1.11.1 Institutional Sustainability

The organization's internal organizational environment is one of the elements of the institution that institutional sustainability considers (Ruben and Schers, 2007). These characteristics are what give the organization its overall health, vitality, and viability.

2.1.11.2 Mission Sustainability

The organization will remain on its desired class in the long run if its mission can be sustained. The organization's activities must be continuously assessed to determine whether they are consistent with its core objective. If the mission is changed, it will be done through a well-articulated and number of participants within the company (Ruben and Schers, 2007).

2.1.11.3 Program Sustainability

Program sustainability occurs when stakeholders (clients) feel strongly enough about and value the services they are receiving to take on that obligation and ownership. When this occurs, the MFI can create a phasing-out strategy because the program will continue to be funded by clients and no outside subsidized support will be required (Bret, 2006).

2.1.11.4 Human Resource Sustainability

It indicates that the MFI is capable of attracting, train, and retain highly competent employees who can provide services as needed. Also, the staff is able to keep the company on track while also considering all other sustainability-related factors (Ruben and Schers, 2007).

2.1.11.5 Financial Sustainability

Financial sustainability refers to the MFI's capacity to pay all of its current expenses as well as those incurred during growth, should activities be expanded (Johnson et al, 2006). It would imply that the MFI is able to cover its operational expenses as well as inflation-adjusted finance charges and growth-related

expenses. A number of indicators can be used to measure and continuously monitor the financial sustainability of an organization.

Otero and Rhyne divided financial sustainability into four levels, starting with the stage in which the MFI is entirely dependent on grants and subsidies for carrying out its operations and ending with the stage in which the program is entirely financed by resources mobilized from the clients and on funds raised from financial institutions at commercial rates of interest. In conclusion, the key to maintaining financial viability is setting interest rates that are high enough to pay for operating expenditures, loan losses, interest charges, and adjustment costs. Yet, MFIs must function effectively enough for these expenses to be covered by appropriate, affordable, and competitive interest rates. MFIs must control delinquency, keep their cost of capital low (by utilizing savings), rotate their portfolios effectively, keep operating costs to a minimal, and most crucially, set interest rates to cover all of these costs if they want to maintain long-term sustainability (Rutherford, 2000).

2.1.11.6 Market Sustainability- This encompasses the entire range of concerns related to the supply and demand of microfinance. It deals with issues relating to the many clientele types, their various types of needs, and designing products to meet those needs. The sustainability of the demand will result from meeting these needs in the most client-friendly possible way. The MFI must be financially self-sufficient, cover all operating expenses, and have access to resources raised from borrowers and from outside sources at rates of interest that are economically feasible in order to achieve a sustainable flow of resources (Johnson et al, 2006).

The accessibility of an extensive variety of options for the consumer is another aspect of market sustainability. The MFIs exist only on the effectiveness and efficacy of their services, not because of intentionally introduced flaws (Rosenberg, 2003).

2.1.11.7 Legal and Policy Environment Sustainability

The above-described market sustainability requires the existence of a strong legal and policy environment that will permit the growth of many organizations engaged in the provision of microfinance services (Onyuma and Shem, 2005). It would cover topics like legal structure, interest rates, saving and resource mobilization from capital markets and international business sources, among many other things.

2.1.11.8 Impact Sustainability

Microfinance has been a successful way to decrease poverty in underprivileged areas. As a result, it is essential that the services provided by the various organizations reduce poverty. For a poor family to gradually escape from poverty, the positive adjustments that take place in their lives must be maintained over the long term (Onyuma and Shem, 2005).

2.2 Global Empirical evidences on drivers of sustainability of MFIs

De Crombrugghe et al. (2008) carried out a study on the performance analysis for a sample of microfinance institutions in India. The study examine the elements that help MFIs become self-sufficient and emphasize any potential conflicts or trade-offs that can occur if MFIs attempt to assist the disadvantaged at the same time (small loan sizes, low interest rates). The research methodology is based on regression analysis. This makes it possible to research how each factor affects operational performance in relation to other factors and to indications of MFI specificity. In order to determine whether there may be a conflict between high repayment rates and profitability or between high repayment rates and cost control, they examine the factors that affect repayment, profitability, and expenses. According to their findings there are two key benefits of regression analysis. First, from a

project evaluation point of view, and second, from the wider point of view of the foundations of the microfinance movement. Given the magnitude of the loans it offers, accepting a particular of this institution, it is thus feasible to evaluate the cost or profitability indicators of a certain institution. They also examine the significance of trade-offs between measures of outreach and indicators of sustainability and efficiency, which the regressions try to explain, from a broader perspective of the foundations of the microfinance movement. They use a unique data set of MFIs from India, a non-profit organization that coordinates and analyzes microfinance. The year 2003 is covered by the study, which contains 42 MFIs.

At a global level, (Ayi & Maty 2010) studied what drives MFI's financial sustainability, using microfinance institutions in 101 countries scattered by region and type of microfinance institutions over the period of 1998-2006. The study revealed that a high-quality credit portfolio, coupled with the application of 82 sample microfinance institutions has sufficiently high interest-rates that allow a sensible profit and sound management are instrumental to the financial sustainability of microfinance institutions. The results reveal that percentage of women borrowers has an insignificant negative impact on the sustainability of MFIs. Finally, the results of the study noted the client outreach of microfinance programs and the age of MFIs have a positive but smaller impact on the financial sustainability of MFIs.

A study by (Jorgensen, 2011) examined the factors that determine profitability of microfinance institutions using a sample of 879 MFIs. The study indicated that capital asset ratio, age (new) and the gross loan portfolio are the factors that statistically influenced profitability. The study also found that operating expense over loan portfolio has positive influence but the number of active borrowers has negative influence.

Rai & Rai (2012) carried out a study on factors affecting the financial sustainability of MFIs. The researchers used data from MFIs in India and Bangladesh. Result of the study revealed the factors that affect the sustainability of MFIs are capital to asset ratio, operating expenses to loan portfolio and portfolio at risk greater than 30 days. They were used a quantitative research approach. The study deployed probit regression model as a data analysis technique using 9 years' secondary data of 65 selected MFIs in India gathered from the mix-market database. The study highlighted that the size of a microfinance institution, average loan balance per borrower, cost per borrower & yield on gross loan portfolio affect the operational sustainability of Indian microfinance institutions in a significant manner.

A study conducted on determinants of financial performance of microfinance institutions in Kenya by (Kipkoech & Muturi 2014) using both quantitative and qualitative approaches using sample of 52 respondents from selected microfinance institutions in Nakuru town found that number of borrowers, capital adequacy and branch network have significant on performance of microfinance institution.

Ngumo & Collins (2017) examine the determinants of financial performance of Microfinance banks in Kenya. The study adopted a descriptive research design and used secondary data from 7 Microfinance banks for a period of 5 years from 2011 to 2015. The study found positive and statistically significant relationship between operational efficiency, capital adequacy, firm size and financial performance of microfinance's. However, the study found an insignificant negative relationship between liquidity risk, credit risk and financial performance.

Beg (2016) studied the determinants of financial self-sufficiency of Andhra Pradesh MFIs, the study used panel data from mix-market of ten MFIs of Andhra Pradesh, over the period 2005 to 2013 and found that yield on gross loan portfolio, size, portfolio at risk (30) days and age are determinants of financial self-sustainability. Furthermore, the study revealed that average loan balance per borrower,

labor cost to assets ratio, capital cost to assets ratio & gross loan portfolio to total assets ratio are statistically insignificant predictors of financial self-sufficiency.

Nyanzu, Peprah and Ayayi (2018) examined the impact of regulation on MFIs' sustainability and social outreach in sub-Saharan Africa. The study used unbalanced panel data over 2002 - 2012 for 30 countries, also it deployed a multilevel estimation technique, the result revealed that regulation supports advance the sustainability and breadth of outreach, however, it does not affect the depth of outreach. Moreover, the study found that microfinance institutions that are deposit-taking have better sustainability, however, tend to serve the marginal poor's. Also, regulatory quality has a positive influence on sustainability and outreach.

Awaworyi (2017) analyzed the sustainability and depth of outreach of MFIs in sub-Saharan Africa, employing data obtained from 206 microfinance institutions in 33 African countries, the study deployed three stage least square technique to analyze whether a trade off exists between sustainability and depth of outreach. The results revealed the existence of a trade-off.

Luka (2017) was conducted on research the determinants of sustainability and outreach of microfinance institutions in Uganda. The study employed an econometric approach using a panel data. The research used 6 years' data gathered from 53 microfinance institutions in Uganda. The study found that sustainability is positively & significantly determined by real effective lending rates and age of a microfinance institutions, and negatively by the ratio of gross outstanding loan portfolio to total assets, the ratio of average loan size to national per capita income, the unit cost of loans disbursed, and a group-based delivery mechanism compared to an individual-based delivery mechanism.

Murithi Philip Timothy (2019) analyzed the effects of credit risk control strategies on the financial performance of Micro-finance Institutions in Kenya. The target population for this study was the operation officers working in the credit department and the management of all 12 branches of Yehu Microfinance in Kenya. The study used a descriptive research design. 80 participants made up the study's sample size. Structured questionnaire was used as the primary data collection method. Statistical Package for the Social Sciences was used for data analysis (SPSS). Standard deviations, averages, frequencies, and other measures of central tendency were used. The link between the variables in the study hypotheses was examined using multiple linear regression analysis and Pearson correlation analysis, respectively. The effectiveness of the credit risk management strategies used by Kenyan microfinance organizations was significantly correlated with their financial performance. According to the study's findings, setting loan size restrictions was a sound credit management strategy, doing routine credit checks increased credit risk management, and using client credit application forms boosted monitoring and credit risk management.

FazahNaz (2019) evaluated Determinants of financial sustainability of microfinance institutions in Pakistan are struggling to survive due to a drop in profitability. In order to determine whether achieving profitability and sustainability becomes a conflicting goal when servicing the poorest strata, the current study intends to explore the factors affecting the financial performance, or profitability and sustainability, of microfinance institutions in Pakistan. The study makes use of a panel of unbalanced data made up of 29 MFIs for the years 2008 through 2014 that was received from MIX Market. The study employs fixed effect and random effect, with endogeneity later being accounted for using instrumental variables (2SLS and 3SLS). The results of the finding shows that the primary variables affecting the financial performance of MFIs in Pakistan are size, cost effectiveness, portfolio at risk, average loan size, and yield on loan portfolio. No evidence of mission drift has been discovered; rather,

helping the less fortunate is thought to improve financial results. The study offers management of MFIs advice on how to identify the variables that might have an impact on their financial performance and achievement of any MFI's primary goals. Managers can learn how to accomplish Microfinance programs are essential for reducing poverty in underdeveloped nations, however most microfinance organizations (MFIs) struggle with this issue.

Wilson B (2020) carried out the Effect of Financial Controls on Financial Stability of Micro Finance Institutions in Rwanda the purpose of the study was to determine how financial controls affected Rwanda's microfinance institutions' financial stability. The financial controls hypothesis was employed by the researcher. The study made use of the following variables: population, sampling frame and size, data processing, and analysis. The research reveals a significant positive regression coefficient. This indicates that a change in the unit of financial controls results in a change in the financial stability of Rwanda's microfinance institutions. Statistical Packages for Social Sciences (SPSS) version 24 was used for the descriptive and inferential statistics used in the data analysis. The entire model of significance was examined using the analysis of variance (ANOVA). In particular, asset management, financial system controls, and capital adequacy are highlighted as appropriate policy measures for financial controls that the report suggests. In order for external investors to monitor liquidity management and identify liquidity and credit risks exposed to their investments early enough, management advises that quarterly reports be provided on schedule. The government advises that all financial services providers operating under MFI comply with regular reporting for improved financial management and effective investment choices.

According to (Tilahun, 2022) Credit expansion and financial sustainability of microfinance institutions have relationship between credit expansion and the financial viability of microfinance institutions (MFIs) in Sub-Saharan Africa is examined in the study (SSA). The interaction between credit expansion, interest rate/portfolio quality, and MFI sustainability is also examined in the study. The study uses the Arellano-Bover/Blundell-Bond two-step Generalized Method of Moments (GMM) Windmeijer bias-corrected standard errors to examine data from 136 MFIs in 31 SSA nations from 2004 to 2018. The findings show that credit expansion is important for MFI financial viability. The research reveals, in particular, that while loan intensity and portfolio size are positively associated with MFI sustainability, the economic impact of loan intensity is greater. The alternative credit expansion proxy, however, is "credit growth."

2.3 Empirical studies on FSS and OSS in Ethiopia

Sima, G. (2010) conducted the study in the Determinants of profitability: an empirical study on Ethiopian MFIs examined internal and external factors that affecting profitability of Ethiopian MFIs for a total of 13 MFIs for the period from 2003 to 2010. The regression result using fixed effect model showed up, operational efficiency, and portfolio quality to have a negative statistically significant effect, Whereas capital adequacy, size, and the only macroeconomic variable used in the study i.e. GDP are found to be statistically insignificant variables.

Sileshi, M. (2011) entitled on determinants of financial and operational sustainability of microfinance institutions in Ethiopia. The researcher used quantitative research approach by longitudinal research design with panel data fixed regression analysis technique. The study was based on ten years secondary data from AEMFI and Mix- Market database for 13 selected MFIs in Ethiopia.

Ramanaiah, M. &Mangala, C. (2012) conducted the research thesis entitled on Determinants of Financial Performance: A study on selected microfinance institutions in Ethiopia. The study was used

the ordinary least square (OLS) method particularly multiple regression models to assess the significant determinants of financial performance. The study was based on nine years secondary data obtained from AEMFI performance analysis report and MoFED for selected thirteen MFIs from the period 2003 to 2011. The study used internal factors such as (capital asset ratio, age, and operational efficiency, portfolio quality, size and gearing ratio) and external factors such as real GDP and market concentration. The outcome of the study shows that the age of microfinance institutions has a positive and statistically insignificant effect on financial performance. The other variables which were portfolio at risk, capital to asset ratio and market concentration affect negatively not significant.

Sima (2013) on his study examined internal and external factors affecting profitability of microfinance institutions in Ethiopia by including a total of 13 microfinance institutions covering the period of 2003-2010. The researcher uses quantitative research mainly documentary analysis. The outcome of the study indicates that age of microfinance institutions has a positive and statistically significant effect on their profitability. However, Operational efficiency and lack portfolio quality have a negative and statistically significant effect. However, capital adequacy, size and GDP are found to be statistically insignificant effect.

The study conducted by (Abdurahman and Mazlan, 2014) Determinants of Financial Performance of Microfinance Institutions in Ethiopia showed the main obstacle to emerging countries' efforts to achieve their social and economic goals is poverty. Microfinance institutions were founded to give rural poor people the chance to escape poverty by becoming financially independent. On their study size has significant impact on performance of MFI whereas; operating expense ratio and breadth of outreach have negative impact on sustainability of MFI. Owing to MFIs' significant role in reducing poverty and promoting economic growth in developing nations like Ethiopia, it is unavoidable to investigate the factors affecting these institutions' financial success. The goal of this study is to determine how macroeconomic, industry-specific, and firm-specific factors affect the financial performance of a few Ethiopian microfinance companies. Quantitative methods and an explanatory research design were used to accomplish the stated goal. The study examined financial ratios from eleven (11) specifically chosen MFIs during a 12-month period.

Dechasa, S. [2017] conducted their study on factors affecting profitability of microfinance institution: a study in Southern Nation Nationalities and Peoples regional state. They used quantitative research approach method mainly focused on secondary document analysis and financial statement for the period covering from 2009 to 2013. The study used multiple linear regression model, descriptive statistics and excel sheet for data analysis to measure profitability (ROA).

Abummar, A. (2018) carried out a study regarding factors affecting financial performance of Oromia credit and saving Share Company: the case of eastern Hararghe branch using five years data from the period 2013-2017. The researcher used explanatory approach by quantitative secondary data sources. The outcome of the study indicates that operational efficiency, GDP, and size of MFIs affect OCSSCO financial performance significantly. Whereas portfolio quality, gearing ratio, capital to asset ratio, market concentration affects negatively and insignificant.

Mamaru Gislaw (2018) on his research to examine the factors that affect Ethiopia's microfinance institutions' performance and gauge their social impact. The study used an explanatory approach and qualitative descriptive research methodology. Throughout a ten-year period, samples from the AdCSI, AwCSI, and VMFI annual financial data were obtained (2008-2017). While content analysis was used to assess the qualitative data obtained through interviews, the quantitative data that had been acquired had

been analyzed using descriptive and inferential statistics. According to the study's results, there is an adverse association between an MFI's level of outreach and factors including the number of offices, the cost per borrower, the average outstanding balance, GNI per capital, and write-offs within the study's time frame. These metrics' negative coefficients indicate a risky business climate. It demonstrates how certain microfinance performance metrics—including Write-Offs during the Period (WODP), office count, cost per borrower and average outstanding balance/GNI per capital—have a negative impact on the profitability of institutions. Based on important aspects of product and service targeting and outreach, customer advantages, and social responsibility, it was determined that the analyzed MFIs performed fairly well in terms of social performance. The targeted MFIs are advised to pay close attention to their cost of borrowing, office count, average outstanding balance/GNI per capital, and write-off during the term in order to increase their profitability.

Ashebir, A. (2019) conducted the research thesis on determinants of profitability on selected microfinance institutions in Ethiopia. The study was used explanatory research design based on the collected secondary data. Return on asset was used as a proxy for profitability measurement. The study used the internal and external factors that affect the profitability of Ethiopian MFIs. From the regression analysis, the specific variables age of MFIs was found to be significant variable with a positive coefficient against ROA. Debt to equity ratio, capital adequacy, and operational efficiency were determined to be significant variables and size and quality of portfolio became the insignificant variables with a negative coefficient. The effect of external variable such as GDP was statistically insignificant and the industrial factors i.e. market concentration was found to be insignificant effect on ROA.

Teninet Elias (2020) evaluated the factors that influence the operational and financial sustainability of microfinance institutions in Ethiopia, where poverty is a serious issue, given the relationship between the health of the microfinance sector and the objective of eradicating poverty. The study used a balanced panel data set with 110 observations using a quantitative research methodology. By using more explanatory financial data, outreach, and macroeconomic indicators, the study uses FSS and OSS as a proxy. As a result, this study provides a thorough analysis of the variables that determine the viability of MFIs in Ethiopia by substituting financial and operational self-sufficiency as proxies. The regression analysis's findings show that the macroeconomic variables cost per borrower and inflation rate had a negative and significant impact on the financial sustainability of MFIs., and the riskiness of the portfolio do not influence the financial independence of MFIs in Ethiopia. The results of the econometric research also show that the average loan size per borrower and the total number of borrowers have a favorable and significant impact on the operational sustainability of MFIs in Ethiopia. According to this study, the debt-to-equity ratio and the cost per borrower have a significant negative impact on the operational self-sufficiency of MFIs. The factors return on equity, loans per loan officer, and the proportion of female MFI borrowers, on the other hand, are not significant.

Gashaw H. (2022) conducted his study on determinants of financial performance, empirical evidence from microfinance institutions in Ethiopia examine the internal and external factors that influence the financial performance of MFIs in Ethiopia. The study uses balanced panel data from 13 MFIs covering the years 2011 through 2021. The data were purposefully chosen based on data availability. To do this, the study used a mixed research methodology together with a contemporaneous and descriptive triangulation design. Both documentary material and in-depth interviews with managers and top specialists were employed in this investigation. Using the use of the Random Effect GLS Regression model, parameters have been estimated. The results of the regression analysis demonstrate that portfolio

risk, the number of active borrowers, and equity debt all significantly and negatively affect financial performance as measured by return on assets.

Fikre B. (2022) empirically investigates to analyze the factors that influence the operational and financial sustainability of MFIs in Ethiopia. The study is used secondary data for a sample of 16 MFIs from the years 2012 to 2021 and a quantitative research approach with an explanatory research design utilizing a balanced panel data random effect GLS regression model. The depth, borrowers per loan officer, and return on equity of the MFIs were all found to have a favorable and significant impact on the operational self-sufficiency of the MFIs. Moreover, financial independence is impacted positively and statistically considerably. The study discovered that both operational self-sufficiency and financial self-sufficiency were negatively and statistically significantly impacted by portfolios at risk with 30 & 90 days and debt to equity ratio. While inflation has a negative and statistically significant impact on operational self-sufficiency, cost per borrower only has a negative and statistically significant impact on financial self-sufficiency. Based on the study's findings, it can be said that depth, the debt-to-equity ratio, return on equity, the portfolio at risk, the cost per borrower, the number of borrowers per loan officer, and inflation are significant explanatory variables in determining both the dependent variables of financial self-sufficiency and operational self-sufficiency.
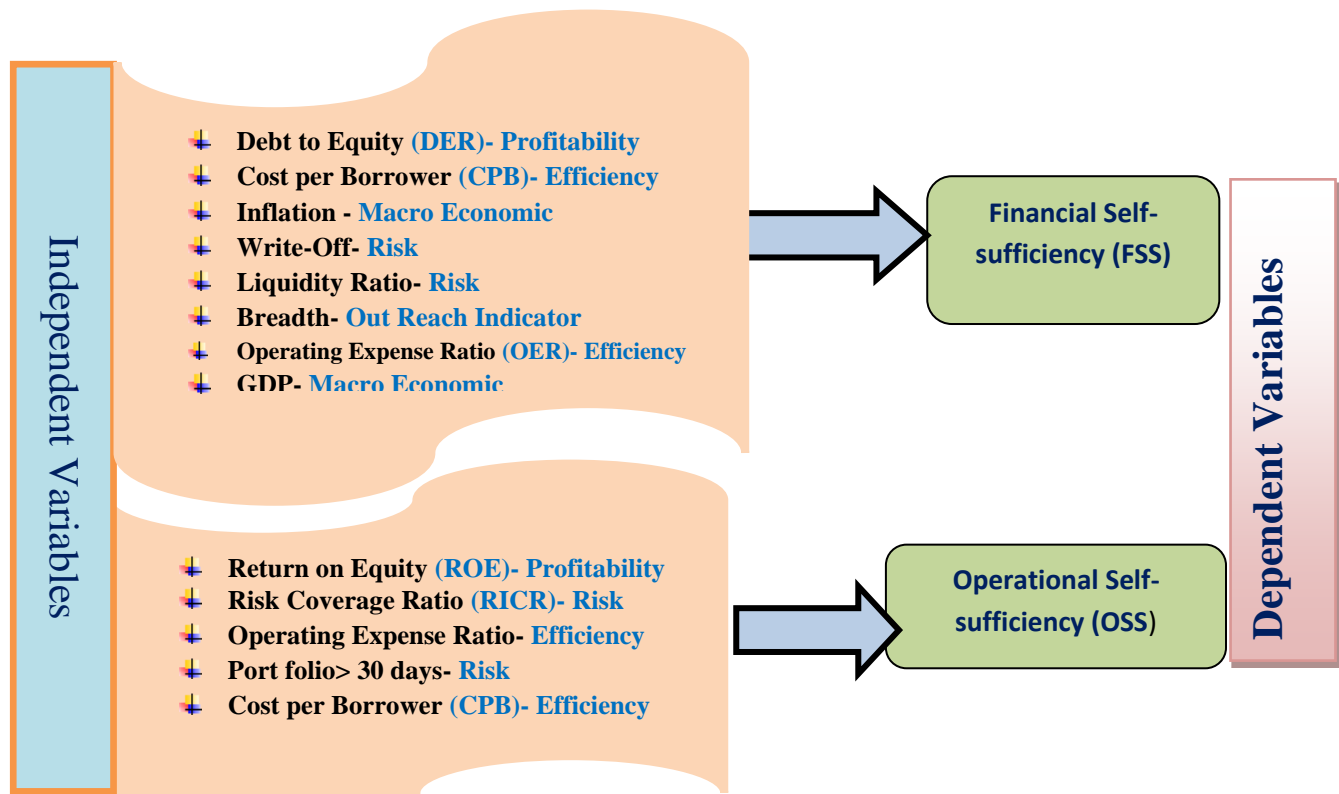
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2.4 Research gap and conclusion

Financial performance is important to all business sectors mainly for the microfinance industry which is in line with the above-mentioned theoretical as well as an empirical review since the constancy of MFIs depends on their performance. The empirical literature that is discussed so far showed that MFIs performance is affected by different factors such as internal and external factors. Both internal and external literatures that are reviewed to examine the determinants of microfinance performance show different and even contradictory results. This indicates that there is no consensus in the micro-financing literature on determinates of the financial performance of MFIs. In Ethiopia, several studies were conducted on the determinants of financial performance of MFIs at different times. The followings are among the researchers who conducted studies on financial performance and its determinants (Abdi & Bacha, 2021; Abebaw, 2014; Belay, 2021; Dechasa & Cherinet, 2018; Fitsum Ashebir, 2021; Haile, 2016; Negash et al., 2020; Regassa & Negash, 2014) but they did quantitative analysis only, however, this study employed a mixed approach. Based on my empirical review all local studies failed to include the important variables like the percentage of women borrowers and the number of borrowers that were adopted from external studies, this study will be consider these two variables. The study will also consider non-measurable determinants which were not observed by other studies in this study area. Therefore, the study will be aiming to narrow the knowledge gap about the significant financial and operational determinant factors of sustainability of Ethiopian microfinance institutions by considering Financial and Operational sustainability as a proxy by taking more explanatory financial variables and some macroeconomic variables

2.5 Conceptual Framework of MFIs sustainability

The Ethiopian microfinance sector is characterized by its rapid growth, an aggressive drive to achieve scale, a broad geographic coverage, a dominance of government backed Microfinance Institutions (MFIs), an emphasis on rural households, the promotion of both credit and savings products, a strong

focus on sustainability and by the fact that the sector is Ethiopian owned and driven (Ebisa, January ,2013). Further to this, government has put its eye to microfinance institutions in its GTP to achieve the millennium development program. Therefore, given the broad role and objectives of MFIs, they have to serve, the target group successfully with continuity, with better efficiency and capacity, the MFIs themselves should exist sustainably. Therefore, the following conceptual framework will help the MFIs to understand on the financial determining areas for their sustainability.

Independent Variables

- Debt to Equity (DER)- Profitability
- Cost per Borrower (CPB)- Efficiency
- Inflation - Macro Economic
- Write-Off- Risk
- Liquidity Ratio- Risk
- Breadth- Out Reach Indicator
- Operating Expense Ratio (OER)- Efficiency
- GDP- Macro Economic

- Return on Equity (ROE)- Profitability
- Risk Coverage Ratio (RICR)- Risk
- Operating Expense Ratio- Efficiency
- Port folio> 30 days- Risk
- Cost per Borrower (CPB)- Efficiency

Financial Self-sufficiency (FSS)

Operational Self-sufficiency (OSS)

Dependent Variables

(Source- Self Extracted-2023)
Figure 1: Conceptual Frame Work

Chapter: Three
Research Methodology
3.1 Research approach
The study's major objective was to look into the factors that influence MFIs' financial and operational sustainability in Ethiopia, using operational and financial self-sufficiency as proxy measures. As a result, this study is intrinsically quantitative to investigate the factors of financial and operational sustainability. The study used a quantitative technique to analyze the financial and operational viability of Ethiopian microfinance firms, including financial data acquired through a documented survey.

Furthermore, quantitative research uses predicted linkages and proposed outcomes to evaluate hypotheses deductively from current knowledge. This research method uses a survey of existing literature to deductively develop theories and hypotheses to test, as well as the translation of the research topic into specific variables (Yesegat, 2009) Quantitative research methodologies use sample data to examine the theoretically stated link between variables to statistically generalize for the population under study. According to LiYuqi (2007), secondary data has its own set of benefits. That is, secondary data generally provide a source of data that is both permanent and available in a form that can be easily

checked by others, increasing the dependability of the data and thus ensuring data quality. As a result, one of the data for the microfinance institutions' financial and operational sustainability indicator variables comes from audited financial statements presented by the National Bank of Ethiopia, the office of the microfinance supervision directorate, and AEMFI.

3.2 Research Design

Research designs are plans and the procedures for research that span the decisions from wide assumptions to detailed methods of data collection and analysis (Creswell, 2009). Therefore, given the nature of the problem and the research perspective, this study employed an explanatory research design to achieve the goal stated in the preceding section. The primary aim of this study was to examine the determinants of financial and operational sustainability of microfinance institutions in Ethiopia. To achieve this objective the study adopted explanatory research design to examine the cause and effect relationships between sustainability and the determinant variables. From the total population of 41 microfinance institutions in the country, only 10 microfinance institutions that have 10 years of audited financial data from 2013 to 2022 are considered as a sample purposively. The study used secondary data, which included the audited annual financial reports of microfinance institutions under study. The data were strongly balanced panel types, which captured both cross-sectional and time-series behaviors.

3.3 Research Method (Approach)

Amdemikael (2012) argues that among quantitative research methodologies employed in business, survey research is a typical technique. As a result, the researcher was use the survey research method in the study to apply the findings to all MFIs operating in the country.

3.4 Data Types and Source

The researcher gathered and used secondary data from various sources to investigate the determinants of the financial and operational sustainability of microfinance institutions in Ethiopia. As a result, the secondary data specific to MFIs was collected from the annual reports of the Association of Ethiopian Microfinance Institutions (AEMFI) Whereas the data related to macroeconomic factors was collected from the National Bank of Ethiopia (NBE), only the most recent audited data from MFIs collected from fiscal years 2013 to 2022, which are available in AEMFI and NBE annual reports, effectively constitute 10 years of data.

From the National Bank of Ethiopia, balanced panel data were gathered for the dependent variable and eleven internal factors. Balanced panel data were gathered from the Central Statistical Agency for macroeconomic indicators of inflation.

3.5 Target population, Sampling Design and Sample Size

3.5.1 Target population

According to the recently recorded data extracted from the NBE website, 41 microfinance institutions are operating in the country by the end of 2022. Accordingly, the target population considered by the researcher is all the 41 microfinance institutions that are providing the microfinance service to the target group by the end of 2022. (www.nbe.gov.et)

Table 3.1 List of Microfinance Institutions in Ethiopia

No	Micro Finance Institutions Name	Established Date	Trade Number	Location
1	Amhara Credit and Saving Institution S.C	09/04/97	001	Bahir Dar
2	Yegna Microfinance Institution S.C.			Addis Ababa
3	Dedebit Credit and Saving Institution S.C.	28/4/97	002	Mekele
4	Oromia Credit and Saving Institution S.Co.	04/08/97	003	Addis Ababa
5	Omo Micro Finance Institution S.C	1/10/97	004	Awasa
6	Gasha Micro Financing S. C	15/05/98	005	Addis Ababa
7	Vision Fund Microfinance Institution S.	17/6/98	006	Addis Ababa
8	Sidama Micro finance Institution	17/6/98	007	Awasa
9	Africa Village Financial Service	17/6/96	008	Addis Ababa
10	Dire Micro Finance	02/05/03	018	Dire Dawa
11	Agar Micro Finance	18/03/04	0019	Addis Ababa
12	One Micro finance	29/10/04	020	Addis Ababa
13	Digaf Micro Credit	28/7/05	022	Addis Ababa
14	Tesfa Micro Finance	03/01/08	025	Addis Ababa
15	Somali Micro Finance	31/1/11	028	Jijjiga
16	Lideta Micro Finance	17/4/12	030	Addis Ababa
17	Adaday Micro Finance	24/6/14	032	Mekele
18	Gambella Micro Finance	18/12/08	026	Gambella
19	Kendil Micro Finance	07/02/01	030	Shashemene
20	Kershi Micro Finance	05/06/17	035	Addis Ababa
21	Sheger Micro Finance	10/07/18	037	Addis Ababa
22	Grand Micro Finance	24/10/19	039	Addis Ababa
23	BusaGonofa Micro Finance	24/10/19	009	Addis Ababa
24	Meklit Micro Finance	16/02/00	012	Addis Ababa
25	Addis Credi and Saving	09/04/97	011	Addis Ababa
26	Eshet Micro Finance	09/04/97		Addis Ababa
27	Wasasa Micro Finance	09/04/97	014	Alemgena
28	BenishangulGumuz Micro Finance	09/04/97	014	Asosa
29	Metemamen Micro Finance	09/04/97	017	Addis Ababa
30	Harbu Micro Finance	09/04/97	017	Addis Ababa
31	Lefiyad Credit and Saving	1942	024	Addis Ababa
32	Dynamic Micro Finance	12/05/09	027	Addis Ababa
33	Specialized Financial & Promotional Institution	25/11/97	029	Addis Ababa
34	Nisir Micro Finance	07/05/14	031	Addis Ababa
35	Rays Micro Finance	07/07/14	033	Addis Ababa
36	Peace Micro Finance	18/11/99	033	Addis Ababa
37	Afar Micro Finance	18/08/14	034	Semera
38	Debo Micro Finance	03/08/18	036	Addis Ababa
39	Yemisirach Micro Finance	23/07/18	038	Addis Ababa

40	Kaafi Micro Finance	18/12/19	041	Addis Ababa
41	SahalKaafi Micro Finance	18/12/19	040	Jijjiga

Source: National Bank of Ethiopia (2023)

3.5.2 Sample size and Sample Technique

The researcher considered 16 microfinance institutions out of the total population of Ethiopian MFIs. Hence, the data included in the study is the 10 MFIs' 10-year data, which was audited from the year 2013 to 2022. Therefore, this provides a total of 100 (10 MFIs * 10 years) observations. The sample size was chosen purposively from the whole population based on the availability of complete 10 years of data

No	Variables Name	Formula
1	Financial self- sufficiency (FSS)	Adjusted financial Revenue/(Financial Expense + Loan loss provision + Operating expenses + Expense adjustment)
2	Operational self-Sufficiency (OSS)	Financial Revenue/(Financial Expense + Loan loss Provision + Operating expenses)

beginning in 2013. In addition to the ten-year data availability criteria, the researcher wants to analyze recent data. Because most MFIs' reports contained missing numbers, the sample used for this study consisted of only 10 MFIs with complete data from 2013 to 2022.The selected ten MFIs were African Village, Digaf, Dynamic, Eshet, Gasha, Harbu, Metemamen, Peace, Vision fund and Wassassa. This micro finances are selected purposively, because they are included their uncollected borrowing on their income statement, in turn important to this research measuring the write off assumptions.

The selected sample does not violate the general rule of thumb that for the generalizability a ratio of the number of observations to the number of variables should never fall below 5:1. That is five observations are made for each independent variable (Hairetal, 2006). Moreover, (Hairet al, 2006) state that although the minimum is 5:1, the desired level is between 15 to 20 observations for each independent variable to be representative. Applying the general rule of thumb as the desired level (that is between 15:1 and 20:1); required the number of observations to be between 135 and 180. With ten years of data from each MFI, the above required a minimum of study units or microfinance institutions. The planned sample of 10 is relatively large; which increases 25 observations above the minimum requirement.

3.6 Definition and Measurement of Variables

The dependent variable in this study generally is the sustainability of microfinance institutions, which is measured by their financial self-sufficiency and operational self-sufficiency. FSS is measured as the ratio of financial income adjusted to adjusted operating expenses, (AEMFI, 2020). On the other hand, OSS is computed as the ratio of unadjusted operating income to operating expenses (the ratio of operating income to the sum of administrative expenses, loan losses, and interest expenses).

Various researchers used different measurement tools to measure the sustainability of the firms, such as ROA, and ROE, while some of the researchers used the mixed market definition of financial sustainability. To keep being consistent with the earlier studies and examine the result in a different context and find a meaningful comparison of the finding with the previous empirical studies, sustainability can be measured by two methods, operation sustainability (OSS) and financial self-sufficiency (FSS).

Table 3.2 Measurements of dependent variables

Source: adapted from different empirical evidence, 2023

3.6.1 Financial self-sufficiency (FSS)

Financial self-sufficiency is a measurement tool used to measure an institution's ability to generate sufficient income to cover its costs. Financial sustainability can be calculated as Financial Self-Sufficiency (FSS) = Adjusted Income / Adjusted Expenses Value of FSS will be about 1 if FSS ≥ 1 means that the MFI is financially sustainable. If the outreach and financial performance are good, then the microfinance institutions will be able to sustain a positive impact on the socio-economic welfare of the poor people. It was also used by various researchers' in their studies, such as Beg (2016); Kipesha& Zhang (2013), and Harelimana (2017).

3.6.2 Operational self-sufficiency (OSS)

Operational self-sufficiency is determines the appropriate level of operating income that will be sufficient to cover the overall cost that is to say. According to (Bogan et al, 2007), the operational self-sufficiency rate reaches the level of 100%, so it will be considered operationally feasible. When it reaches a level of110%, it will be considered optimal from a monetary point of view. Operational sustainability is calculated as operating income divided by the operating expense. It was also used by various researchers in their studies, such as Adongo & Stork (2006), Agboklou & Ozkan (2021), and Bitok (2019).

3.6.2 Independent variables

Debt to equity ratio (DER)

Debt to equity ratio is the simplest and best-known measure of capital adequacy because it measures the overall leverage of the institution. It is calculated as adjusted total liability divided by adjusted total equity (Dissanayake, 2012).

Return on Equity

Return on equity measures how well the institution uses all its equity and it is also an overall measure of profitability reflecting both the profit margin and the efficiency of the institutions (Rahman & Mazlan, 2014).

Cost per Borrower (CPB)

Cost per borrower provides a meaningful measure of efficiency, showing the average cost of maintaining an active borrower of an MFI. It is the most popular measure of MFIs efficiency and is calculated by dividing all expenses related to the operation of MFIs (including all administrative and salary expenses, depreciation, and board fees) by the average number of active borrowers. (Harelimana, 2017).

Operating Expense Ratio

The operating ratio is the most commonly used measure of microfinance efficiency. It measures how an MFI's management has been efficient in reducing operating costs at a given level of operation. The lower the operating expense ratio will indicate efficiency in microfinance institutions' cost reduction strategy (CGAP, 2009)

Write-off

Abdel-Ménaf Ibrahim (2015) argues that write-offs are an important indicator of the value of a portfolio. This indicator simply shows the loan that the institution removed from its records due to a significant doubt that it will be repaid. A loan is written off as part of an accounting transaction to stop assets from being unnecessarily inflated by loan loss reserves.

Write off is an indicator of portfolio quality measurements which refers to the outstanding balance of all loans that have an amount overdue. MFIs choose to declare the loan portfolio of write off of as non-payment (Heng, 2015).

Breadth

Breadth is an outreach indicator defined as the number of individuals who currently have an outstanding loan balance with the MFI that is expected to have a positive impact on sustainability. The number of active borrowers is the proxy for the breadth of outreach. (Lutf & Twaha, 2019)

Risk coverage Ratio

The risk coverage ratio is computed by dividing loan-loss reserve by the amount of portfolio at risk beyond a certain period set by an MFI from their loan losses experience. (Ibrahim, 2017)

Portfolio at Risk > 30day (PAR)

The PAR >30 days is the ratio of loans outstanding principal past due installments longer than 30 daysover total outstanding loans. The higher PAR is, the higher the potential loss in revenues, and the lower the OSS (Naz et al, 2019)

Liquidity Ratio

Liquidity refers to the speed in the transfer of assets into cash, liquidity ratios primarily focus on the cash flows, it is an indicator to measure a company's ability to meet its short-term liabilities. Liquidity management is achieved through the effective use of assets (Robinson et al., 2015). Quick ratio only includes the most liquid of current assets to current liabilities. The rise in the value of this ratio expresses high liquidity of the company. This ratio excludes prepaid expenses and inventory from current assets being difficult conversion into cash (Sinha, 2012).

Table 3.3 Measurements of Independent variables

Variables	Indicators	Measurements	Expected sign
Breadth(Number of the active Borrower)	Outreach	Number of active borrowers with loans outstanding	Positive and significant
Cost per borrower (CPB)	Efficiency	CPB = Adjusted Operating Expense/Adjusted Average Number of Active Borrowers	Negative and significant
Operating Expense ratio(OER)	Efficiency	The ratio of operating Expense to the Gross loan portfolio	Negative and significant
Debt to equity ratio (DER)	Financing structure	Adjusted Total Liabilities/Adjusted Total Equity	Negative and significant
Return on equity (ROE)	Profitability	Adjusted net operating income, net of tax/Adjusted Average Total Equity	Positive and significant
Portfolio at risk>30 day (PAR 30)	Risk	PAR=Outstanding Balance, Loans Overdue30Days/Adjusted Gross Loan Portfolio	Negative and significant

Write-off	Risk	WOF = write off amount for a given period/the Average Gross Profit	Negative and significant
Risk coverage ratio (RICO)	Risk	Adjusted loan loss reserve/PAR>30 day	Positive and significant
GDP	Macro variable	GDP growth rate of the country	Positive and significant
Liquidity Ratio	Risk	Current Liability/ Equity	Positive and significant
Inflation	Macro variable	The inflation rate of the country	Negative and significant

Source: adapted from different empirical evidence, 2023

3.7 Model specification

The researcher used descriptive statistics as well as two separate multiple linear regression models to examine the sustainability of MFIs in Ethiopia. Many econometricians argue that the ability of a multiple linear regression model to identify the independent effects of a set of variables on a dependent variable is one of its most useful features. The research looks at how capital structure, efficiency, productivity, outreach, risk, and macroeconomic variables affect sustainability. As a result, this study included two dependent variables and 11 independent variables that were tested against each of the two dependent variables. The researcher used balanced panel data following the recommendations of many studies and econometricians.

3.7.1 Model estimation of financial self-sufficiency for sustainability

To test whether the financial self-sufficiency of MFIs is explained by the independent variables namely; Breadth, Debt to Equity ratio (DER), Operating Expense Ratio, Cost per Borrower, Liquidity Ratio, Wright-off, Inflation and GDP and Financial Performance of MFIs, the following regression model is estimated to carry out industry wide analysis.

$$\text{FSS}_{it} = \beta_0 + \beta_1 \text{Breadth}_{it} + \beta_2 \text{DER}_{it} + \beta_3 \text{OER}_{it} + \beta_4 \text{CPB}_{it} + \beta_5 \text{WOF}_{it} + \beta_6 \text{GDP}_{it} + \beta_7 \text{LR}_{it} + \beta_8 \text{Inf}_{it} + \varepsilon_{it}$$

Where FSS_{it} is the observed financial self-sufficiency of an MFI i at year t,

β_0 is the constant term showing the value of FSS, when all the coefficient of the independent variables are zero,

$\beta_1 \text{Breadth}_{it}$ is Debt to Breadth of a MFI i at time t,

$\beta_2 \text{DER}_{it}$ is Debt to Equity Ratio of a MFI i at time t,

$\beta_3 \text{OER}_{it}$ is Operating expense Ratio of an MFI i at time t,

$\beta_4 \text{CPB}_{it}$ is Cost per Borrower MFI i at time t,

$\beta_5 \text{WOF}_{it}$ is Wright-off of an MFIs i at t,

$\beta_6 \text{GDP}_{it}$ is Gross Domestic Product of an MFIs i at t,

$\beta_7 \text{LR}_{it}$ is Liquidity Ratio of an MFIs i at t,

$\beta_5 \text{Inf}_{it}$ is Liquidity Ratio of an MFIs i at t,

ε_{it} is the error term of an MFI i at time t.

3.7.2 Model estimation of operational self-sufficiency for sustainability

To test whether the operational self-sufficiency of MFIs is explained by the independent variables namely; Return on Equity (ROE), Operating Expense Ratio, Cost per Borrower, Risk Coverage Ratio (RICO) and Par>30 of MFIs, the following regression model is estimated to carry out industry wide analysis.

$$\text{OSS}_{it} = \beta_0 + \beta_1 \text{ROE}_{it} + \beta_2 \text{RICO}_{it} + \beta_3 \text{OER}_{it} + \beta_4 \text{CPB}_{it} \varepsilon_{it} + \beta_5 \text{PAR>30Days}_{it} + \varepsilon_{it}$$

Where:

OSS **it** is the operational self-sufficiency ratio (dependent variable) of an MFI i at period t,

$\beta 0$ is a constant term; β1-n measures the partial effect of independent or explanatory variables 1-n for period *t,*

$\beta 1$**ROE** $_{it}$ is the Return on Equity of an MFI i at time t,

$\beta 2$ **RICO** $_{it}$ is the Risk Coverage Ratio of a MFI i at time t,

$\beta 3$ **OER** it is the Operating Expense Ratio of a MFIs i at time t,

$\beta 4$ **CPB** $_{it}$ is the Cost Per borrower Ratio of a MFIs i at time t,

$\beta 5$ **PAR>30day**$_{i}$ t is the portfolio at risk greater than thirty days of an MFIs i at t,

ε_{it} is the error term

3.8 Data analysis

AEMFI annual bulletins and several websites provided data in ratios and percentages forms. The descriptive statistics, correlation matrix, and multiple linear regression analysis were used to analyze the panel data. The correlation matrix was also used to examine the relationship between the dependent variable and independent variables, and descriptive statistics (mean, maximum, minimum values, and standard deviations) were used to analyze the general trends of the data from 2012 to 2021 based on a sample of 16 MFIs. Finally, the relative importance of each independent variable in explaining the variation in sustainability was determined using a multiple linear regression model. The random effect regression method was used to conduct the multiple linear regressions model using eview12 software.

Chapter: four

Data Analysis, Results and Discussions

This chapter presents the results of panel data analysis and interpretations. The researchers used the two types of sustainability (FSS and OSS) to assess the performance and its determinants of MFIs in Ethiopia using descriptive and inferential statistics.

4.1. Descriptive statistics

In this section, the descriptive statistics of both the dependent and independent variables are presented. All the explanatory variables, expected to have an impact on the dependent variables of operational self-sufficiency (OSS) and financial self-sufficiency (FSS) have 160 numbers of observations in total.

4.1.1. Dependent variables

As indicated in Table 4.1, the expected mean of FSS was 4.40 (440.0%) indicating financial sustainability. The standard deviation of FSS was relatively high (0.37) compared to standard deviation of OSS (0.34) which indicated that the existence of dispersion in the sustainability of microfinance institutions studied. Financial sustainability (FSS) indicates that the ability of MFIs to cover all of its operating costs and costs of capital without depending on subsidies.

The expected mean of operational sustainability was 4.69 (469.0%) which showed the sustainability of the selected MFIs in Ethiopia over study period. Thus, this result showed that the selected 10 Ethiopian MFIs were operationally sustainable. This result is in line with the study done by (mirani, 2015; Tamene Woldeyes, 2012). When OSS of MFI is below one (100%), eventually its equity will be reduced by losses or must be compensated by grants Marwa et al., (2016).

The MFI reaches its financial viability when it has the financial self-sufficiency and operational self-sufficiency greater than 100% Marawi et al., (2014). It therefore can continue to operate its business without needing to be subsidized. Therefore, the finding of our study showed that both the average

values (ratio) of FSS and OSS were above the standard benchmark which indicated that the ten selected MFIs were sustainable financially as well as operationally.

Table 4.1: Summary of descriptive statistics results of MFIs and NBE data from 2013 – 2022.

Dependent variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Observations
logFSS	4.40	4.44	5.21	3.09	0.37	-0.65	3.20	100
logOSS	4.69	4.74	5.54	3.97	0.34	0.01	2.62	100
Independent variables								
DER	1.64	1.40	4.16	0.29	0.86			100
OER	0.18	0.16	0.39	0.03	0.08			100
BR	26869.3	15720.0	211219	152.00	38797.7			100
Log CPB	6.48	6.51	9.03	5.01	0.71			100
WOR	0.05	0.03	0.35	0.00	0.06			100
LR	1.54	1.45	4.94	-11.53	2.11			100
LogGDP	2.99	3.11	3.45	2.33	0.38			100
Inflation	0.14	0.12	0.25	0.06	0.47			100
RICO	0.87	0.70	4.84	0.11	0.72			100
ROE	0.01	0.09	2.41	-5.29	0.70			100
PAR>30	0.06	0.05	0.32	0.00	0.05			100

Source: E-Views 12 output

Note: I have a big suspicion on your paper see your study specific objectives the variables with your hypotheses, conceptual framework, model specification and the above table????????????
Also see the observations in the methodology sections and here in the above table?????
I am not at all responsible for "Plagiarism" ?????????????????????????????

4.1.2. Independent variables
FSS
Descriptive statistics shown in Table 4.1, the mean values, maximum values, minimum values, and standard deviations of MFIs' FSS observations are 44%, 52.1%, 30.9%, and 37%, respectively. Given the international standard of a 100 percent FSS ratio, the average score of 44.4 percent indicated that the majority of Ethiopian MFIs are not financially self-sufficient. With an FSS ratio of less than 100%, it is difficult for these MFIs to cover all costs and operate without ongoing subsidies. This forces them to rely on grants or concessional loans from outside sources. The most successful MFIs, on the other hand, with a maximum score of 52.1 percent, could reduce the need for subsidies and concessional loans.

OSS
The descriptive statistics shown in table 4.1, the mean, maximum, minimum, and standard deviation of MFI operational self-sufficiency is 47 %, 55.4%, 40%, and 34% for a total of 100 observations respectively. On average the operational sustainability of the MFIs is 47.4 percent. This is less than the sustainability threshold. The first step toward long-term financial viability for an institution is to achieve operational self-sufficiency of 1 (100 percent) (Berne, 2005). Based on this, we can deduce that the

operational self-sufficiency of the Ethiopian microfinance industry is on average 47 percent, which is less than the required level.

Breadth

The number of active borrowers, which is defined as the number of people who have an outstanding loan balance with the MFI, is projected to have a beneficial impact on long-term sustainability (Ganka, 2010). It is commonly considered that the greater the number of borrowers, the better the outreach, and, as a result, an MFI becomes more sustainable. This variable's mean statistics are 26,869. This means that on average, an Ethiopian microfinance organization serves 26,869 borrowers. Table 4.1 shows the maximum and minimum breadth values as 211,219 and 152, respectively.

ROE

As it can be observed from descriptive results in table 4.1, the mean return on equity is 0.01 percent, indicating that they gain 0.01 USD on 1USD equity. The maximum return on equity is 2.41USD, while the minimum is –5.29USD, resulting in a total loss by any standard. This indicates that there are MFIs that are either operating at a loss or with idle capacity.

DER

As shown in table 4.1 the mean, standard deviation, the minimum, and the maximum value are 1.64, 0.86, 0.29, and 4.16 respectively. The mean value of this variable is 1.64 indicates, that MFIs in Ethiopia are leveraged on average than financed through equity capital because the AEMF's proposed standard of debt to equity is 1.5. On the other side, the minimum debt to equity is 0.29 indicating few MFI are financed more through equity capital than debt. However, the maximum value for this variable is 0.29, indicating that debt financing is less considered than a proportional financing structure, indicating that this variable is very low leveraged.

OER

The operating expense ratio for the Ethiopian microfinance industry is shown as 0.18 in its mean. This indicates that on average they are incurring 18 cents in operating expenses for each dollar in the gross loan portfolio. Some highly efficient institutions incur operating expenses of 1 cent for each dollar in the gross loan portfolio. On the other hand, inefficient institutions in the industry incur an operating expense of 3 cents for each dollar on their gross loan portfolio.

CPB

The descriptive statistic shown in table 4.1 revealed that the mean value, the maximum value, and the minimum values of the cost per borrower that changed to log were found to be 65, 9, and 5 respectively. This indicated that the average MFIs incurred a cost of 65 to maintain a single borrower. While the most efficient MFIs incurred a cost per borrower of 5, inefficient MFIs incurred a cost per borrower as high as 9 during the study period.

PAR>30 days

The mean value of PAR> 30 days shows that a 0.06 percent loan is outstanding in the microfinance industry. The higher ratio indicates that MFI is not able to recover the amount of the loan. The minimum value of PAR>30 days is 0 which shows that some MFIs can recover the full amount of the loan portfolio. Whereas the maximum value of the portfolio at risk > 90 days is 32 % which specifies that some MFIs are not able to recover any amount of loan portfolio.

WRO

The mean value of WOF shows that a 5 percent loan is outstanding in the microfinance industry. The higher ratio indicates that MFI is not able to recover the amount of the loan. The minimum value of

WOF is 0 which shows that some MFIs can recover the full amount of the loan portfolio. Whereas the maximum value of the portfolio at WOF days is 35 % which specifies that some MFIs are unable to collect any amount of loan portfolio.

RICO

Microfinance institutions need to take caution to cover any loss as a result of bad debts. The risk coverage ratio indicates how an MFI is prepared for such losses. Normally MFls set aside part of their profits for this purpose to cover any unpaid amount beyond a certain period. Again, this differs from one MFI to another depending on the level of risk they are facing in the unpaid amount. The amount set aside for this purpose is known as loan-loss reserves (CGAP, 2003). The longer the loan is unpaid, the higher will be the amount set aside to cover the loss when it happens. As shown in table 4.1 Ethiopian MFIs on average have 0.87 risk coverage it is below the common practice that microfinance must set above a 100% risk coverage ratio (AEMFI,2020).

GDP and Inflation

The macroeconomic variables GDP and inflation is used for this study, as can be observed in table 4.1 the mean, standard deviation, minimum, and maximum GDP growth rate is 2.99, 0.38, 2.33, and 3.45 respectively. GDP is expected to have a positive impact on the sustainability of MFI as GDP increases sustainability is improved. Another indicator of macro-economic variable is inflation as shown in table 4.1 shows the mean, standard deviation, the minimum, and the maximum value is 0.14, 0.47, 0.06, and 0.25 respectively. Inflation is expected to have a negative impact on the sustainability of MFIs as the inflation rate increase the sustainability decrease.

4.2 Correlation analysis

Correlation analysis was used to determine the relationship between the explanatory variables and dependent variables in both models; it allows for the detection of any multicollinearity issues. The issue may arise if the correlation value exceeds a certain threshold of 0.80 (Kennedy, 2008). The correlation analysis test results in Tables 4.2 and 4.3 below indicate a low degree of correlation between independent variables.

Table 4.2 Correlation Coefficients for FSS model

Covariance Analysis: Ordinary
Date: 02/15/10   Time: 04:02
Sample: 1 100
Included observations: 100

Correlation	LFSS	BREADTH	DER	INF	LGDP	LOGCPB	LR	OER	WOF
LFSS	1.000000								
BREADTH	0.483559	1.000000							
DER	0.209797	0.093753	1.000000						
INF	0.161169	0.084128	0.249372	1.000000					
LGDP	-0.191913	-0.040059	0.012404	0.048762	1.000000				
LOGCPB	-0.008649	-0.079266	0.171085	0.369618	-0.131520	1.000000			
LR	0.375876	0.212196	0.220464	0.176177	-0.053938	-0.111973	1.000000		
OER	-0.559045	-0.324707	-0.136533	-0.154597	0.034685	0.106855	-0.278111	1.000000	
WOF	-0.476213	-0.299464	0.023859	0.098880	0.194956	0.203725	-0.186201	0.459709	1.000000

Source: EViews output 2013-2022

As shown in table 4.2 of the correlation of the independent variables to financial sustainability (FSS), there is a negative correlation between cost per borrower, GDP, Write off and operating expense ratio and financial self-sufficiency of MFIs in Ethiopia. This indicates that changes in cost per borrower, GDP, Write off and operating expense ratio have a negative impact on the Financial Self-Sufficiency Ratio. On the other hand, an MFI's breadth, Inflation, Liquidity ratio and Debt to equity are all positively

related to its financial self-sufficiency ratio. This implies that changes in these independent variables positively contribute to changes in financial self-sufficiency.

Table 4.3 Correlation Coefficients for OSS model

Covariance Analysis: Ordinary
Date: 02/15/10   Time: 04:04
Sample: 1 100
Included observations: 100

Correlation	LOSS	LOGCPB	OER	PAR_30	RICO	ROE
LOSS	1.000000					
LOGCPB	-0.156138	1.000000				
OER	-0.587632	0.106855	1.000000			
PAR_30	-0.559390	0.004472	0.690527	1.000000		
RICO	0.308612	0.086934	-0.206341	-0.294152	1.000000	
ROE	0.481712	-0.096059	-0.211051	-0.251047	0.103359	1.000000

Source: EViews output 2013-2022

As shown in Table 4.3 correlation results, there is a negative correlation between cost per borrower and par>30 and operational self-sufficiency ratio. This indicates that changes in cost per borrower and par>30 have a negative impact on the Operational Self-Sufficiency Ratio. On the other hand, there is a positive relationship between Risk coverage ratio and return on equity. This implies that changes in the Risk coverage ratio and return on equity contribute positively to the change in the Operational Self-sufficiency Ratio.

4.3. Linear Regression Diagnostic Tests

In this section the researcher has made a test for the validity of basic assumptions of CLRM model as follows.
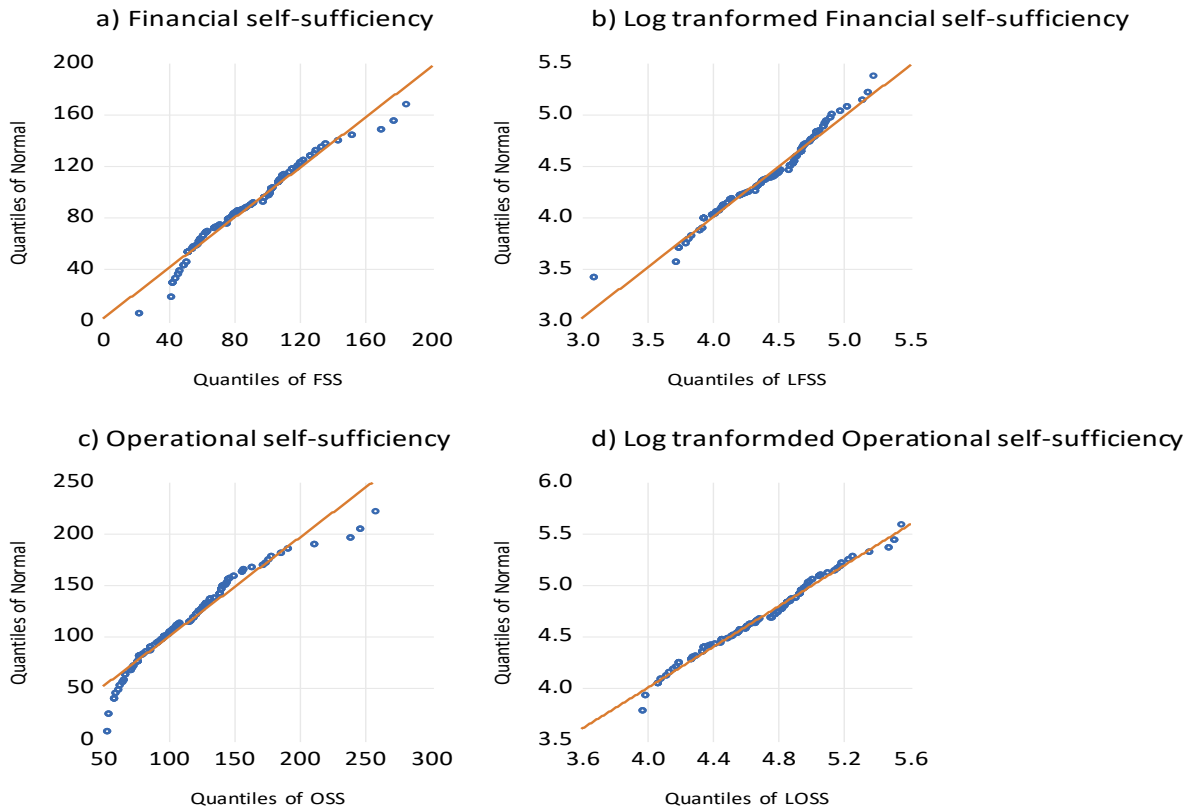
Normality assumptions

The assumption of normality requires the disturbance of the data should be approximately near to the reference line of quantile-quantile plot. Again, we used Jarque-Bera test to test normality assumptions. The *p*-value of the normality test should be bigger than 0.05 and Kurtosis should be around 3 for not to reject the null hypothesis of normality at the 5% significance level (Brooks, 2008). The null and alternative hypothesis for the test has been indicated here below.

Ho: Normally Distributed Errors vs. H1: Non-Normal Distribution Errors

A normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3 (Brooks, 2008). In this paper, the coefficient of the kurtosis was 3.20 for FSS model and 2.63 for OSS model which was almost the same with the suggested kurtosis coefficient of 3(Table 4.1). Moreover, the p-value for the Jarque-Bera (JB) test of FSS and OSS models are 0.24 and 0.75respectively. This showed that the p-value of Jarque-Bera test for both FSS and OSS model was greater than 0.05 which indicated that the normality assumption valid after data transformed using log transformation. Based on the diagnostic test assumptions, both FSS and OSS variables failed to reject the null hypothesis of being normality at the 5% significance level. Thus, the researchers used transformed data to fit regression

model of FSS and OSS.

Source: EViews output of Quantile-Quantile plot normality assumptions, 2023

Figure 1: The Quantile-Quantile plot of normality assumptions for the dependent variables over the period of 2013 – 2022 of Ethiopian MFIs.

From Figure 1 above, we can see that financial self-sufficiency and Operational self-sufficiency were not normally distributed. Because some observations were deviated from reference line as shown in Figure 1 a) and c) respectively. However, the log transformed financial self-sufficiency and Operational self-sufficiency were approximately normally distributed since all observation are near to the reference line as shown in Figure 1 b) and d) respectively.

Normality assumption for FSS
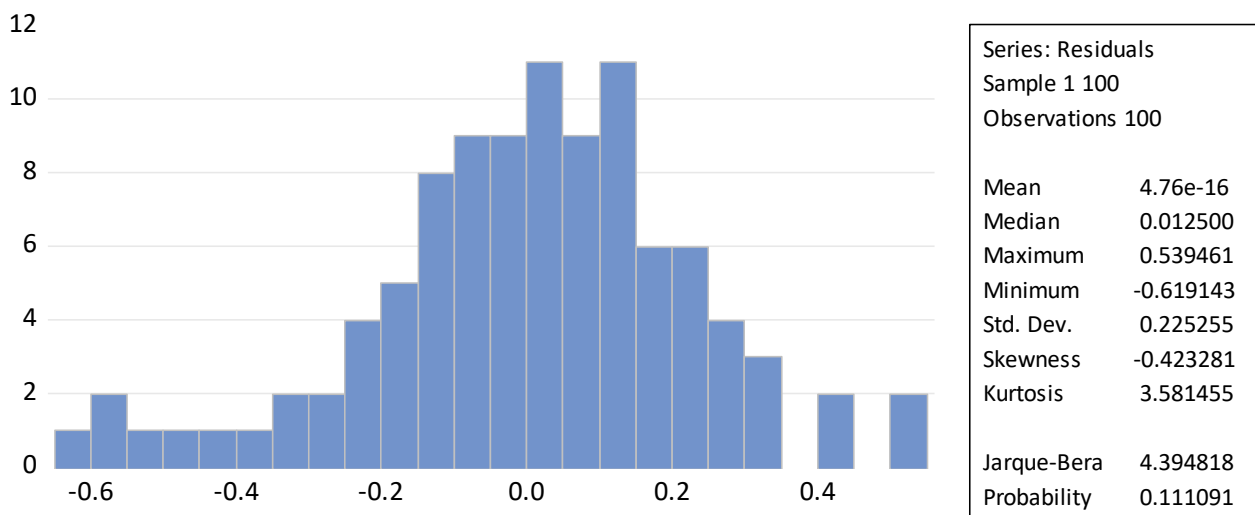
This histogram normality assumption shows that financial self-sufficiency of MFIs is normal over study period of 2013 to 2022. The assumption is not violated. That is multiple linear regression model can fit the data financial self-sufficiency of MFIs over the study period.
????

Normality assumption for FSS

Series: Residuals	
Sample 1 100	
Observations 100	
Mean	3.51e-16
Median	0.025020
Maximum	0.683445
Minimum	-0.668500
Std. Dev.	0.256481
Skewness	-0.271265
Kurtosis	3.331057
Jarque-Bera	1.683072
Probability	0.431048
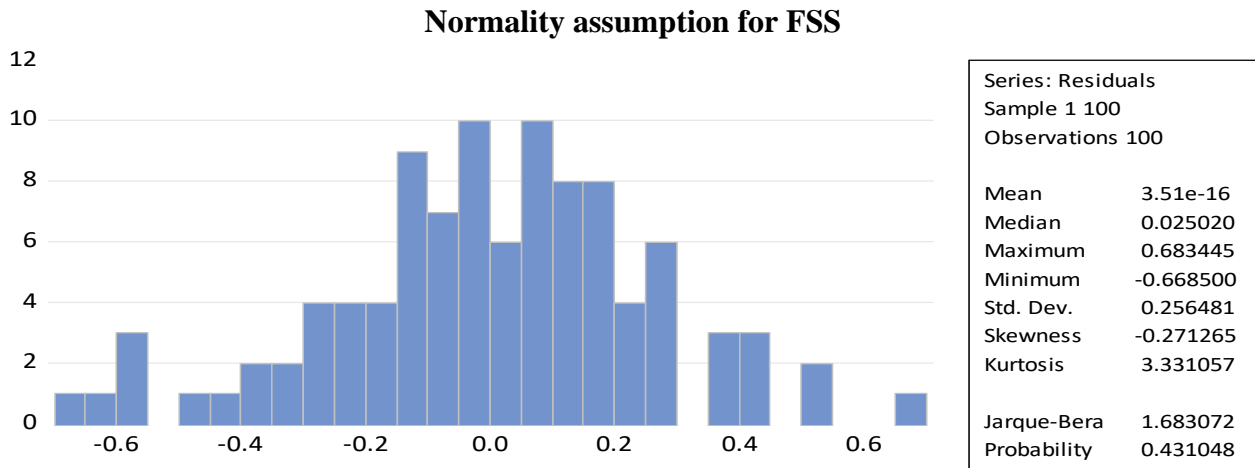
This histogram normality assumption shows that operational self-sufficiency of MFIs is normal over study period of 2013 to 2022. The assumption is not violated. That is multiple linear regression model can fit the data of operational self-sufficiency of MFIs over the study period.
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Heteroskedasticity test for FSS

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.639562	Prob. F(2,88)	0.5300
Obs*R-squared	1.432724	Prob. Chi-Square(2)	0.4885

Here the p value of 0.53 is greater than 0.05 which indicates the variance is constant variance for financial self-sufficiency sustainability of MFIs over study period. So, multiple linear regression assumption is valid for MFIs of financial sustainability.

Heteroskedasticity test for OSS

Heteroskedasticity Test: ARCH

F-statistic	0.433502	Prob. F(1,97)	0.5118
Obs*R-squared	0.440472	Prob. Chi-Square(1)	0.5069

Here the p value of 0.5118 is greater than 0.05 which indicates the variance is constant variance for operational self-sufficiency sustainability of MFIs over study period. So, multiple linear regression assumption is valid for MFIs of operational sustainability.

Serial Autocorrelation test for FSS

| Breusch-Godfrey Serial Correlation LM Test: | | | |
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.319428	Prob. F(2,89)	0.7274
Obs*R-squared	0.712700	Prob. Chi-Square(2)	0.7002
R-squared	0.007127	Mean dependent var	1.48E-16
Adjusted R-squared	-0.104432	S.D. dependent var	0.260108
S.E. of regression	0.273353	Akaike info criterion	0.347360
Sum squared resid	6.650241	Schwarz criterion	0.633929
Log likelihood	-6.368001	Hannan-Quinn criter.	0.463340
F-statistic	0.063886	Durbin-Watson stat	2.005707
Prob(F-statistic)	0.999974		

Here from serial autocorrelation, we can see that p value of 0.727 is greater than0.05 which indicates that there is no problem of autocorrelation in the data. Again, the Durbin Watson statistic is also 2.006 which indicate there is autocorrelation in the data.

Serial Autocorrelation test for OSS

| Breusch-Godfrey Serial Correlation LM Test: | | | |
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.995299	Prob. F(2,93)	0.3735
Obs*R-squared	2.095574	Prob. Chi-Square(2)	0.3507
R-squared	0.020956	Mean dependent var	3.51E-16
Adjusted R-squared	-0.042208	S.D. dependent var	0.256481
S.E. of regression	0.261838	Akaike info criterion	0.225248
Sum squared resid	6.376004	Schwarz criterion	0.407610
Log likelihood	-4.262422	Hannan-Quinn criter.	0.299054
F-statistic	0.331766	Durbin-Watson stat	1.976975
Prob(F-statistic)	0.918631		

Here from serial autocorrelation, we can see that p value of 0.374 is greater than 0.05 which indicates that there is no problem of autocorrelation in the data. Again, the Durbin Watson statistic is also 1.977 which indicates there is autocorrelation in the data.

Multicollinearity test

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not highly correlated with one another (Brooks, 2008). If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. The most simple, operational definition of unacceptable co-linearity makes no pretense to theoretical validity. An admittedly arbitrary rule of thumb is established to constrain simple correlations between explanatory variables to be smaller than 0.8 to 0.9. (Donald E et al, 2005). This assumption has been tested for the variables considered in the study as the independent variables. Therefore, the null hypothesis is articulated as there is no very high correlation between the independent variables. This is summarized with the alternative hypothesis as follows.

Ho: No Multicollinearity vs. H1: Multicollinearity

Table 4.4: Multicollinearity test when FSS is dependent variable

	LCPB	LR	OER	BREADTH	DER	INF	LGDP	WOF
LCPB	1.000000	-0.111973	0.106855	-0.079266	0.171085	0.369618	-0.131520	0.203725
LR	-0.111973	1.000000	-0.278111	0.212196	0.220464	0.176177	-0.053938	-0.186201
OER	0.106855	-0.278111	1.000000	-0.324707	-0.136533	-0.154597	0.034685	0.459709
BREA...	-0.079266	0.212196	-0.324707	1.000000	0.093753	0.084128	-0.040059	-0.299464
DER	0.171085	0.220464	-0.136533	0.093753	1.000000	0.249372	0.012404	0.023859
INF	0.369618	0.176177	-0.154597	0.084128	0.249372	1.000000	0.048762	0.098880
LGDP	-0.131520	-0.053938	0.034685	-0.040059	0.012404	0.048762	1.000000	0.194956
WOF	0.203725	-0.186201	0.459709	-0.299464	0.023859	0.098880	0.194956	1.000000

Source: EViews output for Multicollinearity test,2013-2022

In this case, the largest observed negative correlation for the independent variables of FSS was 0.598 between breadth outreach and write off and thus, this is sufficiently small as compared to the tolerable correlation sated for this study which is 0.9. These values are below the standard set used for this study which is a correlation coefficient of 0.9. Based on this, there is no multicollinearity problem among independent variables used to explain FSS dependent variable (Table 4.4). Therefore, we fail to reject the null hypothesis of no multicollinearity between the independent variables regressed by FSS.

Table 4.5: Multicollinearity test when OSS is a dependent variable

	RICO	ROE	PAR_30	LCPB
RICO	1	0.10335850...	-0.2941518...	0.08693430...
ROE	0.10335850...	1	-0.2510473...	-0.0960585...
PAR_30	-0.2941518...	-0.2510473...	1	0.00447204...
LCPB	0.08693430...	-0.0960585...	0.00447204...	1

Source: EViews output for Multicollinearity test, 2013-2022

Similarly, the correlation result for all the explanatory variables of OSS were below the standard set used for this study. Based on this, multicollinearity can be reasonably ignored. Therefore, we fail to reject the null hypothesis of no multicollinearity between the independent variables under OSS model (Table 4.5).

Wu-Hausman Test

The Wu-Hausman Test can be used to determine whether Fixed Effects Model or Random Effects Model is more appropriate. To apply this test, we need to estimate the Random Effects Models and compare the estimated coefficients using Wu-Hausman statistic. The hypothesis is as follows:

Under the null hypothesis, the coefficients of both the fixed effects and random effects models are consistent. However, only the coefficients of the random effects model are efficient. If we cannot reject the null hypothesis using the Wu-Hausman test, it means that the random-effects model should be preferred.

On the other hand, only the coefficients of the fixed effects model are consistent under the alternate hypothesis. The coefficients of the random effects model are not consistent. If we reject the null hypothesis, the fixed-effects model should be preferred instead of a random-effects model.

Hausman test result

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.036590	7	0.2500

** WARNING: estimated cross-section random effects variance is zero.

Thus, from the Hausman test result, the p value of 0.25 is greater than 0.05 which indicates Random Effect model is better than fixed effects model to fit the FSS data. However, we need to choose the best model between random effects and pooled OLS to fit financial data using Pesaran CD test as follow.

Pesaran CD test result for FSS

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in
      residuals
Equation: Untitled
Periods included: 10
Cross-sections included: 10
Total panel observations: 100
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of
      correlations

Test	Statistic	d.f.	Prob.
Pesaran CD	0.796189		0.4259

Since the p value of Pesaran CD test (0.4259) is greater than 0.05 which indicates that Pooled OLS Regression is better over random effect test FSS data. Thus, the Pooled OLS is more appropriate than the random effects for this data set. Therefore, the analysis and discussion of the result for this study were based on Pooled OLS.

Hausman test result for OSS

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.673026	4	0.0698

** WARNING: estimated cross-section random effects variance is zero.

Similarly, from the Hausman test result, the p value of 0.0698 is greater than 0.05 which indicates Random Effect model is better than fixed effects model to fit the OSS data. Thus, the Pooled OLS is more appropriate than the random effects for this data set. Therefore, the analysis and discussion of the result for this study were based on Pooled OLS.

4.4. Regression Model results and Interpretation

This section presents the empirical findings from the econometric results for the factors affecting the financial and operational sustainability of microfinance institutions in Ethiopia from 2013 – 2022. The model for FSS and OSS, based on the result, has been tested for the assumptions of the classical linear regression model (CLRM) before interpreting the results. According to the test results, the model should satisfy all the assumptions as follows.

4.5.1. Financial Self-Sufficiency (FSS) regression model Results

Based on the regression result in Table 4.4, the adjusted R-square value is 0.475 (47.5%) which implies that 48% of fitness can be observed in the sample regression line. This can be further explained as 48% of the total variation in the financial sustainability was explained by the independent variables jointly. The reported F-statistics in the regression output and its P-value was 12.8 (F-Statistics) and 0.000 (the P-value).

Thus, the null hypothesis of the overall test of significance that all coefficients are equal to zero was rejected as the p-value was sufficiently low (less than 0.05). The dependent variable being explained was financial sustainability which could be measured by financial self-sufficiency ratio. From regression output, we can see that the breadth outreach, liquidity ratio, operational expense ratio and write off variables were found significant at 5% level of significance over period of study.

However, the CPB, Debt to equity ratio, inflation and GDP were found insignificant variables of MFIs sustainability in Ethiopia at 5% level.

Table 4.6: Regression results for the determinants of financial self-sufficiency

Dependent Variable: LFSS
Method: Panel Least Squares
Date: 06/07/23   Time: 09:06
Sample: 1 100
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.613166	0.383808	12.01948	0.0000
BREADTH	2.64E-06	7.71E-07	3.425232	0.0009
DER	0.039942	0.034007	1.174529	0.2432
LCPB	0.032989	0.044146	0.747267	0.4568
LGDP	-0.111716	0.074847	-1.492592	0.1390
LR	0.029443	0.014245	2.066955	0.0416
INF	-0.24601	0.477825	0.514873	0.6079
OER	-1.315249	0.374929	-3.507995	0.0007
WOF	-1.264820	0.505294	-2.503140	0.0141

R-squared	0.517156			
Adjusted R-squared	0.474709	S.D. dependent var		0.377952
S.E. of regression	0.273928	Akaike info criterion		0.333790
Sum squared resid	6.828349	Schwarz criterion		0.568255
Log likelihood	-7.689493	Hannan-Quinn criter.		0.428682
F-statistic	12.18335			2.087778
Prob(F-statistic)	0.000000			

Source: E-views 12 Output for FSS regression model, 2013-2022.
???

Breadth of outreach

Ho: Breadth has a significant impact on financial self-sufficiency

The number of borrowers which measures the breadth of outreach (BREADTH) improves the financial sustainability of microfinance institutions. The regression result for this variable indicates positive (2.64E-06) relationship between the number of borrowers and MFIs' financial sustainability. The relationship was statistically significant at 1% significant level. This is due to the fact that increasing the number of borrowers will increase the volume of sell; and increasing volume of sell is one means to maximize profitability, and then financial sustainability. Besides, Kereta (2007) and (Khan et al., 2017) confirms that outreach and financial sustainability are complimentary. Because as the number of clients

increases MFIs enjoy economies of scale and hence reduce costs which help them to financial sustainable. Contrary to this finding, Ganka (2010) reported a negative relationship between number of borrowers and financial sustainability as inefficiency increases as a result of increased number of borrowers.

Debt to Equity Ratio (DER)

Ho: Debt to Equity has no a significant impact on financial self-sufficiency

Debt to equity ratio (Leverage) was insignificant positive predictor variable in determining financial self-sufficiency. This finding contradicts with the finding on debt-to-equity ratio by Dissanayake (2012), that leveraged MFI are more sustainable. The result by Hartarska (2007) and Nadolnyak (2007) is also indicated that less leveraged MFIs have better financial self-sufficiency (FSS). These two results are also against each other. This study found debt to equity variable to be insignificant negative predictor for operational self-sufficiency, but Dissanayake found it negative but significant, while Hatarska and Nadolnyak found it strong positive significance for the variable. Therefore, based on the regression result from the study, we reject the null hypothesis which was formulated to show the absence of a significant relationship between debt-to-equity ratio and financials elf-sufficiency of Ethiopian microfinance institutions.

Operating expense ratio (OER)

Ho: Operating expense ratio has a significant impact on financial self-sufficiency

The regression result indicated that OER has a negative significant impact on FSS at 1% significant level. Therefore, we fail to reject the null hypothesis that there is no significant relationship between the OER of a microfinance institution and its financial self-sufficiency. This indicated that there is evidence for microfinance institutions financial sustainability to depend on their operating expense ratio. This finding is in line with study done by Nyamsogoro,(2010) and (Yoshi Fukasawa, 2011), in that both shows operational expense ratio has negative significant relationship with FSS of MFIs.

Cost per Borrower (CPB)

Ho: Cost per borrower has a significant impact on financial self-sufficiency

Cost per borrower measures the MFI effectiveness in cost reduction given the number of borrowers they are serving. CPB had a positive effect on the financial self-sufficiency of micro finance but insignificant variable at 5% significance level. The researcher used the CPB in its natural logarithm form to reduce the effect of variation in the observed data. An increase in the cost per borrower increases the financial self-sufficiency of the institutions. Therefore, the higher the figure, the better MFI is financially sustainable. From this we can understand that the increment in cost per borrower significantly makes an institution to be more sustainable. Therefore, this leads to reject the null hypothesis which was articulated as there is no significant positive relationship between the cost per borrower and financial self-sufficiency of microfinance institutions. Thus, the finding against the null hypothesis that the cost per borrower did not affect financial self-sufficiency positively and it was insignificant variable. This finding is disagreed with a paper done by Woller and Schreiner (2002), Christen et al (1995), Cull et al (2007) and Dissanayake (2012). However, in a study by Nyamsogoro (2010) the finding supports that the cost per borrower had statistically insignificant impact on financial self-sufficiency but negatively correlated.

GDP growth rate

Ho: GDP has no a significant impact on financial self-sufficiency

It is generally believed that a stable macroeconomic environment is necessary for the viability of MFIs. This study tested the influence of macroeconomic indicator (GDP growth rate) on the sustainability of MFIs. The result showed that GDP growth has a negative relationship but has no impact on FSS sustainability of MFIs with coefficient level of -0.112t at 5%. Thus, the null hypothesis that GDP growth rate has no negative impact on FSS sustainability of Ethiopian MFIs was rejected.

Inflation (INF)

Ho: Inflation has no a significant impact on financial self-sufficiency

Repayment levels are usually weak and low in the presence of higher inflation rates. However, the regression results above indicated that even though, inflation has negative relationship with financial self-sufficiency, it was not statistically significant in the model and there was no a clear influence on MFIs sustainability in Ethiopia. Therefore, we reject the null hypothesis that inflation has influence relationship on the FSS of Ethiopian MFIs.

Liquidity ratio (LR)

Ho: Liquidity ratio has a significant impact on financial self-sufficiency

As shown in the regression result, the LR positively affected the financial self-sufficiency at 5% significant level. Liquidity refers to the speed in the transfer of assets into cash, liquidity ratios primarily focus on the cash flows, and it is an indicator to measure a company's ability to meet its short-term liabilities. The rise in the value of this ratio expresses high liquidity of the company. This finding agreed with the research done by K. H. I. Madushanka and M. Jathurika (2018) which stated that Liquidity ratios have positive and significantly related to the firm profitability. Another research conducted by Devraj Arjan Sanghani (2014) liquidity has a positive effect on the financial performance of non-financial companies.

Write off

Ho: Write off has a significant impact on financial self-sufficiency

The regression result revealed that there is a negative and statistically significant relationship between sustainability of MFIs and write off ratio at 5% significance level. The negative relationship suggests that increase in write off ratio will lead to fall in financial sustainability of MFIs and spread-out weak risk management. This finding is consistent with previous study done by (Sharif Hossain & Azam Khan, 2016)

Thus**,** based on the regression model results presented in Table 4.4, the estimated regression model of log transformed FSS can be written as follows:

$$\widehat{LFSS} = 4.61317 + 2.64E(-06) * BREADTH + 0.039942 * DER + 0.032989 * LCPB - 0.111716 * LGDP + 0.029443 * LR - 0.24601 - 1.315249 * OER - 1.26482 * WOF$$

The following table summarizes the impact of explanatory variables on sustainability from sustainability regression model.

Table 4.7. Summary of regression results from the FSS regression model

Variables	Null hypothesis	Regression result	Statistically significant at	Null hypothesis
BREADTH	+	+	1%	Fail to rejected
Debt to equity ratio	+	+	5%	Rejected
Cost per borrower	+	+	1%	Rejected
GDP growth rate	+	-	5%	Rejected
LR	+	+	5%	Fail to Rejected
Inflation	-	-	5%	Rejected
Operating expense ratio	-	-	5%	Fail to Rejected
WOF	-	-	5%	Fail to Rejected

Source: EViews sustainability regression output,2012-2020

From the above table 4.7, we can conclude that MFIs', breadth of outreach, liquidity ratio, operating expense ratio and write off were statistically revealed to affect financial self-sufficiency and sustainability of MFIs.

4.4.2. Regression analysis results and Interpretation for OSS a Dependent variable

The regression output in Table 4.8 indicated that the observed R-square was 0.475 (47.5%), and the adjusted R-square at 0.452 (45.2%). On other hand, it measures 45percent of the total variation in the Operational Self-sufficiency Ratio was explained by independent variables jointly. Therefore, 45% of the operational self-sufficiency variation was explained by the independent variables included in this study over the period of 2013 to 2022. The overall null hypothesis of regression model P-value was 0.000 which is less than 0.05. From the regression result we found that RICO, ROE, and PAR_30 had a significant impact on the operational sustainability of Microfinance institutions at 5% level on the other hand cost per borrower has insignificant impact on OSS. In this study, RICO and ROE positively affected the operational self-sufficiency of microfinance institutions. On the other hand, the coefficients of LCPB and PAR_30 affected negatively.

Table 4.8: The regression model results of OSS a dependent variable

Dependent Variable: LOSS
Method: Panel Least Squares
Date: 06/07/23   Time: 12:56
Sample: 1 100
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.196697	0.239942	21.65815	0.0000
LCPB	-0.065658	0.036537	-1.797049	0.0755
RICO	0.077151	0.037813	2.040358	0.0441
ROE	0.171358	0.038319	4.471879	0.0000
PAR_30	-2.525281	0.475234	-5.313766	0.0000

R-squared	0.474561	Mean dependent var		4.691341
Adjusted R-squared	0.452437	S.D. dependent var		0.348342
S.E. of regression	0.257764	Akaike info criterion		0.175162
Sum squared resid	6.312016	Schwarz criterion		0.305420
Log likelihood	-3.758098	Hannan-Quinn criter.		0.227880
F-statistic	21.45029	Durbin-Watson stat		1.703306
Prob(F-statistic)	0.000000			

Source: EViews 10 result for OSS, 2012-2020

??????

Cost per borrower (CPB)

Ho: Cost per borrower has no a significant impact on financial self-sufficiency

The cost per borrower that an MFI incurs, did not affect the operational self-sufficiency of Ethiopian microfinance institutions at 5% significance level. The result from the analysis indicates that the increase in cost per borrower reduces the operational sustainability of microfinance institutions. The cost per borrower measures the MFI effectiveness in cost reduction given the number of borrowers they are serving. This implies that the role of cost reduction did not improve operational sustainability. Therefore, we are rejecting the null hypothesis which was articulated as there is no significant relationship between cost per borrower and operational self-sufficiency of microfinance institutions. Thus, the finding did not support the alternative hypothesis that the cost per borrower affects operational self-sufficiency negatively and significantly. This finding is not in line with that of Dissanayake (2012) and Sileshi (2015) which has found a strong negative relationship between cost per borrower ratio and operational self-sufficiency ratio.

Return on equity (ROE)

Ho: Return on equity has a significant impact on financial self-sufficiency

As shown in the above Table 4.7, ROE has a coefficient of 0.171358 and was significant for at 1% significant level implying that shareholders really seem to interfere with OSS. Therefore, ROE has a positive significant effect on the OSS of Ethiopian MFIs.

Portfolio at risk > 30days (PAR_30)

Ho: Portfolio at risk >30 has a significant impact on financial self-sufficiency

According to regression model result, PAR_30 had a negative significant effect on OSS. This finding disagreed with the paper worked by Fukazawa (2011) that stated the ratio of portfolio at risk has a positive significant effect on operational self-sufficiency of MFIs. This disagreement can be due to study period or MFIs in Ethiopia increase their OSS sustainability over time. Therefore, we reject the null hypothesis that portfolio at risk (PAR) has negative significant effect on the operational self-sufficiency of MFIs in Ethiopia.

Risk Coverage Ratio (RICO)

Ho: RICO has a significant impact on financial self-sufficiency

RICO was a significant positive predictor variable in determining operational self-sufficiency. Therefore, based on the regression result from the study, we fail to reject the null hypothesis which was formulated to show the absence of a significant relationship between RICO and operational self-sufficiency of Ethiopian microfinance institutions.

Now based on the regression result shown in Table 4.8, we can produce the model for operational self-sufficiency of MFIs in Ethiopia over the period of 2013 to 2022.

$$\widehat{logOSS} = 5.196697 - 0.065658 * LCPB + 0.0.077151 * RICO + 0.171358 * ROE - 2.525281 * PAR_{30}$$

The following table summarizes the sign of relationships between explanatory variables and operational self-sufficiency from regression model output.

Table 4.9: Overall regression results and null hypotheses comparison for OSS

Variable	Null hypothesis	Regression result	Level of significance	Status of Null hypothesis
LCPB	-	-	5%	Rejected
RICO	+	+	1%	Fail to Rejected
Operating expense ratio	_	+	5%	Fail to Rejected
Portfolio at risk>30days	_	_	1%	Fail to Rejected

Source: EViews 12 OSS regression output, 2013-2022

Chapter: Five

Summary of findings, Conclusion and Recommendation

This chapter presents the summary of findings, conclusion, recommendation made in the study, and suggestions for further research.

Summary of finding

This study examined the factor that determines the financial and operational sustainability of microfinance institutions using ten years data of from sixteen microfinance institutions containing 100 observations, for the period from 2013 to 2022. Based on the finding from the descriptive statics and econometric result the researcher has made the following conclusion.

During the research period, MFIs in Ethiopia achieved an average mean of 47 percent operational self-sufficiency (OSS). During the study period, however, MFIs in Ethiopia achieved an average mean of 44 percent financial Self Sufficiency (FSS) ratio. Therefore, it can be concluded that MFIs in Ethiopia are not financially and operationally self- sufficient.

Operating expense ratio was found to be an important variable that explains variation in financial and operational sustainability. MFIs' financial and operational sustainability is heavily reliant on loan size. In terms of the coefficient of breadth (average number of borrower), MFIs with larger number of borrower are more likely to be profitable, which results improve sustainability. The regression results revealed that Operating expense ratio found high predictor variables in determining both financial and operational self-sufficiency. Portfolios at risk demonstrate how efficient the MFI is at loan collection. With respect to the coefficient of the portfolio at risk, MFIs in Ethiopia are not efficient in terms of loan portfolio collection which results in MFIs becoming less sustainable.

Conclusion

The study examined the effect of debt and return on equity on MFI's sustainability. The study found that the sustainability of MFIs in Ethiopia is highly related to the financing structure. Choosing an appropriate finance structure is important to MFIs. As per the regression, results MFIs become sustainable if they finance their sources with equity rather than debt. As shown in the regression result cost per borrower was found predictor variable related to financial self- sufficiency. Depending on the coefficient of OER, it can be inferred that MFIs with high OER, are not to be efficient this results MFIs will not become sustainable.

Other determining variables used in this study are liquidity ratio and write off. With respect to the coefficient of liquidity ratio, it can be inferred that MFIs with high LR, are more to adopt the business so borrow with the client, which results in increased sustainability. Write off was found negative and significantly related to operational self- sufficiency. As an write off rate increase, the operational self-

sufficiency becomes decrease. In general, it can be concluded that breadth, liquidity ratio, operating expense ratio, write off, risk coverage ratio, operating expense ratio and par>30 are found to be an essential explanatory variables in determining both the dependent variables of financial self-sufficiency and operational self-sufficiency of MFIs in Ethiopia.

The basic objective of microfinance is to give low-income people the tools they need to expand their businesses independently and earn additional money. However, MFIs must first ensure their viability in order to increase the number of low-income borrowers and assist them in becoming self-sufficient. One way to do this is by becoming financially and operationally self-sufficient.

The study discovered that the debt to equity ratio has a significant detrimental effect on the long-term viability of Ethiopian MFIs' finances and operations. As a result, MFIS needs to balance its capital structures and employ less loan financing. By increasing the par value of their shares and bringing on new members, they must increase their equity capital. To promote membership, MFIs should develop member education programs.

In this study write off was found to be a negative and statistically significant determining variable for financial self-sufficiency. As a result, MFIs should get consult with credit bureaus when lending, and implement a strong collection strategy to track all debtors to greatly reduce write off problem and improve financial sustainability levels. Assessment of borrowers' repayment ability, examining the number of dependents, amount of debt, age, and assets possessed among other things remain an important concern in managing non-performing loans.

Operating expense ratio was found to be a negative and statistically significant variable in determining both financial and operational self-sufficiency; therefore, MFIs should reduce their operating expense ratio by utilizing cost- efficient technology-based methods of reaching remote clients, such as mobile banking. Mobile banking lowers the costs associated with payment dispensation. Furthermore, MFIs should be innovative in their lending activities, particularly in the use of group lending, which greatly reduces monitoring costs for MFIs because the lending mechanism is self–controlling and effective in reducing defaults. The source of financing used in financing operations is another cost center for MFIs. Debt remains an expensive source of financing for Ethiopian MFIs. It is thus prudent to limit the use of debt financing, particularly given the already high operating costs and CPB. Servicing borrowed funds is an obligation to an MFI, regardless of the MFI's level of sustainability; thus, there must be a need to control debt and the level of financing.

The study found that breadth had a positive significant determinant variable for financial self-sufficiency, therefore, the researcher recommends, that MFIs must increase the number of their debtors this lead to increases in the financial and operational self-sufficiency of MFIs in Ethiopia. The MFIs should increase the loan size that they lend to a borrower to reduce operating expense ratios in proportion to the amount they lend. But it increases the level of risk in case of defaults of repayments. Thus, MFIs should make every attempt to balance the average loan size. They should also be informed that as the econometrics result indicates the financial sustainability of Ethiopian MFIs had been getting a better hand in hand with the average loan size, inferring high debtors, which implies the sign of mission drift. Therefore, MFIs in Ethiopia should safeguard their sustainability to go in agreement with their objectives if the MFIs still have to make their original mission sustainable by putting in place measures for the determinants of mission sustainability.

The study also found that liquidity ratio was a positive and significant determining variable for financial self-sufficiency; thus, MFIs should strengthen the productivity of their loan officers by attracting and

giving more loans to the entrepreneurs and for hardworking employees.

It is also recommended that the government play a major role in creating and maintaining a favorable environment for empowering MFIs to ensure their long-term sustainability through appropriate monetary and fiscal policies. To do so, the government must reduce its expenditure, financial institutions must rise saving interest rates, the government must reduce its budget deficit, and community awareness of the importance of saving must be raised to reduce inflation, which has a negative impact on the sustainability of Ethiopian MFIs. This recommendation is based on the fact that the operational self-sufficiency of Ethiopian MFIs is negatively and significantly impacted by the macroeconomic variable of inflation.

Finally, this study found that Ethiopian MFIs are more or less financially self-sufficient, but they are operationally sustainable. As a result, the researcher suggests that to be financially self- sufficient, MFIs should increase their debtors and return on equity while decreasing the write off risk and cost per borrower.

To keep the operational self-sufficiency MFIs should stay profitable and the debt to equity should be increased. The mean value of debt to equity ratio as shown is very low and when we compare this value to the mean value of return on equity ratio it is very low similarly the regression result shows return on equity had a positive and significant determining variable for operational self-sufficiency so the MFIs should reduce debt financing source and maintain balance source of financing by increase source of equity capital. RICO has a positive significant relationship with OSS; therefore, Ethiopian MFIs should ensure to themselves, the improvement of operational self-sufficiency as their value increase. A portfolio at risk has a negative significant effect on the operational self-sufficiency of Ethiopian MFIs. Therefore, MFIs should reduce the ratio of write off by making an efficient collection of the loan portfolio.

Recommendations

Suggestions for further research

This study focused on MFIs in Ethiopia. This study concentrated solely on the financial sustainability component. As a result, additional research may be conducted to investigate other aspects of sustainability (program sustainability and human resource sustainability) of MFIs in Ethiopia. Furthermore, because this study is limited to quantitative aspects and does not include qualitative aspects for determinants of MFIs sustainability in Ethiopia, future researchers on this topic are encouraged to conduct a more comprehensive study that includes other influencing factors that use qualitative aspects.

This study used secondary data containing ten years to identify factors influencing financial and operational sustainability. However, the 10-year period is too short to conduct a thorough econometric analysis. As a result, future research may consider a longer study period. The longer study period may aid in revealing what was most likely not revealed in this study. This study looked at how macroeconomic variables like GDP and inflation affect the financial and operational sustainability of MFIs in Ethiopia, so more research in this area can be done by looking at macro variables like per capita income, exchange rate, and real interest rate.

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