Mekelle University

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Department of Accounting and Finance

Determinants of Financial performance of Microfinance institutions (MFIs) in Ethiopia

A Thesis Submitted to the Department of Accounting and Finance for the Partial Fulfillments of the Requirement for the Degree of Masters of Arts (MA) in Accounting and Auditing

BY

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DECLARATION

I, Kibrom Welday Reda, hereby declare that the thesis entitled "**Determinants of financial performance of MFIs: Evidence from microfinance institutions in Ethiopia.**" submitted for the award of the masters of art (MA) in Accounting and Auditing of Mekelle university, is my work and that all sources of materials used for this thesis have been fully acknowledged.

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CERTIFICATION

This is to certify that Kibrom Welday Reda has carried out a thesis on the topic entitled "**Determinants of financial performance of MFIs: Evidence from microfinance institutions in Ethiopia.**" This thesis is of his original work and does not form part of any other project report or dissertation on the bases of which an award of the Degree of Master of Arts (MA) in Accounting and Auditing was conferred on an earlier occasion on this candidate.

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ABSTRACT

The main objective of this study was to investigate and analyze the Determinants of financial performance in the case of selected micro finance institutions (MFIs) in Ethiopia, with specific emphasis on how Capital to Asset ratio, Firms growth rate, Portfolio at Risk, Operating Efficiency ratio, Age of MFI, real gross domestic product growth, Size of MFI, and Government support affect financial self-sufficiency of the MFIs in Ethiopia. Quantitative research approach was used, and the study included a selected sample of 22 MFIs in Ethiopia covering a time period of nine years from 2015 to 2023 *(198 observations). The study employed secondary data collection method and the data were obtained from the financial annual reports of MFIs that were available in the national bank of Ethiopia. Fixed effect was used for the Panel data regression analysis of variables. To test the accuracy of the model, the researcher has employed important classical regression assumption tests. The fixed effect regression model's result coefficient of determination (R-squared) was 0.706, implying that 70.6% of variation in financial performance is explained by the independent variables used in the study. The result of the study indicated that MFIs' financial performance is significantly influenced by Capital adequacy ratio; MFIs' size, MFIs' growth and Age of MFIs. Whereas, portfolio at risk, operating efficiency, gross domestic product, and government support have no significant effect on financial performance of the selected MFIs in Ethiopia.*

Key words: Financial performance, financial self-sufficiency (FSS), and Microfinance institutions (MFIs)

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LIST OF ABBREVIATIONS

AEMFI: Associations of Ethiopian microfinance institutions

CAR: Capital to Asset Ratio

CGAP: Consulting Group to Assist the Poor

FGR: Firm Growth Rate

FSS: Financial Self-Sufficiency

GDP: Gross Domestic Product

GSP: Government Support

LN: Natural Logarithm

MFI: Microfinance Institutions

NBE: National Bank of Ethiopia

PAR: Portfolio at Risk

ROA: Return on Asset

SIDA: Swedish International Development cooperation Agency

CHAPTER ONE
INTRODUCTION

This introduction part is the first step of the research study which provides a clear explanation about Background of the study, Statement of the problem, Objective of the study, research hypothesis, Scope and limitation of the study, Significance, and Organization of the thesis.

1.1 Background of the Study

Microfinance is a term used to refer to a provision of financial services to low-income people. It envisages building the capacities of the poor who are largely ignored by commercial banks and other lending institutions, and graduating them to sustainable self-employment activities by providing them long lasting access to a quality and reasonable financial services to finance income-producing activities (CGAP, 2019).

The history of microfinance dates back as far as the middle of the 1800s, when the theorist Lysander Spooner wrote about the benefits of small credits to entrepreneurs and farmers as a way of getting the people out of poverty (Kannan and Panneerselvam, 2013). The modern use of the expression "micro-financing", however, has roots in the 1970s when organizations, such as Grameen Bank of Bangladesh with the microfinance pioneer Muhammad Yunus (who is believed to be the founder of formal microfinance), were starting and shaping the modern industry of micro-financing about four decades ago.

The development of microfinance institutions (MFIs) in Ethiopia is a recent phenomenon of 1990s pursuant to the government's Licensing and Supervision of Microfinance Institution 40/1996 Proclamation. Following this proclamation, several microfinance institutions were established and have been providing access to financial services to the poor. Like MFIs in other developing countries, Ethiopian MFIs pursue dual objectives of reaching the poor and achieving financial sustainability (SIDA, 2003 as cited by Zerai, 2012).

The performance of MFIs is essential in evaluating the contribution microfinance can make in reducing poverty and increasing the financial inclusion of the poorest (Hermes and Hudon, 2018). Given the relationship between the performance of MFIs and their goal of poverty eradication, the knowledge of the underlying factors that determine the performance of MFIs is essential not only for their managers, but also for numerous stakeholders such as the National Bank, governments, and other financial authorities to continuously monitor and regulate the financial soundness (Haile, 2016).

Previous studies have analyzed the drivers of the performance of microfinance institutions in various countries as well as in our country. Summary findings of studies indicate MFI-specific characteristics such as maturity (age), size and type of organization, governance structures and conditions external to the MFIs are the main drivers of financial performance. But, the relationship between these drivers and MFI performance very much depends on the context. A systematic analysis by (Hermes and Hudon, 2018) pointed out that from various outcomes out of country-specific and multi-country analyses clearly indicated that country-contextual factors play a significant role in determining whether the link between the various drivers and MFIs performance is positive, negative or non-existent.

Reviewing the empirical literature shows that there were a lot of studies that have been conducted in Ethiopia on MFIs performance in general and the factors that determine MFIs' financial performance in particular. However, there were variations in which these studies used as a proxy to measure the financial performance of MFIs and its possible determinants. In addition, there were disparities in the methodology used. Thus, this is a clear indication a further study is needed which consider the unique characteristics of Ethiopian industry, for instance; in terms of size and outreach the industry is dominated by the so called big five government backing MFIs namely Amhara, Dedebit, Oromia, Omo, and Addis Credit and Savings institutions (AEMFI, 2016). As such, this study added another categorical variable coined as 'government support', to see particularly if the support is a significant determinant of MFIs' financial performance for the Ethiopian MFIs. The aim of this study is, therefore, to identify and analyze the determinant factors that affect financial performance measured in financial self-sufficiency of MFIs in Ethiopia.

1.2. Statement of the problem

MFIs provide financial services to lower income borrowers, who look for relatively small amounts to finance their businesses, manage emergencies, acquire assets, or for smooth consumption (CGAP, 2019). In providing financial services to the poor, MFIs need to decide the possible combination of financial performance and social performance. In practice, the choice for a particular combination of financial and social performance levels may be linked to the type of MFI. Whereas NGOs and Government backed, as in Ethiopian case, may be more inclined to focus on their social mission and prioritize social performance at the cost of reaching financial performance (Hermes and Hudon, 2018).

According to (Haile, 2016), the establishment of sustainable MFI that reach a large number of rural and urban poor who are not served by the conventional financial institutions, such as the commercial banks, has been a key component of the new development Strategy of Ethiopia. Therefore, for MFIs can stick to their main social mission of outreach and provide services to poor households while at the same time being financially sustainable, finding out the key determinants of performance of MFIs is an important issue when evaluating the contribution microfinance can make in reducing poverty and increasing the financial inclusion of the poorest.

Ethiopian MFIs sector is unique due to the dominance of government backed MFIs, focus on rural households, and provision of both credit and saving services. The industry is controlled by regional governments owned large MFIs in the country. According to Hayleyesus (2017), the government backed MFIs in the country accounted for 89.4% of the overall Microfinance industry. Moreover, these microfinance institutions accounted for 85.6% of the total number of active borrowers that were served by the Ethiopian microfinance institutions. The existence of subsidies and support by the government, and local and foreign NGOs in the industry is the thing most of the MFIs rely on to sustain. However, studies conducted abroad (e.g. D'Espallier et al., 2013) indicate having MFIs being dependent on subsidies is not a sustainable long-term business model, and sustainability is critical in the long run for the MFIs in Ethiopia so as to reach the still largely underserved population Zerai (2012). Targeting at maximizing outreach under the condition of being financially sustainable should then be the overriding consideration, for most Ethiopian MFIs are highly dependent on regional and/or other local association's help to operate.

Considering the above argument, therefore, it is essential for these institutions to identify factors affecting their financial self-sufficiency, ability to stand on their own without external backing (e.g. government support) because not having the support they need at their disposal might mean a red flag for their sustainability.

Previous studies on determinants of MFIs performance has been undertaken in Ethiopian conventional banking industry (e.g. Belayneh 2011, Birhanu 2012, Habtamu 2012). The empirical literature investigating the performance of microfinance institutions is scarce and still growing, as such rigorous empirical evidence on Ethiopian microfinance institutions remains limited due to lack of up to date information (Abebaw, 2014). For example, Alemayehu (2008) studied the financial and operational performance of microfinance institutions by using simple descriptive analysis and employing graphs and percentage growth rates by classifying small, medium and large. The study did not say anything about factors affecting financial performance of MFIs.

A study was also conducted by Letenah (2009) on performance analysis of sample microfinance institutions of Ethiopia using productivity and efficiency ratios, financial viability indicators, profitability indicators, leverage and capital adequacy ratios as well as scale and depth of outreach indicators. However, the research stated nothing about which indicators determine the performance of microfinance institutions apart from evaluating the performance of Ethiopian MFIs in terms of various criteria by comparing with the Micro Banking Bulletin (MBB) benchmark.

Local related studies have also been conducted, for instance Melkamu (2012), who tried to see the factors affecting financial and operational sustainability of Ethiopian MFIs. Abebaw (2014) and Haile (2016) also attempted to determine performance of MFIs in Ethiopia with a number of variables. However, in Melkamu (2012) and Abebaw (2014) studies, the MFIs taken as a sample and the years their studies covered were too little to make generalizations about the MFIs' industry in Ethiopia. And as for Haile (2016) his study did only consider firm specific factors. Besides, it did not include potentially important drivers of financial performance metric such as age of MFIs. And collectively they failed to incorporate a categorical variable 'government support', in their studies which this study did.

Undeniably, apart from the studies discussed above, empirical literature has also shown researches on MFIs performance both in Ethiopia and elsewhere (Zerai, 2012; Abate et al. 2014; Tsegaye. A 2009; Servin et al. 2012; BegK 2016; Vanroose and D'Espallier 2013; Wolday 2004; Cull et al. 2007; Hermes et al. 2011). However, while some of the previous studies (Abebaw, 2014; Hermes et al. 2011; Kebede and Berhanu 2012) focus on an overused traditional performance indicator (ROA), others are either dated studies or used just descriptive research approach, or cross-sectional data or focus on cases of other countries.

Building on the previous studies, this study will contribute the following to the already existing literature. First, this study tried to analyze factors affecting financial performance of MFIs by including potentially important missing variable in studies that have been done so far, which is government support (a categorical variable), which perhaps is an important characteristic of the government backing MFIs; and so it is important to see whether its presence would have significant effect on financial self-sufficiency of these MFIs' operating in the industry.

Second, unlike most studies made on MFIs financial performance locally, this study uses specific MFIs financial performance measure, financial self-sufficiency (FSS) a measure of an institution's ability to generate sufficient revenue to cover its costs - as a dependent variable. FSS indicates the extent to which MFIs are able to operate without ongoing subsidies, including soft loans and grants (Cull et al., 2007). The researcher argued that it is an appropriate metric for Ethiopian MFIs to measure their financial performance. Given the objectives in which these MFIs instituted, financial performance evaluation should not be in view of metrics measured using traditional financial ratios such as ROA and/or ROE (which do not exclude subsidies) rather it should be in view of sustaining long enough for these MFIs to reach the underserved rural and urban low-income people.

Therefore, as far as studies that have been made in Ethiopia and abroad are concerned, and coupled with the aforementioned reasons, it seems essential to study determinants using FSS as a proxy of financial performance of MFIs by increasing the number of variables and the number of microfinance institutions so that the validity and generalizability of the study can be enhanced further.

1.3. Objective of the Study

1.3.1 General Objective of the Study

The general objective of the study is to investigate the determinants of financial performance of Microfinance Institutions in Ethiopia.

1.3.2 Specific Objectives of the Study

Specifically, this study addressed the following objectives;

- To determine the impact of capital adequacy ratio on the financial performance of MFIs.
- To examine the impact of portfolio quality on the financial performance of MFIs.
- To analyze the relationship between operational efficiency and MFIs financial performance.
- To determine the impact of firm size on the financial performance of MFIs.
- To examine the impact of firm age on the financial performance of MFIs.
- To determine the impact of real GDP on the financial performance of MFIs.
- To determine the impact of firm growth rate on the financial performance of MFIs.
- To analyze the relationship between government support and MFIs financial performance.

1.4 Research Hypothesis

According to Creswell (2009), more formal way of stating research question is by developing hypotheses between explanatory and dependent variables. The hypothesis may be stated as alternative hypothesis specifying the exact results to be expected. It can also be written in null form indicating no relationship between dependent and independent variables.

Based on the theoretical frameworks and empirical literature review available on microfinance financial performance, this study formulated the following alternative hypotheses to speculate the outcome of this research.

H1. There is a significant and positive relationship between capital adequacy ratio and financial performance of MFIs.

H2. There is a significant and negative relationship between Portfolio at risk and MFIs financial performance.

H3. There is a significant and negative relationship between operational efficiency and MFIs financial performance.

H4. There is a significant and positive relationship between size and financial performance of MFIs.

H5. There is a significant and positive relationship between age and MFIs financial performance.

H6. There is a significant and positive relationship between real domestic product growth and MFIs financial performance

H7. There is a significant and positive relationship between firm growth rate and financial performance of MFIs.

H8. There is a significant and positive relationship between government support and MFIs financial performance.

1.5 Significance of the Study

Although there have been numerous studies on Financial performance of MFIs in other countries where MFIs are relatively large and well developed compared to MFIs in Ethiopia; it is uncommon to find such studies in sufficient numbers in Ethiopia. This study, as an attempt to assess the determinants of financial performance of MFIs in Ethiopia, is expected to provide evidence on what the effects of the firm-specific factors and the general macroeconomic factor will have on the MFIs performance in Ethiopia. Analyzing and Understanding the impact of different factors on the performance of MFIs in Ethiopia is a major stepping stone to enlighten what should be done if good performance is to be achieved.

The findings of the study also benefit to donors, managers and others interested in the MFIs study for it will show the level of financial performance of the MFIs operating in the country have reached. This in turn helps them knowing factors affecting financial performance and thereby take appropriate actions to increase performance of MFIs and the study would also initiate other MFIs service providers to give due attention on the management of identified variables. It is hoped that the outcome of this study would also provide an insight of the MFIs industry to other researchers.

1.6 Scope and Limitation of the Study

This study was confined only to the identification and analyzing of the key determinants of financial performance of the selected twenty-two Microfinance Institutions in Ethiopian by analyzing their financial statements from 2015 to 2023 fiscal year. Therefore, findings of this study may not represent the MFIs under study for the years before or after the study period and in connection with that, this study is based on sample so the outcome of this study may not necessarily represent for other MFIs not included in the study as well. The study comprised all Microfinance Institutions that were in operation for at least nine years. Moreover, since the study for the most part was quantitative, except for government support, it used quantitative measures of performance. As a result, disregarding the qualitative aspect may have little effect on generalizability of the study even though the research considered a large scale of observation.

1.7 Organization of the Study

The study has five chapters which are subdivided into sections. The first chapter deals with the introduction of the study, which includes background of the study, statement of the problem, research question, general and specific objectives, significance, scope as well as limitations of the study. The second chapter presents a review of theoretical and empirical literature conducted so far on the study area. The third chapter, on the other hand, provides a methodology used to conduct the study. This includes sample and sampling techniques, method of data collection and analysis. Data analysis and presentation are presented in the fourth chapter. The last chapter presents conclusions and forward recommendations**.**

CHAPTER TWO
LITERATURE REVIEW

This chapter presents both the theoretical and empirical evidences focusing on the determinants of micro-finance institution performance. As such, the first section, describes overall theoretical overview of micro finance concepts. The second section presents review of empirical studies on conducted on the determinants of MFIs' Financial performance.

2.1 Theoretical overview of microfinance

This section will define theorized relationships between variables, so that it can provide a foundation to construct the proposed theoretical or conceptual framework. Based on previous studies, there are numerous theoretical assumptions used to explain the theoretical relationship between the determinant variables and micro finance institutions‟ financial performance.

2.1.1 Definitions of microfinance

Even though the definitions of microfinance institutions provided by different authors and organizations seem to appear different, in essence they convey the same theme. The term microfinance refers to the provision of financial services primarily savings and credit to the poor and low income households that don't have access to formal financial institutions such as commercial banks (Arsyad, 2005). Microfinance, according to (Otero, 1999) is "the provision of financial services to low income poor and very poor self-employed people". These financial services, according to Ledgerwood (1999), generally include savings and credit but can also include other financial services such as insurance and payment services. Schreiner and Colombet (2001) define microfinance as "the attempt to improve access to small deposits and small loans for poor households neglected by banks." Based on the above definitions, in this study microfinance is coined as the provision of financial products such as savings, loans and insurance to poor people living in both urban and rural settings who are financially excluded from the formal financial sector.

2.1.2 History of Microfinance

Over the past centuries, practical visionaries, from the Franciscan monks who founded the community-oriented pawnshops of the 15th century to the founders of the European credit union movement in the 19th century (Such as Friedrich Wilhelm Raiffeisen) and the founders of the microcredit movement in the 1970s (Muhammad Yunus and Al Whittaker), have tested practices and built institutions designed to bring the kinds of opportunities and risk management tools that financial services can provide to the doorsteps of poor people.

The history of micro-financing can be traced back as far as to the middle of the 1800s, when the theorist Lysander Spooner wrote about the benefits of small credits to entrepreneurs and farmers as a way of getting the people out of poverty (Kannan and Panneerselvam, 2013). And Friedrich W. in his own was the first person who founded a way to assist poor farmers in rural Germany through establishing cooperative lending banks. The modern use of the expression "micro-financing", however, has roots in the 1970s when organizations, such as Grameen Bank of Bangladesh with the microfinance pioneer Muhammad Yunus, were starting and shaping the modern industry of micro-financing.

Professor Muhammad Yunus who was the Nobel Prize winner in 2006, disbursed first loans from his own pocket to a group of rural women in Jobra in 1976 and successfully developed the concept of microfinance with his Grameen Bank throughout the country and later the whole world (Ledgerwood, 1999). The Grameen bank, which is now serves more than 2.4 million clients (94 % of them women) and is a model for many countries. Other examples of early pioneers according to (Helms, 2006), besides Grameen Bank was ACCION International in Latin America and Self-employed Women's Association Bank in India were among the prominent ones. But, in the mid-1980s, micro-credit models supported and subsidized by many donors proved to be inefficient and became a subject of steady criticism. This was due to the fact that most programs resulted in large loan losses and needed frequent recapitalization to continue operating. Then it became clear that market-based solutions were required and this in turn led to a new approach that considered microfinance as an integral part of the overall financial system (Helmes, 2006).

Early in the 1990s the term “microcredit” was replaced by “microfinance” which included not only credits but also other financial services for poor people (Elia.M, 2006). The introduction of the term microfinance followed the success of many microcredit programs around the world. But, the turning point marked the birth and official recognition of the global industry of microfinance was the first Microcredit Summit when in 1997, delegates from 137 countries representing around 1,500 organizations gathered in Washington, D.C. Afterwards the emphasis began to change and the provision of credit was considered to be important to the need of becoming financially sustainable through the provision of a complete range of financial products and to reach more people.

2.1.3 History of microfinance in Ethiopia

Subsequent to the 1984/85 severe drought and famine, many NGOs started to offer micro credit along with their relief activities although this was on a limited scale and not in a sustained manner (Alemayehu, 2008). However, the micro-credit sector in Ethiopia has been strictly regulated since 1996. Following an assessment of revolving funds managed in the framework of NGO development projects, a piece of law was promulgated with the aim of professionalizing the sector by reducing imprudent lending practices, lenient financial discipline and distortions due to unrealistic interest rates (Melkamu, 2012). Formal microfinance in Ethiopia started in 1994/95. Following the commencement of formal micro-finance service in Ethiopia in 1994/5, the Licensing and Supervision of Microfinance Institution Proclamation of the government during 1996 encouraged the spread of Microfinance Institutions in both rural and urban areas as it authorized them among other things, to legally accept deposits from the general public, to draw and accept drafts, and to manage funds for the micro financing business (SIDA, 2003).

Although the development of microfinance institutions in Ethiopia started very recently, the industry has shown a remarkable growth in terms of outreach particularly in number of clients. Since the issuance of Proclamation 40/1996, which provides the establishment of microfinance institutions, thirty-nine microfinance institutions have been legally registered by the National Bank of Ethiopia (NBE) and started delivering services (NBE, 2019). Now there are about 53 registered MFIs in Ethiopia. Until the 30th June of 2023, from the total 53 MFIs registered in the

country, 30 of them were reported their financial statements to the National bank of Ethiopian (NBE,2023).

When we look at the performance of microfinance, despite the large expansion of the industry, the Ethiopian MFIs in general are poor performers on depth of outreach in comparison to other MFIs counterparts in other countries (The MIX, 2017). They are not reaching the poorest of the poor. They are also poor in terms of the ratio of GLP to assets, allocating a lower proportion of their total assets in to loans and they are not using their debt capacity properly. On the contrary, the majority of MFIs were good at breadth of outreach, cost management, efficiency and productivity indicators.

2.1.4 Performance Measurement theories in Microfinance Institutions

Performance measurement of an institution shall be from the perspectives of the organization's objectives. Back in the early days when MFI were initiated, they were financed by donor funds that have a poverty eradication goal. Thus, the MFIs‟ performance was measured on how much they reach to the poor and how the lives of those who get financial services are changing as compared to those who don't get these services. However, as the microfinance industry grew in size, the need for increased financing combined with unpredictability of donor funds trigger the issue of building a sustainable MFIs that stand on their own leg. That is, MFIs shall start covering their own cost of operation from their program revenues as quoted by (Hermes and Hudon, 2009).

The diverse theoretical perspectives on which the microfinance performance is to be measured has created two opposing views but having the same goals school of thought about the microfinance industry. These are called the Welfarists and the Institutionalists. Although they share the goal of poverty reduction, these two approaches put microfinance in the crossroads (Gaetan, 2012).

The Welfarists rely on the proposition of social responsibility in relation to satisfy its customer expectations (Carroll, 1979; Servet, 2007). This school of thought evaluates the performance of MFIs in terms of the customer through the social outreach and impact analysis. Welfarists argue that MFIs can achieve sustainability without achieving financial sustainability. They contend that

donations serve as a form of equity and as such donors can be viewed as social investors. In contrast to private investors who purchase equity in publicly traded firms, social investors don't expect to earn monetary returns rather these donor investors realize a social (intrinsic) return instead (Basu and Woller, 2004).

Welfarists tend to emphasize poverty alleviation, place relatively greater weight on depth of outreach relative to breadth of outreach and gauge institutional success according to social metrics. They feel these issues are important, but they are less willing than institutionalist which sacrifices depth of outreach to achieve them (Basu and Woller, 2004). On the contrary, institutionalists argue that unless MFIs build sustainable institutions that are capable of running independent of subsidies, their promise in eradicating world poverty will not be met. They argue that sustainable MFI helps to expand outreach and reach more poor people.

The main difference of the two schools of thought is on methodology of eradicating poverty. Welfarists say we have to target the very poor and profitability shall be secondary. They prefer to charge subsidized and low interest rates by relying on donor funds. Institutionalists on the other hand argue donor funds are unreliable and MFI by themselves must generate enough revenues to reach more poor people in the future. They favor marginally poor customers. They charge higher interest rates and focus on efficiency of MFIs to generate profit and reach more poor (Basu and Woller, 2004).

For many years the MFI industry was operating with subsidy from donors and governments but currently pressure mounts on these organizations to be financially sustainable. However, it seems that serving the poor and being financially self-sufficient seems contradictory. Various arguments are forwarded: the poor can't pay high interest rate, if the poor consume it has no collateral, there is a big transaction cost in serving the poor. But these assumptions are proved to be wrong in the last 20 years and the poor is seen as capable of paying high interest as ROI of small projects are larger than large projects, the poor don't consume the money, the money is rather use for financing its business, transaction cost barriers are mitigated by the creation of group lending, absence of physical collateral is mitigated by social capital. Hence contrary to the expectations, the MFI industry has shown significant repayment rate although high repayment rates can't be translated into financial sustainability (Basu and Woller, 2004).

However, there seem to be many unresolved problems. Many MFI can't reach a significant portion of the world's poor; they can't be free from subsidies. Mixed results are observed on the impact of the microcredit on the lives of the poor. Questions such as how MFIs can serve the poor but still financially self-sufficient, whether their MFI model is correct, or if so what are hindering them to achieve the targets set, and what optimal solution is available for the MFI in reaching the poor and being financially self-sufficient remain unanswered to this day.

In the literature MFIs**' performance** has been measured in different parameters. Consulting different literature, the following are usually measure used and categorized as follows.

2.1.5 Financial performance measures

2.1.5.1 Profitability indicators

In most cases, researchers use traditional financial ratios such as the return on equity (ROE) or the return on assets (ROA) to measure financial performance. These measures are also used in the more general banking literature. ROE is calculated as net operating income divided by the value of outstanding equity; ROA is measured as the ratio of net operating income to the value of total assets of the MFI. In some cases, researchers use other measures of financial performance they borrow from the banking literature, such as loans at risk or the yield ratio, However, since detailed, high-quality financial information is usually rather difficult to obtain for MFIs researchers mostly fall back on using ROA or ROE as a measure of financial performance (Abebaw, 2014).

2.1.5.2 Financial viability Indicators

Following traditional measures, financial performance is also evaluated by using indicators that are more specific to microfinance. These metrics include measures such as the so called operational self-sufficiency and financial self-sufficiency.

Operational self-sufficiency provides information with regard to the ability of MFIs to cover costs with revenues, that is, it shows to what extent an MFI is able to break even on its operations. It can be assessed by dividing total operating revenues by the sum of total financial expenses on attracting funding, which includes interest paid to depositors and interest and fees on

loans from funds or other financial institutions as well as bondholders, and expenses on loan loss reserves and operations. In some cases, a simpler measure of operational self-sufficiency is used, taking the ratio of operating revenues to operating expenses net of loan loss provision expenses and operating expenses (Hermes and Hudon, 2018). The formula used to calculate is:

$$\text{OSS} = \frac{\text{Operating income (Loans + Investment)}}{\text{Operating Cost + Loan Loss Provisions + Financing Cost Standard}}.$$

Financial Self-Sufficiency is gauged as the adjusted total financial revenue divided by the sum of adjusted financial expenses; loan loss provisions and operating expenses. Adjustments refer to amending for the country-level inflation rate and the implicit and explicit subsidies. These subsidies encompass concessionary borrowings, cash donations, and in-kind subsidies. The financial self-sufficiency measure unlike operational self-sufficiency indicates the extent to which MFIs are able to operate without ongoing subsidies, including soft loans and grants (Cull et al., 2007). Because of its advantage over the traditional financial ratios this study has used FSS as dependent variable a measure of financial performance. It can be calculated by dividing **Operating Income (Loans + Investments) to Operating Costs + Loan Loss Provisions + Financing Costs + Adjusted Cost of Capital**

Therefore, as Hermes and Hudon (2018) noted in their systematic analysis, that there are several ways MFI financial and social performance has been measured in the literature. Yet, there seems to be no consensus with respect to what is the best way of measuring financial and social performance. Thus, harmony about the right measurement of these concepts seems to be crucial so that we can reach at academically founded conclusions about the drivers of MFI performance and to come up with policy relevant recommendations.

2.1.5.3 Capital Structure Indicator

In MFIs‟ and other financial institutions‟ literature a capital structure indicator „Leverage‟ refers to the degree to which a MFI borrows money relative to its amount of equity. That is, it answers the question of how many additional dollars can be mobilized from commercial sources for every dollar worth of funds owned by the MFI. The most widely used measure of leverage is the debt equity ratio. And the other most used in MFI studies is capital adequacy ratio. It refers to the

amount of capital a MFIs have relative to their assets. Capital adequacy means there is a sufficient level of capital required to absorb potential losses while providing financial sustainability. The measure used for capital adequacy in this study is the ratio of capital/equity to assets.

Capital to Asset ratio

The capital to assets ratio is a simple measure of the solvency of MFIs. This ratio helps an MFI assess its ability to meet its obligations and absorb unexpected loss. The determination of an acceptable capital to asset ratio level is generally based on a MFIs assessment of its expected losses as well as its financial strength and ability to absorb such losses. Expected losses should generally be covered through provisioning by the MFI‟s accounting policies, which removes expected losses from both assets and equity. Thus, the ratio measures the amount of capital required to cover additional unexpected losses to ensure that the MFI is well capitalized for potential shocks. Mathematically, **it is calculated by dividing MFI's equity to its total assets.**

As a proxy for the MFIs capital, this study used the ratio of equity to assets. MFI with higher capital to asset ratios are considered relatively safer compared to institutions with lower ratios. MFI with low capital ratios are also riskier in comparison with better capitalized financial institutions. Given the above statement and empirical findings such as Abebaw, (2014); Haile, (2016) take in to account, the following alternative hypothesis is predicted

Hypothesis 1: *There is a significant and positive relationship between capital to asset ratio and financial performance of MFIs.*

2.1.5.4 Growth rate indicators:

Firm growth rate(FGR)

Firm growth is measured by the percentage change in total assets of insurance companies or the yearly increasing percentage of firms' assets of micro finance institutions. Microfinance institutions having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities (Abate Gashaw 2012).

Abdelkader Derbali (2014) examines the impact of firm-specific characteristics (size, leverage, tangibility, risk, growth, liquidity and age) on the performance of eight insurance companies in Tunisia a period of 8 years (2005-2012). The analysis of the results from a regression on panel data indicates that the variables size, age and premium growth are the most important determinants of the performance of insurance companies. Abate Gashaw (2012) examined the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on financial performance in Ethiopia. Similar to the study of Abdelkader Derbali (2014), in Abate Gashaw study from the regression results also growth identified as the most important determinant factors of financial performance and positively related with profitability.

Hypothesis 2. *There is a significant and positive relationship between firm growth rate and MFIs financial performance.*

2.1.5.5 Portfolio Quality Indicators:

In financial institutions performance literature, portfolio quality is a critical area of analysis since the largest source of risk resides in their loan portfolio. The loan portfolio is by far an MFIs largest asset and the risk it poses for the institution can be quite difficult to measure. For microfinance institutions, whose loans are typically not backed by bankable collateral, the quality of the portfolio is absolutely crucial. Fortunately, many microfinance institutions have learned how to maintain loan portfolios of very high quality. In fact, leading microfinance institutions are typically better at maintaining a higher portfolio quality than their commercial bank counter parts in many countries (IADB, 2003).

The portfolio indicators provide information on the percentage of non-earning assets, which in turn decrease the revenue and liquidity position of MFIs. As a result, among the measures of portfolio quality the study has randomly selected to use portfolio at risk ratio for the regression because of its importance and availability.

Portfolio at Risk (PAR 30)

Portfolio at risk is a percentage which represents the proportion of MFI's total gross outstanding loan portfolio that is at default risk. This ratio is the most widely accepted measure of portfolio quality. It shows the portion of the portfolio that is “contaminated” by arrears and thus at risk of

not being repaid. The portfolio at risk measure is free from much of the subjective interpretations that plague other portfolio quality indicators, such as repayment rate. Furthermore, portfolio at risk is a more conservative measure of the institutional risk than repayment rate or arrears because both the numerator and the denominator include the outstanding balance it measures the complete risk and not only the immediate threat. Portfolio at Risk (PaR) is calculated by **dividing the outstanding balance of all loans with arrears over 30 days, plus all refinanced (restructured) loans, by the outstanding gross portfolio** as of a certain date. Since the ratio is often used to measure loans affected by arrears of more than 30, 60, 90, and so, the number of days must be clearly stated, for example as PaR90.

Generally speaking, the older the delinquency, the less likely the loan will be repaid and any portfolio at risk exceeding 10% should be cause for concern, because unlike commercial loans, most micro credits are not backed by bankable collateral. Thus, based on the above relationship and in line with prior studies of empirical findings of studies of (e.g. Cull et al., 2007; Tehulu, 2013; De Nyamsogoro, 2010) PaR 30 had on financial self-sufficiency the following hypothesis is proposed.

Hypothesis3. *There is a significant and negative relationship between qualities of portfolio and MFIs financial performance.*

Efficiency Indicators:

Efficiency indicators are performance measures that show how well the institution is managing its operations. Efficiency indicators take into account the cost of the inputs and/or the price of outputs. They are more readily comparable across institutions than like profitability indicators such as return on equity and assets for these indicators are not easily manipulated by management decisions. Efficiency measures are less comprehensive indicators of performance than those of profitability.

Efficiency ratios provide information about the rate at which the MFIs generate revenue to cover their expenses. It refers to the cost per unit of output. Common efficiency ratios used in various previous researches includes operating expense ratio and it is used as an efficiency indicator in this study.

Operating Expense Ratio

This ratio provides the best indicator of the overall efficiency of a lending institution. For this reason, the ratio is also commonly referred to as the efficiency ratio: it measures the institutional cost of delivering loan services. The Operating Expense Ratio is calculated by **dividing all expenses related to the operation of the institution** (including all the administrative and salary expenses, depreciation and board fees) **by the period average gross portfolio**. Interest and provision expenses, as well as extra-ordinary expenses are not included. Lower efficiency ratio is better. The lower the operating expense ratio, the higher the efficiency will be and the higher MFIs are efficient, the greater the financial self-sufficiency of the MFIs will be. Then considering the above fact and empirical finding of international studies e.g. Nimal Sanderatne, (2003); Dissanayake (2012): Muriu, (2011), and local studies (Abebaw, 2014; Haile, 2016 and Ashebir, 2016), this study formulated the following hypothesis:

Hypothesis 4: *There is a significant and negative Relationship between operational efficiency and MFIs financial performance.*

2.1.5.6 MFIs size

Another factor that can affect the financial performance of an MFI is its size. The size of an MFI is measured by the value of its assets (Hermes et al, 2008). A few articles specifically address the impact of the size of the MFI on their performance. In this study size of the MFIs is used as an independent variable, which account for related economies and diseconomies of scale. In most of the finance literature, the total assets of the MFI are used as a proxy for MFI size and these studies suggested taking total assets as it is doing deflate the dependent variable in the model so it would be appropriate to take natural logarithm before including it in the model to be consistent with other ratios. Size is used to capture the fact that larger MFI are better placed than smaller MFI in harnessing economies of scale in transactions to the plain effect that they will tend to enjoy a higher level of profits. These articles suggest a positive relationship between the size and financial performance of the MFI (Cull et al., 2007; Caudill et al., 2009; Armendàriz and Szafarz, 2011).

The size of MFIs may be material for performance as larger MFIs benefit from economies of scale and scope in providing financial services. Scale and scope economies give larger organizations discretions to be more efficient, resulting in better financial performance. Thus, in line with previous studies, this study also developed the following hypothesis.

Hypothesis 5: *There is a significant and positive relationship between size and financial performance of MFIs.*

2.1.5.7 Age of Microfinance institutions

According to Cull et al, (2007) Sustainability could relate to the age of MFI. The age refers to the period that an MFI has been in operation since its initial inception. Studies indicate that the MFIs age relates to financial performance. Jorgensen, (2011) states that Age, is grouping by new (1 to 4 years), young (5-8 years) or mature (more than 8 years). The number of years is calculated as the difference between the year they started their microfinance operations and the year of data submitted by the institutions.

There is a thought that as MFIs mature, and thus acquire experience in their sector; they increase their likelihood of attaining financial sustainability. This can be explained by the fact that MFIs gradually improve their control over all operations related to issuance of microcredit. In other cases, MFIs that have considerable experience in the microfinance sector have diligently applied credit risk management and general efficient management techniques to attain financial sustainability (Ayayi, 2010). Thus the following proposition is made for Ethiopian MFIs

Hypothesis 6: *There is a significant and positive Relationship between age and MFIs financial performance.*

2.1.5.8 GDP (external factor)

The study used GDP growth as a proxy of the macroeconomic environment. Arguably, this is the most informative single indicator of progress in economic development. Poor economic conditions can worsen the quality of the loan portfolio, thereby reducing profitability and outreach. In contrast, an improvement in economic conditions may have a positive effect on the profitability and outreach of MFIs, (Muriu, 2011). Thus the hypothesis is formulated as follows

Hypothesis 7: *There is a significant and positive Relationship between real domestic product growth and financial performance*

2.1.5.9 Government support – (Qualitative factor)

The Government and the EPRDF were instrumental in instituting Proclamation 96/40, which provides a legal framework for the industry and have been important actors in promoting the growth and development of the microfinance industry in Ethiopia. Rural credit plays an important role in EPRDF policies. The party and its affiliates have an interest in playing a pivotal role in the economy. As part of this strategy, they are involved as investors in various economic sectors as associations, organizations, and individuals.

Different studies such as Alemu (2014): annual report of AEMFI (2016) indicated government support has contributed tremendously to the rapid growth and development of the industry. It has been important for maintaining an indigenous, Ethiopian driven industry. It has permitted retention of certain principles. Also there were commitments to serving the poor and widespread geographic coverage of services, especially in rural areas. In other countries, commitment to these objectives by MFIs often gives way to more pragmatic objectives of financial sustainability and profitability which can reduce or limit a commitment to the poor and wide geographic coverage. Therefore, the sector has witnessed for rapid growth, an aggressive drive to achieve scale, and broad geographic coverage over the decades was due to the dominance of government backed MFI.

Based on the above fact that Ethiopian MFIs‟ industry is dominated by government backed MFI, it is sensible to assume government support greatly contributes to financial performance of the backed MFIs**:**

Hypothesis 8**:** *There is a significant and Positive Relationship between government support and financial performance.*

However, despite the positive contribution with such government backing MFIs model because of their commitments to serve the poor and widespread geographic coverage of their services, especially in rural areas, the support and connection to government structures by party dominated MFIs cannot necessarily be relied upon in the future, especially if the ruling party changes.

Operations may be vulnerable given their dependence on government infrastructure at the local levels, such as local committees, *kebele* officers and offices, and government guarantee of funds.

2.2. Determinants of Financial performance of MFIs: Empirical Review

Empirical literature concerning analysis of the literature emphasizes the existence of a significant number of empirical studies that focused on determinants of firms‟ financial performance.

2.2.1 International related studies

Trong (2012) has conducted research on Capital Structure and Microfinance Performance. The major objective was to provide in-depth analysis and to introduce possible explanations for the relationships between funding, scale of operation and microfinance performance. In order to attain this objective, the study has used financial leverage and scale of operation as independent variables to see their impact on Vietnam's microfinance performance (efficiency, sustainability and depth and breadth of outreach). Accordingly, the research has revealed that the link between funding and microfinance performance varies with the heterogeneity of microfinance institutions‟ characteristics. Profitable and regulated microfinance institutions have higher sustainability, efficiency and outreach. In addition, a large scale of operation helps microfinance institutions achieve higher efficiency, profitability, sustainability and outreach (breadth and depth). On top of this, the study revealed that there is no trade-off between the breadths of outreach and efficiency. Moreover, larger loan sizes are associated with higher loan costs and the global financial crisis has had a minor impact on the performance of microfinance institutions since they have a low level of self-sufficiency, associated with a low degree of financial integration.

Dissanayake (2012) has also tried to investigate the determinants of profitability of MFIs in SriLanka. The major objective was to see the relationship between different internal MFI specific factors and return on equity. For the study, debt to equity ratio, operating expense ratio, write-off ratio, cost per borrower ratio and personal productivity ratio as explanatory variables and ROA as explained variable have been used. The finding shows that, debt to equity ratio and operating expense ratios have negative statistically significant relation with ROE. On the other hand, write-off ratio and cost per borrower ratios have a positive and statistically significant relationship with ROE. However, personnel productivity ratio is not statistically significant determinant of ROE.

Menzie (2011) conducted research with the title of "The effect of subsidies on the performance and sustainability of microfinance institutions" in sub Saharan Africa. The major objective was to bridge the information gap on the performance of microfinance institutions in Sub Saharan Africa (SSA). A quantitative research approach was used in the analysis of financial data collected from 92 selected MFIs and estimated using panel data estimation. Subsidy Dependent Index (SDI), Return on Asset (ROA), Operational Self-Sufficiency (OSS) and Financial Self Sufficiency (FSS) indicators were used for the analysis. Accordingly, the summary results of the analysis showed that the majority of MFIs, i.e., 90.22% of them, were not sustainable nor were they found to be profitable. However, the results show that all the institutions were operationally self-sufficient and that on average MFIs in SSA charged higher interest rates than MFIs in other parts of the world.

A research conducted by Sara (2011) on "The implications of financial sustainability" in the microfinance industry was aimed to map the key characteristics of financially sustainable microfinance institutions (MFIs) and what features that separates them from their no sustainable counterparts. For the analysis, variables like financial sustainability, profit status, efficiency, outreach, deposits, loan losses, interest rates and transparency were used. As such, the study revealed that for-profit MFIs are self-sufficient to a greater extent than the Non-profit, which might be caused by the pressure to deliver value to shareholders. Furthermore, there are indications that self-sufficient MFIs are more efficient, which can be assumed to be caused by technological advantages, or different lending methods. The findings on outreach are somewhat contradictory; sustainable MFIs are reaching more clients on average, which discards a mission drift. On the other hand, self-sufficient MFIs have larger average loan sizes and less female borrowers, two indications that a mission drifts actual exist. Self-sufficient MFIs have also proven to have lower loan loss rates and lower yields on loan portfolio. Generally, the findings were positive, as they indicate that the MFIs have sound loan portfolios and that they have managed to become self-sustaining not by exploiting the poor, but by reducing costs and increasing efficiency.

NdiGwasi, (2014) undertook research titled "Competition and Performance of Microfinance Institutions" in Cameroon. The main objectives of this study were to determine the impact of

competition on the performance of MFIs in Cameroon and to identify the principal determinants of performance for MFIs. The study used a multiple regression model to relate financial performance (ROA) to various explanatory variables such as operational expenses ratios, portfolio at risk, staff productivity, savings mobilization and industry competition. Accordingly, in contrary to most empirical works on competition in the microfinance industry which prone a negative effect of competition on the performance of MFIs, the findings from this study reveal a positive coefficient, implying that competition rather have a positive effect on financial performance. That coefficient however, turns out to be statistically insignificant. There is also evidence that operational expense ratio, portfolio at risk and staff productivity ratios were major determinants of performance for microfinance institutions.

Zohra (2011) has done research on comparison of performance of microfinance institutions with commercial banks in India. The major objective of the research was to study and compare the financial performance of microfinance institutions and commercial banks in India. In so doing, the study used variables such as capital adequacy ratio, debt equity ratio, return on asset; return on equity, net profit margin and operating expenses to assets ratio for the analysis. Accordingly, the research has revealed that there is a significant difference in the means of the capital adequacy ratio and operating expenses to total assets ratio of commercial banks and microfinance institutions at 5% level of significance. On the other hand, the output of the research shows that there is no significant difference between the means of debt equity ratio, return on asset, return on equity, and net profit margin of commercial banks and microfinance institutions at 5% level of significance.

Lawrence (2012) has also tried to find out the factors influencing the sustainability of Micro-Finance Institutions in Murang Municipality. The main objective of the study was to identify whether financial regulations, geographical coverage and reach of the microfinance institutions in Murang municipality influence their sustainability. The study used such variables as financial regulations, geographical coverage and reach as explanatory variables to see their effect on the explained variable, sustainability of microfinance institutions. Accordingly, the study found that financial regulations, number of clients served, financial coverage and volume of credit transacted were the factors that highly affected the sustainability of microfinance institutions. As

a result, the study concluded that sustainability of MFIs is a function of related and interconnected factors. Finally, the study recommended microfinance institutions to open many branches to reach as many people as possible and ensure they conform to rules and regulations.

2.2.2. Local Studies

Ejigu (2009) has conducted a research titled Performance analysis of sample microfinance institutions of Ethiopia. The major purpose of the study was to appraise the performance of Ethiopian MFIs in terms of various criteria by comparing with the Micro Banking Bulletin (MBB) benchmark and for some relative ratios comparison among themselves. In order to achieve its objective, the study has used variables, micro finance institutions indicator, such as portfolio quality indicators, productivity and efficiency ratios, financial viability indicators, profitability indicators, leverage and capital adequacy ratios as well as scale and depth of outreach indicators. The result of the study indicates that Ethiopian MFIs in general are poor performers on depth of outreach. They are also poor in terms of the ratio of GLP to assets, allocating a lower proportion of their total assets in to loans. They are also not using their debt capacity properly. The large and smaller MFIs are allocating more loan loss provision expense than the industry average and the related PAR is high for these MFIs. All the MFIs are good at breath of outreach, cost management, efficiency and productivity. They also charge low interest rates. The profitability and sustainability of the MFI depend on their size. MFI age correlates positively with efficiency, productivity, the use of debt financing and OSS. It is also found that the use of debt financing makes firms more efficient and productive.

Melkamu (2012) has also conducted a research on the Determinants of Operational and Financial Self-Sufficiency, an empirical evidence of Ethiopian Microfinance Institutions. The major objective of the research was to determine factors affecting operational and financial sustainability of microfinance institutions in Ethiopia. In so doing, gross loan portfolio, size of microfinance, personnel productivity ratio, cost per borrower, age of a microfinance, liquidity ratio, number of active borrowers, operating expense ratio as explanatory variables have been used to see their impact on the dependent variable, operational self-sufficiency and financial self-sufficiency ratios. Accordingly, the research has revealed that average loan balance per borrower, size of a MFI, cost per borrowers and yield on gross loan portfolio affects the operational sustainability of Ethiopian MFIs significantly. Whereas cost per borrower, number of active

borrowers and yield on gross loan portfolio affect their financial sustainability. The study also found that MFIs in Ethiopia are operationally self-sufficient while they are not financially self-sufficient.

Abebaw (2014) has conducted a research on the Determinants of Financial Performance of MFIs in Ethiopia to identify the determining factors of financial performance of selected Microfinance Institutions in Ethiopia. The study used age of the MFIs, operational efficiency, portfolio quality, size of MFIs, gearing ratio, real GDP and market concentration as independent variables to investigate their impact on financial performance, return on assets. As a result, the outcome of the study demonstrated that Age of MFIs has a positive but statistically insignificant effect on their financial performance. On the other hand, portfolio at risk, gearing ratio and market concentration affect negatively and not significant.

Muhidin (2015) has made a research on the title "Determinants of Long-Term Sustainability and Efficiency of Ethiopian Microfinance Institutions". The main objective of the study was to empirically test the influence of funding source (capital structure), firm characteristics and macroeconomic variables towards long term sustainability and efficiency of Ethiopian MFIs. In so doing, the researcher employed quantitative research approach and used panel data to analyze the resulting estimates so that the stated objectives and hypothesis are addressed. Accordingly, the study has revealed that increased reliance on donor funds erodes sustainability while maintaining higher percentage of deposits as a percent of loans lead to improved sustainability indicating that increased commercialization helps MFI to improve their sustainability. Relying on grants and soft loans found to decrease their self-sufficiency ratio. Similarly, high proportions of women are also found to erode their sustainability due to perceived reason for their small size of loans. The experience of MFI and GDP growth rate also revealed to enhance their sustainability of MFIs.

With regard to efficiency, the study proved that, having grants as a larger percent of assets, erodes efficiency by increasing cost per borrower and is statistically significant at 1%. MFIs' experience as well revealed eroding their efficiency by increasing their cost per borrower as a result of MFIs' failure to focus on innovation, technology and economies of scale. On the other hand, large loan sizes found to decrease cost per borrower due to economies of scale.

Generally, researches conducted so far didn't clearly identify the key determinants of financial performance of microfinance institutions even though they have made an attempt to look into the factors briefly.

Therefore, previous studies have analyzed the drivers of the performance of microfinance institutions in various countries as well as in our country. However, there were variations in which these studies used as a proxy to measure the financial performance of MFIs and its possible determinants. In addition, there were disparities in the methodology used to address the topic, and the findings are not conclusive. Thus, this is a clear indication a further study is needed which consider the unique characteristics of Ethiopian industry, as market share and in terms of outreach is dominated by the so called big five government backed MFIs namely Amhara, Dedebit, Oromia, Omo, and Addis Credit and Savings institutions (AEMFI, 2016). As such, this study added another categorical variable coined as "government support", to see particularly if the support presence made a difference as significant determinant of MFIs financial performance between the governments backed MFIs and those which are not. The aim of this study was, therefore, to identify the determinant factors that affect financial performance measured in financial self-sufficiency of MFIs in Ethiopia where the role of those institutions in alleviating poverty and sustaining the economic improvement of poor society is significant.

2.2.3 Portfolio Quality

According to Muriu, (2011) empirical study on determinants of profitability of African MFIs, under the study, *what explains the low profitability of MFIs in Africa,* tried to find the factors contributing to profitability of MFIs. His study has used the Generalized Method of Moments system using an unbalanced panel dataset consisting of 210 MFIs across 32 countries for 12 years started operation from 1997 to 2008. Both ROA and ROE were used as proxies for profitability. Loans past due 30 days or more to loans outstanding (PaR >30) were used to measure credit risk and still accruing interest is negatively and significantly related to MFI profitability. This study therefore finds evidence to support the supposition that increased exposure to credit risk is normally associated with lower MFI profitability.

In other study which was undertaken by Lafourcade et al, (2006) on Overview of the Outreach and Financial Performance of MFIs in Africa by taking 163 MFIs from 25 countries show that MFIs around the world continue to exhibit low PAR > 30 days, with a global average of 5.2 percent but African MFIs maintain relatively high portfolio quality, with an average PAR > 30 days of 4.0 percent, performing better than their counterparts in South Asia (5.1 percent), and East Asia (5.9 percent). When MFIs are faced with poor portfolio quality, they may write off the loans from their books or refinance the loans by extending the term, changing the payment schedule, or both. The result shows that loan at risk is negatively correlated with MFIs financial performance.

2.2.4 Capital asset Ratio

In retail banking research which was done by Dietrich and Wanzried (2009) what determines the Profitability of Commercial Banks in Switzerland, the study tried to explain determinants of bank profitability by classifying in to bank specific, macroeconomic and institutionalized factors and use unbalanced panel data from 1999 to 2006 from 453 banks and use linear regression method. The study concludes that the capital ratio, which is defined as equity over total assets, has a positive and significant effect on bank profitability in Switzerland as measured by the return on average assets ROA.

Related study in the banking sector by Vong and Chan, (2010) Determinants of Bank profitability in Macacao, which covers the data set 15-year period from 1993 to 2007, with a sample of five different banks which account for about 75% of the total asset and the same percentage of loans in the banking sector as at the end of 2007. In this study, the performance of a bank is measured by its return on assets. The ROA, defined as net income divided by total assets, shows how well a bank's management is in using the bank's real investment resources to generate profits. Panel regression techniques are used to analyze the internal determinants as well as the external determinants and generalized least squares (GLS) estimation technique. And the result shows that Capital asset ratio has significant impact on bank profitability meaning the positive coefficient estimate for the ratio of equity to total assets indicates an efficient management of banks‟ capital structure.

Muriu, (2011) a study conducted on determinants of profitability of MFIs which is based on a panel data set of 210 microfinance institutions. And Muriu conclude that capital adequacy has robust and significant positive association with MFI profitability. This is illustrated by the relatively high coefficient of the equity to assets ratio across the specifications, that is, this effect remains so even after the inclusion of the external factors. Intuitively, this is an indication that well capitalized MFIs are more flexible in dealing with problems arising 27 from unexpected losses and are confronted with a reduced cost of funding or lower external funding.

2.2.5 Operational Efficiency

According to the study Nimal Sanderatne, (2003) a study on determinants of financial viability, stated that the operational efficiency and low administration costs have an important bearing. Besides, a study on financial performances, the study declared that, many MFIs are not considered sustainable. By stating the fact, the researcher confirmed that the operational efficiency is inevitable to attract funds.

According to Dissanayake (2012), Operating efficiency is measured by operating expense ratio which is adjusted operating expense divided by adjusted average gross loan portfolio and concludes that Operating Expense Ratio, are statistically significant predictor variables in determining Return on Assets Ratio. In line with this idea Muriu, (2011) conclude that inefficiency in the management of operating expenses to significantly decrease MFI profitability.

Gibson, (2012) has also conducted research titled “Determinants of Operational Sustainability of Micro Finance Institutions” in Kenya. The major objective of the research was to find out the factors that affect the operations self- sufficiency and financial sustainability. In addition, it was intended to propose a more comprehensive and representative model for financial sustainability by creating an index to observe the financial performance of the microfinance sector. In doing so, the study utilized a descriptive research design and targeted 30 microfinance institutions (MFIs) to collect the required data and analyzed using multiple regression models. Capital to asset ratio and Operating Expenses indicators as independent variable and Operational Self Sufficiency ratio as dependent variable were used in the regression model. Accordingly, the research revealed that both of them are factors that affect the operations and financial sustainability. The

study also suggested the inclusion of these indicators along with operational self -sufficiency to create sustainability index.

2.2.6 Size of Microfinance (Total Asset)

According to Cull et al, (2007) the size of an MFI is significantly positively linked to its financial performance. This variable is included to capture the economies or diseconomies of scale. There is consensus in academic literature that economies of scale and synergies arise up to a certain level of size. Beyond that level, financial organizations become too complex to manage and diseconomies of scale arise. The effect of size could therefore be nonlinear (Amdemikael, 2012).

It is argued that failure to become profitable in microfinance is partly due to lack of scale economies Muriu, (2011) this implies that profitable MFIs in Africa have a greater control of the domestic market, and therefore lending rates may remain high while deposit rates remain lower since larger MFIs may be perceived to be safer, therefore this high interest rate spread translates to and sustains higher profits margins. Cull et al, (2007) point out that size of MFIs and financial performance has significantly related but loan size is negatively related financial performance meaning Controlling for other relevant factors, institutions that make smaller loans are not necessarily less profitable. But the result find that larger loan sizes are associated with lower average costs for both individual-based lenders and solidarity group lenders. Since larger loan size is often taken to imply less outreach to the poor, the result could have negative implications.

Generally speaking, the size or scale of operations has a clear and positive impact on the financial and environmental performance of MFIs but not always on their social performance.

2.2.7 Age of Microfinance institutions

The study undertaken by Dietich and wanzenried (2009) in the banking industry, that is determinants of profitability in commercial banks show that, larger banks are slightly less profitable than medium sized banks, with the coefficients being significant at the 10% level. This gives some indication that larger banks cannot benefit from higher product and loan diversification possibilities and even face scale inefficiencies.

Many MFIs studies include the age of the MFI in their empirical analysis. In most cases, however, age is used as a control variable. Most cross-country studies find a positive relationship

between the age of the MFI and its financial performance (Ayayi and Senne, 2010; Cull et al., 2007). One exception is Cull et al. (2015) who study Greenfield MFIs and find that they show financial performance comparable to those of the best performing (older) MFIs.

In a systematic analysis by Hermes and Hudon (2018) Country studies offer a more mixed picture, however. A few papers study the association between age and the performance of Indian MFIs. Narwal and Yadav (2014) find a negative impact of age on both profitability and outreach.

Rai (2015) shows that young Indian MFIs grow faster and hold higher-quality assets. Other studies using Indian data find that age positively influences productivity (Rashid and Twaha, 2013) or efficiency (Wu et al., 2016). Wijesri et al. (2015) find that age positively influences financial and social efficiency in Sri Lanka while Wijesri and Meoli (2015) suggest a negative influence on productivity in Kenya. This result maybe, due to the dynamic and competitive nature of the microfinance sector in the country.

2.2.8 Firms Growth Rate

Firm growth is measured by the percentage change in total assets of insurance companies or the yearly increasing percentage of firms' assets of micro finance institutions. Microfinance institutions having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities (Abate Gashaw 2012).

Abdelkader Derbali (2014) examines the impact of firm-specific characteristics (size, leverage, tangibility, risk, growth, liquidity and age) on the performance of eight insurance companies in Tunisia a period of 8 years (2005-2012). The analysis of the results from a regression on panel data indicates that the variables size, age and premium growth are the most important determinants of the performance of insurance companies. Abate Gashaw (2012) examined the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on financial performance in Ethiopia. Similar to the study of Abdelkader Derbali (2014), in Abate Gashaw study from the regression results also growth identified as the most important determinant factors of financial performance and positively related with profitability.

2.2.9 GDP – Macroeconomic Variable (External Factor)

A study Muriu, (2011) suggested an improvement in economic conditions has a positive effect on the profitability and outreach of MFIs. Thus, the variable is expected to exhibit positive relationship with both MFIs profitability and outreach. According to the study undertaken by Imal et al., (2012), a working paper entitled *financial performance of microfinance institutions a macroeconomic and institutional perspective* drawing up on the Microfinance information exchange data and cross-country data on macro economy, finance and institutions; they found GDP have positive impact on MFIs financial performance.

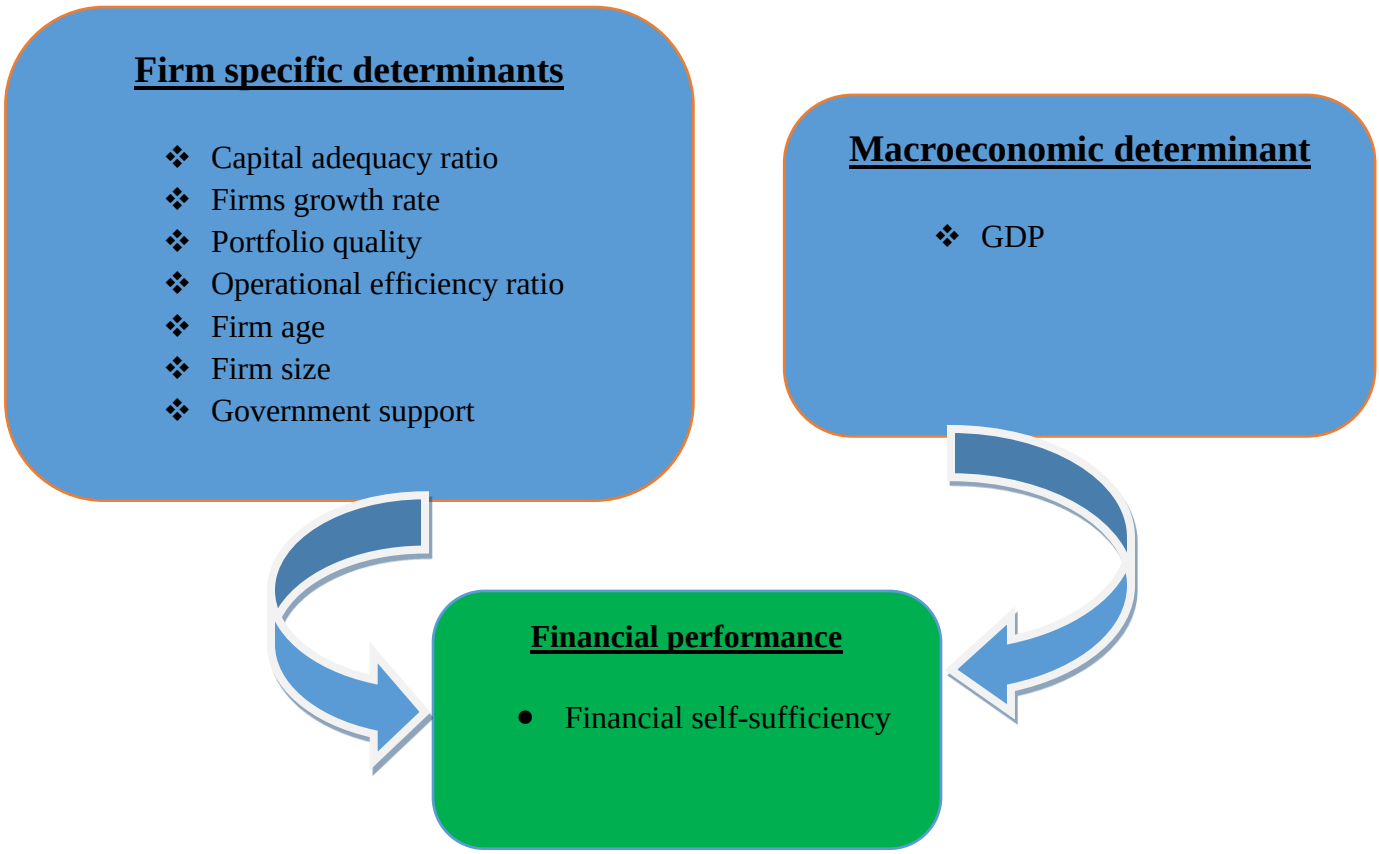
In a study by Jordan (2008) tried to analyze the impact of macroeconomic environment on sustainability of Latin American MFIs by selecting 85 MFI. The major objective of the study was to investigate the impact of macroeconomic factors (external) on sustainability of selected MFIs in Latin America. The study employed four macro-economic factors; unemployment rate, per capita GDP, interest rates and inflation as explanatory variables. ROE and repayment rates as a measure of sustainability of the MFIs were used as a dependent variable. The result shows that none of the macro economic factors have significant impact on repayment rate. However, ROE is highly influenced by per capita GDP. To see the effect of per capita GDP, two divisions were set; to isolate the effect between low income in developing nations and high income developing nations. Consequently, per capita GDP has no impact on low income developing nations but, there is a high significant impact of per capita GDP on high income nations.

2.3 Conceptual Framework

The conceptual framework is the researchers understanding of how the particular variables used in the study connect with each other. Conceptual model gives a depiction on how the variables are related to one another. The variables defined here are the independent (explanatory) and the dependent (response) variable. An independent variable influences and determines the outcome of another variable. In the study, the independent variables are Capital to Asset ratio, Firms growth rate, Portfolio at Risk, Operating Efficiency ratio, and Age of microfinance, real gross domestic product growth, Size, and Government support. On the other hand, a dependent variable can be observed and measured so as to ascertain the weight of the independent variable.

In this case, financial performance is the dependent variable that is measured by financial self-sufficiency.

Figure 2 1: Conceptual framework diagram



Source: Literature driven

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter presents the basic principle of research design and methodology, the ultimate purpose of which is to select the appropriate research method in relation to achieving the objective of the study. This chapter presents: research design and approach, target population, Sample and sampling techniques, data type and source, method of data analysis, and model specification.

3.1 Research Design and Approach

Since the main purpose of the study was to find out the determinants of financial performance in Ethiopian MFIs, explanatory research design and quantitative research approach was used. As noted in Kothari (2004), explanatory research design examines the cause and effect relationships between dependent and independent variables. Quantitative research is the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect. It is a means for testing objective theories by examining the relationship among variables (Creswell, 2009). Unlike that of qualitative study there is less interaction between the researcher and subjects. To increase the quality of finding, standardized procedures are used in sample selection, instrument design, analysis and implementation in this approach.

This study in its quantitative research approach, panel data was used to investigate the determinants of performance of MFIs operating in Ethiopia. The advantage of using panel data is that, it controls for individual heterogeneity, less collinearity variables and tracks trends in the data something which simple time-series and cross-sectional data cannot provide (Gujarati, 2004).

3.2 Target Population

According to NBE, (2023), there are 53 microfinance institutions which are providing a microfinance service to the society in Ethiopia. The target population for this particular study has been all the microfinance institutions currently operating in the country.

3.3 Sample and Sampling Technique

The study is based on the balanced panel data that consists of 22 Microfinance institutions that were operating over the period 2015 to 2023. Until the 30th June of 2023, from total 53 MFIs registered in the country, 30 of them were reported their financial statements to the National bank of Ethiopia. And out of 30 MFIs 22 have been purposively selected for this study, and the rest 8 are excluded because data provided by these institutions for the study period were incomplete. The criterion for choosing among the MFIs is based on the availability and quality of data for the time period of 9 years (2015-2023).

Consequently, the study has considered a total of 198 observations for the regression analysis. The general rule of thumb as stated by Harrell (2001), in his *Regression Modeling Strategies* book, indicates that one needs 10-20 observations per parameter or covariate estimated if you expect to be able to detect reasonable-size effects with reasonable power. In this case, the ratio of observations per independent variables is around 20:1 (198 /10), which are acceptable as per the stated Minimum standard.

3.4 Data Type and Sources

The data sources for the study were collected from secondary sources; particularly nine years' data starting 2015 to 2023 from financial reports (i.e. specifically from balance sheet and income statement) of the MFIs reported to NBE and AEMFIs' performance annual report were also used as an input for the study.

3.5 Method of Data Analysis

Descriptive statistics like mean, minimum, maximum, and standard deviation were used to describe the nature of the data collected from secondary data sources and the variable of interest. Data that are collected from secondary sources were analyzed using STATA 14 software.

Besides, random effect panel regression model was employed for regression of the data. The findings from the report are then organized, summarized and presented on tables to be used to answer the research hypothesis.

According to Gujarati D. (2004), to conduct regression analysis with panel data two main approaches are available: the random effect and fixed effect regression model. The researcher used the Hausman test to choose the appropriate estimation model for panel regression data. The null hypothesis for Hausman test is that random effect is an appropriate model and the alternative hypothesis is that fixed effect is appropriate model. Accordingly, if the null hypothesis is rejected or p value is significant, and then fixed effect model should be used; whereas if null hypothesis is accepted or p value is insignificant, random effect model will be used. So the Hausman test provides evidence to reject the null hypothesis at 5% confidence level. Accordingly, Hausman test result implies that the alternative hypothesis will be accepted; i.e., fixed effect is found to be appropriate model for this study, and thus, all the analyses & discussions of the regression results of the study are based on fixed effect model estimates.

3.6 Operational definition measurement of variables

3.6.1 Dependent Variable

I. Financial self-sufficiency (FSS)

The key dependent variable in the analysis of financial performance, the financial self-sufficiency (FSS) ratio, is measured as the adjusted total financial revenue divided by the sum of adjusted financial expenses, loan loss provisions and operating expenses. It is a measure of an institution's ability to generate sufficient revenue to cover its costs. Value below one indicates that an MFI is not doing well. The financial self-sufficiency ratio is the best measures of financial performance because it offers a more complete summary of inputs and outputs than standard financial ratios such as return on assets or equity (Beg.K, 2016). As a result, financial self-sufficiency (FSS) ratio is used as dependent variable. It can be calculated by dividing **Operating Income (Loans + Investments) to Operating Costs + Loan Loss Provisions + Financing Costs + Adjusted Cost of Capital.**

3.6.2 Independent Variables

Based on the previous MFIs performance literature and objectives of this study, the following independent variables were chosen: Capital to Asset ratio (CAR), Firms growth rate (FGR), Portfolio at Risk (PAR), Operating Efficiency ratio (OPE), and Age of microfinance (AGE), real gross domestic product growth (RGDP), Size of Microfinance (Size), and Government support (GS) - Dummy variable. Accordingly, the research has used regression analyses with one dependent and eight independent variables.

i. **Capital adequacy ratio (CAR):** is measured by dividing Equity to total Assets for the sample of Ethiopian MFIs
ii. **Firm's growth rate (FGR):** is measured as the yearly increasing percentage of firm's assets from year to year.
iii. **Portfolio quality (PAR):** is measured as a ratio of Outstanding balance, loan overdue >30 days to Adjusted gross loan portfolio.
iv. **Operational efficiency (OPE):** Operational Efficiency is a performance measure that shows how well an MFI is reforming its operations and takes into account the cost of the input and/or the price of output. And Efficiency of the MFIs measured in terms of adjusted operating expense to adjusted average gross loan portfolio.
v. **Age of MFIs (AGE):** refers to the period an MFI has been in operation since it came into existence.
vi. **GDP:** is a macroeconomic factor which measures annual real GDP growth for the country
vii. **Size of the firm (SIZE):** is measured as Ln of total assets of the MFIs, because doing so makes it consistent with other variables in the regression model.
viii. **Government support (GSP):** implies the support of government given to the microfinance institutions. MFIs which have a 25% or more regional government share assigned a value equal "1" or "0" otherwise.

3.7 Model Specification

The study mainly focuses on cause and effect relationship between dependent variable, which is financial performance measured by financial self-sufficiency and explanatory variables, which are capital adequacy ratio, firm's growth rate, portfolio at risk, operational efficiency, age, gross domestic product, size, and government support. So the multiple regressions model for the dependent variable FSS is presented in the equation below as follows;

$$Yi = \propto +\beta 1X1i + \beta 2X2i + \beta 3X3i \ldots\ldots + \beta nXni + \varepsilon it$$

Where, **i** - Goes from 1 to n and indicates the observation number

Yi - The value of dependent variable; FSS Financial performance indicator

α - The constant term;

β - The coefficient of the function;

Xi - The value of independent variables:

εi - The disturbance or error term.

Based on all the above information, the study performed the following regressions:

$$FSSit = \propto +\beta 1CARit + \beta 2FGRit + \beta 3PARit + \beta 4OPEit + \beta 5AGEit + \beta 6GDPit + \beta 7SIZEit + \beta GSPit + \varepsilon it$$

Where,

- **β1** to **β8** are the coefficient of the variables and ε_{it} is the random error term.
- α; stands for the intercept term which varies across MFIs but constant over time
- **FSS** it: represents financial self-sufficiency for MFI i at time t, a measure (Proxy) / financial performance.
- **CAR** it: stands for Capital asset ratio for MFI i at time t
- **FGR** it: yearly increasing percentage of firm's asset for MFI i at time t

- **PAR** it: stands for portfolio quality for MFI i at time t
- **OEF** it: represents Operational efficiency for MFI i at time t
- **AGE** it: stands for age of micro finance for MFI i at time t
- **GDP** it: represents real gross domestic product for MFIs i at time t
- **SIZE** it: stands for size of micro finance for MFI i at time t
- **GSP:** represents Government support (Dummy variable), a value = 1, is assigned for government backed MFIs, 0 otherwise.

Table 3 1: Summary of variables with their respective measurements and expected result

Dependent Variable				
S/N	**Variable name**	**Measurement**	**Name to be used in regression model**	**Expected result**
1	Financial self sufficiency	Operating income (loan and investments) / operating costs + loan loss provision + financial costs	FSS	
Explanatory Variables Description to be used in the model				
S/N	**Variable standard name**	**Description and Measurement**	**Variable name in regression model**	**Expected result**
1	Capital adequacy ratio	MFI Equity/Asset	CAR	Positive & significant
2	Firms growth rate	Yearly increasing percentage of MFIs asset	FGR	Positive & significant
3	Portfolio Quality ratio	Outstanding balance, loan overdue>30 days/Adjusted gross loan portfolio	PAR	Negative & significant

4	Operational Efficiency	Operating expense/ Loan portfolio	OPF	Negative & significant
5	Age of MFI	Natural logarithm of total age	AGE	Positive & significant
6	Macroeconomic indicator (Gross domestic product)	Annual real GDP growth for the country	GDP	Positive & significant
7	Size of MFI	Natural logarithm of the total asset	SIZE	Positive & significant
8.	Government support (Dummy variable)	MFIs which have a 25% or more regional government share assigned a value equal "1" or "0" otherwise.	GSP	Positive & significant

CHAPTER FOUR
DATA ANALYSIS AND DISCUSSION OF RESULTS

This part of the research presents the actual result of the study for descriptive statistics and regression result, and discussion of the results. All the important classical regression model assumptions are tested before the regression result is presented. All findings of the regression are based on fixed effect panel regression results, and all statistical estimations in the study are carried out using STATA 14 software package.

4.1. Descriptive Statistics

This section presents the descriptive statistics of dependent and independent variables used in the study for the sample microfinance institutions (MFIs) in Ethiopia. The following table (4.1) shows the mean, median, maximum, minimum, and standard deviation values of dependent and explanatory variables for the period 2015 to 2023. Summary of descriptive results for all study variables is presented in table 4.1 given below

Table 4. 1: Descriptive statistics of Dependent and Independent Variables (198 observations)

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
FSS	1.040141	.362186	.1303746	2.225183
CAR	.3785638	.1512367	.0549532	.8020987
FGR	.3704132	.2129094	.066508	1.053715
PAR	.0687803	.0791417	.000881	.405
OPE	.1986636	.1078861	.012	.6726828
AGE	13.04545	4.532226	1	21
GDP	.0993333	.0103972	.08	.114
SIZE	12.08297	1.933538	8.322686	17.11364
GSP	.2777778	.4490386	0	1

Source: STATA 14 outputs based on MFIs financial statements, 2024.

Table 4.1 demonstrates that FSS (financial self-sufficiency) ratio, which is the dependent variable of the study, is an indicator how well an MFI can cover its costs accounting for

adjustments to operating revenues and expenses (Rosenberg 2009). FSS's value below one indicates that an MFI is not financially self-sufficient. In this study, it had a mean value of 1.04.

This means that during the study period, for every birr incurred in operating costs, financial costs and loan loss provision combined, financial revenues contributed an average birr 1.04 excluding subsidies and grants provided to MFIs considered in this study. Thus, this implies on average Ethiopian MFIs included in this study were financially self-sufficient. The minimum and maximum FSS ratios were also 0.13 & 2.22 with a standard deviation of 0.36 for the MFIs during the specified years.

The independent variable, (CAR) capital adequacy ratio, which is measured by Equity to total Assets for the sample of Ethiopian MFIs, scored a mean value of 0.378. This implies that out of total assets, on average equity of Ethiopian MFIs during the study period was 37.8 percent. The minimum and the maximum capital invested in these MFIs during the nine-year period show a ratio of 0.055 and 0.802 respectively. That is, the least and highest invested amount in equity by MFIs during the study period were as low as 5.5%, and as high as 80.2% with a standard deviation of 15%.

The other important explanatory variable used in this study, firm's growth rate which is measured as the yearly increasing percentage of firm's assets from year to year, had recorded a mean value of 0.370. This indicates that the average firms' growth rate for the selected MFIs during the study period was 37 percent. The minimum and maximum firm's growth rate recorded by two respective Ethiopian MFIs during the specified years implies there was an MFI that grew by just 6.65% and an MFI that grew almost twice (105%) of what it was, in terms of assets they had in previous year. The standard deviation for firm's growth rate for the MFIs was 0.213.

Portfolio quality is an important variable used in the study which is measured as a ratio of Outstanding balance, loan overdue >30 days to Adjusted gross loan portfolio. Regarding the variable Par>30, the higher its value, the riskier the credit portfolio. According to AEMFI, (2013) any portfolio at risk exceeding 10 % should be a serious cause for concern; the rationale is contrary to loans of commercial banks, most loans in MFIs are not backed by bankable collateral. For this study case, the mean of the PAR was 0.068 with a standard deviation of 0.079, and the

maximum and minimum were 0.405 and 0.001 respectively. It indicates that, the average portion of the portfolio in arrears or unpaid for the sample Ethiopian MFIs was 6.88%, relatively good versus the 10% threshold. The maximum 40.5 % result implies that the credit portfolio of some MFIs in the sample was risky.

On the other hand, the average operational efficiency (OPE) ratio of selected MFIs was 0.198, the maximum and minimum efficiency was 0.6726 and 0.012. The average operating efficiency of selected MFIs was 19.8%, indicating that on average they are incurring 0.20 cents in operating expense for each birr in gross loan portfolio. Some highly efficient institutions incur operating expense of 0.012 cent for each birr in their gross loan portfolio whereas inefficient institutions in the industry incur an operating expense of 0.67 cents for each birr on their gross loan portfolio. The standard deviation showed 10.78%, which implied the large disparity in terms of operating expense management among the institutions. Thus, the result indicated that the most efficient MFIs have a larger tendency in managing their operating expenses in connection to their loan portfolio in relation to least efficient MFIs.

Age is also another variable of the study which is measured by number of years' firms stay in operation, which had a mean value of 13.04 years. This indicates that the average age of Ethiopian MFIs during the study period was 13.04 years. The table also shows minimum & maximum values of 1 and 21 years respectively. The table also indicates a standard deviation of 4.53 year.

Economic growth proxies by real GDP growth showed a mean value of 0.099 during the study period with a maximum of 0.114 and a minimum of 0.08. The standard deviation for GDP is 0.0104 which is the smallest of all other deviations in this study, indicating that Economic growth in Ethiopia during the study period of 2015-2023 remains fairly stable and the result was in line with the government's report in relation to the improvement in the economic conditions of the country.

Another variable used in this study is size of the firm which is measured as Ln of total assets of the MFIs, because doing so makes it consistent with other variables in the regression model, and it had a transformed mean value of 12.08. This indicates that the average size of Ethiopian MFIs

during the study period in terms of total assets was birr 176,834,580.3. The minimum and maximum size of the MFIs were birr 41,162,012.8 and birr 269,636,440.51 respectively, with a standard deviation of 1.93.

Finally, as can be seen from table 4.1, government support (GSP) is another important variable used in the study as a dummy variable, 1 was assigned for MFIs with 25 % ownership interest or more controlled by regional governments and 0 for MFIs owned by private or NGOs. The mean value of GSP for Ethiopian MFIs indicated an average of 27.75 % during the study period of 2015 through 2023. The standard deviation of GSP was 0.45.

4.2. Correlation Analysis

This section of the study shows the correlation between two variables. The Correlation between two variables measures the degree of linear association between them, Brooks (2008). The correlation matrix helps to quantify the extent to which quantitative variables go together, and the values of correlation coefficient are always in between -1 and +1.

The sign of the correlation coefficient shows whether the association between the variables is negative or positive whereas magnitude of correlation coefficient shows the strength of their linear association. As such, the closer the coefficients to -1 or +1, the stronger the degree of association between the variables considered. However, correlation coefficients closer to “0” indicate little or no linear association between the variables.

Accordingly, correlation analysis between dependent variable of the study (i.e. Financial self-sufficiency) and explanatory or independent variables (i.e. Capital adequacy ratio, Firm growth rate, Portfolio quality, operating efficiency, Age of MFI, Real gross domestic product growth, Size of the MFI, and government support) for a sample of Ethiopian MFIs are presented in the following table 4.2.

Table 4. 2: Pair-wise correlation matrix of dependent and independent variables

(Obs=198)									
	FSS	**CAR**	**FGR**	**PAR**	**OPE**	**AGE**	**GDP**	**SIZE**	**GSP**
FSS	1.0000								
CAR	0.1658	1.0000							

FGR	-0.0013	0.3521	1.0000						
PAR	0.0225	0.1312	-0.2603	1.0000					
OPE	-0.4335	0.0647	0.0579	0.1647	1.0000				
AGE	0.2091	-0.3988	-0.1828	-0.2228	-0.3837	1.0000			
GDP	-0.0325	-0.0072	0.0071	-0.0298	0.0470	-0.1896	1.0000		
SIZE	0.5165	-0.3293	-0.2280	-0.1952	-0.6460	0.5060	0.0034	1.0000	
GSP	0.0906	-0.5035	-0.3204	-0.2458	-0.3579	0.3654	-0.0080	0.7277	1.0000

Source: STATA 14 Output based on MFIs financial statements, 2024.

As indicated in the above table 4.2, financial self-sufficiency has a strong positive correlation with firm size and age with coefficient values of 0.51 & 0.21 respectively. In addition, financial self-sufficiency has relatively strong positive association with CAR and government support scoring a value of 0.16 and 0.09 respectively. On the other hand, relative to the other variable, the correlation matrix shows weak and positive association between financial self-sufficiency and portfolio quality with a correlation value of 0.022. Operating efficiency has strong negative correlation with financial self-sufficiency with a correlation value of -0.43, whereas firm's growth rate and real gross domestic product have a weak negative correlation with financial self-sufficiency with the value of -0.0013 and -0.0325 respectively.

4.3. Tests for classical linear regression model (CLRM) assumptions

As the econometric model has been developed under certain assumptions, normality, multicollinearity, hetroskedasticity and model selection tests have been conducted before running the regression of the study to make sure the collected data are suitable to the linear regression model and to perform dependable estimations.

4.3.1. Multicolinearity Test

Multicolinearity is an assumption of a linear relationship among explanatory variables that creates bias in the regression model. This problem occurs when the explanatory variables are highly correlated with each other. The main aim of conducting this test is to ascertain whether multicollinearity is strong enough to invalidate the simultaneous inclusion of the explanatory

variables in regressions. Variance inflation factor (VIF) and correlation coefficient were used to check the existence of collinearity problems.

Table 4. 3: Variance Inflation Factor (VIF) test

Variable	**VIF**	**1/VIF**
SIZE	3.67	0.272699
GSP	2.84	0.352540
OPE	1.88	0.532147
AGE	1.66	0.603162
CAR	1.62	0.616767
FGR	1.39	0.719611
PAR	1.30	0.771151
GDP	1.07	0.935746
Mean VIF	**1.93**	

Source: STATA 14 outputs based on MFIs financial statements, 2024.

If for a given variable's VIF is greater than 10 and the degree of tolerance i.e. (1/VIF) for that variable is less than the level of significance (P<0.05), then it indicates that the variable is multicollinear with others in the model. However, table 4.3 indicates that since the VIF is less than 10 and 1/VIF is greater than the significant level (0.05) for all variables, it can be concluded that there is no evidence for the presence of multicolinearity problem based on this test.

Table 4. 4: correlation of independent variables

(Obs=198)								
	CAR	**FGR**	**PAR**	**OPE**	**AGE**	**GDP**	**SIZE**	**GSP**
CAR	1.0000							
FGR	0.3521	1.0000						
PAR	0.1312	-0.2603	1.0000					
OPE	0.0647	0.0579	0.1647	1.0000				
AGE	-0.3988	-0.1828	-0.2228	-0.3837	1.0000			
GDP	-0.0072	0.0071	-0.0298	0.0470	-0.1896	1.0000		
SIZE	-0.3293	-0.2280	-0.1952	-0.6460	0.5060	0.0034	1.0000	
GSP	-0.5035	-0.3204	-0.2458	-0.3579	0.3654	-0.0080	0.7277	1.0000

Source: STATA 14 outputs based on MFIs financial statements, 2024.

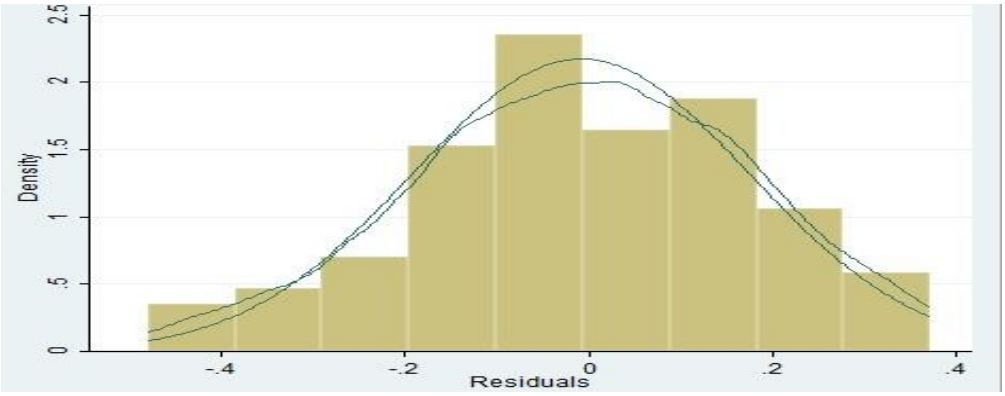
As the rule of thumb in Gujarati (2004) stated, multicolinearity could only be a problem if the correlation coefficient among regressors is above a value of 0.8 and it needs a correction factor.

As can be seen in the above table, the results for correlation coefficient test were all below 0.8. Therefore, this shows non-existent of series correlation among independent variables.

4.3.2. Normality Test

Normality assumption states those residuals or the error terms should be normally distributed, and the researcher used graphical tests in order to check the normality assumption in the study. The following histogram demonstrates how the residuals are distributed over the normal curve.

Figure 4 .1: Histogram showing normal distribution



Source: STATA 14 outputs based on MFIs financial statements, 2024.

Figure 4.1 indicates that the bell-shaped line on the histogram represents a normal curve. From there, it can be noted that there are few outliers that have immaterial deviation from the standard normal curve. Hence, residuals are normally distributed and there is no outlier problem since most of the dataset lies in the center of the line.

4.3.3. Hetroskedasticity Test

Hetroscedasticity is the problem of non-constant variance of error terms and this makes the estimator inefficient. To check whether this problem existed or not, and if existed to take remedial action, Heteroscedasticity test was conducted. The null hypothesis for this test is that residuals are homoscedastic. In this research, Breusch-Pagan test was run to test the existence of

Hetroskedasticity problem and the result shows there was no existence of Hetroskedasticity problem in the dataset as the p-value is greater than the level of significance (0.2879 > 0.05). Therefore, the null hypothesis which says residuals are homoscedastic was accepted.

Table 4. 5: Breusch-Pagan for Heteroskedasticity

Ho: Constant variance
Variables: fitted values of FSS
chi2(1) = 1.13
Prob > chi2 = 0.2876

Source: STATA 14 outputs based on MFIs financial statements, 2024.

4.4. Test of Model Selection

This section of the paper presents techniques used to choose the appropriate estimation model for panel regression data to discuss and interpret the findings of the study. In this regard, the Hausman test was used (See appendix 7) to decide between random effects and fixed effects models. The null hypothesis for this test is that random effect is an appropriate model and the alternative hypothesis is that fixed effect is appropriate model. Accordingly, if the null hypothesis is rejected or p value is significant, then a fixed effect model is used, whereas if null hypothesis is accepted or p value is insignificant random effect model will be used. And, the Hausman test provided evidence (p-value=0.000) to reject the null hypothesis at 5% confidence level. As such, that the null hypothesis was rejected, and the alternative hypothesis was accepted as a result. That is, fixed effect is found to be an appropriate model for this study, and hence, all the subsequent analyses & discussions of the regression results are based on fixed effect model estimates.

4.5. Results of Fixed Effect Regression Analysis

Conducted tests of classical linear regression assumptions earlier like normality, multicollinearity, Hetroskedasticity confirmed that the data were suitable to fit the model used for analysis in this study. Hence, this supports the researcher to employ multiple regression so as

to predict the magnitude of each explanatory variable's impact on the outcome variable, (financial self-sufficiency).

The appropriate estimation model in this research on the basis of the Hausman test is the fixed effects model. The output of the fixed effect model is presented below in table 4.6, and explanations regarding the coefficient of determination (R- squared), discussion and interpretation for each explanatory variable used in this study based on the model output are made in an appropriate manner as follows.

Table 4.6: Regression result and discussion (Obs. = 198)

R-squared within - 0.706
R-squared between - 0.020
R-squared over all- 0.212

F (8,168) = 50.6 & Prob > F = 0.0000

FSS	**Coef.**	**Std. Err.**	**T**	**P>t**	**[95% Conf.**	**Interval]**
CAR	.3392486	.1561835	2.17	0.031	.0309135	.6475838
FGR	.9229327	.1279387	7.21	0.000	.670358	1.175507
PAR	-.8121999	.4436323	-1.83	0.069	-1.688012	.0636124
OPE	.0014249	.2020559	0.01	0.994	-.3974709	.4003206
AGE	.0106917	.0051781	2.06	0.040	.0004691	.0209142
GDP	-.5917166	1.222684	-0.48	0.629	-3.005522	1.822088
SIZE	.1670714	.0211119	7.91	0.000	.1253925	.2087502
GSP	.1256343	.1996002	0.63	0.530	-.2684133	.519682
_cons	-1.50889	.2940275	-5.13	0.000	-2.089355	-.9284256

Source: STATA 14 outputs based on MFIs financial statements, 2024.

Estimated model equation:

$$FSS = \propto + \beta 1CARit + \beta 2FGRit + \beta 3PARit + \beta 4OPEit + \beta 5AGEit + \beta 6GDPit + \beta 7SIZEit + \beta GSPit + \varepsilon it$$

$$FSS = -1.5 + .34CARit + .92FGRit + (-.81)PARit + 0.001OPEit + 0.01AGEit + (-0.59)GDPit + 0.17SIZEit + 0.12GSPit + \varepsilon it$$

The above table 4.6 fixed effect regression output shows three R-squared results. These are: R squared within (0.707), between (0.02) and overall (0.212). According to Gujarati (2004), R squared within has all the properties of the usual OLS R^2. The other two R^2s are squared

correlations, corresponding to the between estimator equation & an overall equation with a constant intercept. The overall R^2 is similar to that of pooled OLS regression. Therefore, R squared within is the appropriate estimate for goodness of fit in the fixed effect model.

Accordingly, the coefficient of determination (R^2) of the model is 0.707 which indicates that 70.7% of the variability in financial self-sufficiency (FSS) is jointly explained by the explanatory (independent) variables used in the study. That is, the independent variables can collectively predict 70.7% of the change in FSS while the rest 29.3 % of change in financial self-sufficiency (FSS) is explained by variables which are not included in the model, which accounted for by the disturbance term. Thus, the model suggests strong goodness of fit since it has higher coefficient of determination (R^2).

The table fixed effect regression output also shows F- statistic (8,168) (p-value of 0.0000) implying that the overall model is statistically significant, which enhanced the reliability and validity of the model. In addition, the coefficient estimate of the constant of the regression is 1.5089 which shows the value of the dependent variable (FSS), if all independent variables values become zero. It implies that the financial self-sufficiency for the sample of Ethiopian MFIs decrease by 1.5089 given all independent variables‟ values are zero.

In addition, capital adequacy ratio measured (CAR) as the ratio of total capital to total asset, firms growth rate (FGR) which is measured as the yearly increasing percentage of MFIs asset from year to year, age measured as the number of years firms involved in operation, and firm size which is measured as Ln of total asset have a positive & statistically significant .i.e. (p-value < 0.000 at 5% level of significance) effect on Ethiopian MFIs' Financial self-sufficiency during the study period. On the other hand, portfolio quality and real gross domestic product have negative and insignificant effect on Ethiopian MFIs financial self-sufficiency at 5% level of significance.

Finally, the remaining variable used in the study; operating efficiency and government support had a positive & statistically insignificant impact on MFIs financial self-sufficiency during the study period.

The following subsequent section presents the detailed discussion of major findings and hypothesis testing based on the preceding fixed effect regression model results.

4.6. Discussion of Findings & Hypothesis Testing

The preceding sections present the overall result of the study. Thus, this section discusses in detail the analysis and interpretation of regression results for each independent variable with their importance in explaining the dependent variable, financial self-sufficiency used as a proxy for financial performance. The data was analyzed in light of the research objectives and hypotheses set forth in the first chapter of the study. Thus, each of the research objectives is addressed in this section. Similarly, each of the research hypotheses are either accepted or rejected based on the findings of the study. Eventually, this part analyzes the statistical findings of this study against the previous period empirical findings and accepted theories that exist in the MFI literature.

The hypothesis, main findings & their statistical significance of the variables used in the study are discussed one by one in the following section.

Capital Adequacy ratio

H1. There is a positive and significant relationship between capital adequacy and financial performance of Ethiopian MFIs.

Results of the fixed effect regression showed that capital adequacy ratio (CAR) (measured as the ratio of firm's total capital to total asset of the firm) has positive & significant relationship with financial self-sufficiency (FSS) at 5% significance level (p-value = 0.031, & coefficient=0.34). Accordingly, this evidence rejected the null hypothesis and accepted the alternative hypothesis; there is a positive and significant relationship between capital adequacy ratio and financial self-sufficiency, thus financial performance. The coefficient indicates that, other variables remaining constant, 1-unit increase on CAR of Ethiopian MFIs is associated with birr 0.34 cents increase on financial performance (FSS) of these MFIs. Alternatively, other variables holding constant, a one percent increase in MFIs CAR results in an increase of 0.34% on FSS. This result is in line with the theory that argues that well capitalized MFIs are more flexible in dealing with problems arising from unexpected losses and against credit risks and results in a better chance for financial performance. In addition, this result strongly supports the findings of most prior period empirical

studies reviewed in the literature part (Athanasoglou et al, 2005; Muriu, (2011); Vong and Chan, (2010); and Amdemichael, 2012). Therefore, from the findings it can be concluded that capital adequacy ratio was one of the main determinants of financial performance of Ethiopian MFIs. It also gives an indication that well capitalized Ethiopian MFIs face lower costs of going bankrupt which reduces their cost of funding results in higher FSS and thus financial performance.

Firms Growth Rate

H2. There is a positive and significant relationship between Firms Growth Rate and financial performance of Ethiopian MFIs.

The results of the fixed effect regression analysis show that there is a positive and statistically significant relationship between firm growth rate and financial performance of micro finance institutions in Ethiopia at 5% significance level with a regression coefficient of 0.92, and p value of 0.000. And the results are consistent with the hypothesis of the study which states that there is a positive and significant effect between firm's growth and financial performance.

The coefficient of FGR indicates every extra 1% growth in sampled MFIs' assets increase their financial self-sufficiency by 0.92% during the study period. This can be interpreted as MFIs having recorded more increment in terms of asset growth over the years have a better chance of being financially self-sufficient for the reason that they do have internal capacity, but it cannot be ruled out that FSS also depends on their ability to exploit external opportunities. Abdelkader D. (2014) found a positive and statistically significant relationship between Firm growth and financial performance of insurance companies in Tunisia, and Abate G. (2012) in his study, revealed the same.

Portfolio Quality

H3. There is a negative and significant relationship between portfolio qualities and MFIs financial performance.

Results of the fixed effect regression model showed that Quality of portfolio (PAR) - measured as the ratio of outstanding balance, loan overdue > 30 days to gross loan portfolio of the firm. This measure indicates how efficient an MFI is in making collections. The higher the PAR implies low repayment rates. The higher the PAR, the more inefficient the MFI will be and,

therefore, the less financial performance. The lower the PAR the more inefficient the microfinance institutions will be and thereby financially sustainable. The coefficient of the portfolio-at-risk > 30 days is negative, as anticipated but statistically insignificant. Thus, it has a negative and insignificant relationship with financial self- sufficiency at 5% significance level (p-value = 0.069).

Accordingly, this evidence fails to accept the alternative hypothesis and accepted the null hypothesis; there is no significant effect between PAR and FSS at 5% level of significance. But the negative coefficient of the ratio (-0.81212) was in line with the prior expectations of the study and also the theory which indicates a negative relationship between financial performance and portfolio quality. This result may be explaining the fact that, those MFIs in Ethiopia exposed to credit risk or have higher accumulation of unpaid loans cause them to lose higher interest income which in turn reduces FSS, hence their financial performance. The result is similar to Muriu, (2011); Yonas, (2012); and Gibson, (2012) but inconsistent with Dissanayake, (2012) finding. In general, it can be said that the quality of portfolio was not a key determinant of financial performance. But its p-value shows that it's not a key but still a determining factor of the financial performance of Ethiopian MFIs at 10% level of significance.

Operating Efficiency

H4. There is a negative and significant relationship between operational efficiency and Ethiopian MFIs‟ financial performance.

Operational Efficiency is a performance measure that shows how well an MFI is reforming its operations and takes into account the cost of the input and/or the price of output. And Efficiency of the MFIs measured in terms of adjusted operating expense to adjusted average gross loan portfolio. Accordingly, the current study which covers the time period from 2015 to 2023 indicates that coefficient of (0.001) and statistically insignificant at 5% significance level (p value 0.994). The result implies that, higher MFIs' operating expense results on higher financial performance, but as the coefficient (0.1%) indicates it's insignificant to make impact on FSS of the sampled MFIs. Based on the finding the study rejects the expectation and accepts the null hypothesis; there is no negative and significant relationship between operating efficiency and

MFIs financial performance. Generally, operational efficiency was not a key determinant of financial performance for Ethiopian MFIs for the study period of 2015-2023. The result was contrary to the findings of previous researches like, Dissanayake, (2012), Muriu, (2011), Sima, (2013) but consistent with Jorgensen, (2011), and Samuel (2015), revealed that the management efficiency has a positive and insignificant association with profitability, financial performance.

Age of MFIs

The age of MFI refers to the period an MFI has been in operation since it came into existence.
The researcher included this variable to check whether there is an effect in the operations of the MFIs in Ethiopia. The variable age is expected to be positively related to financial self-sufficiency. As such the coefficient was positive (0.010691) and it is statistically significant at 5% significance level i.e. P-value of 0.040. This means that mature Ethiopian MFIs are highly likely to be financially sustainable than their younger counterparts. This result is not strange because with increasing age, MFIs are supposed to become efficient and experienced in how they manage their operations in the industry. Hence, increase their likelihood of attaining financial performance.
Findings of this result are in line with the study of cull et al. (2007); Sima (2013); Joergenson (2012) and Yonas (2012) which shows that MFIs age is significantly and positively related with financial self-sufficiency. However, the result is in contradict with findings of Nadiya M (2011), and Nyamsogoro (2010) which shows that age is not a significant factor influencing financial self-sufficiency. Based on the result of fixed effect regression, the alternative hypothesis articulated as, age of MFIs expected to be positively and significantly associated with financial self-sufficiency is accepted. Thus, age was found to be a key determinant of financial performance of Ethiopian MFIs during the study period of 2015 to 2023.

Real Gross Domestic Product

H6. There is positive and significant relationship between real gross domestic product (GDP) growth and Ethiopian MFIs financial performance

Economic growth (GDP) is among the most commonly used macroeconomic indicators, as it is a measure of total economic activity within an economy and the study used real GDP growth as a

proxy of the macroeconomic environment. Results of the fixed effect regression showed that a negative coefficient of (-0.591716) and statistically insignificant (P-value 0.629) which indicates that improvement in economic conditions did not significantly affect Financial self-sufficiency of Ethiopian MFIs during the study period of 2015-2023. The result was consistent with Muriu, (2011), and Jordan (2008) but inconsistent with Imal et al., (2012).

Therefore, the current study found that real GDP growth does not positively affect the financial performance of MFIs in Ethiopia. Therefore, the study rejects the expected hypothesis stated real GDP has a positive and significant effect on FSS of Ethiopian MFIs because there is no evidence that supports the alternative hypothesis.

Firm Size

H7. There is a positive and significant relationship between size and financial performance of Ethiopian MFIs.

Ln of total assets is the proxy measure for the size of MFIs. The econometric result of regression analysis revealed that Total Assets is strongly significant at 1% level and positively associated with financial self-sufficiency. It indicates that, MFI size does improve its financial sustainability. It means that a change in the size (total Assets) causes a change in financial sustainability positively. The econometric result revealed that for one-unit increase in Size of MFIs, financial self-sufficiency ratio is expected to increase by (0.167) units, holding all other variables constant. The findings of this study are consistent with that of Cull et al. (2007). He found that MFIs size is positively and significantly linked to financial self-sufficiency. The findings are also consistent with Bogan et al, (2007); Coleman AK, Osei KA (2008); Yana (2010) and Pavlos (2008). However, the finding is contrary to the findings of Hartarska V (2007). Thus, the findings support the alternative hypothesis expressed as size of MFIs affects financial sustainability positively and rejects the null hypothesis which states that size has no significant effect on financial performance of Ethiopian MFIs.

Government Support

H8. There is a positive and significant relationship between government support and financial performance of Ethiopian MFIs.

Government support (Dummy variable) is the last variable included in this model to see if government backing MFIs were better than those not government backed in terms of financial self-sufficiency as a result of the government support in Ethiopian MFIs. But, even though the coefficient was positive (0.1256), it is statistically insignificant at 5% significance level (P-value of 0.530). That is, this coefficient confirmed the expectation GSP has positively linked to MFIs‟ FSS, however; its impact is negligible. And, it indicates a unit government support contributes 0.125 cents in FSS for sampled MFIs. Since the finding indicates it has no significant effect on financial performance of Ethiopian MFIs institutions, the study failed to accept the formulated alternative hypothesis which says, there is a significant positive effect between government support and financial performance of MFIs during the study period of 2015 up to 2023. In general, the following table provides an overall summary about the effect of explanatory variables which are employed in the model on the dependent variable (FSS) and hypothesis status during the study period.

Table 4.7: Summary of research findings

Independent variable	**Actual finding for sign and significance of variables.**	**Accepted/Rejected hypothesis**
CAR	Positive & significant	Alternative hypothesis (H1) is accepted & null hypothesis is rejected.
FGR	Positive & significant	Alternative hypothesis (H1) is accepted & null hypothesis is rejected
PAR	Negative & insignificant	Null hypothesis (Ho) is accepted & Alternative hypothesis is rejected.
OPE	Positive & insignificant	Null hypothesis (Ho) is accepted & Alternative hypothesis is rejected
AGE	Positive & significant	Alternative hypothesis (H1) is accepted & null hypothesis is rejected
GDP	Negative & insignificant	Null hypothesis (Ho) is accepted & alternative hypothesis is rejected.
SIZE	Positive & significant	Alternative hypothesis (H1) is accepted & null hypothesis is rejected.
GSP	Positive & insignificant	Null hypothesis (Ho) is accepted & Alternative hypothesis is rejected

Source: STATA 14 outputs

Given 5% level of significance, Table (4.7) shows that Capital adequacy ratio, Firm growth rate, age, and size have significant effect on dependent variable (FSS), whereas the remaining variables; portfolio quality, operating efficiency, real gross domestic product, and government support have no significant effect on financial self-sufficiency of Ethiopian MFIs during the study period 2015 to 2023.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

The first part of this section presents the conclusions based on the finding of the study, and the last section of this chapter forwards recommendation based on the conclusions for the units of analysis or Ethiopian MFIs and suggestions for further research.

5.1. Conclusions

The purpose of this study was to identify the major determinants of financial performance of microfinance institutions in Ethiopia that were in operation over the periods of 2015 to 2023. It used financial self-sufficiency (FSS) as a measure of financial performance against which a number of internal and external variables were regressed. Accordingly, the study revealed basic findings in relation to the variables used in the study and financial performance of MFIs in Ethiopia. The study used variables that were commonly found to influence the variation of financial performance (FSS) based on the review of literatures, and finally found a relevant and strong variable on explaining the variation for financial performance of MFIs in Ethiopia. The study empirically ascertained that enhancing financial performance is difficult without knowing and controlling the factors affecting it.

The Methodology of the study is also set taking into account achieving the objectives of the study. Based on that, the researcher used explanatory research design to show the causal relationship between the dependent and independent variables used in the study. The researcher also used quantitative research approach and fixed effect regression model to regress the panel data. Based on the findings of the study set on the fourth chapter of the paper, the researcher has concluded the following points:

Descriptive analysis results show that Ethiopian MFIs averagely generate 1.04 in FSS. This implies on average Ethiopian MFIs included in this study were financially self-sufficient during the study period as the value is greater than one.

Descriptive results of the explanatory variables also showed the following: Capital adequacy ratio (CAR) mean value suggests about 37.8% of the total assets of MFIs were financed by shareholder's funds while the remaining was financed by other source of funds. This may show that the investors' interest in the MFIs' industry is still low. Firms' growth rate indicates on average Ethiopian MFIs were growing at 37 percent whereas Portfolio at risk (PaR >30), the average portion of the portfolio in arrears or unpaid loans for the sample MFIs was 6.88%. Thus we can conclude considering the growth rate and level of paR, the future of the MFIs is promising

Moreover, mean operating efficiency of selected MFIs was 19.8%, indicating that on average they are incurring 0.20 cents in operating expense for each birr in gross loan portfolio. The average age, RGDP (Economic growth proxy), and size of Ethiopian MFIs during the study period were 13.04 years, 9.9% and a value of birr 176,834,580.3. And finally, the mean value of GSP for Ethiopian MFIs indicated; on average 27.75 % of the MFIs' included in this study have their stake controlled by the government and thereby were receiving government support during the study period of 2015 through 2023.

The data analysis result of the fixed effect regression shows 70.6 percent of the change of the dependent variable (financial performance measured by financial self- sufficiency) was explained by the independent variables that were selected and included in the model. In other words, the independent variables can collectively predict 70 percent of the change in financial self-sufficiency of Ethiopian MFIs. This implies that financial performance (FSS) of MFIs is highly explained by the explanatory variables used in the study.

- Capital adequacy ratio was found to have a positive and significant effect on financial self-sufficiency of Ethiopian MFIs during the study period and this corroborates the general theory that argues that well capitalized MFIs are more flexible in dealing with problems arising from unexpected losses and against credit risks and results in a better chance for financial performance.
- Firms growth rate has positive and highly significant effect on financial performance. This implies, MFIs having recorded more growth in terms of assets during the study have a better chance of being sustained, and financial performance. Age and size have also a

positive and significant effect on financial performance of microfinance institutions in Ethiopia during the study period. This shows mature and large MFIs in the industry have better performance due to the experience they get and economies of scale in transactions enjoyed; i.e., they are more likely to be financially sustainable than young and smaller MFIs.

- ❖ The other variables employed in the study, which are portfolio quality, operating efficiency, real gross domestic product, were found to have insignificant effect on financial performance of MFIs, and it concluded they are not key determinants of MFIs' financial performance.
- ❖ Finally, Government support the researcher initially thought it had significant effect on financial performance of Ethiopian MFIs, and as one of main factors being made difference among MFIs in terms of financial self-sufficiency based on the ground MFIs industry in Ethiopia was dominated by government backing institutions; the findings did not support the expectation, and thus occurred to be insignificant determinant of self-sufficiency, and there by financial performance of Ethiopian MFIs.

5.2. Recommendations

On the basis of findings of the research, the researcher has recommended certain points that he thought to be very important. As such, the researcher recommends the following points:

- ➢ According to the result, capital adequacy ratio, firms' growth rate, age and size of MFIs are significant determinants of financial performance of MFIs in Ethiopia. So Ethiopian MFIs are recommended to give an emphasis to firm specific factors. Because, those drivers have a significant effect on the financial performance of the MFIs.
- ➢ Specifically, size is found to be significantly positive related to FSS, a merger among smaller MFIs may bring the desired result of higher financial performance. And, MFIs can be benefited by increasing their capital since well capitalized MFIs are more likely to face lower costs of going bankrupt which reduces their cost of funding and this in turn results in higher FSS and hence financial performance.
- ➢ Young MFIs have also to emulate profit-making investment practices by implementing a sound financial management and good management on the internal

factors that affect their performance, and limitations at a startup that put them at a disadvantage to compete against the experienced and financially strong MFIs in the industry.

- The capital to asset ratio helps MFI to assess its ability to meet its obligation and absorb unexpected losses. The determination of an acceptable capital to asset ratio level is generally based on MFI's assessment of its expected losses as well as its financial strength and ability to absorb such losses. Thus, the management of an institution should develop sound savings mobilizing campaign strategy in order to collect adequate savings from depositors and mostly operate on shareholders' contribution to well capitalize MFI for ensuring unexpected shocks and they also try to manage challenges from past experience. So that, institutions may increase their financial performance that help the MFIs to come out sustainable and to reach the poor.
- The other recommendation is that, microfinance institutions that employ higher debt in the capital structure are less financial performer, which means that highly leveraged microfinance institutions are less profitable (financial performance). So, the management organ may not give a great attention in debt financing and the new MFIs entering the industry must set out different set of goals and operational set of skills which leading to financial performance.
- In addition to this, the management of the institutions may ensure the efficiency of operations from year to year as learning experience to minimize the factors of financial performance of MFIs in Ethiopia and increasing the capacity and the skill of the institution's employee and management by using continuous training, experience sharing from successful MFI and providing advice and consulting are very important. Moreover, the Ethiopian MFIs have to learn experience from profit- making banking practices through the implementation of good financial performance and to assure their financial performance.

Finally, the researcher suggests the following points for further research studies: In relation to determinants of financial performance of Ethiopian MFIs the study focused more on firm specific factors. The study only took GDP as external factor but there are other external

factors which might affect MFIs performance so the researcher recommends for further studies to include such important variables in determining financial performance. Besides, this research did not take into account primary data which might reveal the role of the political system and stability for MFI performance, qualitative factors that cannot be observed from secondary sources thus future researches are recommended to consider such data which help find more relevant factors affecting financial performance of MFIs.

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APPENDIX

1. Appendix 1: Descriptive statistics

```
. sum FSS CAR FGR PAR OPE AGE GDP SIZE GSP
```

Variable	Obs	Mean	Std. Dev.	Min	Max
FSS	198	1.040141	.362186	.1303746	2.225183
CAR	198	.3785638	.1512367	.0549532	.8020987
FGR	198	.3704132	.2129094	.066508	1.053715
PAR	198	.0687803	.0791417	.000881	.405
OPE	198	.1986636	.1078861	.012	.6726828
AGE	198	13.04545	4.532226	1	21
GDP	198	.0993333	.0103972	.08	.114
SIZE	198	12.08297	1.933538	8.322686	17.11364
GSP	198	.2777778	.4490386	0	1

Appendix 2: correlation matrix of dependent and independent variable

Appendix 3: Hetroskedasticity Test

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of FSS

         chi2(1)      =     0.47
         Prob > chi2  =   0.4952
```

Appendix: 4 Variance inflation factor (VIF) test for multi-co linearity

. vif

Variable	VIF	1/VIF
SIZE	2.22	0.451400
OPE	1.85	0.541726
AGE	1.61	0.619857
CAR	1.43	0.697398
FGR	1.34	0.747827
PAR	1.23	0.813893
GDP	1.06	0.940749
Mean VIF	1.53	

Appendix: 5 Autocorrelation test between Independent Variable

. corr CAR FGR PAR OPE AGE GDP SIZE GSP
(obs=198)

	CAR	FGR	PAR	OPE	AGE	GDP	SIZE	GSP
CAR	1.0000							
FGR	0.3521	1.0000						
PAR	0.1312	-0.2603	1.0000					
OPE	0.0647	0.0579	0.1647	1.0000				
AGE	-0.3988	-0.1828	-0.2228	-0.3837	1.0000			
GDP	-0.0072	0.0071	-0.0298	0.0470	-0.1896	1.0000		
SIZE	-0.3293	-0.2280	-0.1952	-0.6460	0.5060	0.0034	1.0000	
GSP	-0.5035	-0.3204	-0.2458	-0.3579	0.3654	-0.0080	0.7277	1.0000

Appendix 6: Hausman test

	Coefficients			
	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
CAR	.3392486	.4266814	-.0874328	.0770776
FGR	.9229327	.6653367	.257596	.0772462
PAR	-.8121999	-.0457415	-.7664584	.3203054
OPE	.0014249	.0770172	-.0755923	.0971842
AGE	.0106917	.0065235	.0041682	.0025971
GDP	-.5917166	-.9030117	.3112951	.1819152
SIZE	.1670714	.1841401	-.0170687	.0137677
GSP	.1256343	-.2792918	.4049261	.1919499

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

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 39.41
Prob>chi2 = 0.0000

Appendix: 7 random effect regressions out put

```
. xtreg FSS CAR FGR PAR OPE AGE GDP SIZE GSP, fe

Fixed-effects (within) regression               Number of obs      =       198
Group variable: ID                              Number of groups   =        22

R-sq:  within  = 0.7067                         Obs per group: min =         9
       between = 0.0202                                        avg =       9.0
       overall = 0.2122                                        max =         9

                                                F(8,168)           =     50.60
corr(u_i, Xb)  = -0.6542                        Prob > F           =    0.0000
```

FSS	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
CAR	.3392486	.1561835	2.17	0.031	.0309135	.6475838
FGR	.9229327	.1279387	7.21	0.000	.670358	1.175507
PAR	-.8121999	.4436323	-1.83	0.069	-1.688012	.0636124
OPE	.0014249	.2020559	0.01	0.994	-.3974709	.4003206
AGE	.0106917	.0051781	2.06	0.040	.0004691	.0209142
GDP	-.5917166	1.222684	-0.48	0.629	-3.005522	1.822088
SIZE	.1670714	.0211119	7.91	0.000	.1253925	.2087502
GSP	.1256343	.1996002	0.63	0.530	-.2684133	.519682
_cons	-1.50889	.2940275	-5.13	0.000	-2.089355	-.9284256
sigma_u	.38004906					
sigma_e	.1680316					
rho	.83648401	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(21, 168) =    14.38                 Prob > F = 0.0000
```