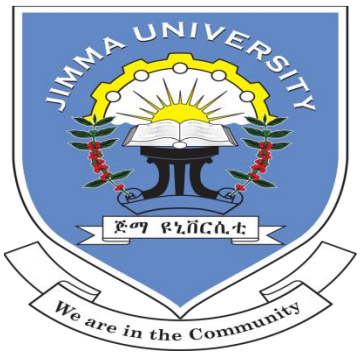
Microfinance participation and its impact on rural household poverty in ChoraBoter district, Jimma zone:Evidence from Oromia Credit and Saving Share Company

A Thesis Submitted to the School of Graduate Studies of JimmaUniversity inPartial Fulfillment of the Requirement for the Degree of Master of Science,in Industrial Economics

BY:

LEMESSA WIRTU DINGO



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Under the Guidance of
Tekilu Tadesse(assistant professor)
And
Achalu Barecha (Msc.)

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COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ECONOMICS
BOARD OF EXAMINERS APPROVAL SHEET

As members of the board of examining of the final MSc thesis, we certify that we have read and evaluated the Thesis prepared by Lemessa Wirtu entitled , " microfinance participation and its Impact on Rural Household Poverty in Chora Boter Woreda, Jimma Zone: Evidence from Oromia Credit and Saving Share Company" ,and recommend that the Thesis is accepted as fulfilling the thesis requirement for the degree of Master of Science in Industrial Economics .

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Certificate

This is to certify that thesis entitled " *microfinance participation and its Impact on Rural Household Poverty in Chora Boter Woreda, Jimma Zone: Evidence from Oromia Credit and Saving Share Company"* submitted to Jimma University for the award of the Degree of Master of industrial economics and is a record of bonafide research work carried out by Mr.LemessaWirtu, under our guidance and supervisions.

Therefore:we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Name of main advisor	*Date*	*signature*
_____ _____	_____	_____
Name of co-advisor	*Date*	*Signature*
_____	_____	_____

DECLARATION

I, hereby declare that this thesis entitled *" microfinance participation and its Impact on Rural Household Poverty in Chora Boter Woreda, Jimma Zone: Evidence from Oromia Credit and Saving Share Company"* has been carried out by me under the guidance and supervision of Mr.Tekilu Tadesse(Assistant Professor) and Mr.Achalu Barecha(Msc.).

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institution.

Researcher's Name	**Date**	**Signature**
Lemessa Wirtu_Dingo__	_____	_____

BIBLIOGRAPHY SKETCH

LemessaWirtu Dingo was born at Limmu District in Eastern Wollega of Oromia Regional State in October 1972. He attended his elementary education at LimmuGelila, Limmu Woreda& his high school education at Gidda Ayana Secondary school from 1989-1992. After completion of his secondary education, he was hired directly without any training in CIP (coffee Improvement Project) in Jimma zone,Limmu Kossa woreda in May 1994 and got training at Nadjo TVET in Coffee & another agricultural training for one year in 1999. Again diploma at WolayitaSodo college in 2006 in animal science, his B.A. Degree in Rural dev't on June, 2008 in distance education from St, Marry university college. Then, he joined Chora Boter woreda Finance and Economic development office coordinator of budget,monitoring & evaluation since 2019,and join Jimma University in September 2019 to follow his postgraduate studies for the M.Sc. degree in Industrial Economics.

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Acronyms/Abbrevations

ATT: Average treatment effect on the Treated

CBN: Costs of Basic Needs

CIA : Conditional Independence Assumption

CIESIN:CanteforInternationalEarthScienecInformationNetwok

ETB: Ethiopian Birr

FAO:Food Association Organization

FEI: Food Energy Intake

FGT: Foster, Greer and Thorbecke

HDI : Human Development Index

MENA:Middle East & North Africa

NBS: Household Budget Survey

NGO: Non-Governmental Organization

OCSSCO :Oromia Credit and Saving Share Company

OIB: Organization of Islamic Countries

OMFI: OMO Microfinance institution

PPP : Purchasing Power Parity

PSM : Propensity Score Matching

SESRIC :Statistical, Economic and Social Research Training

Canter for IslamicCountries

SNNP : South Nation Nationalities of People Region

UNDP: United Nation Development Program

UNHCR: United Nation High Commissioner for Refuge

Abstract

The study is carried out in ChoraBoter District of Jimma Zone in Oromia Regional State aimed with the objectives to estimating of microfinance participation and its impact on the poverty of rural households. To achieve these objectives, the study undertook a cross-sectional household survey collecting primary data from 326 sample rural households' using a simple random sampling method in the 2020/21 production season. The collected data was analyzed using descriptive statistics and econometric approaches. Binary Logit was used for sake of analyzing determinants of microfinance participation. Additionally, the Propensity Score matching model was applied to estimate the impact of microfinance participation on rural household poverty in the study area. The descriptive analysis revealed that the microfinance participation decision differs among participants and non-participant based on socio-economic characteristics such as age, marital status, education, family size, and religion. The result of the logit model indicated that marital status, education, nonfarm participation, family size, frequency of extension contacts, and cultivated land size affect microfinance participation decision of the household positively whereas the age of household, religion (being Muslim), distance from the market, and the estimated value of asset have a negative and significant effect on the participation decision of households in the OCSSCO micro-financing services. Additionally, the study found that microfinance participation has a positive and significant effect on rural household poverty. The ATT result implied that MFP brought statistically positive significant impact on HHs expenditure levelof rural HH poverty. It is recommended that the importance of microfinance in poverty reduction is of immense benefit to the participant households in ChoraBoter woreda

Keywords: Chora Boter, *Rural Poverty, Microfinance Participation, Logit, PSM, Impact Evaluation*

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The distribution of the 'haves' and the 'have-nots' characterize the world. While the former lead a luxurious life, the latter suffer from a lack of decent, beneficial, and productive life. The inequality between the rich and the poor is widening apart, which resembles the trend of opening a scissor. Besides, the number of the poor is getting higher and better as the years pass. Poverty is typically taken into consideration as a state of affairs where in the underprivileged do now no longer have good enough food and shelter, lack get right of entry to training and fitness offerings, are uncovered to violence, and discover themselves in a nation of unemployment, vulnerability, and powerlessness. Poverty is multi-dimensional and needs to be checked out via several signs including degrees of income and spending, social indicators and indicators of vulnerability to dangers, and socio-political access and participation. The envisioned range of undernourished humans accelerated to 815 million in 2016, up from 777 million in 2015(FAO, 2017).

Globally, poverty is distributed unevenly. Data provided by the World Bank (2018) indicate that736 million people worldwide are living below the international poverty line and are located mainlyin Sub-Saharan Africa (41%), South Asia (12%) and in MENA (5%)& extreme poverty is decreasing, but in sub-Saharan Africa, there are now more extremely poor people than in the 1990s. Extreme poverty, measured in terms of the number of people living below the recently updated poverty line of US$1.90 a day (valued in 'purchasing power parity', or PPP), has significantly declined since 1990, when almost 2 billion people, or quite 37 percent of the world's population, were extremely poor. In 2012, the world wide prevalence of utmost poverty was put at 12.7 percent and was projected to fall to 9.6 percent by 2015.

Marguerite (2000)And Cohen (2000) concluded that get the right of entry to microfinance is a key threat control method for clients, and microfinance offerings lessen vulnerability and make a contribution to poverty alleviation. Messele (2002) additionally determined that during nations including Indonesia, Bangladesh, and India, it changed into proved that credit score and saving

offerings may be furnished to economically lively terrible profitably and sustainability. This encouraging result will become the nook stone for the microfinancing revolution in the course of the world. Wolday (2000) additionally argued that the transport of monetary offerings has been considered as an anti-poverty device of improvement packages in Ethiopia. A farm credit score is normally taken into consideration as an important entry to boom agricultural productivity, in particular of land and labor, to reinforce meals and profits degrees, to inspire employees, and thereby to relieve poverty.

According to Parker (2000), poverty has always been a concern of microfinance; and some microfinance institutions use methodologies that focus on the very poor as a separate client group, while others are based on non-targeted financial services for all those who lack access to formal credit institutions.The microfinance institutions services consists provision of micro loans, micro savings, micro insurance service, money transfer, leasing and other relevant schemes to the target poor peoples who have been excluded by the conventional commercial banks due to lack of collateral requirements and high transaction costs (Tolosa, 2014).

Sound practice in microfinance institutions is based on the ability to provide appropriate financial services to individuals and households that are otherwise excluded from the financial system (Parker, 2000). According to his report, most microfinance clients are poor and many are extremely poor. Poverty remains a pervasive national problem that calls for urgent action.

Microfinance improvement in Ethiopia is the latest phenomenon in institutionalized form. But it has a protracted record in extraordinary forms. The Government's efforts of turning in monetary offerings especially credit scores to boost up socio-financial improvement in Ethiopia might also additionally date again to the instantaneously publish Italian profession length with the status quo of the Ministry of Agriculture in 1943 and Agricultural Bank of Ethiopia in 1945.The most important goal of the Bank changed into helping small land holders whose farms have been devastated for the duration of the Italian profession via loans to buy agricultural inputs and repaired houses (Abebe, 2006).

The authorities of Ethiopia believe that microfinance establishments are one of the gadgets in poverty reduction. It is anticipated that microfinance offerings create employment opportunities, growing profits, improving empowerment, and in a mixture enhance the livelihood of the terrible. Accordingly, Proclamation No. 40/1996 changed into hooked up in 1996 to sell microfinance improvement in Ethiopia. Following this, many (thirty-one) microfinance establishments were

rising in awesome ways in Ethiopia.

Microfinance establishments are decisive manner outs from the vicious circle of poverty in particular for the agricultural and concrete terrible section of the society especially in a rustic like Ethiopia in which many humans stay slightly under absolutely the poverty line. The number one goal of microfinance (MFIs) is to offer monetary offerings (credit score and saving) to the terrible with the intention to relieve financial constraints and assist alleviate poverty. Each MFI attempts to maximize its reimbursement overall performance, whether or not it's far income orientated or now no longer. One indicator of powerful MFIs is the mortgage reimbursement overall performance of the borrowers.

Microfinance has an impact on poverty that is the poor section of peoples has low profits, which results in low funding and which in flip ends in low productiveness. Microfinance establishments, saving, and credit score cooperatives ought to be designed to respond to the failure of the economic and improvement banks to fulfill the monetary desires of poor and small producers (Adebayo, 2009, Fiona, 1999). Microfinance establishments nicely immediately have an effect on family profits with the aid of using encouraging productiveness. It additionally will increase the range of manufacturing and productiveness, maximize the usage of to be had assets and make the most of their comparative benefit inside marketplace places. Furthermore, it encourages the socio-monetary improvement of the worried society (Ahmed et al., 2011). It is coined because the monetary carrier rendered to the disadvantaged institution of the humans and small marketers to assist them in growing self-employment possibilities and profits producing activities (Ebimobowei et al.,2012).Microfinance is the stipulation of monetary offerings to beneathneath privileged and low-profit families without getting admission to formal monetary establishments. Besides its miles a method for supplying to the poor in rural and concrete areas, mainly ladies with financial savings and credit score centers to install or enlarge the business and grow family security (Wolday,2002). This means that it entails the supply of monetary offerings which includes financial savings, loans, and coverage to poor humans residing in each city and rural settings who're not able to reap such offerings from the formal monetary sector.

It is feasible to argue that microfinance gives a window of possibility for the poor to get admission to a borrowing and saving facility. In different nations, those centers additionally offer organizational assist, training, protection nets, empowerment, and monetary and different assist in

the course of crises. Microfinance applications goal each monetary and social poverty. To check the achievement in their effort's microfinance establishments, want to degree the effect at the borrowers. The number one goal of all MFIs interventions is poverty discount. Poverty discount is perceived from the financial factor of view. On the alternative hand, MFIs interventions sell residing situations of terrible humans with the aid of using providing supportive carriers. These supportive offerings like getting admission to fitness and schooling offerings are essential signs of human improvement. The goal of this system is to create sustainable adjustments within side the lives and livelihood of the terrible in particular (Meyer, 2002).

According to Wolday,2000), poverty in Ethiopia is a multidimensional problem with large scope; there is no single actor and approach to its reduction. He argued that the solution to the problem should also be multidimensional. it's going to be necessary to introduce instruments that provide data on the poverty line that help to look at or target poor people. Recognizing this fact, the necessity to deal with poverty has been the main target of the many development programs implemented by governments, non-government organizations (NGOs), and personal investors.

The micro-financing lending approach focuses on reducing poverty through credit and saving services, often provided together with complementary services such as skills training and teaching on literacy, health, nutrition, family planning, and the like (Messele,2002). Schroeder,1996) found that financial services accessible to the agricultural poor may need the potential to efficiently contribute to income generation, food security, and poverty alleviation. The goal of micro-financing institutions as development organizations is not only to serve as financial services, as other financial inter mediation but also serve as social inter mediation. Thus, most of the microfinance services providing institutes have articulated creating a little and simply accessible loan to the poor as their primary objective. Therefore, one can say that reducing poverty is a high agenda in Ethiopia by using microfinance institutions as a means of credit services for rural household people.

1.2 Statement of the Problem

The main challenge of the economic development of Ethiopia for more than two decades is poverty. Poverty may be a multi-dimensional phenomenon associated with the shortage of social, economic, cultural, and political entitlements. The widespread poverty, with all the problems that come with it, the greatest challenge of our time so that poverty reduction has been an important development challenge over decades. One of the identified constraints facing the poor is lack of access to credit to enable them to require advantage of economic opportunities to extend their level of productivity and income, hence move out of poverty (Sophia, 2012).

The large number of populations in Ethiopia is rural households, and they have a low level of literacy. The majority of the farm community is comprised of subsistence farmers who are not in a position to use high-quality seeds, sufficient fertilizers, and improved farm land, and limited access to credit. Because of this, small farmers are generallycharacterized by low income, fewer savings, and low capital formation. In line with this, agricultural development is hindered thanks to a lack of credits, weak infrastructure, and poor transport systems (Wolday and David, 2010).

Different economic policies formulated by development practitioners and researchers to minimize the effect of poverty in the country, poverty has been continued to be the challenge of the economic development of Ethiopia. Poverty reduction strategy and different poverty intervention programmers of the government and other development practitioners in rural areas are some of the testimonies of this. Microfinance institutions were one of the strategies that help to reduce poverty (Abduselam,2017).An important tool in fighting poverty is microfinance which has gain prominence over the last few decades in countries hardest hit by the menace. Feleke's (2011) finding result showed that the household’s income is positively related to participation in microfinance services. Households participate in microfinance institutions with the expectation that borrowing will increase their earnings, smooth consumption, enhance their food security, sustain self-employment, reduce the risk of vulnerability and increase savings to strengthen the basis for human capital formation. Microfinance also enables households to mobilize and harness their resources and optimally exploit the opportunities available to them. Moreover, microfinance services contribute to the improvement of agricultural productivity by adopting productivity-enhancing inputs and modern farming techniques (Ziaul, 2014).

However, in Ethiopia, the poor households in the country remain with limited access to formal financial services. The majority of rural people and therefore the poor farmers lack access to credit from modern financial institutions. Besides, formal financial institutions are inefficient and inaccessible in providing credit facilities to the poor (Sileshi, 2014).

The prevailing operation of the formal or conventional financial institutions in many low-income countries like Ethiopia is inefficient in providing sustainable credit facilities to the poor. Access to institutional credit, which contributes to the increase in investment, is very limited in Ethiopia. The majority of the poor access financial services through informal channels, money lenders, Iqub, Iddr, friends, relatives, traders, etc. (Wolday, 2002). Most micro-credit services delivered through NGOs and government-initiated projects in Ethiopia did not consider savings as one of the most important products both to the client and institution.

Moreover, even though there have been many studies conducted concerning the impact of microfinance at the country level. Ethiopian microfinance institutions are faced with many problems. Some of these are low outreach, limited funding alternatives, limited financial products, lack of research to understand client needs, and weak internal control system (Abebe, 2006; Wolday,2007).

According to Achamyeleh,2011,) microfinance contributes to the development of human, social and physical capital to the poor. Despite this, European Academic Research argued that some researchers conducted in microfinance showed that people who access the service of microfinance runaway from poverty, and their living conditions were improved both in rural and urban (Fareed et al., 2014).

A study of thirteen (13) MFIs in seven developing countries was taken (Mosely and Hulme, 2004 cited in Haftom,2011) and found that evidence of a trade-off between reaching the very poor and having a substantial impact on household income and consumption. They found that programs that targeted active poor households (those near the poverty line level) had a greater impact on household income.

However, a high proportion of them has been focusing on contributions to children's education, improving health outcomes for women and children, poverty reduction, and empowering women by participation in microfinance services. Moreover, these studies have compared microfinance beneficiaries against non-beneficiaries on outcome variables of interest using descriptive statistics

and observable characteristics without addressing the key methodological issues like selectivity bias and sensitivity analysis. Further, these studies didn't address the impact of microfinance on household poverty in rural areas where the majority of the people rural households-based subsistence farming system

In ChoraBoter woreda where this study is conducted, some related researches on microfinance institutions in another area have been done. For example, studies on the financial and operational performance of microfinance institutions by using simple descriptive analysis (Kebu, 2017). Moreover, this study focused on factors affecting the financial performance of microfinance institutions in the study area. Further, Birhanu,2016) investigated the role of microfinance institutions in the reduction of unemployment within the study area. However, the study did not say anything about the effect of microfinance services on rural households' poverty in the study area.

Therefore, to fill these conceptual gaps, the researcher motivated to conduct a study that focused on assessing determinants of the rural households' participation in OCSSCO micro-financing and its impact on rural household poverty in the case of ChoraBoter Woreda, Jimma Zone of Oromia Regional State using binary logit and Propensity Score Matching model which is applicable for impact assessment.

On the other hand, at ChoraBoter district where the research was conducted the majority of the households are Muslim & religious belief affects the borrowing process of the micro-entrepreneurs. It is expected that religion is an important variable that affects positively for non-Muslims but negatively for Muslims in credit demand (Dutta and magableh,2006).

1.3 Research Questions of the study

The study will answer the following questions

- What are the incidence, depth, and severity of rural poverty in the study area?
- What are the principal determinants of microfinance participation of rural households in the Study Area?
- Does participation in Microfinance affect the poverty status of rural households? If yes, positively or negatively? And to what extent?

1.4.General Objective

The general objective of the study is to examine microfinance participation and analysis examine its impacts on the rural households in ChoraBoter district, Jimma Zone

1.4.1Specific Objective of the Study

The specific objectives of the study are:

- To examine the extent of incidence, depth, and severity of rural household poverty in the study area
- To investigate the determinants of households' participation in microfinance in the study area
- To estimate the impact of microfinance participation on rural household poverty status in the study area

1.5 Significance of the study

Identifying the impact of microfinance on poverty enables the MFI to explore which types of services are required by clients. This information is essential for all microfinance institutions to be demand responsive rather than supply-driven in their choice of products and lending methodology. Once the program is under way, understanding the needs of the participants enables program managers to determine what types of participants the program attracts and which financial services are used by different clients. If the targeted groups are not responding, the MFI can evaluate its methodology and services to better meet the needs of that population. Since there is no single applicable way to be successful in credit provision and saving mobilization, the study will also help the MFIs to meet the basic needs of their clients. The research is believed to generate data about OCSSCO and its impact it may have brought on the life of the clients. It will also be important to provoke a discussion on whether OCSSCO can reduce poverty in countries such as Ethiopia where starvation is chronic. The research will serve policy makers, program managers, donor field staff and NGO personnel, researchers, and practitioners of micro-credit service to acquire the understanding of the process of intervention, level of the contribution of small loans to reducing poverty, and take other necessary support measures to strengthen the initiatives. In addition, the research may serve as an eye-opener and a pointer towards further study in the area, as it is among the first of its type in ChoraBoter Woreda.

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1.6 Scope and Limitation of the Study

The study was conducted in ChoraBoter woreda of Jimma zone, Oromia Regional State. Being confined in one district, its external strength could be weak and hence, generalizations from the findings of the study to other areas may not hold. Poverty is multi-dimensional and dynamic according to the world development report (2001), goes well beyond material deprivation (lack of opportunity, which is measured by income or consumption), to include low capabilities, vulnerability, and voicelessness. This study was emphasized mostly on microfinance and poverty issues and analyses at the level of households by taking 'snap-shot' at a particular period based on a cross-sectional design, collects data at one time, and hence, one can generalize the findings from such one-shot studies to the population only at the time of the survey. Notwithstanding useful, such a study does not capture the complex and dynamic nature of rural poverty.

One of the limitations is the difficulty in getting proper responses from respondents regarding their expenditure on food consumption because respondents are not willing to give accurate information on the amount of expenditure, they invested on consuming food annually.

1.7 Organization of the Study

The study has five chapters. Chapter one contains an introductory part including background, problem statement, the objective of the study, the significance of the study, limitation of the study, and organization of the study.The second chapter of the paper presents a review of the theoretical literatures, empirical literatures, and the conceptual framework of the study. Chapter three contains the methodology of the study. Chapter four refers to empirical analysis and findings of the study. & Chapter five presents the summary, conclusion, and recommendation of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1.Theoretical Review

2.1.1 Concepts and Basic Definitions

2.1.1.1 Poverty

As a multidimensional phenomenon, poverty is described and measured in a large number of ways. The United Nation High Commission for Refugees (UNHCR) defines “poverty” as a human circumstance characterized via way of means of the sustained or persistent deprivation of assets, capabilities, choices, protection, and energy essential for a good enough trendy of residing and different civil, cultural, monetary, political, in addition to human rights (UNHCR, 2004).

Thus, poverty may be defined because the country of being without the requirements of each day residing, regularly related to need, difficulty, and shortage of assets throughout a huge variety of circumstances. Some human beings see poverty as a subjective and comparative period, at the same time as for others it's far ethical and evaluative or scientifically established (Donald & Marcus, 2005). On the different hand the Copenhagen Declaration of 1995 describes absolute poverty as “a circumstance characterized via way of means of excessive deprivation of human primary needs, together with food, secure ingesting water, sanitation centers, fitness, shelter, training, and information”. World Bank (2001), on the different hand, identifies “excessive poverty” as being folks that stay on much less than UN $1 a day, and “poverty” as much less than $2 a day. On that trendy, 21% of the world’s population become in excessive poverty, and greater than 1/2 of the world’s population become terrible in 2001. However, monetary deprivation loss of earnings is a trendy function of the maximum definitions of poverty. But this in itself does now no longer take account of the myriad of social, cultural, and political factors of the phenomenon. Poverty isn't always the simplest deprivation of monetary or cloth

assets however additionally a violation of human dignity. In this regard, it's far really well worth noticing the word via way of means of Kofi Annan, UN Secretary-General who stated “on every occasion, we carry one soul out of a lifestyle of poverty, we're protecting human rights. And on every occasion we fail on this mission, we're failing human rights (UNHCR,2004).

The Concept of poverty is multi-dimensional (viz.earnings poverty and non-earnings poverty). It covers now no longer simplest the ranges of earnings and intake, however additionally fitness and training, vulnerability and chance, and marginalization and exclusion of the poor from the mainstream of the poverty.Poverty is a relative concept. No individual or country is truly terrible or wealthy. A man is poor or rich in contrast to the others. As Adam Smith says, “Man is terrible or wealthy in line with the degree wherein he can manage to pay for to revel in the necessaries, conveniences, and amusements of lifestyles”. The shape of those minimal requirements but changes, with the version in area and time. There isn't any uniform trendy to outline poverty at some stage in the world. Poverty conventionally refers to incapability of the human beings to acquire positive predetermined minimal intake needs. But in a much wider sense, poverty is the constraint that restricts human beings to revel in positive centers of lifestyles. This has appeared as functionality poverty. Thus, functionality poverty is described as the shortage of primary capabilities. When human beings are not able to attain a positive degree of vital human achievements of functioning, they are afflicted by functionality poverty (Rao,2005).

In countries where in dependable earnings information may be found, earnings have regularly been used to behavior poverty and welfare evaluation. However, the typically favored indicator of welfare has been intake expenditure, in element due to the volatility of earnings. Income might also additionally vary unpredictably, making it a ‘noisy’ indicator of welfare. Consumption tends to be much less risky than earnings due to the fact intake smoothing possibilities which include saving, borrowing, and community-primarily based totally chance sharing is to be had to the terrible. This indicates that present-day

intake, as opposed to present-day earnings, is a higher indicator of each present-day and long-time period trendy of residing (Ravallion, 1994; Lipton &Ravallion, 1995; Deaton, 1997).

In trying to summarize the definition of poverty, (Oruc, 2015) asserted that poverty in each relative and absolute poverty refers to a condition wherein someone isn't always capable of fend or offer sufficiently for their requirements or essential human necessities which include garb and first-rate accommodation, food, the success of social and financial responsibilities, non-get admission to efficient employment, loss of skills, assets, and confidence; and has constrained admission to monetary and social infrastructure. These encompass get admission to fitness, training, potable water, sanitation, and roads. These avert the individual from advancing in welfare that is restricted via way of means of the scarce availability of monetary and social infrastructure. They concluded via way of means of terming this example as being a concern to a “loss of capabilities” (Todaro, 2004).

2.1.1.2 Poverty Line

A poverty line may be described because the cash an individual desires to acquire the minimal degree of “welfare” to now no longer be deemed “terrible.” Standard measures of earnings poverty integrate a financial degree of the family “financial welfare” with a poverty line inside the area of that degree, most effective beneath which human beings in that family are deemed to be “terrible.” The maximum broadly used measures of financial welfare are modern-day earnings and expenditure on intake, each of which had been derived from pattern surveys of households. Consumption is extra generally utilized in growing nations wherein earnings are frequently more difficult to a degree, and possibly a much less dependable welfare indicator, given a degree of (predictable) earnings variability over the years, notably (however now no longer most effective) from agriculture. The compilation of countrywide poverty strains for growing nations supplied via way of means of Ravallion, Chen, and Sangraula (2009), intake became used because the welfare indicator with inside the poorest 1/2 of nations ranked via way of means of intake in line with capita, with earnings-primarily

based measures most effective rising above the median. In practice, strategies were generally used to derive the poverty line; the ‘meals strength consumption’ and ‘meals share’ strategies (Ravallion, 1994). Both tactics are primarily based totally on the belief that there's a minimum strength requirement for an average character to hold up regular activities, including the 2,200 Kcal in line with the day threshold stipulated via way of means of the WHO (1985). Thus, the ‘meals strength consumption’ technique tries to pick out the entire intake expenditure at which someone is predicted to reap the minimal meal strength requirement. This is completed via way of means of regressing calorie consumption on intake expenditure or earnings. The poverty line, then, will become that degree of general expenditure at which the minimum strength requirement is met (Greer &Thorbecke, 1986). The benefit of this technique is that it routinely consists of an allowance for non-meals items, circumventing one of the problems stated above. However, it can result in an ‘inconsistent poverty contrast throughout sub-agencies or over the years considering that human beings with the identical command over primary intake desires will now no longer in popular be handled the identical way’ (Lipton &Ravallion, 1995). In the ‘meals share’ technique, the price of the meals package that meets the minimum strength requirement is expected for every populace sub- organization. These meals' poverty strains are then divided via way of means of the proportion of meals in the general expenditure of the poorest households, including the poorest decile, in every sub-organization to attain the entire poverty line. This technique may additionally result in inconsistencies in poverty contrast considering that the proportion of meals in general expenditure does now no longer continue to be steady throughout sub-agencies sub-groups (Ravallion, 1994).

Absolute Poverty: An absolute poverty line is a constant (organization-specific) cutoff degree this is carried out throughout all capacity aid distributions. In comparisons over the years, for example, the usual is unchanged even inside the face of financial growth (even though provisions are made for modifications in rate ranges). Similarly, in comparisons throughout nations, constant-threshold comparisons require the best alternate charge (Foster, 1998). These strains mirror

the fee of the assets that had to hold a minimal degree of welfare. The goal is to degree the price concerned in buying a basket of crucial products (items and services), which permit someone to attain minimal ranges of delight in phrases of primary desires. One of the traits of absolutely the poverty strains is that outcomes may be taken from them which might be touchy to financial development, even though is shared out homogeneously among the population. For example, if there's a growth in earnings ranges in society, even though this growth is sent homogeneously among the populace, the share of terrible human beings calculated with absolute poverty strains will decrease. One of those absolute strains this is broadly used fixes a greenback in line with capita an afternoon because the fee of minimal assets wished for someone to now no longer be taken into consideration in poverty. This line may be utilized in a global context with the implication consequently that any character who lives on much less than a greenback an afternoon is terrible. The maximum intense complaint in opposition to absolutely the technique is that inside that technique, human desires are interpreted as being predominantly bodily desires -- this is, for meals, haven, and apparel -- instead of as social desires. People aren't, it's miles argued, honestly man or woman organisms requiring replenishment of bodily strength. They are social beings predicted to carry out socially disturbing roles including parents, employees, and citizens. They aren't honestly customers of bodily items however manufacturers of these items and lively contributors of their societies. They are depending on together supplied utilities and facilities. Moreover, the size of the charges for meals is an intricate matter. The quantity and price of the meals that are eaten depend upon the social roles performed and the nutritional conduct located, in addition to the varieties of meals to be had inside the market. Specifying the charges of assembly nutritional desires is consequently very difficult.

Relative Poverty: In relative poverty, poverty is measured as the share of the populace with earnings much less than a few constant percentages of median earnings. It compares the bottom segments of a populace with the top segments. For instance, the Euro stat makes use of a relative poverty degree primarily based totally on “financial distance “which corresponds to a degree of earnings set at

60% of the median family earnings (Ravallion et al., 2008). Relative poverty is involved with how nicely off a man or woman is with admiration to others within side the identical society. In theory, consequently, even as an absolute poverty line is a degree that might, adjusting for rate fluxes, stays solid over the years, a relative poverty line might be predicted to shift with the general trendy of residing in a given society. Relative Poverty perspectives poverty as socially described and depending on social context, consequently relative poverty is a degree of earnings inequality. Usually, relative poverty is measured as the share of the populace with earnings much less than a few constant underdeveloped nations; it's miles the life of mass poverty this is the reason for concern (Ruddar, 2008). There are some criticisms of the relative degree of poverty. First, it perpetuates poverty with inside the statistical experience that a few constant percentages of the populace are usually seemed as terrible. Poverty consequently consistently exists. Second, even as a relative degree of poverty can supply an estimate of the scale of the terrible, it cannot offer any statistics at the high-satisfactory of lifestyles of the terrible.

Subjective Poverty: Asks human beings themselves to charge their poverty ranges or ranges of nicely-being, instead of growing an 'expert'-led, 'scientific' or 'goal' degree. In popular, subjective measures of poverty tend to consist of extra non-cash-metric signs of nicely-being than goal signs. Subjective measures of nicely-being additionally tend to consist of a relative component –human beings rank their nicely-being in terms of ranges of nicely-being loved via way of means of others around them. The degree correlates the people via way of means of assessing concerning the statistics of self-perceived query, minimal earnings query, and earnings assessment query (Isobel, 2015). Subjective poverty strains are primarily based totally on asking human beings what minimal earnings degree is wanted simply to make ends meet (Jonathan &Khandker, 2010). Self-suggested measures have essential limitations, however. Subjective measures may reproduce current discrimination or exclusion styles if those styles are perceived as regular inside the society. This is probably the case in discrimination in opposition to ladies or different precise agencies in society. Subjective checks may want to then fail to seize discrimination, which ought to be addressed via way of means of

public policy. More generally, the located perceptions of poverty want now no longer offer an awesome foundation to set up precedence public actions.

2.1. 1.3 Poverty measures

The Cost of Basic Needs (CBN) is one of the exclusive tactics, wherein the entire poverty line is built because of the sum of meals and a non-meals poverty line. It first estimates the price of obtaining sufficient foods for nutritions after which provides the price of different necessities including apparel and haven. Moreover, the Unmet Basic Needs (UBN) or Minimum Basic Needs (MBN) technique measures poverty in terms of peoples' get right of entry to primary desires. Housing, primary services, academic ranges, and fitness care constitute the four foremost standards that might be used if you want to estimate the UBN of a family percentage of median earnings (SESRIC, 2015).More importantly, Hagenaars (1986) places the primary want technique as follows:

$$Z = Co + O_{co} \quad \text{.....(1)}$$

Where,

Z is the poverty line

C_o is the minimum cost of food

O_{co} is the minimum cost of non-food items

In this approach, poverty lines are drawn by computing the cost of the food basket at regional prices that enable poor households to meet the nutritional requirements. In addition, an allowance for non-food consumption is added (Ravallion&Bidani, 1994) and (Ravallion. & Sen., 1996). The cost of basic needs approach is most ordinarily used. It first estimates the cost of acquiring enough food for adequate nutrition usually 2,200 Calories per person per day and then adds the cost of other essentials such as clothing and shelter (Jonathan &Ravallion,2010).

Foods Energy Intake Approach (FEI):

The other method of defining the absolute poverty line is the Food Energy Intake (FEI) approach. This method sets poverty lines by computing the level of consumption or income at which households are expected to satisfy the normative nutritional requirement, which is 2200Kcal (Greer &Thorbecke 1986, cited in (Darcon& Krishnan, 1996). When price information is unavailable, the food energy intake method are often used. This method plots expenditure per capita against food consumption calories per person per day) to determine the expenditure (or income) level at which a household acquires enough food (Jonathan &Khandker, 2010).

2.1.1.4 Poverty Index

The poverty index is an indication of the standard of living in a country that was developed by the united nation (UN) to complement the human development index (HDI). The multidimensional poverty index reflects the socio-economic differences and widely different measures of deprivation in developed and developing countries. Kimalu (2002) pointed out that one poverty measure that has been found manageable in presenting information on the poor in an operationally convenient manner is the FGT (Foster, Greer, and Thorbecke) measure developed by (Foster, J Greer, &Thorbecke, 1984). This measure is used to quantify the three well-known elements of poverty: the level (Po), depth (P1), and severity (P2) (also known, respectively as incidence, inequality, and intensity) of poverty. The FGT formula used to measure overall poverty is shown in the following equation of measures proposed by Foster, Greer, and Thorbecke (1984).

$$P_{\alpha} = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-xi}{z}\right)_{\alpha} \quad \text{..... (2)}$$

Where

$P_{\alpha is}$ a measure of Absolute Poverty

α equals to 0, 1, and 2 for P_0, P_1, and P_2 respectively

X_i is equal to consumption per adul tequivalent for individual i

Z is the poverty line

q is that the number of individuals earning income below the poverty line z

n is that the total number of households with in the sample

The Headcount Index (P0):

FGT (0), or the Headcount Index, measures the proportion of the population whose welfare falls below the poverty line and this measure is a member of the FGT (Foster, Greer, Thorbecke) family of poverty measures (CIESIN, 2015). The headcount index is the most ordinarily used method of estimating the incidence of poverty. This index measures the proportion of the population that is considered poor, often denoted by P0.Formally:

$$P_0 = \frac{q}{n} \quad \text{.....(.3)}$$

Where,

q is the number of poor and

n is the total population (or sample).

If 60 people are poor in a survey that samples 300 people, then P0 = 60/300 = 0.2 = 20%.

For reasons that will be clearer below, it is often helpful to rewrite equation (3) as follow:

$$P_0 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-xi}{z}\right)_0 \quad \text{.....(4)}$$

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-xi}{z}\right) \qquad \frac{1}{n}q = \frac{q}{n} = H \quad \text{.....(5)}$$

The head count index measures the proportion of the population falling below the poverty line and the greatest virtues of the headcount index are that it is simple to construct and easy to understand.

However, the measure has a minimum of three weaknesses: First, the headcount index does not take the intensity of poverty underconsideration. Second, the headcount index does not indicate how poor the poor are and hence does't change if people below the poverty line become poorer. Third, the poverty estimates should be calculated for people, not households.

The Poverty Gap Index (P1):

The poverty Gap Index (P1) represents the population average consumption deficit about the poverty line. The index shows the total amount necessary to be allocated to increase the incomes of all the poor up to the poverty line (NBS, 2015). (M. Ravallion, 1992) indicated that the poverty gap index is the average share of the minimum standard of living, which the poor are lacking. He also described it as the total income shortfall needed to eradicate poverty. This can be calculated as follows:

$P_1 = \frac{1}{n}\sum_{i=1}^{q}\left(1-\frac{xi}{z}\right)_1$ rearranging it, the equation can be written as:

$$P_1 = \sum_{i=1}^{p}(z - yi) \quad \text{.....(6)}$$

The Severity (Squared Poverty Gap) Index (P2)

The squared poverty gap index is used to measure the severity of poverty that is the degree of inequality amongst the poor themselves. This index is a weighted sum of poverty gaps (as a proportion of the poverty line), where the weights are the proportionate poverty gaps themselves. The act of squaring the poverty gap gives greater weight to the poverty gap of the poorest households since their poverty gap will be larger (SESRIC, 2015). To construct a measure of poverty that takes into account inequality among the poor, some researchers use the squared poverty gap index. Formally

$P_2 = \frac{1}{n}\sum_{i=1}^{q}\left(1-\frac{xi}{z}\right)_2$ Or..... ..... (7) .

$$P_2 = \sum_{i=1}^{q} (z - yi)2$$

The measure lacks intuitive appeal, and because it is not easy to interpret it is not used widely. It may be thought of as one of a family of measures proposed by Foster, Greer, and Thorbeck(1984).

2.1.2 Microfinance

Microfinance is the form of provision of a large variety of economic offerings to low-earnings micro-companies and families. It is a shape of economic improvement that has centered on assuaging poverty thru supplying economic offerings to the terrible (Robinson, 2001). According to Robinson (2001) microfinance facilitates low-earnings human beings lessen the risk, enhance management, increase productivity, achieve better go back on investment, boom their earnings, and enhance the fine in their lives and people in their dependents. Accordingly, microfinance packages have currently been taken into consideration as a crucial tool to gain the poverty discount objectives. In maximum studies papers, the phrases microcredit and microfinance are regularly used interchangeably, however, it's miles crucial to spotlight the distinction among them due to the fact each phrase is regularly confused. The major distinction amongst phrases is set the variety of offerings and the centered clients. For example, (ADB,2000) defines microfinance because the provision of a large variety of economic offerings consisting of loans, deposits, fee offerings, cash transfers, and coverage to terrible and low-earnings families and their micro-companies. In general, Microfinance is a broader period than microcredit and covers economic offerings that offer an extra scope of gettingthe right of entry to the terrible. Microfinance additionally consists of offering entrepreneurial talents and training, at the side of recommendation on many topics for a higher residing consisting of health, vitamins, instructing kids, and enhancing residing conditions. Tolosa (2011) states that maximum human beings think about Microfinance as supplying very small loans to marketers to begin small businesses. This is what's called Microcredit and bureaucracy a massive part of what's taken into consideration to be Microfinance however, as referred to above; microfinance is

the supply of a large variety of economic offerings to the terrible, along with the credit.

2.1.2 1 Emergence of Microfinance Institutions

Since the conventional financial establishments have did not attain the poorest of the poor of the population; microfinance emerged as a cap potential device to fill the gap b/n financial establishments and needy human beings. The beginning of microfinance is traced lower back to the early 1700s whilst Jonathan Swift, an Irishmen, had the concept to create a banking gadget that could attain the poor. He created the Irish Loan Fund, which gave small brief-time period loans to the poorest human beings in Ireland who had been now no longer being served through business banks, in hopes of earning profits inside the rural regions of Ireland (Jennifer, 2010).

In the 1970s comparable banking structures confirmed up throughout Europe concentrated on the agricultural and concrete poor. Friedrich Raiffeisen of Germany found out that the poor farmers had been being taken benefit of through mortgage sharks. He mentioned that beneathneath the contemporary lending gadget, the poor could by no means be capable of creating wealth; they could be caught in a cycle of borrowing and repaying without ever making private financial improvement. Finally, he based the primary rural credit score union in 1864 to interrupt this trend. In the Nineteen Fifties donors and authorities' subsidies poor been used to fund loans on the whole for agricultural people to stimulate financial boom however those efforts had been brief-lived. The loans had been now no longer attaining the poorest farmers; they had been regularly finishing up inside the palms of the farmers who had been higher off and didn’t want the loans as severely as others. Funds had been being lent out with a hobby charge a lot beneathneath the marketplace charge and there had been now no longer sufficient budget to make this feasible lengthy-time period. These loans had been hardly ever being repaid, so the banks’ capital became depleting fast, and whilst the sponsored budget ran out, there has been no extra money to pump into the rural economic system with inside the shape of micro loans (Jennifer, 2010). In the Seventies, the largest trends in micro finance occurred. Grameen

Bank in Bangladesh commenced off as an action-primarily based studies assignment through a professor who carried out a test credit score software. This nonprofit software dispersed and recovered lots of loans in masses of villages. The professor attempted to increase this concept to different bankers in Bangladesh, however, they had been afraid that it became too volatile as an enterprise and became down the offer. However, nowadays Grameen Bank is one of the international's biggest microfinance establishments with over 7.9 million debtors in 2011 and Grameen way rural or village in Bangladesh language (Tolosa,2011).

2.2 Empirical Literature

2.2.1 An overview of Poverty in Ethiopia

Ethiopia has a subsistence agriculture ruled economic system and a maximum of Ethiopians stay in far-off rural regions in persistent poverty. The first putting function of the economic system is how small the mixture fee of products and offerings produced with inside the nation. As of 2010/11, the critical statistical employer stated that the Gross Domestic Product (GDP) became Birr 506.08 billion (approximately US$25.95 billion) 1 (Abu, 2013). By any standard, Ethiopia is one of the poorest nations inside the international. Poverty in Ethiopia manifests in some methods and this, in truth, is attributed to a large number of interrelated elements. (Bisrat, 2011) For example, has recognized those elements as inadequate supply of earnings, loss of asset/skill, poor fitness fame, bad academic degree, and backward mindset of human beings toward work. These elements in a single or every other manner have a direct or oblique impact on the existing standard of human beings. For example, loss of earnings effects in discount of expenditure pattern, bad fitness results in being unproductive, absence from work, much less lively, loss of schooling effects in loss of skill, helplessness and so on. Although those elements are believed to be universal, there are glaringly a few variations among the causes, processes, and outcomes of poverty in most of the city and rural societies. Roughly 29.6 consistent with cent of the

populace lives beneathneath the country-wide poverty line. However, there are marked variations among rural and concrete regions.

Poverty in Ethiopia is greater reported inside the rural regions in comparison to the regions, with a uniform distribution. The state of affairs worsened lately due to sharp will increase with inside the expenses of food and fertilizers on international markets, which made it greater hard for poor families in Ethiopia. Most rural families stay on each day consistent with capita earnings of much less than US$0.50.

Generally, rural families have much less get admission to maximum important offerings. According to the present day Poverty Assessment, normal development in decreasing poverty due to the fact 1992 falls brief of what's required to satisfy MDG through 2015 because of excessive variability in agricultural GDP and fast populace boom. Most rural families are locating it an increasing number of hard to live on without recourse to seasonal or everlasting urban migration on the lookout for salary employment

2.2.2 Overview of Microfinance establishments Development in Ethiopia

Microfinance improvement in Ethiopia is the latest phenomenon in institutionalized shape. But it has a protracted record in one of a kind bureaucracy. The Government's efforts of turning in monetary offerings specifically credit scores to boost up socio-financial improvement in Ethiopia might also additionally date lower back to the on-the-spot submit Italian career duration with the status quo of the Ministry of Agriculture in 1943 and Agricultural Bank of Ethiopian in 1945.The major goal of the Bank became to help small land holders whose farms have been devastated in the course of the Italian career thru loans to buy agricultural inputs and repaired houses (Abebe, 2006). During the Dergue regime, a huge proportion of credit scores became given to the country region and marginalizing the personal region and the bad. Due to this, the personal region along with the bad became pressured to rely upon self-financing and non-institutional credit score. During the 1986-ninety the

proportion of home credit score to the personal region and cooperatives averaged four.7 and 1.1 percentage respectively and the relaxation going to the authorities and public region (Wolday, 2001). NGOs had been turning in remedy and improvement offerings like emergency meals, fitness, schooling, and water in Ethiopia due to the fact Seventies. Following the failure and unsustainability of monetary offerings through NGOs and governments, a proclamation that offers for the status quo of microfinance establishments became issued in July 1996. Since then, diverse microfinance establishments have legally been registered and commenced turning in microfinance offerings.

2.2.3 Saving and Credit desires in Ethiopia

The Need for a credit score could be very excessive for most of the poor in Ethiopia. According to Mubarak (2006) quoting Renee Chao et.al (2000) economically energetic poor human beings in Ethiopia who can probably get admission to financial offerings are approximately 5.2 million. However, it needs to be mentioned that nowadays Microfinance establishments (MFIs) meet the simplest much less than 20 percent of the call for the monetary carrier of the poor inside the united states of America (Ayelech, 2011). In the case of rural vicinity, the terrible calls for credit score essentially for four reasons: -First, women and small businessmen in rural and urban vicinity want brief-time period credit score for his or her petty buying and selling or different earnings producing activities. Secondly, Innovations in farming like progressed seed and fertilizers will increase the capital necessities of the farmer. Thirdly, maximum rural families stay at subsistence degree and therefore, no surplus may be used for the destiny and for this reason they want credit score to bridge the space of meals shortage, for intake smoothing. Lastly, People additionally want credit score to satisfy their social responsibility like weddings, holidays.

Similarly, the want for saving is excessive regardless of the extensive unfold perception that the poor cannot store. One can study that quite a few saving is taking vicinity in one of a kind bureaucracy in rural and urban regions which are at risk of risks. People store for diverse purposes: to manipulate their daily residence maintain finance, as coverage for the surprising crisis, to satisfy social

duties, and to build up for destiny desires. People store outdoor monetary gadgets in lots of bureaucracy, along with Jewellery, animals, grain (Dilayehu, 2010). These types of savings are very volatile as they're subjected to pests, disease, theft, drought, and loss. As a result, there is a right floor to mention that human beings will take the possibility of saving in monetary phrases whilst being poor independent on microfinance establishments.

2.2.4 The Intermediary role of Microfinance Institutions

Almost all microfinance establishments (MFIs) with inside the international recognition in making credit score to rural and urban poor families' unemployed, underemployed, and small entrepreneurs. They emphasize first in growing earnings activties through imparting severely wished credit score centers and technical help to the poor after which on saving mobilization. Like their opposite numbers in different a part of the international, the mission of OCSSCO Microfinance Institution (OMFI) that is working with inside the maximum Oromia local a part of Ethiopia, is getting access to credit score with the intention of poverty eradication.

Financial improvement performs a critical position in poverty discount. Microfinance is appealing and has been prevalent as a critical device to assist the poor in enhancing livelihoods, decreasing vulnerability, and fostering social in addition to financial empowerment (Lousie, 2002). As Wolday (2003) states the shipping of monetary offerings had been prevalent as one of the poverty discount gear inside the improvement paradigm; as it enables the poor to grow earnings, enhance academic and fitness fame if it's far found out appropriately.

It is assumed that poor families lack get admission to good enough monetary offerings for green chance coping. Without a little monetary help, those families do now no longer have many potentialities for growing their productiveness and residing fashionable in a sustainable manner. Because conventional monetary regions do now no longer have a hobby in lending to poor families because of loss of feasible collateral and excessive transaction costs (Yitay,2011). Microfinance packages aiming at imparting monetary offerings to those who are excluded from the conventional monetary region had been released in lots of

growing nations along with Ethiopia. Still in Ethiopia, loss of getting admission to finance is one of the essential troubles impeding manufacturing, productiveness, and earnings as using tapered hobby fees (lowering hobby fees over numerous mortgage cycles) as an incentive to pay off on time and no collateral are needed opposite to formal banking practices. Instead of collateral, microfinance intermediaries use opportunity methods, like, the checks of customers' reimbursement cap potential through using social facts in preference to coins go with the drift analyses. In Ethiopia, microfinance organizations became brought as a part of the authorities' poverty remedy techniques aiming at facilitating rural credit score get admission to through rural families and gambling an extra position with inside the Millennium Development Goals agenda (Ayelech, 2011). Microfinance nowadays unfolds all around the united states of America and commenced to present offerings like provision of credit score for rural and urban families and small businesses, accepting deposits, drafts,and public financial savings.

2.2.5 Determinants of Household Microfinance Participation

The study of (Mpuga(2020)confirmed that the age of an individualis undoubtedly associated with the choice to use for credit score and the quantity of credit score implemented. The younger and lively people with objectives to earn better earning and amplify funding or engaged in one of kind activities are anticipated to be greater energetic interms of saving to build up sufficient capital. The older is probable to depend greater on their beyond financial savings and accrued wealth for intake. He in addition said that the younger might also additionally tend to store and/or borrow greater for diverse activities even as the antique can be much less. Those in the medium age have a fine and huge call for even as the antique are much less willing to call for credit score. However, opposite to his findings, the take a look at the result through Tang et al. (2010) proved that antique farmers are much more likely to borrow than more youthful farmers. This is due to the fact older farmers have a greater social community or social capital and, thus, have greater get admission to the credit score marketplace. The take a look at through (Nwaru, 2011) in Nigeria contradicts this

result and proved that the age of the character does now no longer have an impact on credit score calls for.Women's acquisition of capital is confined through social identities. In rural regions, there's gender segregation of activities. Women who step outdoor conventional gender roles through taking a greater unbiased and entrepreneurial technique of their financial lives might be blamed with the conventional construction of gender and activity regulating social norms.If these norms are strong enough such women might also additionally explicit no call for credit score even if they have got worthwhile funding possibilities. If they do, the society will item them questioning that women who actively have interaction in marketplace-orientated activities aren't capable of taking good enough care in their domestic responsibilities (Fletschner& Carter, 2008). As a consequence, the possibility of worrying about a mortgage inside the formal monetary establishments negatively correlated with being lady headed family (Bendig et al., 2009; Newark,2011.

Bendig et al. (2009) make use of a complete survey in Ghana to discover the viable drives that affect the one-of-a-kind sorts of families' participation in monetary offerings. Results from a multivariate probit regression technique confirmed in evaluation to their expectations. Household length became anticipated to negatively affect the call for credit score. This is because of the truth that the bigger families (assumed to include greater kids and aged human beings and now no longer families with greater economically energetic adults) are probable to devour a huge proportion in their earnings and feature much less collateral (Tang et al., 2010).

The result, however, found out fine have an effect on of family length on worrying microcredit as large families are greater uncovered to surprise (e.g., illness) from the better quantity of residence maintain members. Tang et al. (2010) indicated schooling as certainly considered one among critical variables that affect families' call for credit score. In their locating it became viable to reveal that an extra yr of schooling through head could grow the possibility of borrowing through every other 2.5 percentage and doubling land endowment could growth the possibility through 5.6 percentage. However, the effect of those elements became now no longer identical instead it varies substantially through

sort of monetary establishments (formal or casual). For example, even as schooling will increase families' possibility to borrow from formal credit score markets, it decreases or does now no longer affect the casual credit score call for at all. But this isn't always usually true. Chen &Chiivakul (2008) argue that schooling, at number one and secondary degree might also additionally affect on undoubtedly, however, at 4-yr college degree, schooling has a poor however insignificant impact. This may want to mean that pretty knowledgeable people already experience excessive earnings and wealth and feature little want to borrow. Bendig et al. (2009) tested that higher-knowledgeable heads are probable to apply credit scores from formal monetary offerings. Households' credit score call for became extensively laid low with transaction costs. In a rural village, people lack facts approximately the time and transportation price (Zeller et al., 1997) which will increase their price of getting access to credit score. For example, Tang et al. (2010) found out that greater kilometers of distance between the village and the closest financial institution could lessen the possibility of borrowing from the financial institution by 1%. In opposite, the take a look at through (Mpuga, 2004) failed to reveal concrete proof approximately the effect on of distance on call for credit score. Individuals might also additionally preference a better debt even as they're in an excessive contemporary earnings degree and this can be the character's rational choice as those people have better destiny earnings expectations (Chen &Chiivakul, 2008).

The different clarification is additionally, whilst earnings could be very low, the marginal application of intake could be very excessive, main to robust call for of credit score. In addition, people much more likely to borrow when they collect a few properties which function as collateral. Similarly, (Magri, 2002) argued that internet wealth, as a trademark of a family's contemporary and destiny endowment, is an important determinant of credit score calls for. When endowment grows, families can mechanically finance an extra proportion in their preference intake and their call for credit score might also additionally lower. At the intermediate degree of wealth, however, growth in endowment can grow the intake desires and for this reason, the call fora mortgage will increase. In the take a look at, it became determined that the fee of the property has a huge and fine

impact on the preferred debt. But at most degree, the relation among calls for credit score and the fee of asset and preferred debt became determined poor (Chen &Chiivakul, 2008). The asset of the family is a critical detail family soak up to attention whilst borrowing choice is made. To this respect, the take a look at (Duflo et al., 2008) indicated that the number of farm animals owned has a poor have an effect on worrying credit score as families want no greater capital. But the findings of (Mpuga, 2004) and (Mpuga, 2008) contend that it isn't always the quantity of the property instead of the fee of property (e.g., building, land) owned through family and different living that strongly affect calls for credit score.

The take a look at through (Bendig et al., 2009) concluded that asset endowment and regular (formal) employment fame decorate monetary carrier uptake. Households, who get hold of remittances, additionally do now no longer display calls for micro-credit scores. This helps the good-sized assumption that poorer families are much more likely to be excluded from the formal monetary region than higher-off families (Mohieldin& Wright, 2000; Nguyen, 2007). The result additionally indicated that debtors had been characterized through excessive and constant earning and awesome property (that may function as collateral). Since families' motivation for the call for monetary offerings ranges inside the identical supply, it's far hard to finish that the impact of sure determinants has always the identical significance for credit score or saving call for. Households can call for credit score for earnings generations, or earnings and intake smoothing, or others. Thus, a family who studies a surprise can much more likely call for a credit score than a family who needs a credit score for saving.

The simplest exception, dependency ratio, which does not affect call for, confirms the findings of Nwaru (2011). Events that undoubtedly affect credit score called for had been migration or loss of life of an own circle of relatives member, a horrific harvest, fine however highly-priced social activities which include marriage and circumcision. However, theeffect of those elements differs relying upon the supply of the credit score. For instance, income earnings as a salaried worker; ill days, and distance from the village undoubtedly have an effect on call for credit score from the casual supply. The findings in India confirmed that skill, possibilities from off-farm investments, and the career of the people are

key elements influencing debtors to get a mortgage from microfinance (Chaudhuri, 2011). Another thing that influences the call for a credit score is the chance degree inside the house vicinity. If the extent of the heritage of financial chance is stronger, the client is probably much less willing to invite for a mortgage. The chance mindset of the character inside the composition of the monetary portfolio is stated to be similarly affecting credit score calls for. However, figuring out calls for elements isn't always a panacea to research the credit score marketplace in growing nations. It is similarly critical to discover determinants that affect farmers in getting access to farmers in accessing credit scores.

2.2.6 Empirical Evidence on Impact of Microfinance on Poverty Status of Household

Despite the growing importance of microfinance provision to developing significance of microfinance provision to the effective bad human beings, there are just a few research carried out inside the vicinity, mainly on microfinance effect evaluation, in Ethiopia. Moreover, the research carried out is targeted at the effects from the deliver facet perspective,i.e., overall performance from the views of lending establishments. (Wolday, 2002) additionally studied the demanding situations and potentialities of the latest product improvement inside the microfinance enterprise in Ethiopia. His effects confirmed that merchandise of microfinance establishments had been now no longer produced primarily based totally on marketplace evaluation to satisfy the want and desire of the customers even as maintaining the monetary establishments worthwhile.

This has therefore affected dropout fees, outreach, and lengthy-time period targets of the packages. As some distance as microfinance effects are concerned, diverse researchers had been recording a few fine effects. For instance, Mengistu (1998) carried out a take a look at credit score carrier management beneathneath the microenterprise assignment. He mentioned that the growth inside the number of software beneficiaries became a trademark of the help of this system to employment creation. He additionally indicated the growth inside the degree of credit score ceiling in addition to using saving debts as signs of the boom of

microenterprises toward the formal region.

In a greater latest take a look at, Banerjee et al. (2015a) look at whether or not a multidimensional commencement software aimed toward the intense bad can assist them to set up and preserve self-employment sports even as generating lasting enhancements on their well-being. Over the years 2007 to 2014, randomized trials in six nations; Ethiopia, Ghana, Honduras, India, Pakistan, and Peru, had been carried out. Over ten thousand families from eligible villages tormented by intense poverty inside the six nations had been decided on. After twelve months from beginning this system, the effects from all websites confirmed fine effects of this system on intake, meals protection, property, earnings and sales, bodily and intellectual fitness, political involvement, and girls empowerment. The fine effect on intake, meal protection, and property improved twelve months later (after 3 years from beginning the intervention). The fine effect on earnings and sales and intellectual fitness declined but remained undoubtedly huge after twelve months from accomplishing the primary cease line survey even as the effect on bodily fitness and girls empowerment declined and have become even insignificant. Despite the versions in impact after twelve months from finishing this system, the effects mean that it's far viable to enhance the financial fame of the poor (mainly in intake, meals protection, and asset ownership) in a tremendously brief duration of time.

In latest, Prathap et al. (2018) carried out the take a look at on effect of microfinance on the poverty of rural families in case of India and from their take a look at, they have got come to the conclusions that there's a substantive and fine effect of microfinance sports at the residing requirements, empowerment and poverty remedy most of the bad human beings specifically with inside the rural backdrop. Another critical take look at became carried out through Razan (2017) in Ramallah, Palestine at the effect of microfinance on poverty remedy. The take a look at unearths that longer involvement in microfinance packages will increase the Odd Ratios of perceiving enhancements in earnings, consistent with capita intake expenditure, social empowerment in addition to enterprise sales, income, and capital. In evaluation, they take a look at unearths that better hobby fees

lower the Odd Ratios of higher-perceived family earnings, consistent with capita intake expenditure, nutrition, schooling, housing conditions, social empowerment, and income. They take a look at additional unearths that the fee of microfinance loans (log-transformed) decreases the Odd Ratios of earnings, intake, schooling, and fitness care. Furthermore, the Odd Ratio of higher-perceived get admission to fitness care is determined to grow with the number of microfinance loans.

George (2009) used PSM as a good way to determine the impact of microfinance on smallholder farmers in Africa. The major goal right here became to evaluate whether or not families with a credit score are higher off as in comparison to the ones without. Results found out that participation in microfinance credit score improves family effective earning through more than a few among the USA $two hundred to USA$ 260 in an unmarried manufacturing duration. Additionally, Laura and Gloria achieved effect evaluation on conditional coin switch packages the use of propensity rating matching techniques in Colombia, Mexico, and Nicaragua confirmed that this system is a powerful way for selling human capital accumulation amongst bad families (Laura & Gloria, 2005). In particular, they indicated surely that this system is successful in growing faculty enrolment fees, enhancing preventive fitness care, and elevating family intake.

Birhanu (2018) additionally look at the studies to take a look at the effect of microfinance on poverty discount in Hossana metropolis, SNNPR, Ethiopia. The take a look at particularly primarily based totally on number one information acquired from two hundred randomly decided on pattern families from organization statistics consisting ninety OMFI software individuals and 110 non-player families the use of a structural questionnaire.

To estimate the effect of microfinance in poverty deminission PSM is used to create a similar pair of remedy- manage families because of the absence of baseline information. Based on this take a look at the researcher concluded that participation in Omo MFIs at Hossana metropolis had introduced fine and huge effect concerning to overall earnings, overall saving, mixture expenditure of player family as in comparison to non- individuals. Further, the researcher argues

that as some distance as ATT result became the simplest impact of the intervention, program intervention reduces poverty at family degree. The different effect evaluation in the associated vicinity is the only which carried out through Reda (2016) at the effect of microfinance establishments on poverty remedy in the case of Ethiopia. The précis of the findings at the survey shows that during maximum parameters, clients reaction evidenced that the microfinance software is contributing loads at the family degree poverty discount.

Tadele et al. (2018) took at taking a look at entitled “studying the effect of credit score on rural families’ earnings in case of cheliya district, west shewa zone, Oromia Regional state, Ethiopia. This takes a look at has targeted on inspecting the effect of microfinance at the earnings of player families in comparison to non-player families the use of cross-sectional information from each number one and secondary sources. Propensity score matching (PSM) version became used on this take a look at due to the fact propensity rating matching technique is normally used with non-experimental technique and the technique enables to manipulate pre-intervention distinction at the covariates a good way to reduce the choice bias of the pattern families. According to this take a look at, the impact of microfinance on rural families’ earnings became better for the participants than non-participants. The result of this takes a look at indicated that participation in microfinance credit score carrier has had a fine and huge effect on the whole family annual earnings

Tadele et al. (2018). Fitsum and Holden (2005) indicated that families’ participation in microfinance offerings has introduced fine alternate in consistent with capita intake expenditure however now no longer statistically huge. The effect on off-farm earnings and kids' schooling became statistically huge fine alternate. However, farm animal keeping is negatively correlated with participation inside microfinance.

The take a look at what became beneathneath taken through Asmelash (2003) confirmed that the whole annual earnings of each rural and concrete debtors became improved than non-borrower families with inside the take a look at the

vicinity. His locating result additionally means that Dedebit Credit and Saving Institute has a fine effect on earnings diversification, owning a higher residence, growing assets, and enhancing cap potential to pay academic and clinical rate of player than non-player families. Likewise, Feleke (2011) analyzed the effect of microfinance offerings on the earnings of city families in the Digital Microfinance organization in the Gullele sub-city. The take a look at concluded that remedy families display better earnings development than manage customers.

Firafis (2016) in his take a look at found out that mortgage reimbursement overall performance of the debtors and the screening method which the organization follows to ration mortgage to its customers had been determined to be sound. Moreover, the result of the locating confirmed that the credit score scheme has contributed undoubtedly in phrases of enhancing the earning, get admission to schooling, get admission to fitness centers, and dietary fame of the debtors. The take a look at through Melese (2013) indicated the fine effect of microfinance on the development of family earnings, intake, employment possibilities, saving, get admission to schooling and clinical centers ofsoftware individuals. Further, the result of the take a look at indicated that the OCSSCO's micro-financing scheme has had a fine impact on enhancing the residing requirements of its customers the use of the final results variables which include earnings, dietary fame, get admission to schooling, clinical centers, saving and employment possibilities. On the opposite hand, the take a look at achieved through Taye (2014) imply that the micro-financing software has a fine impact on girls' financial empowerment as measured through the improved involvement of girls in family choice making. Moreover, the evaluation result indicated that get admission to Microfinance has recommended the financial empowerment of girls in phrases of enhancing their enterprise sports and the fame of girls at own circle of relatives and united states of America degree. Similarly, the take a look at beneathneath taken through Kebu (2017) on the effect of microcredit packages on lady-headed families in Jimma Zone confirmed that greater knowledgeable families, huge land holders, and better earnings earners participation in micro credit score software became low. The take a look at concluded that because of

microfinance software participation, the yearly expenditure for lady head families became improved.

2.3 Conceptual Framework

To visualize the influence of explanatory variables on microfinance participation as well as the Impact of MFIs in general and OCSSCO in particular in improving rural household poverty in the study area, conceptually the model of interaction between explanatory variables and Microfinance can be constructed in the framework below

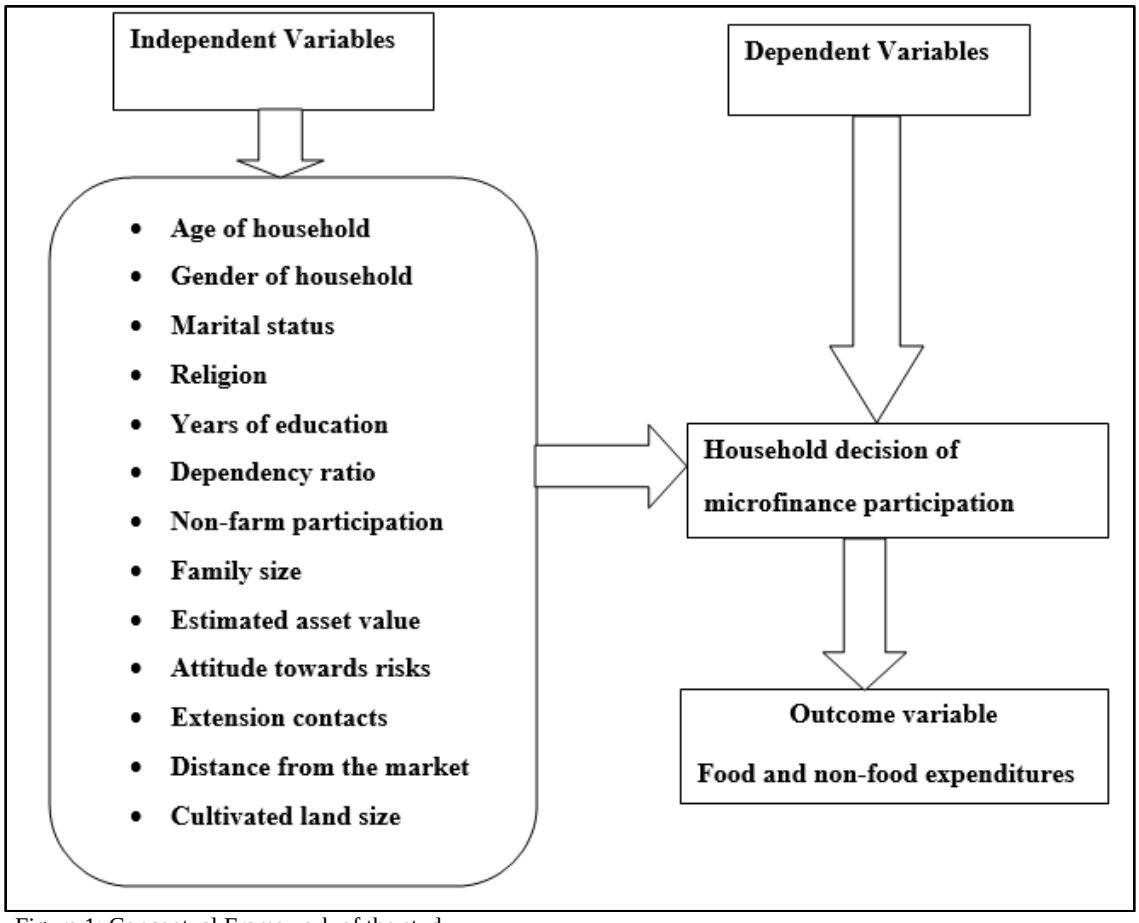

Figure 1: Conceptual Framework of the study

CHAPTER THREE

3.1 METHODOLOGY OF THE STUDY

3.1.1 Description of the Study Area

The study was conducted in Oromia National Regional State in the Jimma zone of Chora Boter district (Figures 2 & 3). It is bordered on the south by LimmuKosa, on the east BoterTolay, on the west by LimmuSeka, on the north by Dano district of West Shewa Zone, and on the northwest by NonoBenja district.

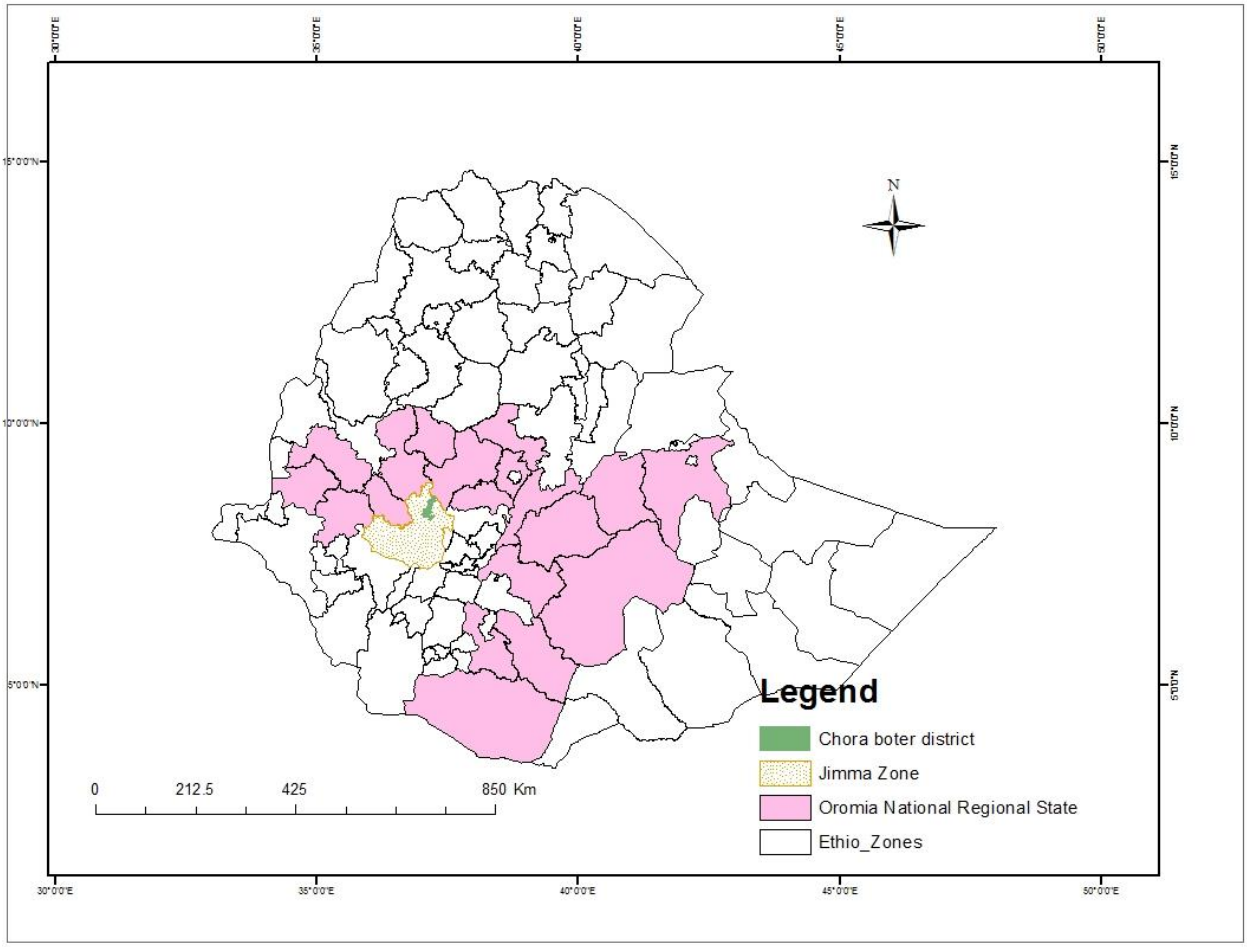

Figure 2: Map of the study area

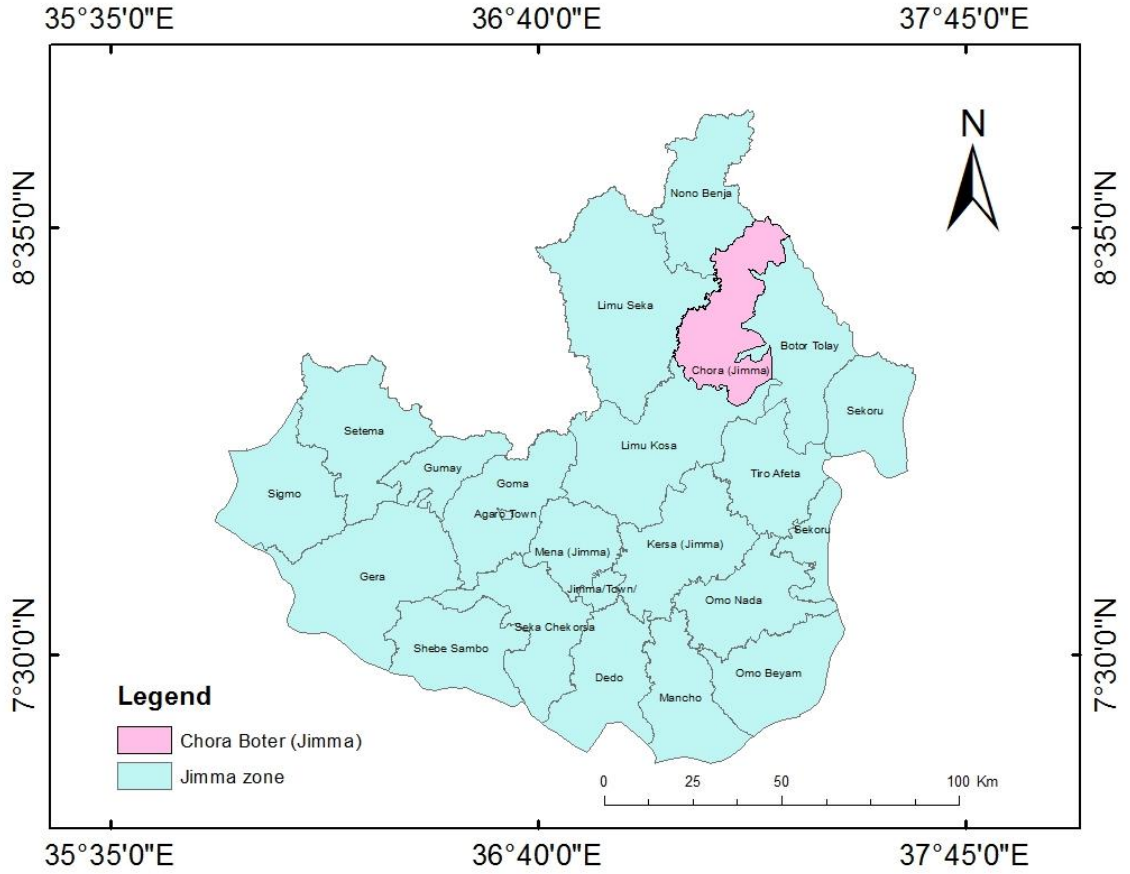

Figure 3: Location of ChoraBoter in Jimma Zone

Chora Boter is one of the 22 districts of Jimma Zone in Oromia. It is located about 112 km from Zonal capital Jimma and 447 km from the national capital, Addis Ababa. The district lies within an altitudinal range between 1800 to 2800 meters above sea level. The temperature of the area ranges between 14 and 28 with an average mean annual temperature of about 21. The mean annual rainfall is 1800-2200 mm. (CSA, 2015). This district is located at latitude and longitude.of 8018'-8039'&37^{0} 6"-37' respectively.

According to the Central Statistical Agency (CSA, 2015), this district has an estimated total population of 91,738 of which 45,284 are men and 46,454 are women; and 1,043 or 1.14% of the population are urban dwellers, the crops grown in this district include maize, teff, wheat, sorghum, enset and fruits like banana, papaya, and avocado. Coffee is an important cash crop in this district and over 47,000 hectares of coffee in the district were planted. ChoraBoter has an estimated cattle population of 244,240, sheep 26,412, goats 40,045,horse2534,

mule 15,690, donkey 18,915, and poultry 25,000(CSA, 2015).

3.2 Sample Size Determination and Sampling Techniques

The survey was conducted on a respective sample of respondents from ChoraBoter district, the target population of the study is the households in the study area and the sample was taken from **3732** households in the sampled kebeles of the Woreda. The selection was conducted randomly. Three stages sample design procedure will be adopted for the survey.

The first stage was the selection of sample branch(ChoraBoter) of the OCSSCO from twenty-four branches in the Jimma zone based on the time spent in the program that is a branch of long duration. In the second stage, using the purposive sampling method from three kebeles. Thirdly, sample respondents will be selected through simple random sampling as participant and non-participant and the selection of sample respondents from three kebeles and distinction of sample households as participant and non-participant is based on proportion to size. The total sample size is 326 of which 203 will from non-participant who make up the control group. Finally, probability proportional to the size will be employed to select 123 households from participants and 203 households from non-participants which constitutes the size of the sample to 326 from selected kebeles.

The required sample respondents were determined based on Cochran (1977)'s the formula of proportion given by:

$$n_o = \frac{Z^2 pq}{e^2} \quad \text{.....(1)}$$

Where n_o is the sample size,Z is the selected critical value of desired confidence level,

p theestimated proportion of an attribute that is present in the population,

q = 1 – p, and e is the desired level of precision level.

In this study, it is observed that maximum variability is equal to 63% (p = 0.63),95% confidence level with5% precision level. Then the required sample size was as follows

P = 0.63 and hence q = 1 – 0.63 = 0.37; e = 0.05; z = 1.96

$$n_0 = \frac{Z^2pq}{e^2} \qquad \frac{(1.96)^2(0.63)(0.37)}{(0.05)^2} = 358 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots ... (2)$$

To calculate the final sample size, the correction formula of Cochran (1977) which is suggested for a finite population that reduces sample size slightly is given below:

$$n = \frac{n_0}{1+\frac{n_{0-1}}{N}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .... (.3)$$

$$n = \frac{358}{1+\frac{357}{3732}} = \frac{358}{1+0.0956594} = \frac{358}{1.0956594} = 326$$

Table 1: Sample size allocation of the selected kebeles

Selected Kebeles	Number of Households in the kebele	Participant households	Non participant households	Sample selected from kebele	
A/Menta	1146 (30.7%)	380 = 34%	766 = 66%	100	34 from client
					66 from non-client
K/D/Golu	1153(30.9%)	425 = 38%	728 = 62%	101	38 from client
					63 from non-client
M/Dirre	1433 (38.4%)	566 = 41%	867 = 59%	125	51 from client
					74 from non-client
Total	3732 (100%)	1371	2361	326	326

Source: Own computation of proportion to the size

The total number of households in 19 kebele is about 27215 and 3732 households are the target population of the selected three kebeles in the district. Accordingly,

a total of 326 sample households were randomly selected from three kebeles. Three kebeles were purposively selected due to their duration with the services of OCSSCO and their relatively greater number of clients. Then the respondents were selected using a simple random sampling method within each stratum.

3.3 Sources and Types of Data

Both primary and secondary data were used for this study. The primary data needed for the study was obtained from randomly selected rural households of Chora bother woreda. The types of data which was generated through the various data collection instruments from these sources are quantitative and qualitative data. Secondary sources of data are government policy documents and reports, poverty research reports from the research journals, books, and magazines, policy documents and working and discussion papers of various institutions and from the zonal and woreda administration offices, and woreda microfinance.

Then,a structured household questionnaire was administered to 326 sample households of participants and non-participant in the selected kebeles. In doing so, training was given to enumerators about the questionnaire, and follow-up was made to ensure that the process of data collection was smooth. The survey questionnaire was pre-tested before full-scale data collection to clarify issues in the questionnaire.

3 .4 Method of Data Analysis

Both descriptive and statistics and econometric models were used for analysis. Econometric models were used to analyze the empirical data collected from the sample population for this study.

3.4.1 Descriptive Analysis

Descriptive statistics such as mean, standard deviation, percentages, pie charts, graphs, and cross-tabulations were used in analyzing the data.

3.4.2 Econometric Analysis

Data analysis followed upon completion of data coding and organizing. The STATA 14 version is the statistical software that was used for analyzing the data. The Logit and PSM models were used for the sake of microfinance participation determinants and evaluation of the impact of microfinance on rural household poverty respectively in this study. The following methodologies are employed in analyzing the extent of poverty, participation determinants of microfinance, and impact assessment of OCSSCO microfinancing scheme on the poverty of rural households.

3.4.2.1 Approaches to Measure Poverty situation in the study area

The poverty line is the starting point of every point of analysis, below which a household was classified as being poor and above which a household was classified as being non-poor. Income or consumption is traditionally used to measures material deprivation (Busisa, 2011). According to Jonathan and Shahidur (2009) especially consumption rather than income is viewed as the preferred welfare indicator because consumption better captures the long-run welfare level than current income. Consumption may better reflect households' ability to meet basic needs. Income is merely one of the elements that allow consumption. Consumption reflects the ability of a household access to credit and saving at times when their income is very low. Hence, consumption reflects the particular standard of living (welfare). In most developing countries, the income report of households is likely to be understated compared to the consumption expenditure report (MoFED, 2012). Income is so erratic and seasonal that it is going to be very difficult for respondents to recall. Hence, many of the income poverty measures (such as the head count ratio, poverty gap ratio, and therefore the squared poverty gap ratio) use consumption instead of incomewith in the conduct of poverty analysis (Mohammed, 2017). This is the reason why consumption as an indicator of welfare and cost of basic need approach (CBN) using per adult equivalence to fix the poverty line of the households in the study area is used in this paper.

Consumption to be an indicator of a household's welfare, it has to be adjusted for the difference with in the calorie requirement of various household members (for

age and gender of adult members). This adjustment could be made by dividing real household consumption expenditure by an adult equivalent scale that depends on the nutritional requirement of every family member. The adult equivalent scale must therefore be different for different age groups and therefore the gender of adult members. Besides, household consumption may have to be adjusted for differences in prices across regions and for a different point of time to take care of the difference in the cost of basic needs across space and over time. Total poverty here refers to an aggregate measure of poverty that takes under consideration both the food and non-food requirements. Here it's worth noting how poverty lines are established.

The most widely used method of estimating the poverty level is that the cost of basic needs method because the indicatins are going to be more representative and therefore the threshold are going to be consistent with real expenditure across time, space,and groups. According to this approach, first the food quantity consumed by respondents is defined by choosing a bundle of food typically consumed by the poor. The quantity of the bundle of food is determined in such a way that the bundle supplies the predetermined level of minimum caloric requirement (2200 kilocalories). This bundle is valued at local prices or at national average prices to get consistent household annual consumption expenditure. Then a specific allowance for the non- food goods consistent with the spending of the household is added to the food expenditure.

To do so the study considered the commonly used national poverty line of 5220.00 Ethiopian birr expenditure per adult equivalent as a benchmark. The households having consumption expenditure level per capita under the national poverty line that is needed to fulfill his/her basic need for food and non-food goods were considered poor in the current analysis. This minimal level of consumption is differently called the ‘poverty line’ and is a margin that represents the breaking point among poor and non-poor. This is called the absolute margin of poverty.

2.4.2.2 Determinants of the Household Microfinance Participation

The most commonly used probability models are logit or probit which preferred

to Linear probability Model (LPM) because there are certain problems associated with the estimation of LPM such as the result of the linear probability model may generate predicted values less than zero or greater than one, which violates the basic principles of probability. In addition, the LPM is encountered with the problem of non-normality of disturbance term and questionable coefficient of the goodness of fit (R2), heteroscedastic variances of the disturbances. The study employed a binomial logistic regression model given that the dependent variable is dichotomous: 0 when a household is a nonparticipant and 1 when a household is a participant. Predictor variables are a set of socioeconomic and demographic status indicators of the household. They contain both dichotomous and continuous variables.

The choice of the logit model is premised on the fact that ordinary least squares assume a continuous dependent variable while in the case of participation the response is a binomial process taking the value 1 participant and 0 for non-participant (Gujarati &Porter, 2009). Every model has its strong point and weaknesses, but in this study logit model was preferable to the probit model as it has more reasonable feature such as simplicity: The equation of the logit CDF is very simple, while the normal CDF involves an unevaluated integral and interpretability: The inverse linearizing transformation for the logit model is directly interpretable as log-odds, while the inverse transformation probit model does not have a direct interpretation, the logit method gives parameter estimates that are asymptotically efficient, and consistent. Indeed, the logit approach is known to produce statistically sound results. The probability of being a participant is specified as the value of the cumulative distribution function which is specified as a function of the explanatory variable (Gujarati &Porter,2009)given in the form:

$$Yi = \alpha + \beta 1X_1 + \beta 2X_2 + \beta 3X_3 + \ldots\ldots\ldots\ldots\ldots + \beta nXn + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (.4)$$

Where

Y_i = is a binary variable for the probability of rural household's participation in OCSSCOO $Y_i = 1$ if the rural household has participated in OCSSCO

α = intercept (constant term)

βi = coefficient of explanatory variables

X_i = are explanatory variables that affect the dependent variable household's participation

ε_i = is the error term

To explain the basic idea behind the Logit model, let us consider the following mathematical form of Gujarati (2004)'s the functional form of the cumulative logit model, y=1 if probability of being a participant and zero otherwise:

$P_i=E(Y=\frac{1}{X_i})=\beta_0+\beta 1X_1$.....(5)

Now consider the following expression:

$P_i=E(Y=\frac{1}{X_i})=\frac{1}{1+e^{-(\beta_0+\beta_1 x_i}}$.....(6)

For the easy of exposition we re-write the above functionas;

the easy of exposition we re-write the above functionas;

$P_i=\frac{1}{1+e^{-z_i}}=\frac{e^z}{1+e^z}$.....(7)

$Z_i = \beta_0 + \sum_{i=0}^{n} \beta_i \quad X_i+U_i$.....(8)

Under this case, the probability, Pi ranges between 0 and 1, as Zi ranges from $-\infty$ to $+\infty$, that is, Pi is non-linearly related to Zi (or explanatory variables) and also to the parameters (β's). So, the model is non-linear and thus we cannot use the OLS procedure to estimate the parameters. However, the problem of non-linearity may be resolved through log transformation as follows: If Pi is the probability of being participant, then (1− Pi), is the probability of not being participant. Thus, we have;

$1 - Pi = \frac{1}{1+e^{z_i}}$.....(9)

Therefore it can be written as;

$\frac{P_i}{1-P_i}=\frac{1+e^{z_i}}{1+e^{-z_i}}= e^{z_i}$ .....(10)

This is merely the odds ratio in favor of household participation in microfinance. The ratio of participation that a household will be a participant to the probability that it will not be a participant. Now if we take the natural log of this equation:

$$Li = Ln\left(\frac{P_i}{1-P_i}\right) = Z_i, \text{where} Z = \beta_0 + \beta_1 X_1 + \ldots\ldots\ldots\ldots\ldots + \beta_n X_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots (11)$$

Or this can also write as:

$$Li = Ln\left(\frac{P_i}{1-P_i}\right) = Ln\left(e^{\beta_{0+}\sum_{j=1}^{n}\beta_0 x_{ji}}\right) = Zi = \beta_0 + \sum_{j=1}^{n}\beta_j X_{ji} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (12)$$

Where L_i is log of the odds ratio in favor of participation in the microfinance, which is not only linear in X_j, but also linear in the parameters

3.4.2.3 Impact of Microfinance on Rural Household's Poverty

To address this objective the first task was measuring the outcome (poverty) and treatment (microfinance) variables. Microfinance participation was employed to classify the households as participants or non-participants. And a household whose expenditure for consumption less than the poverty line was considered as poor and a household whose consumption expenditure greater than the threshold (the calculated poverty line) was considered as non-poor households. After the measurement of treatment and the outcome variables, the PSM method was employed to estimate the impact of Microfinance on rural household poverty. This is because to correct the potential sample selection bias that might arise due to systematic difference between participant and non-participant rural household as used by (Titay, 2013; Zerihun, 2013; Shehua&Sidiquea, 2014; Dev et al., 2017; Osarfo, 2016; Rahut et al., 2017) for the same purpose. PSM was initially coined by Rosenbaum and Rubin (1983) and has been applied in many program evaluations. PSM matches groups based on their conditional probability of receiving a treatment given pre-treatment characteristics (Ibid). As far as this impact of microfinance participation is concerned the impact of microfinance is found by comparing the average expenditure of participant and non-participant households. In our case estimating the effect of household's participation in the OCSSCO on a given outcome (Y) is specified as:

$$\Upsilon_i = Y_i (D_i = 1) - Y_i (D_i = 0) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (13)$$

Where Υ_i is treatment effect (effect due to participation in the microfinance), Yi is the

outcome on household *i,* Di is whether household *i*,has got the treatment or not (i.e., whether a household participated in the microfinance or not).

The most important evaluation parameter is the so-called Average Treatment Effect on the treated (ATT), which concentrates solely on the effects on those for whom the program/interventions are introduced. In the sense that this parameter focuses directly on those households who participated, it determines the realized impact from the program and helping to decide whether the program is successful or not. It is given by:

$$\tau_{ATT} = E(\tau/D = 1) = E(Y_1/D = 1) - E(Y_0/D = 1) \quad \text{.....(14)}$$

This answers the question, how much did households participating in the program benefit compared to what they would have experienced without participating in the program. Data on $E(Y_1/D = 1)$ are available from the program participants. An evaluator's classic problem is to find $E(Y_0/D = 1)$. So the difference between $E(Y_1/D = 1) - E(Y_0/D = 1)$ cannot be observed for the same household. Due to this problem, one has to choose a proper substitute for it to estimate ATT. The possible solution for this is to use the mean outcome of the comparison individuals, $E(Y_0/D = 0)$, as a substitute to the counter factual mean for those being treated, $E(Y_1/D = 1)$ after correcting the difference between treated and untreated households arising from selection effect.

Thus, by rearranging, and subtracting $E(Y_0/D = 0)$ from both sides of equation (.2), one can get the following specification for ATT.

$$E(Y_1/D = 1) - E(Y_0/D = 0) = \tau_{ATT} + E(Y_0/D = 1) - E(Y_0/D = 0) \quad \text{.....(15)}$$

Both terms in the left-hand side are observables and ATT can be identified, if and only if $E(Y_0/D = 1) - E(Y_0/D = 0)$. i.e., when there is no self-selection bias. This condition can be ensured only in social experiments where treatments are assigned to units randomly (i.e., when there is no self-selection bias). In non-experimental studies, one has to introduce some identifying assumptions to solve the selection problem. The following are two assumptions to solve the selection problem.

Conditional Independence Assumption (CIA): conditional independence assumption is given by $Y_0 \pm D/X$.....(16)

Where ± indicates independence, × -is a set of observable characteristics,

Y_0 – nonparticipants. Given

a set of observable covariates (×) which are not affected by treatment (in our case, participating in OCSSCO), potential outcomes (poverty) are independent of treatment assignment (independent of how microfinance participation decision is made by the household). This assumption implies that the selection is solely based on observable characteristics (X), and variables that influence treatment assignment (program participation decision is made by the household), and potential outcomes (poverty) are simultaneously observed (Bryson *et al*., 2002; Caliendo and Kopeinig, 2008). Hence, after adjusting for observable differences, the mean of the potential outcome is the same for D = 1 and D = 0 and E (Y_0/D = 1, X) = E (Y_0/D = 0,X).

Common Support Region Assumption: The common support is the region where the balancing score has positive density for both treatment and comparison units. This assumption rules out the perfect predictability of D given ×. That is:

$0 < pr (D = 1/X) < 1$.....(17)

This assumption improves the quality of the matches as it excludes the tails of the distribution of (X), though this is done at the cost that the sample may be considerably reduced. Yet, nonparametric matching methods can only be meaningfully applied over regions of overlapping support. No matches can be formed to estimate the parameters when there is no overlap between the treatment and comparison groups. It also guarantees an individual with identical observable characteristics to have a positive probability of belonging both to the participants and control group (Rosenbaum and Rubin,1983).

3.4.2.3.1 Estimating propensity Score using binary response model

First, the propensity score was obtained using either logit or probit models to predict the probability of participation of households. According to Gujarati (1999), both provide similar results. Thus, for comparative computational simplicity logit model was used to estimate propensity scores using the household's pre-

intervention characteristics (Rosenbaum and Robin,1983) and matching is then performed using propensity scores of each observable characteristic, which must be unaffected by the intervention. These characteristics include covariates variables that influence the participation decisions and the outcome of interest. The coefficients are used to calculate a propensity score, and participants are matched with non-participants based on having similar propensity scores.

In estimating the logit model, the dependent variable microfinance participation, which takes the value of 1 if a household, participated in the program and 0 otherwise. The mathematical formulation of the logit model is as follows:

$P_i = \frac{e^{z_i}}{1+ e^{z_i}}$……………………………………………………(18)

Where

P_i is the probability of participation for the i^{th} household and it ranges from 0 to 1

Z_i is a function of N-explanatory variables which is also expressed as:

$Z_i = \beta_0 + \sum_{i=0}^{n} \beta_i X_i + U_i$………………………………………………………………………… (19)

Where i, 1, 2, 3…n, β_0 =intercept

βi = regression coefficients to be estimated or logit parameter

U_i = a disturbance term, and

Xi = pre-intervention characteristics.

The probability that the household belongs to non-participants:

$1 - Pi = \frac{1}{1+ e^{z_i}}$………………………………………(20)

Therefore, the odds ratio can be writtenas:

$\frac{P_i}{1-P_i} = \frac{1+ e^{z_i}}{1+ e^{-z_i}} = e^{z_i}$ ………………………………………………(21)

Now $\frac{P_i}{1-P_i}$ is simply the odds ratio in favor of participating in OCSSCO. It is the ratio of the probability that the household would participate in microfinance to the probability that he/she

would not participate in the program. Finally, by taking the natural log of equation (.9) the log of odds ratio can be written as:

$$Li = Ln\left(\frac{P_i}{1-P_i}\right) = Ln\left(e^{\beta_{0+}\sum_{j=1}^{n}\beta_0 x_{ji}}\right) = Zi = \beta_0 + \sum_{j=1}^{n}\beta_j X_{ji} \quad \text{.....(22)}$$

Where L_i is log of the odds ratio in favor of participation in the microfinance, which is not only linear in X_j, but also linear in the parameters.

3.4.2.3.2 Choice of matching algorithm

Estimation of the propensity score basically is not enough to estimate the ATT of interest. This is because propensity score may be a continuous variable and therefore the probability of observing two units with an equivalent propensity score is, in theory, zero. Various matching algorithms can be proposed to overcome this problem. However, Nearest Neighbor matching (NNM), Caliper Matching (CM), and Kernel Matching (KM) are commonly used algorithms. The methods differ from each other concerning the way they select the control units that are matched to the treated, and concerning the weights, they attribute to the selected controls when estimating the counterfactual outcome of the treated.

The choice of a selected method depends on the data in question, and in particular on the degree of overlap between the treatment and comparison groups in terms of the propensity score. When there is sharing overlap with in the distribution of the propensity score between the comparison and treatment groups, most of the matching algorithms yield similar results (Dehejia and Wahba 2002). Therefore, by considering these issues the best fitting algorithm was employed in this study.

3.4.2.3.3 Checking overlap and common support

Imposing a common support condition ensures that any combination of characteristics observed within the treatment group also can be observed among the control group (Bryson et al., 2002). The common support region is the area that contains the minimum and maximum propensity many treatment and control group households,respectively. Comparing the incomparable must be avoided,i.e. only the subset of the comparison group that is like the treatment group should be utlized in the analysis. Hence, an important step is to check the overlap and the region of common support between the treatment and comparison group. One means to determine the region of common support more precisely is by comparing the minima

and maxima of the propensity score in both groups. The basic criterion of this approach is to delete all observations whose propensity score is smaller than the minimum and larger than the utmost in the opposite group. Observations that lie outside this region are discarded from analysis (Caliendo and Kopeinig 2008). No matches are often made to estimate the typical treatment effects on the ATT parameter when there's no overlap between the treatment and non-treatment groups.

3.4.2.3.4 Testing the matching quality

Since we do not condition on all covariates but the propensity score, it's to be checked if the matching procedure can balance the distribution of the relevant variables in both the control and treatment groups. The main purpose of propensity score matching is not to perfectly predict selection into treatment but to balance all covariates. While differences in covariates are expected before matching, these should be avoided after matching. The primary purpose of the PSM is that it is a balancing method for covariates between the two groups. Consequently, the idea behind balancing tests is to check whether the propensity score is adequately balanced (Caliendo and Kopeinig 2008). Rosenbaum and Rubin (1983 (Dehejia and Wahba 2002), emphasized that the crucial issue is to ensure whether the balancing condition is satisfied or not because it reduces the influence of confounding variables. Standardized bias, t-test, joint significance, and Pseudo- R2commonly used to check this(Marco&Sabine,2005)there by those tests were employed for this study.

3.4.2.3.5 Sensitivity Analysis

As outlined in equation (13) that the estimation of treatment effects with matching estimators is based on the unconfoundedness or selection on observables assumption. However, if there are unobserved variables that affect assignment into treatment and therefore the outcome variable simultaneously, a 'hidden bias' might arise (Rosenbaum, 2002). In another word, if treatment and outcomes are also influenced by unobservable characteristics, then CIA fails and the estimation of ATTs are biased. The size of the bias depends on the strength of the correlation between the unobservable factors, on the one hand, and treatment and outcomes, on the opposite.

It should be clear that matching estimators are not robust against these 'hidden

biases. Different researchers have become increasingly aware that it is important to test the robustness of results to depart from the identifying assumption. Since it's not possible to estimate the magnitude of selection bias with non-experimental data, the matter are often addressed by sensitivity analysis.

Rosenbaum (2002) proposes using Rosenbaum bounding approach to check the sensitivity of the estimated ATT concerning deviation from the CIA. The basic question to be answered here is whether or not inference about treatment effects could also be altered by unobserved factors. In other words, one wants to determine how strongly an unmeasured variable must influence the selection process to undermine the implications of matching analysis.

The bounding approach does not test the unconfoundedness assumption itself, because this would amount to test that there are no (unobserved) variables that influence the selection into treatment. Instead, Rosenbaum bounds provide evidence on the degree to which any significant results hinge on this untestable assumption. If the results turn out to be sensitive, the evaluator might have to think about the validity of his identifying assumption and consider other estimation strategies.

As noted above, it is not possible to estimate the magnitude of selection bias using observational data, instead, the sensitivity analysis using the bounding approach that involves calculating upper and lower bounds, using the Wilcoxon signed-rank test. This rank tests the null hypothesis of no-treatment effect for different hypothesized values of unobserved selection bias.

3.5 Definition of Variables and Hypothesis

3.5.1 Dependent variable

Microfinance participation is a dependent variable for the logit analysis which has dichotomous nature representing rural household farmer's participation decision to microfinance. This is to distinguish or discriminate between those participants or non-participants of microfinance in the study area. It takes the value of "1" for participants and "0" for non-participants to microfinance.

The dependent variable for the impact assessment (outcome variable) in this study represents rural household poverty. And it is measured considering as household annual expenditures taking continuous value.

3.5.2 Independent variables

The following are the independent variables that were considered for the analysis of participation determinants:

Age of the household head: Age refers to the length of time one has been alive. It is a continuous variable, defined as the farm household head's age at the time of interview measured in years. Those farmers having a higher age will have a much lower association with cooperatives and other formal credit institutions because when the household becomes older and older, he/she loses initiation and work interest due to feeling of tiredness, and it is hypothesized that farmers with higher age may have less access to use credit from the formal sources. Additionally, **y**oung household heads with the expectation of growing income and a high marginal utility income together with creating a new family will have a high demand for micro credit compared to the old household. So, as our years of age increases our expectation of growth and marginal utility towards generating income decreases together with Njuguna (2015) and (Negeri (2016). In this study age of the household,the head is expected to hurt the microfinance participation of the household.

Gender of household head: This is a dummy variable that assumes a value of "1" if the head of the household is male and "0" otherwise. According to (Buvinic, Sebstad, and Zeidenstein, 1979) "there are two major factors which restrict household's access to formal credit more than men. These are related to women's lack of control over economic resources and the nature of their economic activity". With this background including the existing gender differences; male-headed households have mobility, participate in different meetings, and have more exposure to information; therefore, it is hypothesized that male-headed households have more access to use formal credit.

On another hand, in the case of Forah's (2011) investigation, the coefficient of the

gender of the household head was positive and statistically significant at one percent level, and accordingly, the probability of participation by female-headed households was 5.05 percent higher than that of male-headed households. This finding may be explained by the view that women are generally more constrained and restricted than men in terms of their access to financial services as well as control over household resources and capital (Fletschner, 2009; Wawire, 2010). Such exclusions increase their propensity to participate in microfinance due to the need to smoothen consumption or expand their enterprises. Moreover, many microfinance products are tailor-made for women to address issues of gender inequalities and high poverty levels among them (Mayoux, 2001). This finding is different from that of Swain (2010) whose study in India found no evidence of gender affecting the participation in microfinance.

Marital status: This is a dummy variable that takes the value of 1 if the household is married and 0 otherwise. Different studies suggested different results regarding how marital status affects household microfinance participation. For example, Forah (2011) conducted a study on factors affecting microfinance participation and the marital status of the household head; the coefficient of the married household head was positive and statistically significant at a one percent level. This finding suggests that married couples have greater liquidity needs due increased financial needs of more persons in the household. In contradict to Farah's study, Amine (2016) in Eritrea found out that married individuals had a lower probability of participation in microfinance when compared to the unmarried. However, in this study, it is hypothesized that married households have more credit demand than unmarried since their consumption from greater family size increases so that married households have a higher probability of microfinance participation than unmarried and it is expected that the coefficient of married households would be positive.

Religion: is a particular system of faith and worship or it is a pursuit or interest followed with great devotion with a value of one for Muslims and zero otherwise is included. Dutta and magableh (2006) find that religious belief affects the borrowing process of micro-entrepreneurs. It is expected that religion is an important variable that affects positively for non-Muslims but negatively for Muslims in credit demand.

Educational status of a household head: this is continuing variable which takes time spend in school in a year. Farmers who can read and write are expected to have more exposure to the external environment and accumulate knowledge. They can analyze costs and benefits. The more educated the household head the more credit he will use for consumption purposes. According to Musebe et al, (1993), as the household gets more formal education, the probability of obtaining credit increases. Therefore, it is expected that those farmers who are more educated have better credit requirement that leads to access to use formal credit sources.

Better educated households are likely to have lower entry costs since they face less difficulty in collecting information and evaluating the information needed for the decision to apply for credit.

Non-farm participation: Non-farm activities are activities that are not related to farming or agricultural activities. Non-farm employment is any form other than a farm in the type wages. In a rural area, the majority of households are involved in farm activities but many of them get their income from non-farm activities**.** Households who are involved in non-farm activities have a higher demand for credit since these activities requiring them huge capital. The findings in India showed that skill, opportunities from non-farm investments, and occupation of the individuals are key factors influencing borrowers to get a loan from microfinance (Chaudhuri, 2011). Therefore, it is hypothesized that participation in nonfarm activities has affected the microfinance participation of the household positively in this study.

Family size: Refers to the total number of families in the household. It is assumed that a household with a larger family size demands more micro credit (Schreiner &Nagarajan, 1998). Greater household size represents a bigger demand for consumption and less ability to repay the debt. Again, the result of the findings of Nguyen (2007) in Vietnam & Shah *et al.* (2008) in Pakistan showed that an increase in household size increased household participation in microfinance. Agreeably, bigger households tend to face greater liquidity constraints, therefore, precipitating greater participation. So, it is expected that a household with a large family size has a high probability of participation in a microfinance institution.

Dependency ratio Refers to the total of the family under 15 and greater than 65

years (unproductive) to above 15 and below 65 years (productive people) (Diagne, 1999). The presence of more dependants in households may discourage lenders because it signals higher desired consumption instead of investment, limited earning capacity, and a higher probability of default (Nwaru, 2011; Diagne, 1999). However, households with a high dependency ratio are more likely to have more demand for credit.

Cultivated land (farm) size: is the farm size in hectares measured by the total land area under crop production. It includes own, rented, and share cropping arrangement cultivated land by the household head. It is hypothesized that an increase in cultivated land would lead to an increase in demand for credit. Moreover, lenders would prefer households that have high cultivated land.

Extension Contact: It refers to the number of times the household received extension service within a year and will measure in several frequencies which the household receives the service in a year. The main objective of the extension service was to increase crop production by using modern agricultural technologies like chemical fertilizer, irrigation, etc. and had more participated in agriculture intensification activities than the counterparts as a result farmer who have frequent contact with extension agents are expected to have more information that will influence farm household's demand for credit from the formal sources (Ambachew&Ermiyas, 2016; Titay, 2013). On the other hand, the propensity of households to participate in farm activities is positively influenced by their extent of contact with that since they are better in farm income relatively and it leads them to participate in farm activities (Yishak, 2017). Therefore, it was hypothesized that this variable positively influences farmer's access to use formal credit.

Distance from Market: It refers to the proximity or farness of the household's residence from the "nearest" marketplace and will measure by the walking hour which the household waste to arrive at the nearest market. In other researches like Bassie (2014) and Ayantoye (2017) it measured by km, but since this study area is rural it is difficult to get the real distance in km and the estimated hour which will get

by asking the household is better relatively. Access to market and other public infrastructure create opportunities for more income by providing in diversifying livelihood strategies through non and off-farm employment, easy access to input and transport facilities; households nearer to the market center have a better chance to microfinance participation (Yishak, 2017). But, according to and closeness to urban areas or market exposes rural households to high competition to participate indifferent wage employs and other self-employment sectors, as a result, had a positive effect on microfinance participation of rural households in their study. For this study, the variable is expected to be relating negatively to microfinance participation.

Value of available Asset: This is the estimated value of available assets which takes discrete value in Birr. The asset of the household is an important element household takes into consideration when a borrowing decision is made. To this respect, the study by (Duflo et al., 2008) indicated that the amount of livestock owned has a negative influence on demanding credit as households need no more capital. But the findings of (Mpuga, 2004) and (Mpuga, 2008) contend that it is not the number of the assets rather the value of assets (e.g., building, land) owned by households and another dwelling that strongly influence demand for credit. In this study, the higher the value of available assets is believed to decrease participation rate and hence will have a negative influence.

Attitudes towards risk: The other factor, which influences the household's access to formal credit, is their attitude towards risk. Many farmers, as can be expected, are very risk-averse that even when credit is available, they do not like to venture into activities. This is due to the risks of repaying loans that come from the loss of crops due to seasonal changes, pest and insect damage. It will be measured based on the farmer's positive or negative perception. This is a dummy variable that takes "1" if they respond as they fear risk to take loans and "0" otherwise. Therefore, it was expected that risk-averse farmers will not demand credit and it negatively affects access to use credit from the formal credit institutions.

CHAPTER FOUR

RESULT AND DISCUSSION

This chapter is subdivided into three sub-sections. The first part presents the descriptive statistics on the demographic and socio-economic characteristics of the sampled households. The second section presents the results and discussion on the extent of poverty of sampled households of the study area and finally, the third section deals with the discussion and results on determinants of Microfinance participation and the impact of microfinance participation on rural households poverty of sampled households in the study area.

4.1 Descriptive Analysis

In this section, we discussed descriptive analysis of data to present the microfinance participation condition in different demographic structures in rural households by using percentages and tables. A total of 326 households were surveyed in ChoraBoter woreda and the results of the study are revealed as follows.

4.1.1 Demographic and Socio-economic characteristics of Households

Table 2: Summary statistics of continuous explanatory variables by participation

Explanatory variables	Participant HH		Non-participant HH		**Mean diff.**	**t-value**	**p-value**
	Mean	Std. dev.	Mean	Std. dev.			
Age of HH head	41.195122	12.5584	43.5764	14.4066	-2.38	1.5167	0.296
Years of education	5.33	3.14	3.9803	2.844	1.353	-4.0015	0.000
Family size	9.2	2.8262	6.37434	2.371	2.836998	-9.7292	0.000
Dependency ratio	3.7398	1.8679	3.665	1.69	0.7448	-0.3721	0.309
Extension contacts	2.52	1.035	1.08867	1.0679	1.4316	11.8683	0.000
Distance from market	3.8711382	2.6413	10.53	3.5995	-6.6584	17.81	0.000
Estimated value of asset	40223.577	71037.458	78148.3	97697.633	-379224.7	3.7459	0.003
Cultivated land size	3.7865	1.2137713	2.1946	2.2175	1.5920	-3.223	0.000

Source: Own computation from survey data (2021)

As we can observe from the above table, the mean of educational year for the participant was higher than the mean of a non-participant. The result found a significant mean difference of 1.432 between microfinance participant and non-participant at t-value of 4.0015 indicating that participation probability consistently increases as the year of education increase suggesting households whose head has achieved a higher level of education have a higher chance of acquiring information, thus affecting levels of participation. Moreover, the t-value confirms that there is a significant mean difference between the participant and non-participant education level of the household head with p- the value of 0.000 at a 1% level of significance.

As it is observed from the above survey result, there is a significant mean difference among participation status of households across the size of family members within the household. The study observed that the mean (average) family size of the participant was 9.2 and that of non-participant was 6.4. The result of the t-statistical value also reflected that there was a significant mean difference in terms of family size between participant and non-participant households with a t-value of 9.7292(p = 0.000). This indicates that the higher the family size the higher the probability of participating in OCSSCO micro-financing services.

One can also note that the participation decision of households varies with the estimated value of assets. On average, the estimated asset value of the participant is 40,223.577 birr per household, whereas the estimated asset value of the non-participant category is 78,148.276birr per household in real terms. The result of the t-statistical value also revealed that there was a significant mean difference in terms of the estimated value of assets between participant and non-participant households with a t-value of 3.7459. The study revealed that the mean of the estimated value of an asset for non-participant was much higher indicating household with higher estimated asset value did not want to be a participant in microfinance institution because he/she is free from the shortage of financial need.

Furthermore, it could also be seen from the analysis that there is an important variation among participant and non-participant households across the distance from the market, extension contact, and cultivated land size. Accordingly, the mean value of market distance, extension contact, and cultivated land size was 3.87, 2.52, and 3.7866 respectively for participant whereas it was10.53, 1.1 and 2.2 respectively for a non-participant.

Moreover, the result of the t-statistical value also reflected that there was a significant mean difference among participants and non-participant in terms of market distance from market, extension contact, and cultivated land size with a t-value of 17.8, 11.868, and 7.3223 respectively.

Table 3: Proportion of categorical variables across participation status

Explanatory variables	Categories	Participant		Nonparticipant		x^2	
		N	%	N	%	Z	P>|Z|
Gender of HH	Male	82	67%	142	70%	0.3842	0.535
	Female	41	33%	61	30%		
Marital status	Marriage	112	91%	131	64.5%	28.3950	0.000
	Otherwise	11	9%	72	35.5%		
Religion of HH	Muslim	19	15%	40	20%	0.9365	0.333
	Other	104	85%	163	80%		
Nonfarm activities	Participant	41	33%	76	37%	26.1974	0.000
	Non participant	82	67%	127	63%		
Risk attitude	Averse	60	49%	105	52%	0.2655	0.606
	Non averse	63	51%	98	48%		

Source: Own computation from survey result (2021)

Concerning the participation profiles by sex of the household heads, from the total 326 sampled households about 224 households head were male-headed and the remaining 102 households head were female-headed. As indicated in the above table the result of the survey in the study area show that the proportion of female-headed participant household was lower than the female-headed nonparticipant households in the study area. On the other hand, the male-headed participants were higher than the male-headed nonparticipation households. These results show

that male was more participant in microfinance than females. This can be understood that female-headed households were more excluded from the microfinance services than male-headed households in the study area and women relative to men are disadvantaged in accessing microfinance services and opportunities in the study area.

The marital status of the household head is an important constituent of the demographic variables. But from different angles there is positive and vise verse between microfinance participation and marital status of house household head. Economic theory and most empirical literature support the notion that the chance of participation in microfinance increases as one is married. This is due to when people get married household size will increase as new children are born and expenditures increase which in turn leads to a search for mechanisms of fulfilling additional needs and necessities for the family. Table 4.3 demonstrates that the percentage of the married participant is higher than the percentage of non-married (single, divorced, and widowed) respondent households. The term married included those individuals who are not single by the time of the survey. The percentage distribution of respondents by marital status shows that out of 123 participant respondents 112(90%) of them were married households, whereas 64 percent of heads of households are married in the non-participant group at the time of the survey. This indicates that the proportion of married households is higher in participants compared to non-participant which probably shows the influence of married on participation decision of the households.

Regarding two socio-economic characteristics namely; participating in nonfarm activities and risk attitude of the respondents, even if it is different in proportion among participant and non-participant, the descriptive analysis found that a significant difference did not exist.

4.2 Analysis of extent and dimension of poverty

In this study, to know the proportion of the rural household in the study area as poor and non-poor, the annual expenditure of sampled households in the study area was compared with the commonly used national poverty line of 5220 ETB expenditure per adult equivalent. Hence the rural households whose annual expenditure below 5220 birrs per adult equivalent was considered poor and whose expenditure above 5220 birrs per adult equivalent was considered non-poor in the study area in this study.

Based on the measured expenditure of sample respondents of ChoraBoter woreda, from the total 326 sampled households 118 (36%) households were below the poverty line (poor), and the

remaining 208 (64%) households were above the poverty line (non-poor). The level of this poverty line is higher than the poverty proportion of rural Ethiopia in 2015/16 which was 25.6 % (NPC's An Interim Report on Poverty Analysis Study, 2015/16 cited in CSA,2018).

The FGT indices namely head count ratio, short-fall/poverty gap, and severity of poverty are used to show how much the magnitude of poverty looks like in the study area. The predetermined poverty line (adopted national poverty line) was used to estimate poverty indices in the study area using the FGT class of poverty measures developed by Foster *et. al.* (1984) to explain the extent of poverty in the study area. Accordingly, 0.36, 0.26, and 0.080 are the computed head count index, poverty gap, and poverty severity, respectively (Table5).

Table 4: Poverty indices of sample households

Poverty index	Index value
Poverty head count index(P0)	0.36
Poverty gap/depth index(P1)	0.26
Poverty severity(P2)	0.080

Source: Own computation from survey data(2021)

The most widely used poverty indices are the percentage of the poor (headcount index), the aggregate poverty gap (poverty gap index), and the distribution of income among the poor (poverty severity index). The poverty measure itself is a statistical function that translates the comparison of the indicator of household well-being and the chosen poverty line into one aggregate number for the population as a whole or a population subgroup. Many alternative measures exist, but the three measures described below are the ones most commonly used.

4.2.1 Poverty head count index

As already discussed above the poverty measure (Pα) developed by Foster, Greer, and Thorbecke (1984) are used to explain the extent of poverty in the study area. This index tells us the proportion of the population, whose consumption expenditure falls below the predetermined poverty line. It is the share of the population who cannot afford to buy or consume a basic basket of goods. The resulting poverty estimates for the study area (Table 5) show that the percentage of poor people measured in

absolute head count index (α = 0) is about 36%. This figure indicates that this proportion of the sampledhouseholds in ChoraBoter woreda live below the absolute poverty line. This implies that 36% of the population are unable to get the minimum calorie required (2200 kcal per day per adult) adjusted for the requirement of nonfood items expenditure.

Putting differently, these proportions of sample households are unable to fulfill the minimum amount of expenditure i.e., Birr 5220.00 per adult equivalent per year and live under absolute poverty.

4.2.2 Depth of poverty (Poverty Gap Index)

This poverty measure captures the mean aggregate income or consumption shortfall relative to the poverty line across the whole population. It gives information about the households on how far they are from the poverty line. This index measures the extent to which households on average fall under the poverty line. This index does not indicate the inequality changes among the poor. It is computed by adding all the shortfalls of the poor and dividing the total by the total resource needed to bring all the poor to the level of the poverty line. For the poor, the poverty gap equals the poverty line less actual income or consumption and for the non-poor above the poverty line, it is considered to be zero.

$$P = \frac{1}{N}\sum_{k=1}^{n}\frac{Gi}{Z} = \frac{1}{326}\sum\frac{Gi}{5220} = \frac{1}{326}\ 85 = 0.26$$

Thus, the poverty gap can be used as a measure of the minimum amount of resources necessary to eradicate poverty. In the case of ChoraBoter woreda, the poverty gap index shows the amount that should be transferred to the poor with the right targeting to bring all the poor out of poverty. That is, each poor should get exactly their income or expenditure shortfalls (the amount he/she needs) to be lifted out of poverty. The depth of the poverty gap of ChoraBoter woreda is 0.26 as shown in Table 5. This implies that the number of resources required to get people out of poverty in the woreda is 26% of consumer spending per adult equivalent. When the poverty gap index becomes higher, the number of resources required to spend to the poor under proper targeting becomes higher. When we see the annual short fall of the poor's consumption expenditure, it is on average 1357.2 birr. This implies that on average birr 1357.2 per annual were required to bring a poor person in the woreda just to the poverty line.

4.2.3 Severity of Poverty

This index takes into account inequality among the poor, it is simply a weighted sum of poverty gaps (as a proportion of the poverty line), and hence, by squaring the poverty gap index, the measure implicitly puts more weight on observations that fall well below the poverty line. Formally: $\frac{1}{326}(26) = 8\%$. Even though households, whose consumption expenditure lies below the poverty line have the common name "poor", the degree of poverty varies from one to another. Therefore, the poverty severity index measures disparity in the poverty level of individual households. The result indicates that 8 percent variation among poor households in the study area. It is greater than the rural poverty of the country which is 0.029 % HICES (Mo FED,2012).

4.3 Result of Econometric Model

4.3.1 Logistic regression Analysis

In Logistic regression analysis such as how to create interaction between variables and how to interpret the results of logistic model, the first setup for our analysis to be valid, our model has to satisfy the assumptions of Logistic regressions. When the assumptions of Logistic regression analysis are not met, we may have problems, such as biased coefficient estimates or very large standard errors for the Logistic regression coefficients, and these problems may lead to invalid statistical inferences. Therefore, before using our logit model to make any statistical inference, we need to check that whether the model fits sufficiently well and check for influential observations that have an impact on the estimates of coefficients. Let's begin with a review of the assumptions of logistic regression. The conditional probabilities are a logistic function of the independent variables, no important variables are omitted, no extraneous variables are included, and the independent variables are measured without error. The observation is independent and not linear combinations of each other (Berry and Feldman,1985).

4.3.1.1Model specification error

When the researcher builds a logistic regression model, he assumes that the Logistic of the outcome variable is a linear combination of the independent variables. The STATA 14 command **linktest**can be used to detect a specification error, and it is issued after the logit or logistic command. The idea behind the link test is that if the model is properly specified, one should not be able to find any additional predictors that are statistically significant except by chance. After the regression command,

the **linktest**uses the linear predicted value (**-hat**) and linear predicted value squared (**-hatsq**) as the predictors to rebuild the model (Pregibon, 1981). The variable (**-hat**) should be a statistically significant predictor since it is the predicted value from the model. This will be unless the model is completely is specified. On the other hand, if our model is properly specified, variable (**-hatsq**) shouldn't have much predictive power except by chance. Therefore, if (**-hats**) is significant, then the **linktest**is significant. This usually means that either we have omitted variables or our link function is not correctly specified (Menard, 1985). Likewise, in this study, the model specification errors were checked by **linktest**, the test of the **hat** *is* significant (with p-value 0.000) and **hatsq**insignificant (with p-value 0.745) were **linktest**is insignificant. Therefore, it shows that the **linktest**has failed to reject the hypothesis that the model is specified correctly. Accordingly, it seems to us that we don't have a specification error (Appendix-4).

4.3.1.2 Goodness-of-fit

In the logistic regression output of this study, the LINK test result in the appendices confirms the fact that the model is adequate. Evidence of a GOOD FIT is reflected in a non-significant _HATSQ here the p-value for _HATSQ is 0.742. This suggests good evidence of overall goodness-of-fit is reflected in a non-significant p-value. The other evidence of GOOD FIT is reflected in a ROC curve that lies above the 45-degree line reference area under the ROC curve = 0.988 says that 99% of the observations are correctly classified (see appendices).

In addition, the goodness of fit in logistic regression analysis is measured by count R^2 which indicates the number of sample observations correctly predicted by the model. The count R^2 is interpreted based on the principle that if the predicted probability of the event is less than 0.50, the event will not occur, and if it is greater than 0.50, the event will occur (Maddala, 1981). Hence, the model results showed that the logistic regression model correctly predicted 80.43 % of sample households. It is apparent from the results that the fitted model correctly predicted 80.43 % of the observed values.

4.3.1.3 Multicollinearity

Multicollinearity occurs when two or more independent variables in the model are approximately determined by a linear combination of the independent variables in the model. The degree of multicollinearity can vary and can have different effects on the model. When perfect multicollinearity occurs, that is, when one independent variable is a perfect linear combination of the others, it is impossible to obtain a unique estimate of regression coefficients with all the independent variables in the model. The variables included in the model were tested for the existence of multi-collinearity, if

any. Contingency coefficient and variance inflation factor were used for multi-collinearity test of discrete and continuous variables, respectively (see Appendix-3a and Appendix-3b).Contingency coefficient value ranges between 0 and 1, and as a rule of thumb variable with a contingency coefficient below 0.75 shows a weak association, and a value above it indicates the strong association of variables. The contingency coefficient for the discrete variables included in the model was less than 0.75 that didn't suggest multi-collinearity to be a serious concern. As a common practice, continuous variables having a variance inflation factor of less than 10 are believed to have no multi-collinearity and those with VIF of above 10 are subjected to the problem and should be excluded from the model (Gujarati,2009).

4.3.2 Estimation of Determinants of Microfinance Participation

The binary logit model was used to estimate the determinants of rural poverty in ChoraBoter woreda. The estimation result of the model is presented in the following table:

Table 5: Binary Logit Estimation of Determinants of Microfinance Participation

Microfinance participation	Coef.	Std. Err	Z	P>|Z|	[95% conf. interval]
Age ofHH	-.0496844	.023872	-2.08	0.037*	-.0964727 -.002896
Gender of HH	.0566539	.6779217	0.08	0.933	-1.272048 1.385356
Marital Status	2.558408	.9481698	2.70	0.007***	.7000289 4.416786
Religion	-1.258832	.7400296	-1.70	0.089*	-2.709264 .191599
Education	.1949058	.1099155	1.77	0.076*	-.0205246 .4103361
Nonfarm activities	1.895605	.6714493	2.82	0.005***	.5795884 3.211621
Family size	.6681807	.1509714	4.43	0.000***	.3722823 .9640791
Dependency ratio	-.2372544	.1741751	-1.36	0.173	-.5786313 .1041225
Extension contacts	1.63216	.3387716	4.82	0.000**	.9681803 2.296141
Distance from market	-.7127277	.1148765	-6.20	0.000***	-.9378816-.4875738
Estimated value of Asset	-.0000121	3.72e-06	-3.26	0.001***	-.0000194-4.82e-06
Attitude towards risk	-.0080636	.6524425	-0.01	0.990	-1.286827 1.2707
Cultivated land size	.3272271	.1056922	3.10	0.002**	.1200743 .53438
_cons	-4.883993	2.005162	-2.44	0.015	-8.814039 -.953948

Number of Observation=326 Source: Own computation from survey data(2021)
LRchi2(13) = 347.53
Prob>chi2 = 0.0000

PseudoR2 = 0.8043
Log likelihood =-42.284637

Note: ***, ** and * denotes level of significance at 1%, 5% and 10% respectively.

In table 5 above out of 13 explanatory variables, 10 of the variables of which 7 of them are continuous and the remaining 3 significant variables are dummies: Age of the household, Marital status of a household, religion of household head, years of education, household Nonfarm participation, size of family members, times of extension contact, distance from the market, the estimated value of the Asset and Total size of cultivated land have a significant effect on the rural households participation to microfinance at the significance level at 1%, and 10%. The negative values of explanatory variables in the table above indicate that when the unit change in the independent variable leads to a decrease in the probability of being a participant. The positive values of explanatory variables in the table above indicate that when the unit change in the independent variable leads to an increase in the probability of being a participant. Among the significant explanatory variables, marital status, years of education, nonfarm activities participation, family size, extension contact, and cultivated land size were affecting the dependent variable (microfinance participation) positively whereas the remaining four variables namely age of household head, religion, distance from the market and the estimated value of asset were affected the participation decision negatively.

4.3.2.1 Marginal Effect for Logit regression

Because the logit model we are using for regression analysis is not linear, the marginal effect of each independent variable on the dependent variable is not constant but it depends on the value of the independent variables. Thus, marginal effects can be a means for summarizing how a change in response is related to a change in a covariate. For categorical variables, the effects of discrete changes are computed, i.e., the marginal effects for discrete variables show how P (Y = 1) is predicted to change as Xk changes from 0 to 1 holding all other Xs equal. Whereas for continuous independent variables, the marginal effect measures the instantaneous rate of change, i.e. we compute them for a variable while all other variables are held variables constant.That means in this study change in the probability of being a participant with a unit change in the continuous independent variable (Greene, 1993).Thus, opposed to the linear regression case, it is not possible to interpret the estimated parameters as the effect of the independent variable up on being a participant. However, it is possible

to compute the marginal effects at some interesting values of the significant explanatory variables. We can see in table 6 below

Table 6:Marginal Effect of Logit Model

Variable	dy/dx	Std. Err	Z	P>|Z|	[95% conf. interval]	X
Age of HH	-.0040721	.00218	-1.87	0.061	-.008339 .000194	42.6779
Gender of HH	.0046034	.05462	0.08	0.933	-.102448 .111655	.687117
Marital Status	.1450882	.05149	2.82	0.005	.044178 .245998	.745399
Religion of HH	-.0764704	.04102	-1.86	0.062	-.156865 .003925	.180982
Education	.0160157	.01038	1.54	0.124	-.004364 .036312	4.4908
Nonfarm activities	.1701909	.07948	2.14	0.032	.014414 .325968	.484663
Family size	.0547636	.01931	2.84	0.005	.016912 .092615	7.44479
Dependency Ratio	-.0194452	.01622	-1.20	0.231	-.051236 .012346	3.69325
Extension contact	.1337707	.04299	3.11	0.002	.049518 .218023	1.62883
Distance from market	-.0584146	.01786	-3.27	0.001	-.093414 -.023416	8.01733
Estimated value of asset	-9.93	.00000	-2.62	0.009	-1.7e-06 -2.5e-07	63839.3
Attitude of risk	-.0006609	.05348	-0.01	0.990	-.10548 .104159	.506135
Cultivated land size	.0268193	.00987	2.72	0.007	.007476 .046162	2.79525

Source: Stata output computation from survey data (2021)

4.3.2.2 Interpretation of Significant Explanatory Variables

The logistic regression model shows that from the total of thirteen explanatory variables hypothesized to influence household's microfinance participation some of them; namely the marital status of a household, nonfarm activities, Family size, estimated asset value of the household, cultivated land size, frequency of extension contact and distance from the market are significant at 1% probability level whereas the age of household head, religion and years of education were significant at less than 10%. The coefficients of the three variables were not statistically significant at the conventional

probability levels implying that they were less important in explaining the variability in the household's participation decision in the woreda. These variables are the sex of the household head, the attitude of the household head towards risk, and the dependency ratio. Thus, in what follows, the estimation result of the binary logit model and its interpretations of the significant explanatory variables will be discussed.

Age of household head: The age of a household head was negatively and significantly affected microfinance participation decision of households at less than 10% probability level showing an inverse relationship with household participation. It shows that a one-year increase in the age of the respondent would result in a 0.4% decrease in the probability of being a participant in Microfinance. The possible explanation could be as rural farmers' households get aged, their access to information decreases because of a decrease in their mobility especially to run income-generating activities. Asset accumulation also diminishes as the household's productivity decreases. Moreover, their achievement motivation and level of aspiration diminish with age. The result is consistent with the findings of Roman (2010).

Marital Status: Household head marital status coefficient results of the study revealed that the variable under consideration is positively related and significant at a 10% probability level with the probability of being a participant. The coefficient of the marginal effect of logit model interpretation could be married household has the probability of 14.5% to be participant compared to others status (single, divorced, and widowed), assuming other things remain constant. The meaning of the result suggests that married couples have greater liquidity needs due to the increased financial needs of more persons in the household. Different studies suggested different results regarding how marital status affects household microfinance participation. For example, Forah (2011) conducted a study on factors affecting microfinance participation and concerningthe marital status of the household head; the coefficient of the married household head was positive and statistically significant at a one percent level.

The religion of household: the religion of the household head seems to make a significant difference in the demand for credit. The variable was hypothesized as dummy 1 for Muslim and 0 for other religions. The result of the coefficient shows that the Islamic religion hurts the microfinance participation of the house household. The interpretation would be assuming all other things remain constant being Muslim decreases the probability of being a participant in microfinance by 7.65 percent compared to other religions. In an area where the social ties and religion contributes to attitudes and beliefs of individuals, religion affects the credit behavior of the society (Getaneh, 2005).

In the Muslim religion, creditor saving is not allowed since paying or receiving interest is considered as haram (Getaneh, 2005), and hence people refuse to take credit even though they are unable to finance themselves. This can be witnessed from the study of Ageba&Amha (2006) who found that 1.8 percent of the respondents in their sample did not apply for credit due to religious reasons. In addition, Getaneh (2005) reported that in certain areas of Ethiopia such as in the Oromia and the Amhara region, earning money by the act of loan is haram.

Education of the household head: education affects positively and significantly rural household decision in participation of microfinance service at less than 10% probability level. The model result shows that when years of education level increase by one year result in 1.6% increase in the participation probability in microfinance, citrus paribus condition. The implication is that literate households more easily demand and protect his/her right and so education increases the knowledge and skill of the people in a society Hinzen, (2004). Therefore, more education to society means more intervention in different economic and social activities by that society. A household head is relatively better educated; he/she can have relatively better motivation to do income-generating activities. The result of this finding is consistent with the results of Sharma and Zeller(2005)

Non-Farm activities: The marginal effect coefficient of logistic regression suggested that nonfarm activities participation of the households has a positive and significant effect on the rural household microfinance participation so that the variable is significant at a 1% probability level. The model marginal effect result shows that when the household participates in nonfarm activities, his/her microfinance participation probability increases by 17 percent compared to a household that did not participate in nonfarm activities. The meaning of this result is that households who are involved in non-farm activities have a higher demand for credit since these activities requiring them huge capital. This is in line with finding in India which suggested skill, opportunities from non-farm investments, and occupation of the individuals are key factors influencing borrowers to get a loan from the microfinance (Chaudhuri, 2011).

Family Size: Family size affects positively and significantly women's decision in participation in microfinance service at less than one percent probability level. The model result shows that when the family size increases in one person, the level of household chance of participation decision in microfinance services increase by 5.4%, while the other variables held constant. This might be attributed to large families which are more likely to exert consumption stress on the household borrowing than those in a smaller family as the larger family is more likely to have a higher

thedependency ratio, which is reflected through an increased probability of microfinance participation (Tekle and Eshetu 2017). This may mean that households with larger families cannot invest in farm capitalization since a large portion of their farm output is used to maintain their families. Oluwasola&Alimi (2008) also found a similar result in Nigeria that big family size (11 averagely) increased agricultural credit demand. And also, Bendig et al. (2009) reported from Ghana that larger households are more exposed to shock (e.g., illness) because of a higher number of household members which ultimately caused them to have participated in microfinance.

Extension contacts: The result of logistic regression indicated that the frequency of extension contact had a positive effect on rural households' participation in microfinance services, and was significant at the 5% significance level. This means that those households getting more extension services have a high probability to participate in microfinance services. The marginal effect of the frequency of extension contact was 0.1337. The computed marginal effect result shows that a unit increase in the frequency of extension contact increases the probability of households' participation in microfinance services by 13.38% keeping other variables constant at their means. The explanation would be the extension service was to increase crop production by using modern agricultural technologies like chemical fertilizer, irrigation, etc. and had more participated in agriculture intensification activities than the counterparts as a result farmer who have frequent contact with extension agents are expected to have more information that will influence farm household's demand for credit from the formal sources (Amba chew &Ermiyas, 2016; Titay, 2013). On the other hand, the propensity of households to participate in farm activities is positively influenced by their extent of contact with that since they are better in farm income relatively and it leads them to participate in farm activities (Yishak,2017).

Distance from the Market (market proxy): Distance from the market affects negatively and significantly household decisions in participation of microfinance services at a 1% probability level. The interpretation could be a one-kilometer increase in distance from the nearest market, the probability of participation declines by 5.8 percent. The most possible explanation is that households living far from marketplaces have less access to valuable information which could have helped them to make advantage of opportunities. Besides, microfinance institutions members get income-generating activities selection, planning, and management training from the responsible organization. This training helps them to better process and use the information they get as a result of them

nearness to the market. Moreover, households that have better market access havea higher chance of engaging in different income-generating activities. As a result, rural households who are close to the market have a better possibility to be relatively better empowered than those who are far from the market and the result of this study was consistent with the study of Ebrahim, (2006); Daniel, and Yirgalem (2016).

Estimated Value of Asset: The estimated value of an asset that the household ownersare one variable in this study and the variable is significant at less than one percent affecting the microfinance participation decision of the household negatively. The coefficient of marginal effect in logistic regression shows that as the asset of the household increases the microfinance participation probability of the household can be decreased. This is because when endowment grows, households can automatically finance a greater share of their desire consumption and their demand for credit may decrease. The asset of the household is an important element household takes into consideration when a borrowing decision is made. To this respect, the study by (Duflo et al., 2008) indicated that the amount of assets owned has a negative influence on demanding credit as households need no more capital. But the findings of (Mpuga, 2004) and (Mpuga, 2008) contend that it is not the number of the assets rather the value of assets (e.g., building, land) owned by households and another dwelling that strongly influence demand for credit.

Cultivated Land Size: Another important variable is cultivated land size which had a positive effect on the rural households' participation in microfinance services and statistically significant at a 5% significance level. The marginal effect result of the study shows that a one-hectare increase in cultivated land size increases households' participation in microfinance by 2.68%, keeping other variables in the model constant. The finding of the study coincides with Asfaw (2013), who found that cultivated land size has a positive and significant effect on households' microfinance participation decisions. The possible implication is that as a household cultivated additional hectares of land, he/she needs more financial resources to fulfill inputs for the production and this could increase the probability of microfinance participation. Similarly, the results of the study by Daniel and Yirgalem (2016) had also revealed that farmers with the cultivated land can be engaged on fertilizer credit. This statement supports the economic logic of the substitutability of fertilizer for the land. Rural households facing the problem of low level of production due to shortage of farmland and limited use of modern farm technologies would increase their productivity through the use

fertilizer and other improved farm inputs. This forces farmers for searching for credits and saving institutions or individuals and groups. This result is also consistent with studies carried out by Daniel and Yirgalem (2016).

4.3.3 Impact of Microfinance on rural household poverty

This section presents the entire process or implementation of propensity score matching (PSM) to evaluate the impact of microfinance participation on rural household poverty. More precisely, it presents the estimation of the propensity score, common support region, matching algorithm, and balancing test. In the end, it provides the microfinance effect among the participant households.

4.3.3.1 Estimation of the propensity scores

To address the third objective of the study, the propensity score matching (PSM) model was applied. To implement this, the first task was estimating propensity scores and it was computed based on the logistic model. The estimated score is used as a tool to balance the observed distribution of covariates across the treated (participant) and the untreated (non-participant) group (Marco & Sabine, 2005).

As shown from the table 6 logistic model results, the Chi-square value is 75 with <1% significance level and it suggests the model is well fitted. The pseudo-R2 value is 0.1904 which is fairly low. R2 value indicates that how well the model explains the participation probability (Marco & Sabine, 2005). A low R2 value means participant households do not have many distinct overall characteristics and hence the match between participant and non-participant households becomes easier (Titay, 2013). Here, the overall intention was to balance the observed covariates by using propensity scores. Therefore, to remove iteration a detailed interpretation for determinants was not discussed since the determinants of microfinance were discussed more in the above Logit model. However, to mention, from all included variables into the model ten variables (age of the household head, marital status, religion of household, years of education, nonfarm activity participation, family size, frequency of extension contact, distance from the market, estimated value of asset and cultivated land size) were found statistical significance. From these variables: age of household, religion (Muslim), distance from the market, and estimated asset value was statistically influenced microfinance participation negatively while marital status, education, nonfarm activities, family size, extension contact, and cultivated land size were positively and statistically affecting the participation decision of the household.

Logistic regression	Number of obs	=	326
	LR chi2 (13)	=	75.53
	Prob> chi2	=	0.0000
Log likelihood = -42.284637	Pseudo R2	=	0.19043

Table 7: Estimation of Propensity Score: Dependent Variable Microfinance Participation

Microfinance participation	Coef.	Std. Err	Z	P>|Z|	[95%conf. interval]
Age of HH	-.0496844	.023872	-2.08	0.037*	-.0964727 -.002896
Gender of HH	.0566539	.6779217	0.08	0.933	-1.272048 1.385356
Marital Status	2.558408	.9481698	2.70	0.007***	.7000289 4.416786
Religion	-1.258832	.7400296	-1.70	0.089*	-2.709264 .191599
Education	.1949058	.1099155	1.77	0.076*	-.0205246 .4103361
Nonfarm activities	1.895605	.6714493	2.82	0.005***	.5795884 3.211621
Family size	.6681807	.1509714	4.43	0.000***	.3722823 .9640791
Dependency ratio	-.2372544	.1741751	-1.36	0.173	-.5786313 .1041225
Extension contacts	1.63216	.3387716	4.82	0.000**	.9681803 2.296141
Distance from market	-.7127277	.1148765	-6.20	0.000***	-.9378816 -.4875738
Estimated value of Asset	-.0000121	3.72e-06	-3.26	0.001***	-.0000194 -4.82e-06
Attitude towards risk	-.0080636	.6524425	-0.01	0.990	-1.286827 1.2707
Cultivated land size	.3272271	.1056922	3.10	0.002**	.1200743 .53438
_co ns	-4.883993	2.005162	-2.44	0.015	-8.814039 -.953948

Source: Own computation from Field survey data (2021)

4.3.3.2 The Common Support Condition

Once the predicted values of program participation (propensity scores) were estimated for all households in the program and outside the program, the next step would be imposing common support conditions on the propensity score distributions of households with and without the program. As shown inTable 8,the estimated propensity scores vary between.0039312and.9999998(mean=0.63) for participant or treatment households and between .00393117 to .9718079 (mean = 0.37) for non-participant (control) households. The common support region would then lie between 0.0039

and 0.9718. In other words, households whose estimated propensity scores are less than 0.0039 and larger than 0.9718 are not considered for the matching exercise. This means only eligible observations have to be matched together and non-eligible households should be out of the further analysis. Once the common support region is defined, individuals that fall outside this region have to be rejected and hence the treatment effect cannot be estimated. As the main purpose of the propensity score estimation was to balance the observed distributions of covariates across two groups, it is necessary to ascertain that there is sufficient common support region for the two groups and the differences in the covariates in the matched two groups have been eliminated. These two issues are the necessary preconditions for the reliability of the subsequent estimations of the program impacts (Carolyn,2010).

Table 8: Distribution of propensity score among household group

Group of HH	observation	Mean	STD	Minimum	Maximum
Participant HH	123	.901107	0.1847019	.0039312	.9999998
Non participant HH	203	0.599204	.1644284	.00393117	.9718079
Total	326	.3773006	.4431341	.00393117.	.9999998

Source: Own computation from survey data (2021)

Figure 4 depicts the distribution of the propensity score among the group of households. As shown, most of the participant households were found in the middle, while most non-participant households were found on the left side of the distribution. It also reveals that there is a wide area (overlap) in which the propensity score of both the participant and the non-participant groups are similar. The distribution of estimated propensity score before and after the imposition of the common support condition for the participant and non-participant households separately also shown in Appendix 8 and 11, respectively.

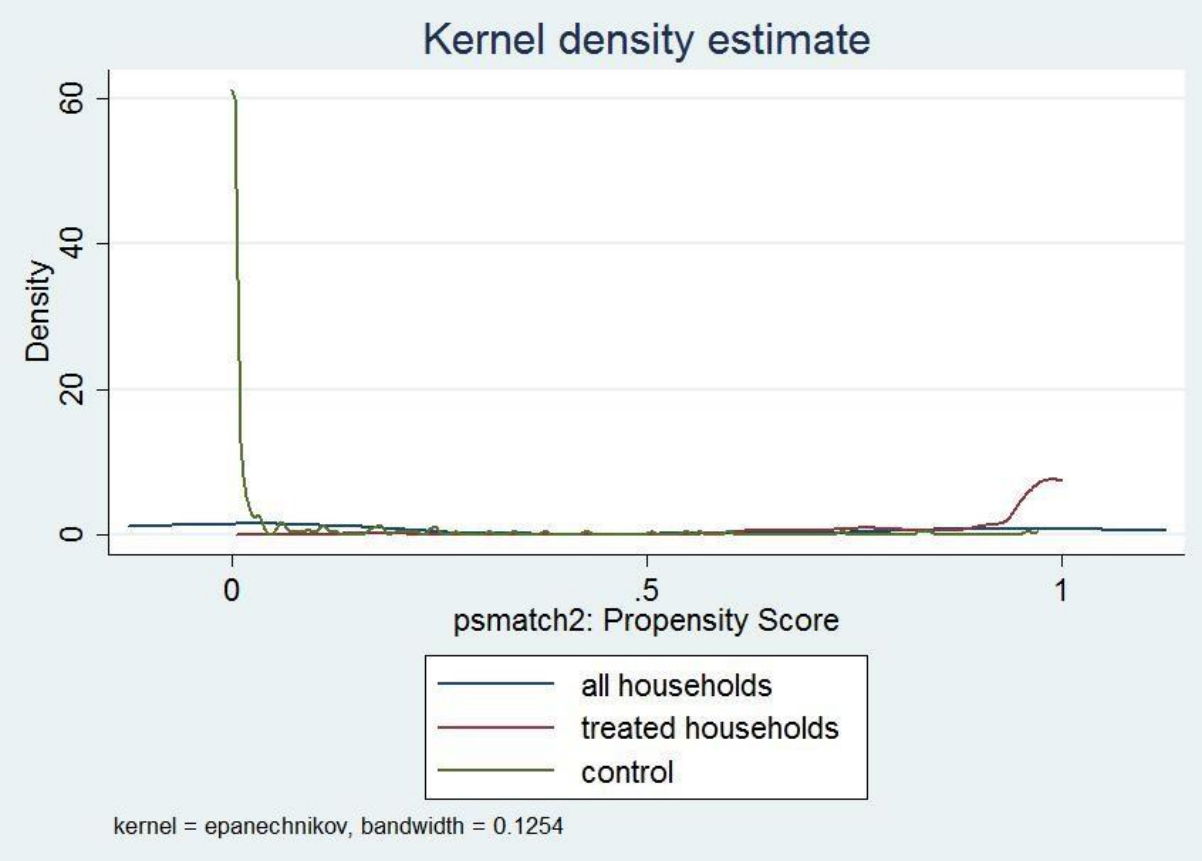

Figure 4: Kernel Density of Propensity Score Distribution

4.3.3.3 Choice of matching Algorithm

To identify the best estimator algorithm, three matching estimators NNM, RM, and KM with different bandwidths were employed. Alternative matching estimators were tried in matching the treatment and control households in the common support region. The final choice of a matching estimator was guided by different criteria such as the equal means test referred to as the balancing test (Dehejia and Wahba, 2002), pseudo-R2, and matched sample size. Specifically, a matching estimator which balances all explanatory variables (i.e., results in insignificant mean differences between the two groups), bears a low R2 value, and results in a large matched sample size is preferable. Table 10 shows the estimated results of tests of matching quality based on the above-mentioned performance criteria. After looking into the results, it has been found that kernel matching with a band width of 0.25 is the best estimator for the data at hand. As such, in what follows estimation results and discussion are the direct outcomes of the kernel matching algorithm based on a band width of 0.25.

Table 9: Performance of Different Matching Estimators

Matching Estimator	Performance criteria			
	Pseudo R2	LR CH2	Mean Std. biased	Matched Sample
NN1	0.204	27.12	27.1	251
NN2	0.098	13.03	14.8	251
NN3	0.122	16.25	18.5	251
NN4	0.112	14.92	19.4	251
NN5	0.106	14.05	16.8	251
NN6	0.122	16.26	23.1	251
CM0.1	0.399	14.37	26.7	216
CM0.25	0.339	14.11	29.4	218
CM0.5	0.390	33.56	29.6	234
KM Band Width 0.1	0.069	9.21	14.6	251
KM Band Width 0.25	0.05	7.82	15.6	251
KM Band Width0.5	0.07	9.27	19.4	251

Source: Own computation from field survey (2021)

Once the best-performing matching algorithm is chosen, the next task is to check the balancing of propensity score and covariate using different procedures by applying the selected matching algorithm bandwidth (0.25) matching in the case of this study. It should be clear that the main intention of estimating propensity scores is not to get a precise prediction of selection into treatment. Rather, to balance the distributions of relevant variables in both groups.

4.3.3.4 Testing balance of propensity score and covariate

After choosing the best performing matching algorithm the next task is to check the balancing of propensity and covariates. The main purpose of the propensity score estimation is not to obtain a precise prediction of selection into treatment, but rather to balance the distributions of relevant variables in both groups. The balancing powers of the estimations are ascertained by considering different test methods such as the reduction in the mean standardized bias between the matched and unmatched households, equality of means using t-test, and chi-square test for joint significance for the variables used.

The mean standardized bias before and after matching are shown in Table 11 with the total bias reduction obtained by the matching procedure. In all cases, it is evident that sample differences in the unmatched data significantly exceed those in the samples of matched cases. The process of matching thus creates a high degree of covariate balance between the treatment and control samples that are ready to use in the estimation procedure. Similarly,t-values in the same table show that before matching nine of chosen variables exhibited statistically significant differences while after matching all of the covariates are balanced.

Table 10: Propensity Score and Covariate Balance

Variable	Sample	Mean		% reduct		t-test		V(T)/
		Treated	control	bias	|bias|	t	p>|t|	V(C)
_pscore	U	.90111	.05992	481.1		42.72	0.000	1.26
	M	.75205	.72353	16.3	96.6	0.57	0.569	0.76
Age	U	41.195	43.576	-17.6		-1.52	0.130	0.76
	M	42.375	44.917	-18.8	-6.8	-0.90	0.372	1.13
Gender	U	.66667	.69951	-7.0		-0.62	0.537	.
	M	.75	.61986	27.9	-296.3	1.37	0.173	.
Marital status	U	.91057	.64532	67.1		5.56	0.000	.
	M	.875	.89215	-4.3	93.5	-0.26	0.796	.
Religion	U	.15447	.19704	-11.2		-0.97	0.335	.
	M	.20833	.23254	-6.3	43.1	-0.28	0.778	.
Education	U	5.3333	3.9803	45.2		4.00	0.000	1.22
	M	4.3333	3.767	18.9	58.1	0.92	0.359	0.85
Nonfarm activities	U	.66667	. 37438	61.0		5.32	0.000	.
	M	.4375	.47217	-7.2	88.1	-0.34	0.736	.
Family size	U	9.2114	6.3744	108.8		9.73	0.000	1.42
	M	7.4583	8.1922	-28.1	74.1	-1.41	0.162	0.78
Dependency ratio	U	3.7398	3.665	4.2		0.37	0.710	1.22
	M	3.6667	3.9821	-17.7	-321.7	-0.94	0.348	2.02*
Extension contacts	U	2.5203	1.0887	136.1		11.87	0.000	0.94
	M	2.0833	1.9595	11.8	91.3	0.58	0.561	1.31
Dist. Fro market	U	3.8711	10.53	-210.9		-17.81	0.000	0.54*
	M	4.9104	5.5898	-21.5	89.8	-1.04	0.302	1.90*
Value of Asset	U	40224	78148	-44.4		-3.75	0.000	0.53*
	M	46875	53501	-7.8	82.5	-0.39	0.698	3.03*
Risk attitude	U	.4878	.51724	-5.9		-0.51	0.608	.
	M	.58333	.53915	8.8	-50.1	0.43	0.667|	.
Cultivated land size	U	3.7866	2.1946	89.1		7.32	0.000	0.30*
	M	3.6531	4.0513	-22.3	75.0	-0.45	0.654	0.02*

Source: Own computation from field survey data (2021)

Table 11 depicts the matching quality test by using the selected best estimator based on the above criteria. Therefore, it shows that the balancing test of covariates before matching of the participant and non-participant household heads were significantly different in many covariates. But, after matching

no significant differences were observed between participant and non-participant households. The distribution of propensity scores before and after matching as shown in the table also indicates that estimating the p-score balances the participated and non-participated groups adequately, a result that highlights the importance of the PSM approach. The fifth and sixth columns of Table 11 show, the standardized bias before and after matching and the total bias reduction obtained by the matching procedure, respectively. The standardized difference in covariates and propensity score before matching was in the range of 4.2% and 481.1%, but it significantly reduced to the range of 4.3% and 28.1% after matching. And after matching there is no significant difference in all covariates observed.

Table 11: Balancing Test of Covariates

Sample	Pseudo R2	LRchi2	p>chi2
Unmatched	0.812	350.70	0.000
Matched	0.059	7.82	0.899

Source: Own computation from field survey (2021)

All of the above tests suggest that the matching algorithm researcher has chosen is relatively the best for the data at hand. Consequently, the researcher proceeds to estimate the average treatment effect on the treated (ATT) for the sample households. Moreover, the low pseudo-R2 and the insignificant likelihood ratio tests support the hypothesis that both groups have the same distribution in covariates X after matching (see Table 12). This result clearly shows that the matching procedure can balance the characteristics in the treated and the matched comparison groups. We, therefore, used these results to evaluate the effect of microfinance participation of households having similar observed characteristics. This allowed us to compare observed outcomes for participants with those of a comparison group sharing common support.

4.3.3.5 Treatment effect on treated

The purpose of these all processes was to see whether the participant households have a significant difference in poverty status compared to non-participant households or not. To identify this, there are two parameters; ATE and ATT, but ATE does not reveal the true impact of diversification and might not be of relevance to policy makers since it does not consider into account the common support

Assumption (Carolyn, 2010; World Bank, 2016). This implies households who were highly motivated and the households who had extremely low motivation to participate included in treatment effect (ATE). Therefore, the average treatment effect on the treated (ATT) was computed to evaluate explicitly the impact on those for whom at least the probability to participate was approximated.

The ATT result implied that microfinance participation brought a statically positive significant impact on household's expenditure level or rural household poverty. It has been found that microfinance increases household expenditure for participant households in the range of 422.9887 and 1031.028 birrs on average at less than 1% significant level for all estimators even though there is modest varying among algorithms. This result is also supported by many studies (Titay, 2013; Dev et al, 2017; Chinedul et al., 2017; Osarfo, 2016).

Table 12: Average Treatment Effects on Treated by different Estimators

Algorithms	Outcome	Participant	Non-participant	ATT	SE	T-Value
NNM2	Expenditure	5670.81154	5230.9250	439.8865	204.2794	2.15
Kernel 0.25	Expenditure	5670.81153	5247.8228	422.9886	1140.3007	3.5
Caliper 0.25	Expenditure	6252.35067	5221.3229	1031.0277	606.9815	2.05

Source: Own computation from Field Survey (2021)

The computed average treatment effect on the treated result in Table 13 indicates that microfinance credit has a statistically significant effect on rural households' expenditure. A positive value of the average treatment effect on the treated (ATT) indicates that households' annual expenditure has been improved as a result of microfinance participation in the study area. Accordingly, participation in microfinance service has increased the total annual expenditure of participant households by ETB 422.9887 which is 7% higher than the expenditure of non-participants. Moreover, the mean difference between participants and non-participants in terms of total annual expenditure per adult equivalent was significant at a 1% significance level.

4.3.3.6 Checking the robustness of average treatment effect

There are several ways to check the robustness of the findings. One approach is to estimate the propensity score equation and then use the different matching methods to check the consistency of the results with different bands of selected matching estimators and even with different matching techniques (estimators) (Table 13). This method was used by many studies such as World Bank (2010), Wanjala (2016) Rahut et al. (2017), and Nigussie et al. (2018). The other method which is used commonly is applying direct nearest-neighbor matching instead of estimating the propensity score equation first with the "nonmatch" command in Stata. The study by Roth et al. (2014) in Cambodia used this method to assess the robustness of the result and also recommended by (Carolyn, 2010) and (World Bank, 2010). They suggested that, if it gives a similar result with the selected matching estimator, then the finding is assumed to be more reliable.

The other is the Rosenbaum bounding approach which was suggested by Rosenbaum (2002). PSM assumes all covariates that affect the treatment and the outcome variable controlled. Therefore, this sensitivity analysis method is designed to check how the ATT result deviates if the unobserved covariates have been allowed to differ among participant and non-participant households. However, there is disagreement among scholars in deciding the odd value of treated and non-treated (γ). Many kinds of literature used the range of γ to be between 1.1 and 2 (Titay, 2013; Roth et al., 2014), others used between 1.1 and 3 or above (Adugna, 2011; Wole, 2014). But, according to Roth et al. (2014), the value of γ above 2 is recommended for natural science studies and argues that it is difficult to control above 2 (100%) for unobserved covariates in social science and hence it analyzed by the γ value between 1 and 2 in this study. So, those three methods were done in this study.

As shown from Table 13 even if there is variation in the size of ATT (between 422.99 and 1031.03) across estimators, the impact is positive and significant for all at $p<10\%$. The nonparametric (nonmatch) estimate suggests participant households have 1584.338 expenditure more on average (Table 14). The result from Rosenbaum bounding approach also shows that the impact is not changing though the participant and non-participant households have been allowed to differ in their odds of being participants up to 100% (Gamma2**)** in terms of unobserved covariates (see Table 13)**.** This implies that the sensitivity of ATT is controlled up to doubled deviation in hidden covariates. The significant γ value further indicates that the study considered important covariates that affected both microfinance participation and rural household poverty. Overall, it is possible to conclude that

theimpact estimates (ATT) is fairly insensitive to unobserved selection bias and is a pure effect of microfinance participation on households' rural poverty.

Table 13: Direct Nearest Neighbour Matching Results for Checking Robustness

DNNM	Outcome	Coefficient	Std. Error	Z	P>|z|	[95% conf. interval]
DNNM1	Expenditure	1584.338	773.733	2.05	0.000	67.84936 3100.826
DNNM2	Expenditure	1645.508	782.6876	2.10	0.000	111.468 3179.547

Source: Own computation from field data(2021)

Table 14: Result of Sensitivity Analysis Using Rosenbaum Bounding Approach

Outcome Gamma 1 Gamma 1.25	Gamma 1.5	Gamma 1.75	Gamma 2
Expenditure P<0.000P<0.000	$P<2.e^{-9}$	P<0.11254	$P<1.3e^{-13}$

Source: Own computation from Field survey (2021)

But, the thing it needs caution is, PSM does not eliminate the bias resulting from confounding factor rather it reduces it, the sensitivity of ATT to hidden bias does not imply the existence of unobservable at all and these test statistics also does not imply the overall validity of CIA (Roth et al., 2014).

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

Microfinance participation was already accepted as the main strategy to overcome poverty and rural shocks, but it lacks due attention in Ethiopia. The study attempted to examine the determinants of microfinance participation and its impact on rural household poverty in the case of Chora Boter woreda of Oromia Regional State, Ethiopia by using survey data. Besides, it overviewed the socio-economic characteristics and the participation portfolio of rural households. The study was based on cross-sectional data which was collected from 326 rural households drawn from three kebeles based on a simple random sampling method and finally, the intended data was accessed by using a structured questionnaire. The study employed descriptive statistics (such as mean, percentage, and frequencies t-test), poverty measuring approach (cost of basic needs using FGT method), and two econometrics models (Logit, and PSM) to analyze the collected data.

The first attempts were made to assess the magnitude of poverty in the study area using the cost of basic needs approach and three FGT indices (head count index, poverty gap index, and squared poverty gap) were used to identify incidence (level), poverty gap and severity of poverty in the study area.

Moreover, the study examined the determinants of microfinance participation using the binary logit model. And the result demonstrated that years of education, marital status, family size, cultivated land size, participation in nonfarm activities, and frequency of extension contact affects the participation in microfinance positively whereas the age of household, religion, distance from the market, and the estimated value of asset determine the participation decision of the household negatively.

Finally, this paper sought to investigate the impact of microfinance on the poverty of rural house hold (expenditure) among rural households. To implement this PSM model was employed and found that microfinance participation brought a significant positive impact on household poverty showing a significant mean difference in expenditure per adult equivalent between participant and non-participant households. To check the robustness of the estimation result, different sensitivity analyses were performed and the result confirmed its positive impact.

5.2 Conclusion

Generally, this study finding confirms existing literature on the situational overview of poverty, microfinance, and the impact of microfinance participation on a household's well-being. The study used the cost of basic needs method to measure consumption expenditure (per adult equivalent) of the rural household and compared their expenditure with a predetermined national poverty line of 5220 birrs per adult equivalent expenditure per year. The poverty measure approach revealed that the poverty incidence, poverty gap, and poverty severity were found 36, 26, and 8 percent respectively. The headcount index shows that 36% of the households were poor and 64% were not poor, the poverty gap result implies a 26% consumption shortfall from the poverty line, and the severity result indicatesan 8% variation among poor households.

In the study area even though there is a significant number of households who participate in microfinance services, the extent or degree of participation was low and suggests that still the study area rural households were not benefiting from the services as such. The descriptive analysis result showed that the mean difference between the two groups regarding the sex of household head implying female-headed households less participated in microfinance services compared to male-headed households in the study area. Again, marital status, education level, cultivated land size; and frequency of extension contact were statistically significant. However, the two groups have shown a statistically insignificant mean difference regarding a dependency ratio.

The estimation result of the logit model indicated that among 13 explanatory variables, which were hypothesized to influence the household heads' participation in microfinance services, ten variables were statistically significant while the remaining three variables were statistically insignificant. The significant variables in the model were the age of household head, marital status, education level, religion, family size, nonfarm activities, cultivated land size, distance from the market, frequency of extension contact, and the estimated value of the asset are significantly influenced households' participation in microfinance services while dependency ratio, gender of household head and attitude of the household head towards risk were the three insignificant explanatory variables.

It can be concluded that rural households who are better educated, contacted more frequently by extension more, married household, large family member, has large cultivated land, male-headed, and participate in nonfarm activities not Muslim not tend to engage in microfinance than others. Additionally, the finding of the study showed households with large asset value, far from the market,

Muslim in religion, and higher aged were less inclined to microfinance participation.

To estimate the impact of microfinance on the expenditure of the respondent households, different processes of matching quality tests such as t-tests, reduction in standardized bias, and chi-square tests before calculating ATT were applied. From table 13 ATT result indicated that participation in OCSSCO MFIs at Choraboter woreda had brought positive and significant impact regarding the aggregate expenditure of participant household compared to non-participants. Further, sensitivity analysis test on estimated ATT shows that effect of not change even though both groups are allowed to differ in their odds of being treated up to 220% ( ) in terms of unobserved covariates. From the findings of the study, it can be concluded that it seems to lend credence to the conclusion of previous studies that microfinance participation can contribute to the improvement of household living standards. The impact estimation results also showed that there was a significant difference in outcome variables between participant and non-participant households, which could be attributable to the participation in microfinance services.

The effect of microfinance on rural households' expenditure was higher for the participants than non-participants and was statistically significant. Moreover, the result of the Rosenbaum bounding procedure to check the hidden bias due to unobservable selection shows that the estimated ATT for outcome variable (total annual expenditure) was insensitive indicating its robustness. Hence, the ATT result in table 6 was insensitive to unobservable selection bias, being the pure effect of program intervention. Therefore, as far as ATT result was the only effect of the intervention, program intervention (microfinance participation) reduces poverty at the household level.

5.3 Recommendation

Based on the results of descriptive and econometrics analysis, the researcher forwarded the following policy implications as an alternative for the importance of rural households living standard improvement:

- As indicated above in the conclusion part of the study, the poverty magnitude and dimension (poverty incidence, gap, and severity) were found to be high relative to the national poverty situation. So, it can be important to give due attention to different stakeholders by searching for different opportunities i.e., for example giving credit services, which will increase the well-being of rural households in general and in the study area in particular.

- The study underlined that education was found to have a positive contribution in increasing microfinance participation in the study area and this has its role in decreasing rural householdpoverty.Therefore,expanding bothformal and informal education for rural households, creating awareness about the importance of education will improve their skill to use farm inputs effectively as well as help to benefit from existing microfinance services appropriately and this can improve the well-being of the rural household.
- Family size is found to be one of the key factors that contribute toan increase in demand for microfinance usage. Hence, the government and NGOs, particularly operating at the local levels should design sound implementation programs to put the already endorsed and existing population policy into effect. To this end, two side actions can be possible. One, a focus on family planning and integrated health service and education provisions must catch the attention of decision-making bodies. Second, the existing microfinance institution (OCSSCO) should facilitate and expand its services for rural household farmers to help them with this high family size and respective financial problems.
- The income from nonfarm activities helps rural households to participate in microfinance services so that this can increase the stream from which the income is generated. Thus, the government and NGOs, particularly operating at the local levels should design sound implementation programs like forming farmers' cooperatives and then supporting them financially to involve them in different nonfarm activities and this can help them (rural households) to improve their living standards.

- Extension contact is one important variable influencing microfinance participation significantly and positively. This indicates that frequently contacted household has the advantage of improving awareness regarding how to use loan economically, how to manage his/her farm inputs and resources and also come out with skill and experiences to cope with the existing situation in life. Therefore, the concerned body both government and non-government should due attention to those rural households through creating different training opportunities on issues such as farm-related training, advantages and usage of microfinance services, family planning, etc. to improve their living standard.
- Moreover, the study found that distance from the market was among the important factors that determinetheparticipationoftheruralhouseholdin microfinance inthe study area.This shows the advantages of market access to rural households. Therefore, it is suggested that government bodies from bottom to top should give due attention to this group through creating market opportunities for their products and this can improve their participation as well as help the rural community improving their living condition.
- The positive impact of OCSSCO MFIs in improving expenditure implying that OCSSCO microfinance is important in reducing poverty and enhancing social welfare at Choraboter woreda. Therefore, all necessary support should be provided to the industry from the government and other funding organizations to improve their performance and outreach as well as to improve the magnitude and type of impact towards poverty alleviation. Hence, the importance of microfinance in poverty reduction is of immense benefit to the participant households in Choraboter woreda. There is, therefore the need to help and sustain it and help its growth as its role to the development of the ChoraBoter woreda and the country at large is very good.

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APPENDICES

Appendix 1: Conversion factor for Adult Equivalent Scale

Year of age	Male	Female
0-1	0.33	0.33
1-2	0.46	0.46
2-3	0.54	0.54
3-5	0.62	0.62
5-7	0.74	0.72
7-10	0.84	0.72
10-12	0.88	0.78
12-14	0.96	0.84
14-16	1.06	0.86
16-18	1.14	0.86
18-30	1.04	0.80
30-60	1.00	1.02
60 plus	0.84	0.74

Appendix 2: Omitted Variable Test for Logit Model

```
. estatovtest


Ramsey RESET test using powers of the fitted
      values of MFP Ho: model has no omitted
      variables
               F (3,309)=   45.34
                Prob>F=       0.0000
```

Appendix 3a: Contingency Test of Multicollinearity Test for Discrete Variables

genhh	1.0000				
mstatus	0.0308	1.0000			
relihh	0.0251	0.0370	1.0000		
nfarm	-0.1134	0.0596	-0.0095	1.0000	
attrisk	-0.0446	0.0001	-0.0456	-0.1224	1.0000

Appendix 3b: Variance Inflation Factor Test of Multicollinearity for Continuous Variables

```
. vif
```

Variable	VIF	1/VIF
Fsize	1.35	0.7413
DistMark	1.34	0.7456
EXCont	1.28	0.7817
Dratio	1.21	0.8268
CLSize	1.14	0.8776
AgeHH	1.14	0.8786
EducHH	1.09	0.9199
VaAsset	1.04	0.9612
Mean VIF	1.20	

Appendix 4: Model Specification Test

```
. linktest

Iteration 0:   log likelihood = -216.04906
Iteration 1:   log likelihood = -46.477407
Iteration 2:   log likelihood = -42.455085
Iteration 3:   log likelihood = -42.246429
Iteration 4:   log likelihood = -42.232534
Iteration 5:   log likelihood = -42.232496
Iteration 6:   log likelihood = -42.232496

Logistic regression                             Number of obs     =        326
                                                LR chi2(2)        =     347.63
                                                Prob > chi2       =     0.0000
Log likelihood = -42.232496                     Pseudo R2         =     0.8045

------------------------------------------------------------------------------
         mfp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        _hat |   1.013924   .1600803     6.33   0.000     .7001726    1.327676
      _hatsq |    .014599   .0444257     0.33   0.742    -.0724737    .1016717
       _cons |  -.0513031   .3215977    -0.16   0.873    -.6816229    .5790168
------------------------------------------------------------------------------
Note: 0 failures and 1 success completely determined.
```

Appendix 4: Logistic regression model of Microfinance Participation Determinant

```
Logistic regression                             Number of obs     =        326
                                                LR chi2(13)       =     347.53
                                                Prob > chi2       =     0.0000
Log likelihood = -42.284637                     Pseudo R2         =     0.8043

------------------------------------------------------------------------------
         MFP |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       AgeHH |  -.0496844    .023872    -2.08   0.037    -.0964727   -.002896
       GenHH |   .0566539   .6779217     0.08   0.933    -1.272048   1.385356
     Mstatus |   2.558408   .9481698     2.70   0.007     .7000289   4.416786
      ReliHH |  -1.258832   .7400296    -1.70   0.089    -2.709264    .191599
      EducHH |   .1949058   .1099155     1.77   0.076    -.0205246   .4103361
       Nfarm |   1.895605   .6714493     2.82   0.005     .5795884   3.211621
       Fsize |   .6681807   .1509714     4.43   0.000     .3722823   .9640791
      Dratio |  -.2372544   .1741751    -1.36   0.173    -.5786313   .1041225
      EXCont |    1.63216   .3387716     4.82   0.000     .9681803   2.296141
    DistMark |  -.7127277   .1148765    -6.20   0.000    -.9378816   -.4875738
     VaAsset |  -.0000121   3.72e-06    -3.26   0.001    -.0000194   -4.82e-06
     AttRisk |  -.0080636   .6524425    -0.01   0.990    -1.286827    1.2707
      CLSize |   .3272271   .1056922     3.10   0.002     .1200743    .53438
       _cons |  -4.883993   2.005162    -2.44   0.015    -8.814039   -.953948
------------------------------------------------------------------------------
```

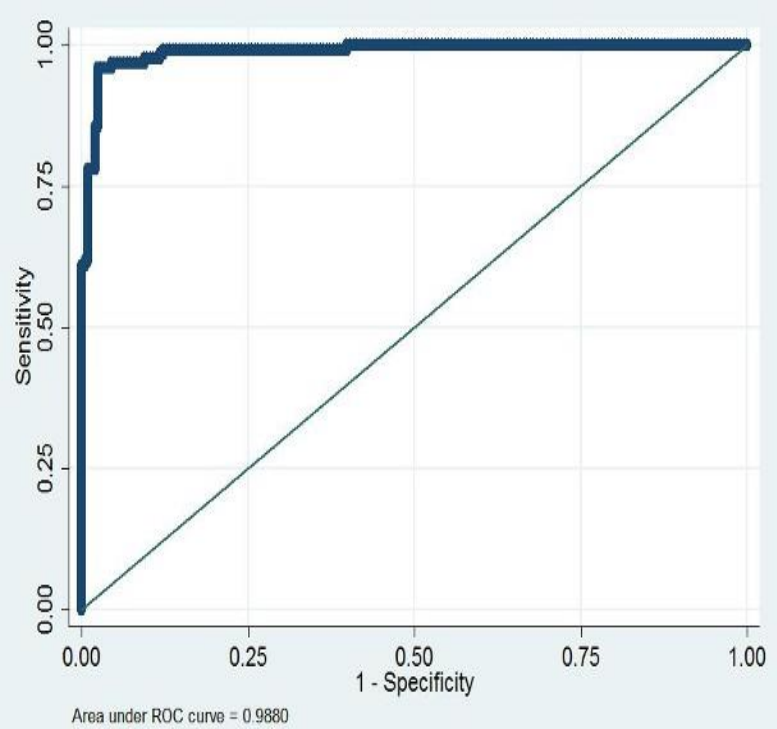
Appendix 6: Marginal Effect Model of Logistic Regression

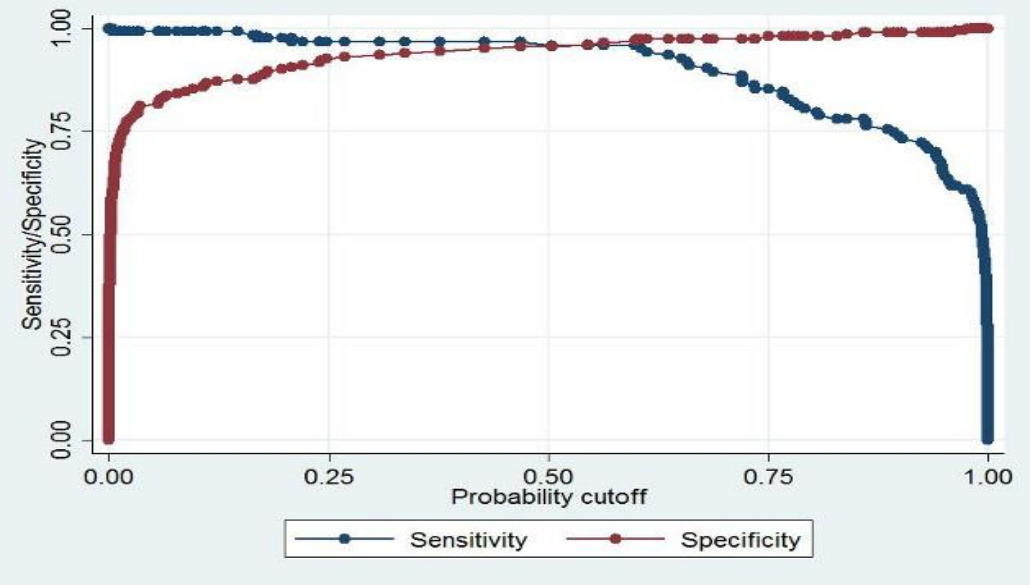
```
. mfx

Marginal effects after logit
      y  = Pr(mfp) (predict)
         =  .09007227
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
agehh	-.0040721	.00218	-1.87	0.061	-.008339	.000194	42.6779
genhh*	.0046034	.05462	0.08	0.933	-.102448	.111655	.687117
mstatus*	.1450882	.05149	2.82	0.005	.044178	.245998	.745399
relihh*	-.0764704	.04102	-1.86	0.062	-.156865	.003925	.180982
educhh	.0159743	.01038	1.54	0.124	-.004364	.036312	4.4908
nfarm*	.1701909	.07948	2.14	0.032	.014414	.325968	.484663
fsize	.0547636	.01931	2.84	0.005	.016912	.092615	7.44479
dratio	-.0194452	.01622	-1.20	0.231	-.051236	.012346	3.69325
excont	.1337707	.04299	3.11	0.002	.049518	.218023	1.62883
distmark	-.0584146	.01786	-3.27	0.001	-.093414	-.023416	8.01733
vaasset	-9.93e-07	.00000	-2.62	0.009	-1.7e-06	-2.5e-07	63839.3
attrisk*	-.0006609	.05348	-0.01	0.990	-.10548	.104159	.506135
clsize	.0268193	.00987	2.72	0.007	.007476	.046162	2.79525

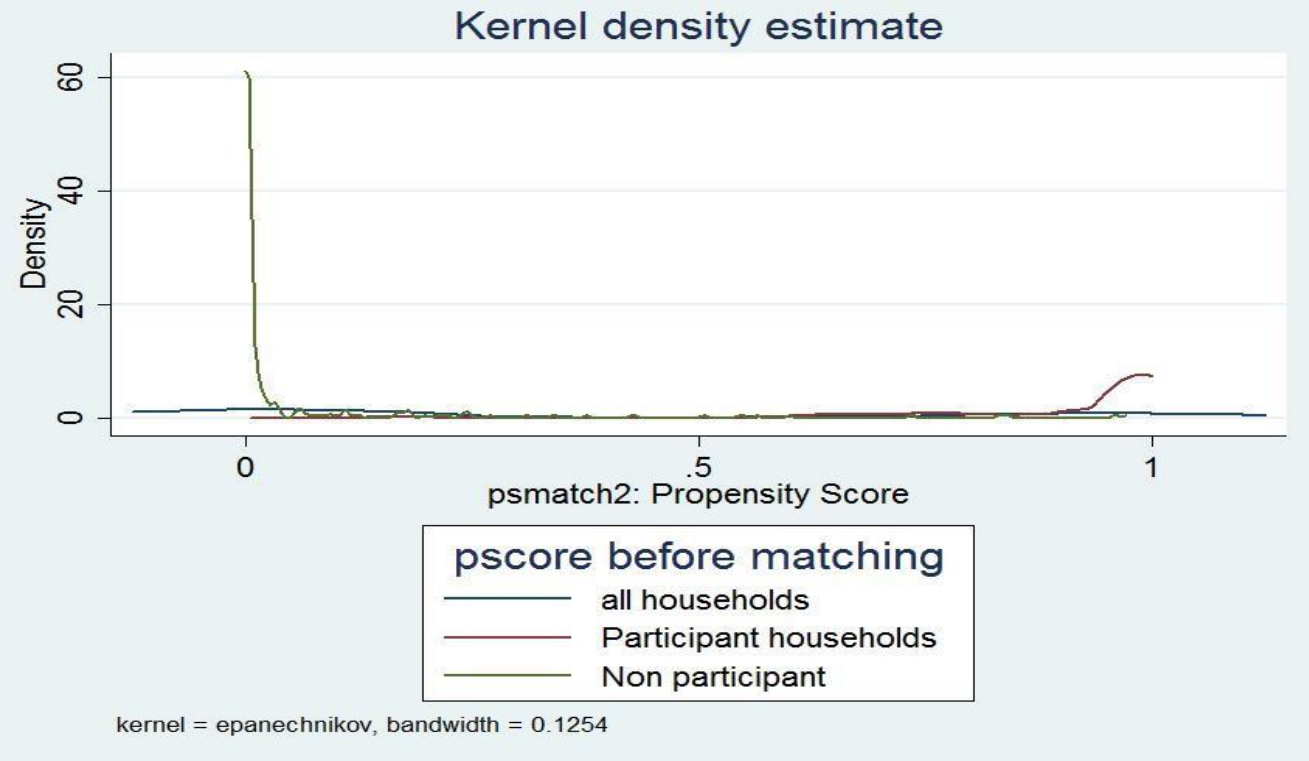
(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 7: Graph of Sensitivity and Specificity Test for Logit Model

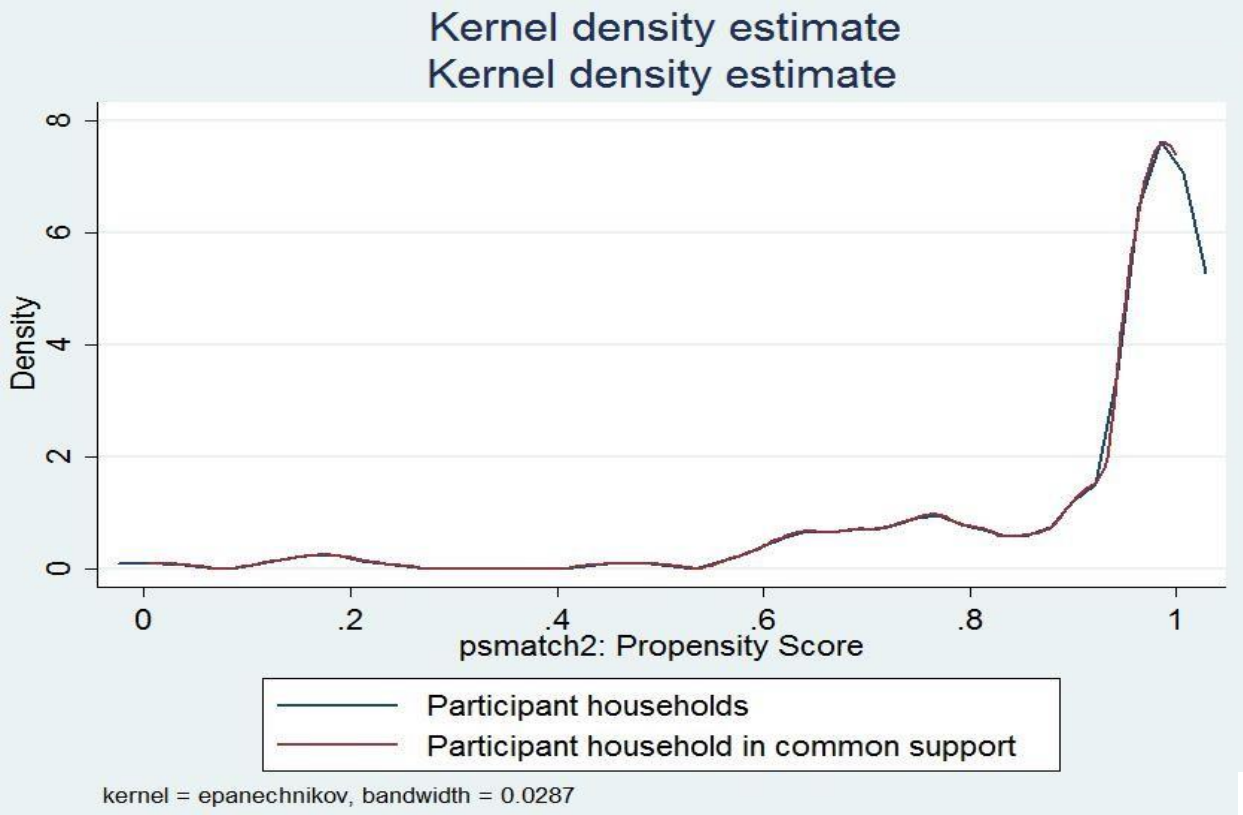



Sensitivity/Specificity
0.00
0.25
0.50
0.75
1.00
0.00
0.25
0.50
0.75
1.00
Probability cutoff
Sensitivity
Specificity

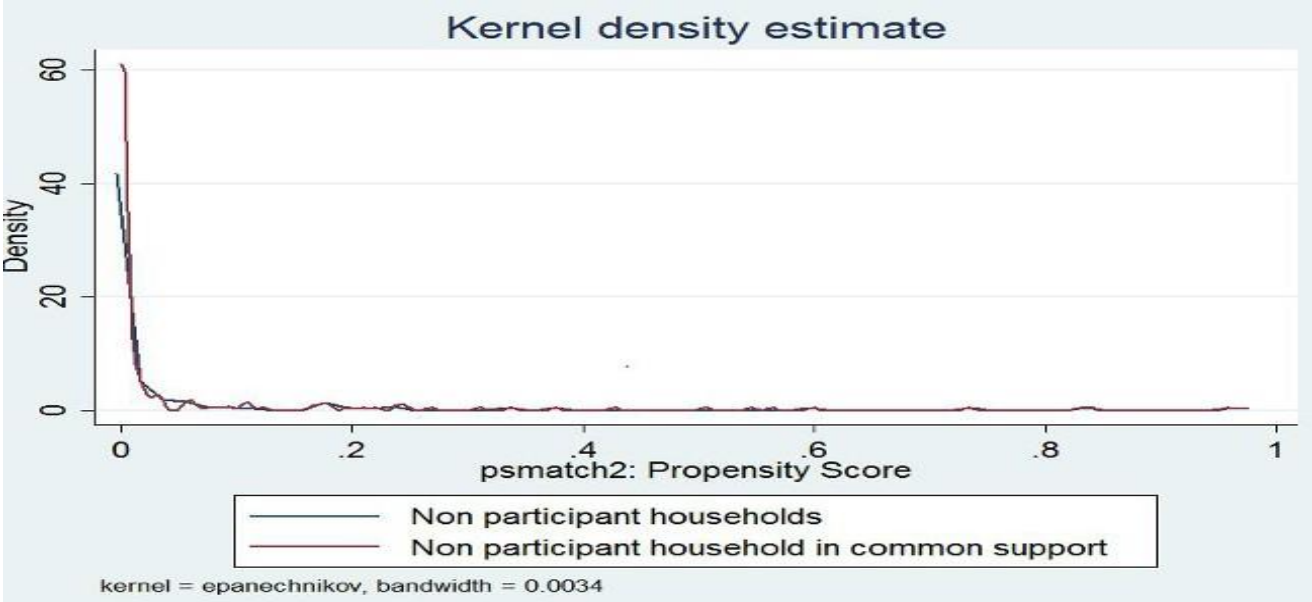
Appendix 8: Kernel density of score matching before matching

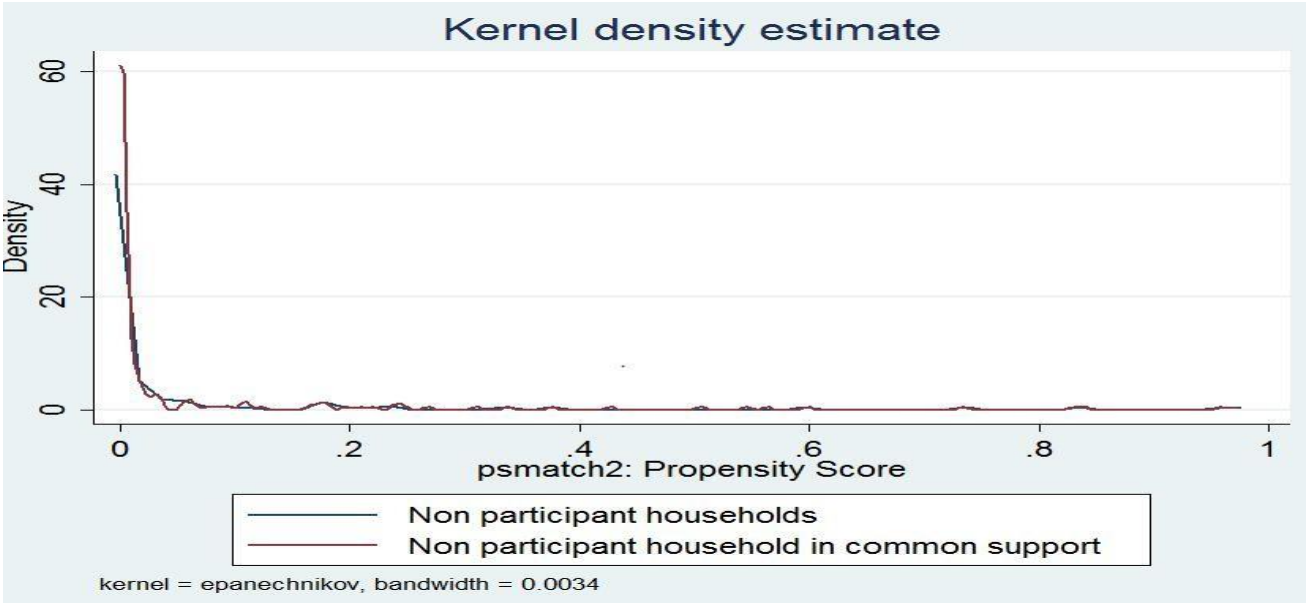


Appendix 9: Kernel density of propensity score of participant households in common support

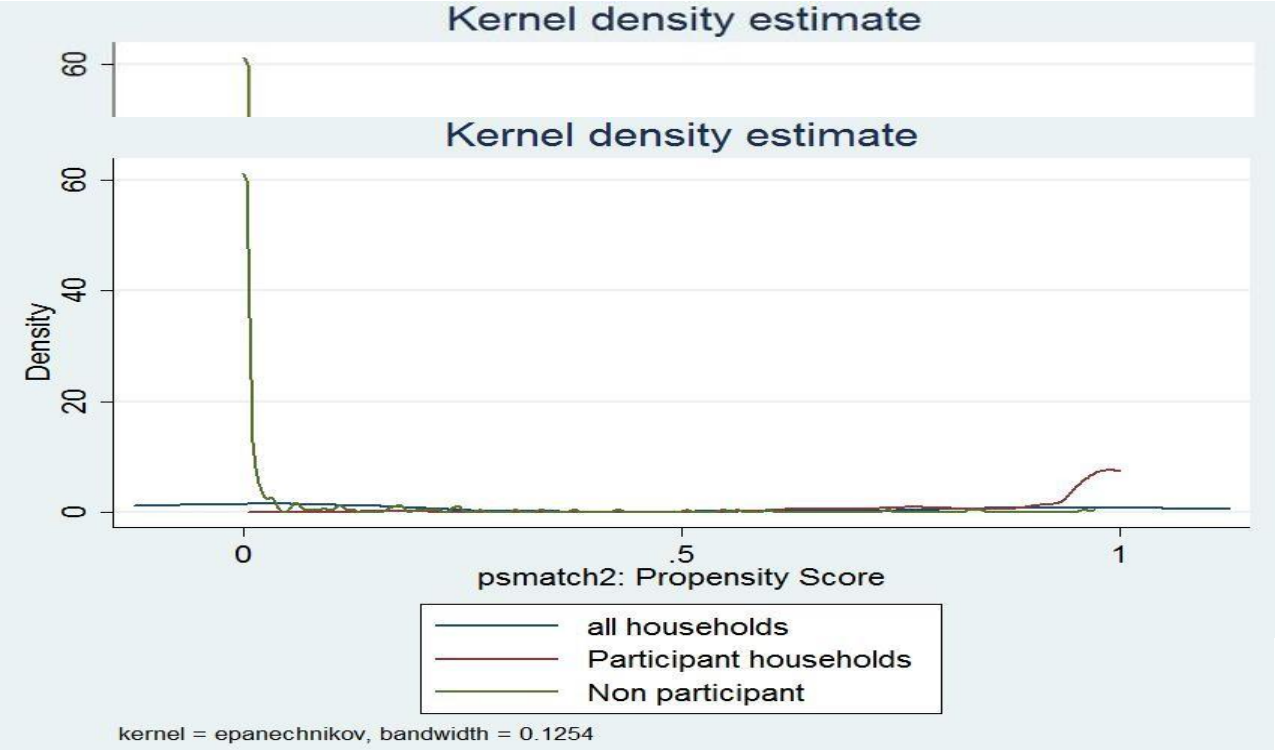


Appendix 10: Kernel densityof propensity score of non participant households in common support




Kernel density estimate
Density
0
20
40
60
0
.2
.4
.6
.8
1
psmatch2: Propensity Score
Non participant households
Non participant household in common support
kernel = epanechnikov, bandwidth = 0.0034

Appendix 11: Kernel Density Propensity Score after Matching



Appendix 12: Balance of Propensity Score and Covariates

Variable	Unmatched / Matched	Mean Treated	Mean Control	%bias	%reduct |bias|	t-test t	t-test p>|t|	V(T)/ V(C)
_pscore	U	.90111	.05992	481.1		42.72	0.000	1.26
	M	.75205	.72353	16.3	96.6	0.57	0.569	0.76
Agehh	U	41.195	43.576	-17.6		-1.52	0.130	0.76
	M	42.375	44.917	-18.8	-6.8	-0.90	0.372	1.13
Genhh	U	.66667	.69951	-7.0		-0.62	0.537	.
	M	.75	.61986	27.9	-296.3	1.37	0.173	.
mstatus	U	.91057	.64532	67.1		5.56	0.000	.
	M	.875	.89215	-4.3	93.5	-0.26	0.796	.
Relihh	U	.15447	.19704	-11.2		-0.97	0.335	.
	M	.20833	.23254	-6.3	43.1	-0.28	0.778	.
Educhh	U	5.3333	3.9803	45.2		4.00	0.000	1.22
	M	4.3333	3.767	18.9	58.1	0.92	0.359	0.85
Nfarm	U	.66667	.37438	61.0		5.32	0.000	.
	M	.4375	.47217	-7.2	88.1	-0.34	0.736	.
Fsize	U	9.2114	6.3744	108.8		9.73	0.000	1.42
	M	7.4583	8.1922	-28.1	74.1	-1.41	0.162	0.78
Dratio	U	3.7398	3.665	4.2		0.37	0.710	1.22
	M	3.6667	3.9821	-17.7	-321.7	-0.94	0.348	2.02*
Excont	U	2.5203	1.0887	136.1		11.87	0.000	0.94
	M	2.0833	1.9595	11.8	91.3	0.58	0.561	1.31
distmark	U	3.8711	10.53	-210.9		-17.81	0.000	0.54*
	M	4.9104	5.5898	-21.5	89.8	-1.04	0.302	1.90*
vaasset	U	40224	78148	-44.4		-3.75	0.000	0.53*
	M	46875	53501	-7.8	82.5	-0.39	0.698	3.03*
attrisk	U	.4878	.51724	-5.9		-0.51	0.608	.
	M	.58333	.53915	8.8	-50.1	0.43	0.667	.
Clsize	U	3.7866	2.1946	89.1		7.32	0.000	0.30*
	M	3.6531	4.0513	-22.3	75.0	-0.45	0.654	0.02*

Household Survey Questionnaires

Jimma University
SCHOOL OF GRADUATE STUDIES
COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF ECONOMICS

THESIS TITLE: **Determinants of Microfinance Participation and Its Impact on Rural Household Poverty in ChoraBoter Woreda, Jimma Zone, Ethiopia: Evidence from Oromia Credit and Saving Share Company (OCSSCO)**

Farm Households Questionnaire

Introduction

Dear respondent, first I would like to thank you for your cooperation in the success of household data collection of this study. This interview questionnaire was designed for a research study whose overall objective is to identify and analyze "**Determinants of Microfinance Participation and its Impact on Rural Household Poverty in ChoraBoter Woreda, Jimma Zone, Ethiopia: Evidence from Oromia Credit and Saving Share Company (OCSSCO)".** The farm household data will be entirely used for the Master thesis so that any information in this document will not be used for another purpose. Since your honest and genuine response is highly invaluable to get inputs for the study, I would like to request you kindly give us accurate and relevant data for each question in the questionnaire. To this end, I kindly request that you complete the following short questionnaires

General Instructions for Respondents

1. Please don't enter your name or conduct details on the questionnaires.
2. Please feel free to respond to what you know and/or feel.
3. If there are questions that you don't understand ask for clarifications.

General Instruction for the Enumerators:

1. Make a brief introduction to each respondent before starting any question (greet them in the local language, get his/her name, tell them about yours & the institution you are working for, & make clear the purpose of study).
2. Please ask each question clearly and patiently until the farmers understand it.
3. Please do not try to use vague technical terms while asking (use local unit).

4 . During the process of the interview put the answer of each respondent on the space provided and use a tick mark in the box when necessary to describe his choice.

Enumerator's name:_____Sign
Questionnaire no:
District/Woreda:
Name of municipality/village:
Name of household head interviewed:
Date of interview:

Thank you in advance for sparing your precious time to fill in this questionnaire.

PART ONE: Household Information

1.1. Gender of the household head: Male☐ Female ☐

1. 2. Age of the household head (in years): _____

1.3. The highest educational qualification of the household head in the year_____

1.4. The level of educational qualification of the household head:

Illiterate ☐ Basic education (read and write) ☐ Primary school ☐ Secondary school ☐ TVET(Certificate) ☐ College/University ☐ other specify_____

1.5 Marital status of the household head: Married ☐ Divorced ☐ Widowed ☐ Single ☐

1.6 What is your religious affiliation? Islam ☐ Christianity ☐ Traditional ☐ Others_____

1.7 Total family size_____

1.8 How many children under 15 years are there in the household? _____

1.9 How many of your household members are adults (15-64years)? _____

1.10 How many of your household members are elders above 64years?____

1.11 How many of your family members can write and read?_____

PART TWO: Socio-economic Conditions of the Households

2.1 What is type of associations are there in your community? (More than one option is possible): Farmers' Cooperative ☐ Youth Association ☐ Women Association ☐ Consumers' cooperative

Iddir ☐ Iqub ☐ Other(specify)_____

2.2 Do you have any other administrative responsibility in society? Yes ☐ No ☐

2.3 If your answer for the above question is 'yes, how many days, on average, do you spend per week to your responsibility?_____

2.4 The dominant economic activity of the household head

Agriculture ☐ Manufacturing ☐ Service ☐ Others(specify):_____

2.5 What is your annual income from farm activities (in birr)?_____

2.6 How many hectares of land you owned allotted by the government?_____

2.7 How many hectares of land is under cultivation in the 2020/21 production season (own, rented in, and sharecropping in)?_____

2.8 Did you ever contact extension agents in the 2020/21 production season? Yes ☐ No ☐

2.9 If your answer to question 2.8 above is "yes", how many times did you contact extension agents (in number)?_____

2.10 Did you involve in non/off-farm business activities in the 2020/21 production season? Yes ☐ No ☐

2.11 Ifyouranswertoquestion2.10aboveisyes,whataretheactivitiesyouinvolved in?

(More than option is possible) Weaving ☐ Blacksmithing ☐ Tannery ☐ Basketry ☐

Pottery ☐ Tailoring ☐ Making/selling ☐ Charcoal ☐ Selling Fuel Wood ☐ Grain Trade ☐

Livestock Trading ☐ Selling Labor ☐

Selling local beverage ☐ Carpentry ☐ Employ of Local Institution ☐ Others_____

2.12Is there market accessibility for your goods and services produced? Yes ☐ No ☐

2.13 What is the value of your total assets in Birr?_____

PART THREE: Institutional Services

5.1 Microfinance Institutional Service

5.1.1 Are you a member of the OCSSCO microfinance institution? Yes ☐ No ☐

5.1.2If your answer to question 5.1.1 above is 'Yes, when did you start membership?_____

5.1.3 Have you applied for a loan from OCSSCO for the 2019/20 production seasons? Yes ☐ No ☐

5.1 4 If your answer for question no 5.1.3 is 'Yes', then in what form did get your loan: Group lending ☐ Individual ☐

5.1 5 If your answer to question 5.1.4 above is 'group lending', how many members?_____

5.1 6 If your answer to question 5.1.3 above 'Yes', was your loan application rejected? Yes ☐ No ☐

5.1 7 If 'Yes' to question no. 5.1.6, why was your application was rejected?_____

5.1.8. If "No" to question no. 5.1. 6, have you received the total amount of credit you

applied for? Yes ☐ No, partially approved ☐

5.1 9 How was the credit distributed to you? In cash ☐ Kinds ☐ Both ☐

5.1 10 What was the amount of credit you received? ___ Birr [hint: if the loan is kind use market price to estimate it]

5.1 11 For what purpose you used the available credit? (More than one option is possible)

Purpose	Yes	No	…Purpose	Yes	No
To buy farm inputs	☐	☐	For food purchase	☐	☐
To buy farm materials	☐	☐	For health service for	☐	☐
further agricultural investment	☐	☐	for house improvement	☐	☐
To startup new farm business	☐	☐	Other (specify)_____		
For education	☐	☐			

5.1 12 If 'No' to question no. 5.1.8, why did you not receive the total credit you applied for?

Reason	Yes	No
Lack of collateral	☐	☐
Lending policy of the institution	☐	☐
Other (specify_____		

5.1.13 If your answer to question no. 5.1.3 above is 'No', why you didn't apply for credit in 2018/19?

Reason	Yes	No	Reason	Yes	No
No need, household has enough	☐	☐	No bank account	☐	☐
Top high interest rate	☐	☐	Not a member	☐	☐
Lack of collateral	☐	☐	Fear of losing collateral	☐	☐
Lack of supplier r	☐	☐	Fear of being rejected	☐	☐
Don't know where to apply	☐	☐	Don't like to be indebted	☐	☐
Other(specify)__ _____	☐	☐			

2.14 Did you repay your loan? Yes No

2.15 If you paid or paying the loan what is/are the income sources?

Selling livestock ☐ Selling asset ☐ Borrowing from relatives/friends ☐

Land sale/rent ☐ Other(specify)_____

2.16 How long far you are from OCSSCO (in kilometer)?_____

2.17 Did you exclude from these revises of OCSSCO due to fear risks? Yes ☐ No ☐

2.18 If your answer to question 5.1.17 is 'Yes, what kind of risk you

fear? Market and price failure ☐ Livestock illness/diseases ☐ Drought ☐

Crop damage ☐ Others(specify)_____

2.19 Did you ever get another option of getting credit other than OCSSCO to finance your monetary needs? Yes ☐ No ☐

2.20 If your answer for question 5.1.19 is 'Yes', which credit source?

Bank ☐ Iqub ☐ Friend/family borrowing ☐ Other(specify)_____

5.2 Access to Extension Service

5.2.1 Did you receive extension advice and training from your local extension workers for the 2020/21 farm production season? Yes ☐ No ☐

5.2.2 If your answer for question 5.2.1 is 'yes, how often did the extension Workers give you advisor and training services for 2018/19 production season? _____

5.2.3 If you did not get any extension services, what were the main reasons for not participating in the extension program? (More than one option is possible)

Reason	Yes	No	Reason	Yes	No
Ignorance (unknowing about its usage)	☐	☐	Lack of adequate crop land	☐	☐
Does not yield the expected results	☐	☐	Extension officers did not show up	☐	☐

Non- availability of the program ☐ Other (specify)_____

PART FOUR: Household Expenditures

I. Household Expenditures on Food and Drink Items

	Items	measurement	Quantity	Expense per week (in birr)	Expense per month (in birr)	Expense per year (in birr)	Source 1=own production 2=purchase 3=gift
	Coffee	Cup					
	Tea	Cup					
	Maize	KG					
	Teff	KG					
	Barley	KG					
	Sorghum	KG					
	Wheat	KG					
	Vegetables	KG					
	Fruits	KG					
	Lentils	KG					
	Vetch	KG					
	Egg	Number					
	Meat	KG					
	Milk/cheese	Litter					
	Chicken	Number					
	Honey	KG					
	Sugar	KG					

	Salt	KG					
	Oil	Litter					
	Pepper	KG					
	Tella	Litter					
	Tej	Litter					
	Araqi	Litter					
	Beans	KG					
	Root crops such as potatoes	KG					
	Others						

II. Household Expenditures on Non-food Items

No	Items	Amount of expense in birr	
		Per month	Per year
1	Transportation		
2	Medical care		
3	School fee		
4	Utensils		
5	Transfer to others		
6	Social affairs (for church, Idir, etc.)		
7	Batteries		
8	Repayment of credit (for agricultural inputs and others)		
9	Soap		
10	Kerosene		
11	Marches		
12	Payment for epub		
13	Clothing and footwear		
Others			