

T.R.
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DEPARTMENT OF AGRICULTURAL ECONOMICS



**CREDIT UTILIZATION AND SATISFACTION OF FARMERS
FROM MICROFINANCE INSTITUTIONS: THE CASE OF
OROMIA CREDIT AND SAVINGS SHARE COMPANY IN THE
WADERA DISTRICT (ETHIOPIA)**

Master's Thesis

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2022

ACCEPTANCE AND APPROVAL OF THE THESIS

The study entitled “**Credit Utilization and Satisfaction of Farmers from Microfinance Institutions: The Case of Oromia Credit and Savings Share Company in the Wadera District (Ethiopia)**” prepared by **Gutama Girja URAGO** and supervised by **Prof. Dr. Mehmet BOZOĞLU** was found successful and unanimously accepted by committee members as MSc thesis of the Department of Agricultural Economics, following the examination on the date 15/06/2022.

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ÖZET

ÇİFTÇİLERİN MİKROFİNANS KURUMLARINDAN KREDİ KULLANIMLARI VE MEMNUNİYETLERİ: WADERA İLİ OROMİA KREDİ VE TASARRUF HİSSE ŞİRKETİ ÖRNEĞİ (ETİYOPYA)

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Tarım, başta gelişmekte olan ülkeler olmak üzere ülkenin ekonomilerinin gelişmesinde büyük önem taşımaktadır. Tarımın ekonomiye en büyük katkısını sağlayan çiftçiler, resmi kaynaklardan kredi almada farklı zorluklarla karşı karşıyadırlar. Bu çalışmanın amacı, çiftçilerin mikro-finans kurumlarından kredi kullanımları ve geri ödemelerini etkileyen faktörler ile birlikte mikro-finans kurumlarının hizmetlerinden memnuniyetlerini ortaya konulmasıdır. Bu amaçlara ulaşmak için gerekli olan birincil veriler 270 çiftçiden yüz yüze anketler yoluyla elde edilmiştir. İlgili web siteleri ve yayıncıların ikincil verileri de kullanılmıştır. Toplanan verileri analiz etmek için hem tanımlayıcı hem de ekonometri modeller kullanılmıştır. Çiftçilerin kredi kullanımlarını ve aldıkları kredi miktarlarını modellemek için bağımsız çift-sınır modeli kullanılmıştır. Çiftçilerin kredi geri ödemelerini etkileyen faktörleri belirlemek için lojistik regresyon modeli kullanılmıştır. Çiftçilerin mikro-finans kuruluşları tarafından sağlanan hizmetlerin kalitesinden memnuniyetlerini ölçmek için SERVPERF modelin uyarlanmış hali kullanılmıştır.

Probit regresyonu sonuçları, çiftçilerin tasarruf alışkanlıklarının ve eğitimin kredi kullanım kararlarını olumlu, çiftçilerin tarım dışı gelirleri ve kredi geri ödeme dönemine yönelik algılarının ise olumsuz etkilediğini göstermiştir. Kırpılmış regresyon sonuçları, çiftçilerin yaşının, çiftlik gelirinin ve çiftlik dışı gelirin alınan kredi miktarı üzerinde olumlu bir etkisi olduğunu ortaya koymuştur. Lojistik regresyon sonuçları, arazi büyüklüğü, tropik hayvan sayısı ve çiftçilerin konutları ile mikro-finans kurumlarının arasındaki mesafenin kredinin geri ödenmesini pozitif olarak etkilediğini, medeni durum ve çiftçilerin kredi geri ödeme dönemine yönelik algısının ise negatif olarak etkilediğini göstermiştir. Faktör analizi sonucunda mikro-finans kurumlarının çiftçilere sunduğu hizmetlerin kalitesini ölçen beş unsur elde edilmiştir. Tam güvenilirlik, empati, yanıt verebilirlik, planlama ve kredi koşulları unsurlarının çiftçilerin mikro-finans kurumlarının hizmetlerinden memnuniyeti ile anlamlı bir pozitif ilişkisi olduğunu ortaya konulmuştur. İlgili kuruluşların çiftçilerin kredi kullanımının faydaları ve kredi temerrüdünün sonuçları hakkında farkındalığını artırmak için daha fazla eğitim vermeleri tavsiye edilmektedir.

Anahtar Kelimeler: Kredi erişimi, Double hurdle, Faktör analizi, Kredi geri ödemesi, Guji.

ABSTRACT

CREDIT UTILIZATION AND SATISFACTION OF FARMERS FROM MICROFINANCE INSTITUTIONS: THE CASE OF OROMIA CREDIT AND SAVINGS SHARE COMPANY IN THE WADERA DISTRICT (ETHIOPIA)

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Agriculture is crucial in developing the economies of countries, especially developing countries. Smallholder farmers, who share the largest contribution of agriculture to the economy, confront different challenges in obtaining credit from formal sources. The aim of this study was to examine the effective factors for credit utilization and repayment and, farmers' satisfaction with microfinance institution services by farmers from microfinance institutions. In addition, it was aimed to measure. The necessary primary data that was used to achieve these goals was collected from 270 farmers through face-to-face questionnaires. Some secondary data from reputed websites and publishers were also used. Both descriptive and econometric models were employed to analyze the collected data. The independent double-hurdle model was used to model credit utilization and loan amounts received by farmers. The logit model was employed to identify factors influencing loan repayment by farmers. A modified version of the SERVPERF model was used to measure farmers' satisfaction with the quality of services provided by microfinance institutions.

The results of the first-hurdle probit regression showed that the saving habits of farmers and training had a positive impact on the credit utilization decisions of farmers, while the off-farm income and perception of farmers towards the loan repayment period had a negative impact. The results of second-hurdle truncated regression revealed a positive impact of the age of farmers, farm income, and off-farm income on the received loan amount. The output of the logistic regression showed that the land size, the number of tropical livestock, and the distance between residences of farmers and microfinance institutions had a positive relationship with loan repayment, while marital status and the perception of farmers towards the loan repayment period had an inverse relationship with loan repayment by farmers. As a result of factor analysis, five dimensions that measure the quality of services provided by microfinance institutions to farmers were derived. All reliability, empathy, responsiveness, schedule, and terms of credit dimensions had a significant positive relationship with farmers' satisfaction and the services of microfinance institutions. It was recommended that the concerned body should provide more training to raise awareness of farmers about the benefits of credit utilization and the consequences of loan-default.

Keywords: Credit access, Double hurdle, Factor analysis, Loan repayment, Guji.

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LIST OF ACRONYMS

AB	: Abyssinia Bank
ABB	: Abay Bank
ADIB	: Addis International Bank
ADL	: Agricultural Development Led Industrialization
AIB	: Awash International Bank
AIDB	: Agricultural and Industrial Development Bank
BNIB	: Buna International Bank
BRIB	: Berhan International Bank
CBE	: Commercial Bank of Ethiopia
CBO	: Cooperative Bank of Oromia
CSA	: Central Statistics Agency
DA	: Development Agents
DB	: Dashen Bank
DBE	: Development Bank of Ethiopia
DGB	: Dehub Global Bank
EB	: Enat Bank
EIC	: Ethiopian Insurance Corporation
ETB	: Ethiopian Birr
FAO	: Food and Agriculture Organization
FTC	: Farmers' Training Center
GDP	: Gross Domestic Product
HSB	: Housing and Savings Bank
IBM	: International Business Machines
KMO	: Kaiser–Meyer–Olkin
LIB	: Lion International Bank
MFI	: Microfinance Institution
NBE	: National Bank of Ethiopia
NGO	: Non-governmental Organization
NIB	: Nib International Bank

OCSSC	: Oromia Credit and Saving Share Company
OIB	: Oromia International Bank
PAF	: Principal Axes Factoring
PCA	: Principal Component Analysis
REST	: Relief Society of Tigray
SPSS	: Statistical Package for the Social Sciences
UB	: United Bank
UNOCHA	: United Nations Office for the Coordination of Humanitarian Affairs
USAID	: United States Agency for International Development
VIF	: Variance Inflation Factor
WB	: Wogagen Bank
ZB	: Zemen Bank

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INTRODUCTION

Background of the Study

Ethiopia is one of the predominant agrarian countries in Sub-Saharan Africa. The agricultural sector in the country accounts for about 40% of total gross domestic product (GDP), 75% of total employment in the country, and 80% of total exports (USAID, 2021). This clearly shows that fostering agricultural sector growth would make a huge difference in gross domestic product growth. As a result, the growth rate of the agricultural sector should be prioritized as the primary issue to be addressed in the economy of Ethiopia. On the contrary, the agricultural sector's growth rate is slower than other sectors, such as the industrial sector. According to the report by the National Bank of Ethiopia (NBE), the growth of real GDP was determined as 9.6% growth in the industry, 5.3% in the services, and 4.3% in the agriculture sector. The agricultural sector's share in the economy of Ethiopia declined from 39.6% in 2015 to 32.7% in 2020 (NBE, 2020). However, its implication is not the declination of agricultural productivity or output, but rather the growth rate of the agricultural sector compared to both the industrial and service sectors in the country. Although agricultural production and productivity are increasing, the rate is not as rapid as it should be.

In the Ethiopian economy, the agricultural sector is the main economic activity that controls most of the economic activity compared to both the industrial and service sectors. The government is attempting to increase the contribution of the agricultural sector to the economy through various strategies and policies. Agricultural Development Led Industrialization (ADLI) is one of these strategies and policies. ADLI is defined as a development strategy that aims to achieve initial industrialization through potent agricultural growth and close agricultural-industrial linkages (Ohno, 2009). Despite these strategies and policies, the percentage share of the agricultural sector in GDP has been decreasing over time (Degu, 2019; NBE, 2020).

In rural areas of Ethiopia, households mainly rely on agricultural activities to generate their income, food and meet their household financial needs (Ayele and Goshu,

2018). Thus, about 78% of Ethiopians who are living in the rural areas have been engaged in agriculture to meet their basic needs (World Bank, 2021). Therefore, the issue of improving agricultural productivity is not only to increase the GDP of the country but also to assure food self-sufficiency of the farmers and enable them to generate more income to cover basic costs of living. The improvement in the agricultural productivity of the farmers would foster the growth of the GDP of the country, in addition to improving the living standards of the mass population who live in rural areas with agriculture as the main activity. Therefore, overcoming the problems that are tackling the growth of agricultural production and the productivity of farmers is a crucial key to success for Ethiopia.

Smallholder farmers dominate the agricultural production in the country. About 12 million smallholder farming households account for an estimated 95% of agricultural production and 75% of all employment in the country (FAO, 2020; USAID, 2021). Smallholder farmers are the driving force behind the growth of agricultural production in the country. Improving agricultural production and productivity requires smallholder farmers to adopt modern farming technologies, use more fertilizers, boost irrigation and cultivate high-yield crops. All these activities necessitate more capital to purchase the inputs and cover the operation costs. Therefore, it increases the financial needs of smallholder farmers (Urago and Bozoğlu, 2022). These smallholder farmers are often unable to pay for those expenses out of their wallets due to their low income. Thus, here comes the demand for credit to cover the gap between owned and required capital (Singh et al., 1985).

According to Mosher (1966), as cited by Berhanu (2005), credit is one of the important instruments that are used to enable farmers to adopt innovation and new technologies. Therefore, the government encourages microfinance institutions to facilitate credit services for farmers. The Ethiopian government established its first microfinance legislation in 1996 (proclamation 40/96) to provide microcredit services to the needy. Thus, at the end of the fiscal year 2019/20, the number of microfinance

institutions in the country reached 41, with a total capital of Birr 19.4 billion and a total asset of Birr 92.2 billion (NBE, 2020).

Statement of Problems

Farmers in subsistence agriculture and low-income countries like Ethiopia, where smallholder farming dominates the overall national economy, face a severe lack of financial resources to purchase productive agricultural inputs. On the other hand, the prices of agricultural inputs are increasing gradually. As a result, the subsistence reliance of smallholder farmers on financial institutions for credit has increased significantly in recent years. Microfinance institutions in Ethiopia have been providing loans to the needy, especially smallholder farmers, for many years. They operate to meet the credit needs of the poor and facilitate saving mechanisms for them. Although the number of farmers using credit from microfinance institutions was low in the past, nowadays most smallholder farmers are benefiting from microfinance institutions' credit services.

Many studies have been conducted to address the credit received by smallholder farmers from microfinance institutions. Some of them were aimed at measuring the impact of microfinance institutions on the productivity of farmers, while others were focused on the performance of microfinance institutions. Although some research has been conducted to give a general idea about credit utilization by farmers, it is not considered sufficient to provide enough insight into this issue. The difference in farming styles and the diversity in the livelihoods of the farmers are the main reasons for expecting different results from this research. Therefore, there is a gap in addressing the issue of credit utilization by farmers, which would be covered by this study, especially in the chosen study area.

The failure of smallholder farmers to repay their debts on time or at all is a severe problem that both credit institutions and smallholder farmers are dealing with. According to Hunte (1996), as cited by Birhanu (2005), loan default is a tragedy because credit institutions frequently collapse due to a lack of proper lending strategies and trustworthy credit policies. This research would play a great role in the decision to take

proper action to prevent this problem in advance by describing and analyzing the driving factors for loan defaulting.

Satisfaction of the farmers is crucial for proper credit utilization of farmers and strengthening microfinance institutions. As per reviewed literature, there was no research that had been conducted to address the issue of farmer satisfaction with microfinance institution services in Ethiopia. Therefore, it is not clear whether these farmers are satisfied with the current loan provision services of microfinance institutions or whether they use microfinance institution services due to a lack of alternative options. This study is expected to close the gap in this area.

Objectives of Study

The general objective of this study is to analyze the extent to which the credit utilization, repayment, and satisfaction of farmers from microfinance institutions are associated with different socio-demographic and economic characteristics of the farmers and the service quality of microfinance institutions.

The specific objectives of this thesis are:

- to describe the credit utilization status of the farmers.
- to identify factors influencing farmers' decisions on credit utilization.
- to investigate and identify factors influencing loan repayment by farmers.
- to assess the farmers' satisfaction with microfinance institution services.
- to determine the service quality dimensions affecting the satisfaction of farmers with MFI's services.
- to give information about the socio-economic characteristics of the farmers in the Wadera district. The reason for the selection of this district is discussed in section 0.

Research Questions

The research questions of the study are stated below:

- Do the farmers use credit from microfinance institutions?
- If so, to what extent do they utilize it?
- What are the factors influencing credit utilization by farmers?
- Do farmers repay their debts before the due date?
- What are the factors affecting loan repayment by farmers?
- At what level are farmers satisfied with the services of microfinance institutions?
- What are the service quality dimensions that are affecting farmer satisfaction with MFI's services?

Significance of the Study

Since the agricultural sector is the dominant sector in the economy of the country, it should be prioritized to combat persistent poverty in the country. So far, many studies have suggested that credit provision to farmers plays a vital role in improving agricultural production and productivity. Therefore, studies on the factors which affect credit utilization, loan repayment, and satisfaction of farmers are crucial to enable microfinance institutions, governmental and non-governmental financial institutions, policymakers, policy implementers, as well as borrowers, to know where and how to channel efforts to optimize credit utilization, minimize loan defaults, improve farmer satisfaction, and help to draft successful credit strategies and policies in the study area and outside of it. Furthermore, the study would provide important information for those who want to conduct detailed and comprehensive studies on microfinance institutions.

Scope and Limitation of the Study

This study was conducted in the Wadera District of the Guji Administrative Zone of the Oromia Regional State, Ethiopia. As stated in the objectives, the scope of this research is limited to identifying important demographic, socioeconomic, and institutional factors influencing credit utilization and repayment by farmers, in addition to investigating the service quality dimensions of microfinance institutions that are associated with farmer satisfaction as a customer. Accordingly, the study was conducted

in six kebeles of the district and 270 randomly selected farmers were included in the study. The selected respondents were smallholder farmers residing in these kebeles who are responsible for managing agricultural activities. Primary data was collected using a structured questionnaire from these selected respondents. Descriptive statistics, logit model, independent double-hurdle model, and factor analysis followed by multiple linear regression were used to achieve the objectives of the research.

This study is concerned with the analysis of the main determinants of microfinance institution source credit utilization, repayment, and satisfaction of the Wadera district farmers and did not consider the credit utilization, repayment, and satisfaction of farmers in the area from other credit sources. However, the analysis of the credit utilization, repayment, and satisfaction of the farmers from other credit sources could generate useful information that might help in channeling financial resources to the farmers of the district. Future studies on this issue might provide helpful information to policymakers, financial institutions, and other stakeholders involved in rural development.

Organization of the Thesis

The main body of this thesis consists of six sections. A brief introduction is given in the first section. Section two reviews the related literature. A brief overview of the financial sectors in Ethiopia is discussed in section three. Section four gives insight into the data and methodologies used in this thesis including the proposed empirical framework. The results of descriptive and econometric analysis are presented and discussed in section five. Lastly, the sixth section presents the overall conclusion drawn from the findings in this thesis.

LITERATURE REVIEW

Credit can be defined as a contract in which a borrower receives a sum of money or something of value and repays the lender at a later date, usually with interest. In other words, the ability to control the money of other people in exchange for a promise to repay it at a later date (Singh Yadav, 2017).

Determinants of Credit Utilization and Loan Amount

The characteristics of the farmer and the attributes of the financial institution can influence the farmer's decision to use credit and repay their loan on time. The characteristics of the farmer encompass age, gender, income, education, marital status, and so on. The attributes of the financial institutions include the interest rate, terms of credit, and distance from the credit provider (Auma and Mensah, 2014). These attributes together affect the credit use decisions of the farmer, the amount of credit to use, and the loan repayment. Many authors have conducted research to analyze these factors. The related literature is discussed below.

Age is one of the individual characteristics that can influence the farmer's decision regarding credit utilization. Many authors have followed the life-cycle hypothesis, which states that young and energetic individuals with ambitions for higher incomes will be more active in saving to accumulate wealth (Auma and Mensah, 2014). This hypothesis predicts that older adults are more likely to rely on their past savings and accumulated wealth to smooth their consumption. In addition, the young may prefer to invest in non-farm activities that require large capital investments, whereas older adults prefer to invest in farm activities. Thus, the demand for microcredit among older adults would be higher compared to younger individuals. The study results by Zeller (1994) proved that the age of an individual was positively related to the decision to apply for credit and the amount of credit applied for. The results of the multinomial logit regression model used by Mpuga (2010) also supported the positive relationship between the age of an individual and their demand for credit. Furthermore, the findings of Karagaytan and Bozoğlu (2019) revealed a positive effect of the farmers' age on their access to

Agricultural Credit Cooperatives. Therefore, the farmer's age is expected to vary positively with credit utilization and negatively with the loan amount received.

The credit utilization status of the farmer may vary depending on the gender of the farmer. Men and women engage in different activities, especially in developing countries like Ethiopia, which have different implications on their credit utilization. Commonly, women are responsible for taking care of the children and other home activities, while men are responsible for income-generating activities. Furthermore, there are different power relations between men and women. Virtually, women have no control of assets such as land, livestock, and buildings that could be used as collateral to acquire credit. However, in some cases, women can also manage assets when their husband dies or gets divorced. Thus, women rarely become responsible for acquiring credit. According to the findings of Lemessa and Gemechu (2016), households headed by females were less likely to access and use credit than male-headed households. In addition, Danso-Abbeam et al. (2016) found the positive marginal effect and significance of gender, which implies that credit accessibility is high for male farmers. The result of the independent double-hurdle model by Ayele and Goshu (2018) showed that the amount of loans received was higher for male farmers. However, Akpan et al. (2013) found a negative relationship between the gender of the farmers and the decision to access credit. The author commented that the result could be attributed to the multi-functional role of males as it was observed that male farmers in the study area were engaged in other income-generating activities apart from their primary occupation. Therefore, for this study, the gender of the farmer is expected to have a positive effect on the credit utilization and amount of loans taken for the male farmers.

The marital status of the farmer is among the individual characteristics that can influence his or her decision regarding credit utilization. According to Jappelli (1990), married couples could be given more credit because they were less mobile and loans could be jointly underwritten. His report proved that singles were 3.4% more likely to be constrained than married couples. Consequently, the probability of credit utilization for married farmers would be higher than that of unmarried farmers.

The credit utilization status of the farmer can be affected by the education levels of the farmers. Etonihu et al. (2013) found that the education level of the farmer was positively related to the rate of accessibility to agricultural credit. In addition, the findings of Ayele and Goshu (2018) proved that the literacy status of the farmer was among the statistically significant factors that influenced the decision of the smallholder farmers to use credit and the amount of loan received. The result of the first-hurdle (Probit regression) estimated that the literacy of the farmer increased the probability of utilizing microfinance loan by 41%, *ceteris paribus*. The result was in line with the findings of Bakhshoodeh and Karami (2008), Ibrahim and Aliero (2012), Abunyuwah and Blay (2013), and Lemessa and Gemechu, (2016) which revealed that rural farmers with better literacy qualifications had a higher probability of accessing credit from formal financial institutions. The result of the second-hurdle (Truncated regression) of Ayele and Goshu (2018) predicted that the literacy of farmers increased the loan size by 5.2%, keeping other things constant. Many authors have demonstrated a positive relationship between the farmer's literacy and the amount of loan taken (Abunyuwah and Blay, 2013; Asante-Addo et al., 2013; Lensink et al., 2005; Mohamed, 2003). Therefore, for this study, the literacy status of the farmer is expected to have a positive impact on the decision of the farmer to use credit and the amount of loan received.

According to Lemessa and Gemechu (2016), the decrement in the number of family members increases the farmers' access to formal credit use. The result was similar to the result of the logit model used by Isitor et al. (2014) which revealed that the household size was negatively related to the probability of credit utilization. Using a probit model, Danso-Abbeam et al. (2016) also found an inverse relationship between household and credit access of the farmers. The negative relationship between family size and credit could be attributed to those farmers with small family sizes, who can use more capital for labor and other farm inputs, which increase the demand for credit, and as demand increased, there would be a chance of access to credit. Meanwhile, Ayele and Goshu (2018) found a positive relationship between the number of family members and the microfinance loan utilization of the farmers.

The size of the landholding also has an impact on the credit utilization of the farmers. As the size of the owned land increases, the operation costs also increase, stressing the necessity of credit. According to the result of the probit model used by Ayele and Goshu (2018), keeping other factors constant, as the size of a landholding increased by 1 hectare, the probability of using a microfinance loan increased by 36.1%. The output of the logit model used by Lemessa and Gemechu (2016) also supported the positive impact of farm size on the credit utilization of the farmer. In addition, the findings of Gunes et al., (2016) revealed that the size of cultivated land has a significant positive impact on the agricultural credit usage by farmers.

Many authors argued that farmers' perceptions of loan repayment periods and the distance of the loan provider from the farmer's residence had a significant impact on credit utilization and loan amount taken (Ayele and Goshu, 2018; Isitor et al., 2014; Lemessa and Gemechu, 2016). The farmers who thought the loan repayment period was constrained were less likely to use credit. Furthermore, the probability of credit utilization of farmers who reside far from credit providers was also low. As a result, farmers' perceptions of the loan repayment period and distance from the loan provider are expected to have a negative impact on credit utilization and the amount of loans taken out by farmers.

Determinants of Loan Repayment

The loan repayment of the farmer can be influenced by the age of the farmer. Rao et al. (2019) revealed a negative relationship between the age of an individual and loan-default. The result coincided with the findings of Berhanu (1999), Godquin (2004), and Ezihe et al. (2014). The reason for these findings could be that the aggressiveness of the young individuals led to loan defaults. Another possible reason might be that older adults have more accumulated savings over their lifetime. Thus, the older adults have enough capital to repay the loan. However, this hypothesis might not always be true. On the contrary, Berhanu (2005) and Wongnaa and Awunyo-Vitor (2013) found a positive relationship between age and loan repayment default by farmers. In addition, Khandker et al. (1995) also reported that age had a strong positive impact on loan repayment

default. Therefore, the age of the farmers can vary positively or negatively with the loan repayment of the farmers.

According to Matin (1997), the education status of the household had strong negative effect on loan default status, irrespective of the income level of the household. On the contrary, Teklu (2006) found that the education status of the farmer was significant and positively related to the loan repayment performance of the farmer. The result could be attributed to the literate farmers' awareness of the importance of loan repayment and the consequences of default.

Haile (2015) revealed a positive relationship between family size and the loan repayment of the farmer. The result could be attributed to one of their family members being involved in a source of other income-generating activities that could help them earn additional income and allow them to repay on time. Rao et al. (2019) also found that the size of the household had a positive impact on loan repayment of the farmers. Furthermore, many authors have emphasized the positive impact of household size on loan repayment (Berhanu, 2005; Cheriye, 2013; Sileshi et al., 2012). Therefore, the probability of loan repayment by the farmer is expected to increase, as the number of family members increases.

Gebeyehu et al. (2013) found that as the land holding of the farmer increases, the loan repayment of the farmer also increases. This could be attributed to the income generated from the large farm being higher and enough to cover the loan repayment. The impact of size of livestock owned by the farmer could be similar to that of farm size.

The farmers' loan repayment can also be influenced by other socio-economic characteristics of farmers and institutional characteristics of lending institutions. Interest rate, terms of credit, and distance from credit provider are among institutional characteristics, and farm income, off-farm income, number of owned livestock, training, and perception of the farmers towards the loan repayment period are among socio-economic characteristics of farmers that affect their loan repayment (Awunyo-Vitor, 2012; Gebeyehu et al., 2013; Haile, 2015; Rao et al., 2019).

Farmer Satisfaction with Microfinance Institutions

Satisfaction is a feeling of pleasure or disappointment because of comparing the perceived performance of the outcome with their expectations. Farmer satisfaction with microfinance institutions is determined by the quality of services provided by the institutions (Agustina et al., 2018). The improvement in the quality of services provided by microfinance institutions would be followed by the increasing satisfaction of farmers as customers. Furthermore, Shanka (2012) conducted a study to assess the service quality of private banks in Ethiopia and its impact on customer satisfaction. The result of the study revealed that there is a positive impact of service quality on customer satisfaction.

Gunes et al. (2016) used factor analysis followed by an ordered probit model to investigate the factors that influence Turkish farmers' satisfaction with agricultural credit. The result of their study revealed that credit card usage is the most important factor that determines farmer satisfaction with agricultural credit. In addition, Aggelopoulos et al. (2011) used Principal Axes Factoring (PAF) to examine farmers' satisfaction with the structures and services related to agricultural credit in Greece. They concluded that the most important factor was linked to financial terms of credit and transaction costs.

Hypotheses

From the above review of literature, the following hypotheses were formulated:

1. The socio-economic characteristics of the farmers and the institutional characteristics of microfinance institutions have an impact on the credit utilization and loan amount received by farmers.
2. The socio-economic characteristics of the farmers and the institutional characteristics of microfinance institutions have an impact on loan repayment by farmers.
3. The service quality dimensions of MFI have a positive impact on customer satisfaction with their services.

FINANCIAL SECTORS IN ETHIOPIA

Financial sectors contribute to economic growth by funding entrepreneurs and, in particular, channeling capital to high-return projects. The role of the financial sector is to act as a mediator between lenders and borrowers, offering a variety of savings mechanisms with varying risk and return characteristics and assisting investors in locating the capital they require while taking into account the returns and risks associated with the projects they wish to pursue (Kotiso, 2019). In a market economy, a stable and sophisticated financial system encourages investment efficiency and growth.

Financial Institutions in Ethiopia

The financial institutions in Ethiopia can be categorized as formal, semi-formal, and informal institutions (Kotiso, 2019). Financial institutions such as banks, insurance companies, and microfinance institutions make up the formal financial system, which is a regulated sector. Savings and credit cooperatives are semi-formal financial institutions that are not regulated or supervised by the National Bank of Ethiopia (NBE). Traditional savings and lending mechanisms such as *idir*¹ (burial association), *equb*² (saving association), and *mahber*³ are part of the active informal financial market in Ethiopia.

1.1.1. Banking Sector

The history of the banking sector in Ethiopia started with the establishment of the Bank of Abyssinia in 1905. The bank was jointly owned by the Ethiopian government and the National Bank of Egypt, which was then under British rule (Kotiso, 2019). Following the Italian invasion in 1935, the Bank of Abyssinia was closed, and Ethiopia had no banking system of its own until 1942, when the government established the State Bank of Ethiopia (Tesfay, 2010). The bank provided the functions of both the central bank and a commercial bank until 1963, when it was reorganized and two institutions

¹ Idir is an association established among neighbors or workers to raise funds that will be used during emergencies, especially to organize funerals for their closest relatives and provide solace in grieving.

² Iqub is an association established by a small group of people in order to provide substantial rotating funding for members.

³ Mahber is commonly used by religious associations to raise funds for medical and funeral expenses.

were established. The created institutions were the National Bank of Ethiopia (NBE) as the central bank of the country, and the Commercial Bank of Ethiopia (CBE), to conduct general banking business with the public, including the mobilization of short-term savings (Admassie, 2004). Many foreign bank branches and a private bank were operating in competition with the government-owned commercial bank until 1976, when they were nationalized and merged into a single government-owned bank. The command system under the Socialist government that ruled from 1974 to 1991 put an end to the competitive banking situation that had begun to grow vigorously in the 1960s and 1970s.

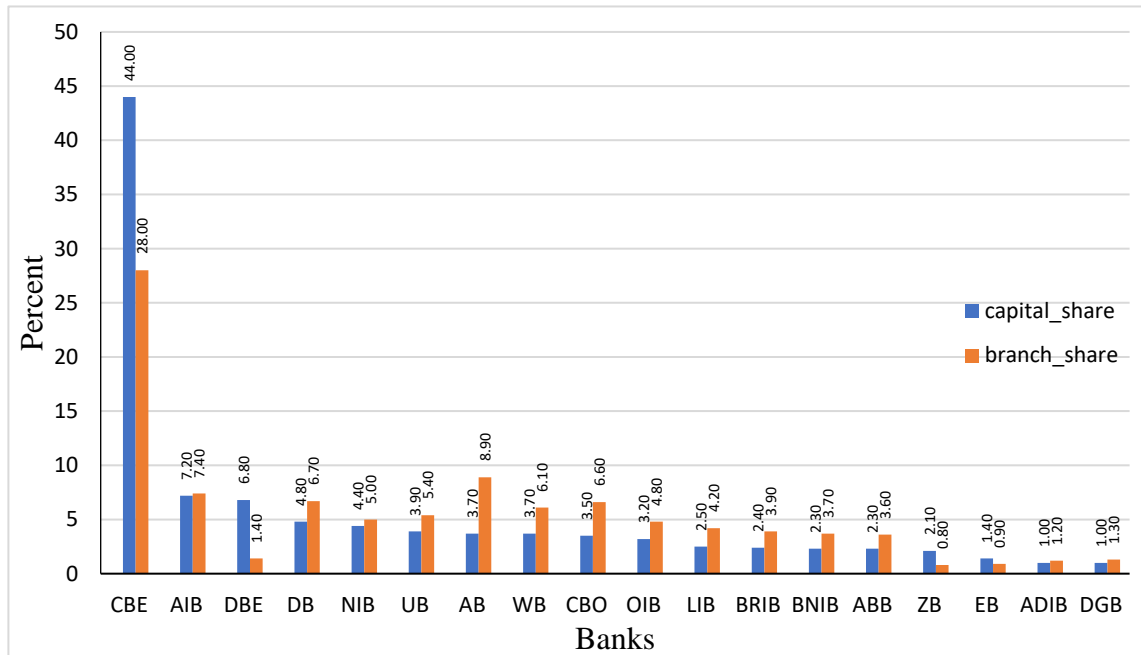
After the change of government in 1991, some measures were taken to liberalize and reorient the economy towards a more market-based system. The financial market was deregulated due to commercial considerations. These reforms were aimed at creating a financially sound, competitive, and well-functioning system that can support long-term economic growth and development (Ahadu, 2019). In 1994, new banking and insurance laws were enacted, and private banks were allowed to be re-established. The supervisory role of the central bank has been extended to include microfinance institutions. However, the three state-owned banks (namely NBE¹, CBE², and AIDB³) continued to dominate the financial market in terms of assets, capital, and deposits (Kiyota et al., 2007).

The number of banks reached 18 (16 private and 2 public), and insurance companies 18 (one public and 17 private) by the end of 2019/2020 (NBE, 2020). The dominance of state-owned banks over private banks that is attributed to the Socialist regime continues. As depicted by Figure 3.1, the Commercial Bank of Ethiopia, which is a state-owned bank, alone controls about 44% of capital and 28% of branches in the country.

¹ National Bank of Ethiopia

² Commercial Bank of Ethiopia

³ Agricultural and Industrial Development Bank



Source: Computed from National Bank of Ethiopia Annual Report 2019/2020

Figure 0.1. Banks share of capital and branches in the country

1.1.2. Microfinance Institutions

Microfinance institutions work to alleviate poverty and vulnerability among poor households by providing credit to farmers to increase their agricultural productivity and incomes, diversifying non-farm income sources, and increasing household assets. In 1994, the Relief Society of Tigray (REST) attempted to rehabilitate drought-affected people and those affected by war through the rural credit scheme, which was the first microfinance service in Ethiopia. It was based on the experiences of other countries and tailored to the needs of the Tigray region, the northern part of Ethiopia (Kotiso, 2019). As a result of its success, the microfinance service was gradually replicated in other regions of the country in the second half of the 1990s. Currently, the number of microfinance institutions has reached 41. There are 11 public, 13 private, and 17 NGO microfinance institutions (NBE, 2020). Their total capital and total assets reached Birr 19.4 billion and Birr 92.2 billion, respectively (Table 0.1). By the end of 2019/2020, the five largest microfinance institutions in the country, namely, Amhara, Dedebit, Oromia,

Omo, and Addis Credit and Savings Institutions, accounted for 82.6% of the total capital, 90.1% of the savings, 85.9% of the credit, and 86.3% of the total assets of the microfinance institutions in the country. This indicates that other microfinance institutions in the country are at their infant stage.

Table 0.1. Microfinance institutions performance (in billions of ETB)

Particulars	2018/19	2019/20	Growth (%)
Total Capital	16.57	19.44	17.30
Saving	41.90	44.71	6.70
Credit	58.72	64.90	10.50
Total Assets	83.48	92.20	10.50

Source: 2019/2020 NBE annual report

Microfinance institutions mainly focus on their economic sustainability. The economic sustainability of microfinance institutions is commonly measured under three dimensions, summarized as the “critical microfinance triangle” developed by Zeller and Meyer (2002). As shown in Figure 0.2, microfinance institutions aim to have an impact on welfare to improve the economy and reduce poverty. The second area of focus is outreach to the poor. This indicates increasing the number of clients they have by reaching more users. MFIs also focus on their financial sustainability in the long-term. According to Zeller and Meyer (2002), financial unsustainability in microfinance institutions arises due to the low repayment rate.

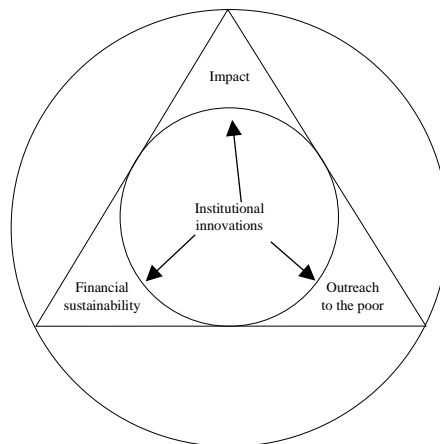


Figure 0.2. The critical triangle of microfinance institutions

Agricultural Credit in Ethiopia

The Agricultural Bank of Ethiopia was established in 1945, following the establishment of the Ministry of Agriculture in 1943 (Tesfay, 2010). The main aim of the bank was to help small landholders whose farms were destroyed during the Italian occupation by providing credit for the purchase of seeds, livestock, and implements, as well as the repair or reconstruction of their homes and farm buildings (Admassie, 1987). The efforts of the Pre-Five Year Development Plan (1945-1951) to support agriculture and small farmers through credit were unsuccessful for a variety of reasons, including the collateral requirement, the landlord-tenant relationship, which made producing certificates of ownership difficult, the diversion of loans to non-agricultural uses, and so on (Admassie, 1987, 2004). Furthermore, the efforts of the Five-Year Development Plan were not able to achieve significant success due to the requirements of high collateral, up to 200% of the loan amount, primarily in the form of real estate and machinery, as well as a guarantee. During the Second Five-Year Development Plan, which was implemented from 1962 to 1967, the government intervened in the allocation of financial resources to accelerate national development, according to the development plan (Admassie, 2004). Government intervention includes the allocation of credit, setting interest rates, and establishing public commercial banks and specialized banks such as development and investment banks. The resources were mobilized and channeled as per the plan by public banks. In the plan, agriculture was prioritized and identified as the leading economic activity, followed by mining, manufacturing, and power as the most propulsive sectors. Comprehensive and minimum package programs, which were intended to support small farmers by organizing and providing low-cost credit through the Agricultural and Industrial Development Bank (AIDB) until the end of the Imperial regime in 1974, did not get far in terms of reaching small farmers.

In 1976, during the Derg regime, after the fall of Emperor Haile Selassie in 1974, a new banking law was enacted in Ethiopia and the financial system was nationalized and

restructured. After 1976, the credit policy was geared toward the country's centralized economic management's overall policy. Accordingly, the financial sector in the country was comprised of five institutions: (1) the NBE, the central bank with overall monetary policy and financial sector supervision responsibilities; (2) the CBE, the only commercial bank that provides retail and wholesale banking, as well as short-term commercial credit and savings mobilization; (3) the AIDB, which focused on short-term, medium-term, and long-term credit for agriculture, industry, and other sectors; (4) the Housing and Savings Bank (HSB), the primary source of long-term credit for the construction of buildings and housing; and (5) the Ethiopian Insurance Corporation (EIC), which offered a comprehensive insurance package (Admassie, 2004). During the Derg regime, more than 89% of the credit provided by AIDB for agriculture went to state farms, with the rest going to agricultural cooperatives, and the private peasant sector receiving only a small portion. The chance of smallholder farmers getting credit was low. Furthermore, out of the overall supply of rural credit through both AIDB and CBE, only 9% went to the peasant sector during 1982 to 1992. Given the large number of people living in rural areas, the amount of land under cultivation, and the demand for credit, the amount of credit given to this sector is negligible. The rural population has been underserved by credit delivery systems.

After the fall of the Derg regime, the country followed a free-market economy that promoted financial liberalization by the end of 1992. The financial reforms undertaken in the country include removing priority access to credit, liberalizing interest rates, restructuring and introducing profitability criteria, reducing direct government control over financial intermediaries and limiting bank loans to the government, improving the NBE's supervisory, regulatory, and legal infrastructure, and allowing private financial intermediaries through the new entry of domestic private intermediaries (Tesfay, 2010). After the reforms, the bank started using two approaches to deliver loans to credit beneficiaries. The first approach was to give the loan directly to the end-user, and the banks signed loan agreements with credit recipients who were responsible for repaying the borrowed funds. In the second approach, other intermediaries, such as cooperatives

or associations, enter into a loan agreement with the bank and then distribute the funds to their members or end-users.

In rural Ethiopia, regional governments serve as intermediaries between banks and farmers. These governments use their federally allocated budget as collateral to borrow money from banks, which they then lend to farmers for agricultural input purchases. Banks have been able to lend large sums of money to farmers thanks to this procedure. Nonetheless, there have been instances of default, necessitating repayment from regional administration budget allocations. Furthermore, despite some success in shifting the flow of financial resources (primarily credit) from public enterprises to the private sector as a result of post-liberalization policy, economic reforms have failed to make the agricultural sector more attractive and suitable for long-term investments (Admassie, 2004). In comparison to other economic sectors, the agricultural sector's share of total credit disbursed by banks has continued to be marginal. As shown in Figure 0.3, the share of the agricultural sector in the total credit disbursed by banks has been declining over the years. Furthermore, almost all agricultural credit is believed to be of a short-term nature, which will have little impact on long-term agricultural investment and transformation. In terms of agricultural credit versus non-agricultural credit, the financial resources that flow to the sector are generally low when compared to the sector's actual and expected contribution to economic growth. Therefore, banks were unable to meet the credit needs of smallholder farmers.

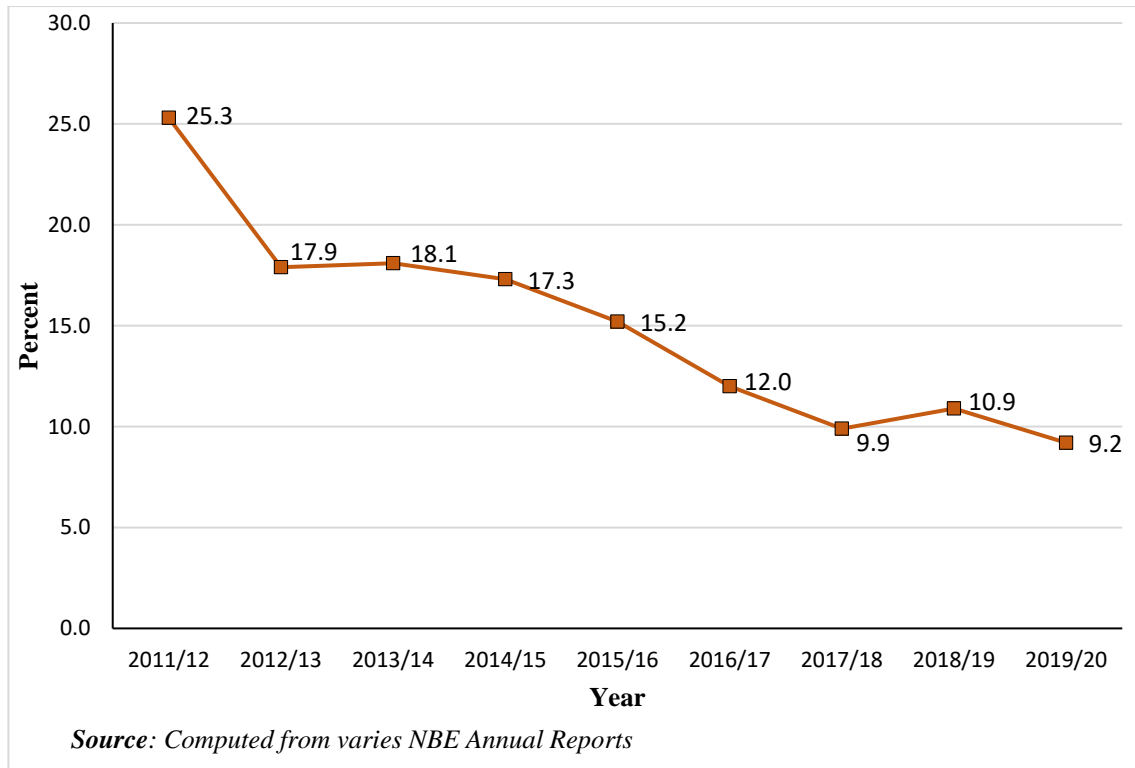


Figure 0.3. The share of the agricultural sector in the total credit disbursed by banks

Why Microfinance Institutions?

Microfinance institutions are either established or supported by the government, as well as foreign and local NGOs, to provide loans, financial education, and boost financial awareness among low-income households. These MFIs are located throughout the country and are legally licensed by the government to accept deposits from the general public, draw drafts, and provide credit for income-generating activities. Even though MFIs have recently begun operations, their reach and coverage of clients in Ethiopia are fairly noticeable (Auma and Mensah, 2014). By the end of June 2019/2020, 41 MFIs with a capital of 112.9 million birrs registered with the NBE following Proc. No. 40/1996 and became operational. These MFIs focus on rural households, particularly poor farmers, because agriculture is the primary activity in rural Ethiopia. Therefore, microfinance institutions are considered the main source of credit for smallholder farmers in Ethiopia.

DATA AND METHODOLOGY

Description of Study Area

Ethiopia, officially the Federal Democratic Republic of Ethiopia, is the most populated country in Africa, next to Nigeria. It has a total area of 1,100,000 km² and a total population of 117 million¹. Oromia Regional State is the largest regional state of the Federal Democratic Republic of Ethiopia with a total population of 35 million and a total area of 353,690 km². The population in the region were Muslim (47.5%), Orthodox (30.5%) and Protestant (17.7%) religion followers (CSA, 2007). The average annual temperature of the region is 19.2°C. The average annual rainfall of the region ranges from 200 to 2400 mm, with an average annual temperature of 7.5-27.5°C. The region receives a lot of rain. The climate zones in the region are tropical (49.8%), sub-tropical (42.2%), and temperate (7.5%).

The East Guji administrative zone is one of the 22 administrative zones of Oromia Regional State. Currently, the East Guji zone consists of 15 rural woredas⁸ and 3 urban woredas (for a total of 18 woredas). Most of these woredas are pastoral and agro-pastoral. The climate of the East Guji zone is mostly arid and semi-arid. The rainfall pattern is bimodal, with the major season (*Gana*) lasting from March to May and receiving 60% of the annual rainfall, while the minor season (*Hagaya*) lasts from September to November and receives 40% of the annual rainfall (Abate, 2016). The mean annual temperature of the zone ranges from 24°C to 30°C.

The Wadera woreda is one of the rural woredas of the East Guji zone and was selected as the study area for this research (Figure 4.1). The main reason for selecting this woreda lies in the findings of Wale (2015) that indicated most of the microfinance institutions found in Ethiopia are concentrated in the Oromia Regional State and Addis Ababa city administration. At the time of questionnaire collection, most woredas in Oromia were not safe for data collection due to political instability in the region. Thus, the Wadera woreda was the safest district until data collection and was selected as the

¹ <https://en.wikipedia.org/wiki/Ethiopia>

study area. The woreda shares many similar topographic characteristics and livelihood systems with other woredas in the zone. The fact that the woreda has a mix of highland and lowland agro-ecological characteristics is also another reason for its selection as the study area for this research. In addition, according to the 2022 UNOCHA population estimate based on the 2021 CSA projection, 90.5% of the population of the woreda are rural dwellers (UNOCHA, 2022).

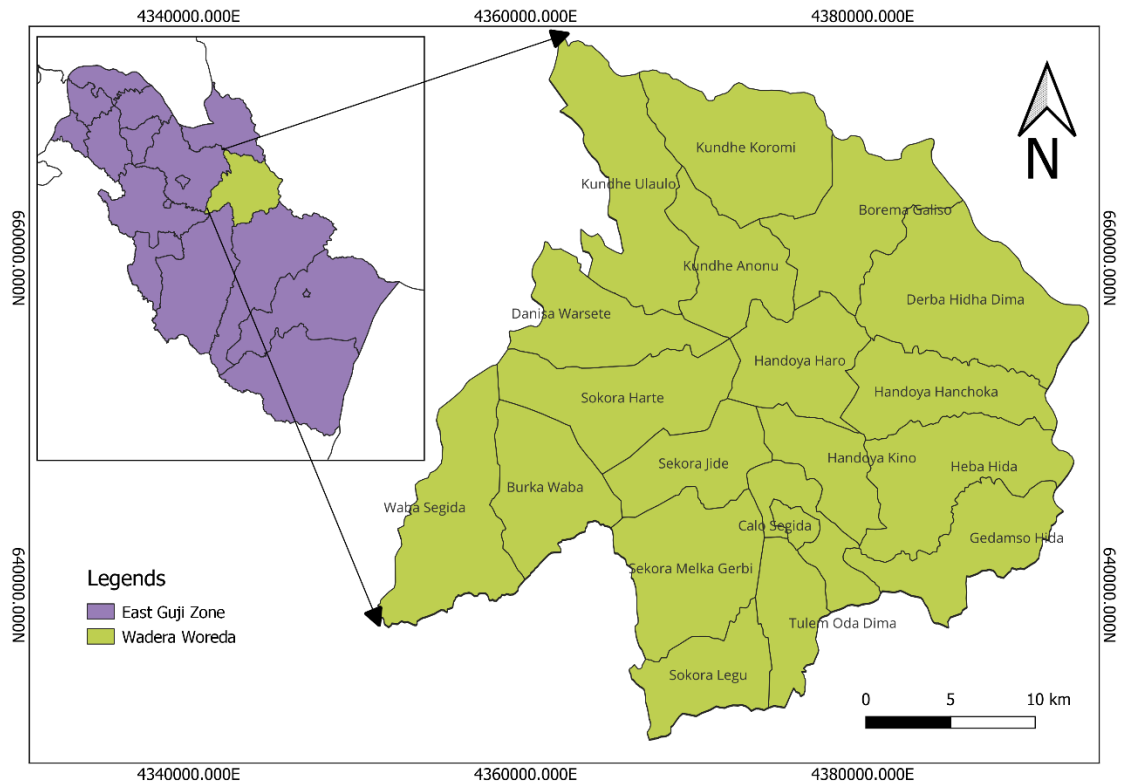


Figure 0.1. Map of the study area

Sampling Technique and Sample Size

The primary data of this research was collected from farmers residing in Wadera woreda¹. Andrew Fisher's formula for the unknown population is used to calculate the sample size (Jung, 2014), as shown below;

$$\text{Sample Size} = \frac{(Z - \text{score})^2 * \text{StdDev} * (1 - \text{StdDev})}{(\text{Margin of error})^2} \quad (1)$$

The Z-score (standard score) correlates to the confidence level. When a random sample is chosen several times, the confidence level is the probability that the confidence interval contains the real population parameter. A Z-score is a number that indicates where a raw score or a percentage of confidence level falls in relation to the population mean. The confidence level in this study is 90% because the total population of farmers in the woreda is unknown, thereby lowering the confidence level. The Z-score for 90% confidence level is 1.645 (Kibuacha, 2021). In addition, the confidence interval shows the margin of error (5%) and the standard deviation is good to set to 0.5 to ensure a proper sample size (Lindfors, 2021). Therefore, the total sample size is;

$$n = \frac{(1.645)^2 * 0.5 * (1 - 0.5)}{(0.05)^2} = \frac{2.7 * 0.5 * 0.5}{0.0025} = \frac{0.675}{0.0025} = \mathbf{270}$$

In a quantitative study, probability sampling is preferable to non-probability sampling because samples drawn using probability sampling techniques are more representative than samples drawn using non-probability sampling techniques (Mossie et al., 2020). Therefore, a two-stage random sampling technique was employed to select the respondents. Firstly, from 20 kebeles² in the woreda, 6 of them were selected randomly. Accordingly, Sokora legu, Sokora Jide, Danisa, Tulam Oda-Dima, Sokora Melka Gerbi and Harte kebeles were selected. A sample size of 270 was determined using Equation 1, and exactly the same number of questionnaires were distributed. Accordingly, from each kebele 45 farmers were selected randomly as a representative of

¹ Woreda is an equivalent of a district in Ethiopia. For the rest part of the thesis, the word woreda is used instead of district

² Kebeles are the administrative units under woreda in Ethiopia

the whole kebele (total sample of 270 farmers) to generate the primary data through a structured interview.

The secondary data that was used in this study was collected from NBE annual financial reports, journal articles, and government reports. In addition, data from reliable data collectors such as FAO, the World Bank, USAID, etc., was used to compare and describe the results.

Theoretical Model

Depending on the reviewed literature and empirical framework, the following multi-stage credit utilization decision tree is developed for this study.

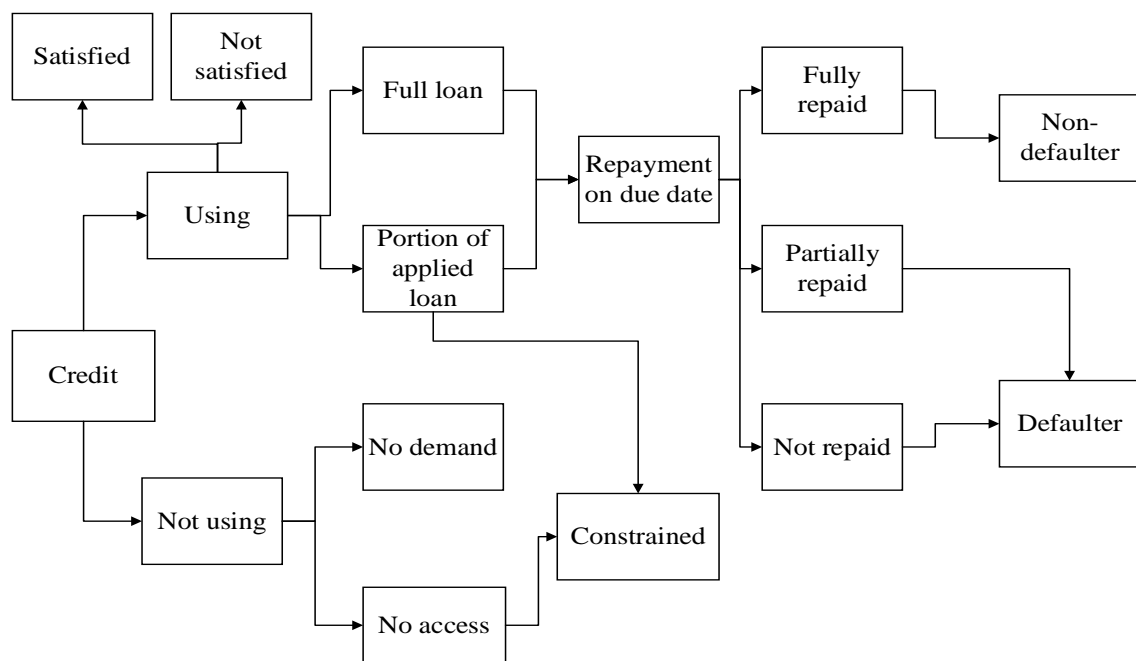


Figure 0.2. Multi-stage credit utilization decision tree

The multi-stage credit utilization decision tree above indicates that farmers decide whether or not to use credit from microfinance institutions. If the farmer is not using credit, the reason could be either there is no access to credit (constrained) or the farmer has no demand for credit. If the farmer is using credit, the farmer may be satisfied or not be satisfied with using credit depending on the microfinance service quality. If the

farmer received the full amount of the loan that he applied for, then he would be credit unconstrained. Otherwise, if the farmer only received a portion, then they are credit constrained. These farmers who are using credit from microfinance institutions are expected to repay the loan before the due date. If the farmer fails to fully repay the loan on the due date, that farmer is categorized as a loan-defaulter.

The credit utilization and loan repayment of the farmer can be influenced by different independent factors. The figure below shows the empirical factors that affect the credit utilization and loan repayment of the farmers.

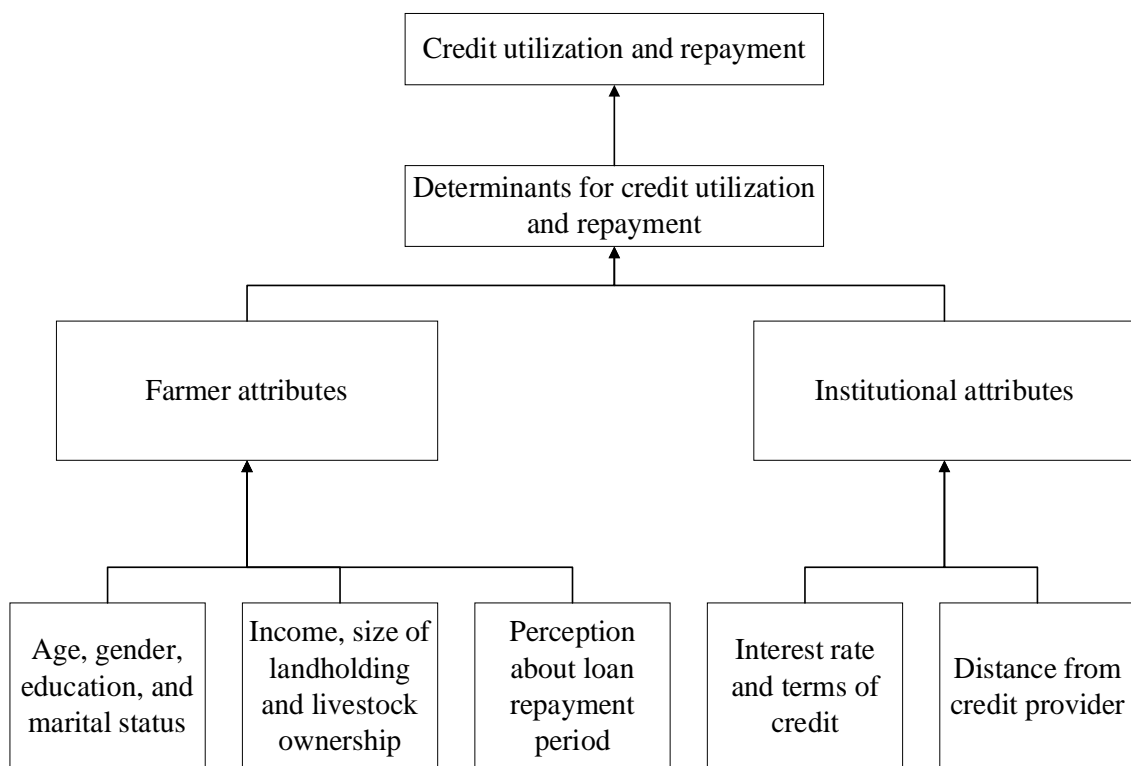


Figure 0.3. Determinants of credit utilization and repayment

As stated under the literature review section, there are several independent variables that influence the decision of the farmer with regard to credit utilization and loan repayment. These include age, education, gender, religion, farm size, family size, marital status, livestock ownership, distance from microfinance institutions, and

perception of the loan repayment period and interest rate. The summary framework of the explanatory variables that are used in this research is given under Section 0.

Based on the reviewed literature, the following framework is developed to analyze the factors that determine farmers' satisfaction with a loan from microfinance institutions.

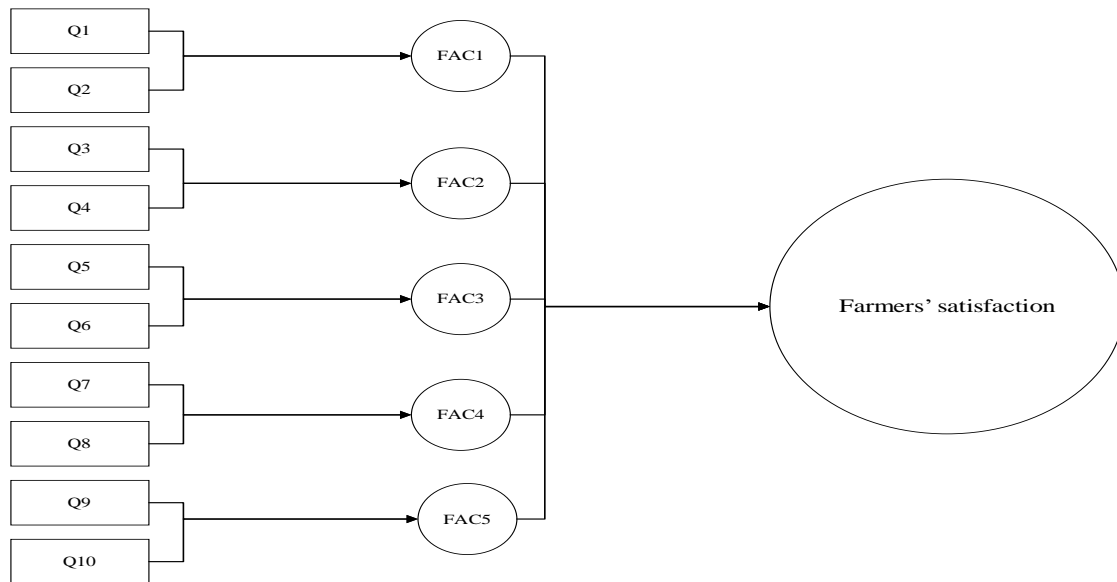


Figure 0.4. Structural model for farmers' satisfaction

The structural model of factor analysis for farmers' satisfaction above implies some sort of factors should be extracted out of answers provided by respondents for prepared questions. The purpose of factor extraction is to get a few meaningful factors that influence farmers' satisfaction with credit from microfinance institutions.

Empirical Framework

There are two methodologies for analyzing the credit utilization of households. These are the life-cycle model of consumption and the determining factors approach (Diagne, 1999). The first method, which is the indirect approach, scrutinizes household consumption and income data for indications of a significant dependence on transitory

income. The second method directly uses the information collected from households on their credit utilization and experience.

According to Chen and Chivakul (2008), the life-cycle model and the permanent income hypothesis of Modigliani (1986) and Friedman (1957) serves as the foundation for the theory of credit utilization and household constraint of credit access. One of this approach's assumptions is that in a perfect capital market, a household's credit demand for credit utilization emerges for consumption smoothing. When the household's income is low, the household borrows to smooth current consumption, which the household repays in a period of high income. Thus, in the perfect capital markets, household will be able to borrow the amount of money they want to smooth their consumption. Consequently, the model assumes that the current consumption of a household should be independent of current income. Due to information asymmetry and problems with contract enforcement, households in developing countries are credit constrained and may not be able to smooth their income and consumption (Diagne et al., 2000). This eventually undermines the life-cycle model and the permanent income hypothesis approach. In addition, some authors have argued the shortcomings of this model. The first limitation of the model is that household savings, remittances, and accumulated assets can help households to smooth their income (Doan et al., 2010). Secondly, most developing countries lack insurance and thus require credit for health care (Auma and Mensah, 2014).

The shortcomings of the indirect approach stressed the importance of the direct approach as it could capture more information about their income and consumption directly from household members (Balogun and Yusuf, 2011). By using this approach, the credit utilization status of the households can be assessed and information related to the socio-economic characteristics of the households affecting credit demand and utilization can be explained.

Many authors used a variety of methods to evaluate service quality and the relationship between service quality and customer satisfaction. The most widely used

models are the SERVQUAL and SERVPERF models by Parasuraman et al. (1988) and Cronin and Taylor (1992), respectively. The difference between these two models mainly lies in the components to be measured; SERVQUAL measures both the expected and perceived quality of the service, and SERVPERF uses only the perceived quality of the service experienced by the customer. SERVQUAL has five dimensions to measure the service quality provided by institutions. These are (1) responsiveness, (2) reliability, (3) tangibles, (4) assurance, and (5) empathy. Responsiveness is the willingness of the institution to provide a customer with fast and efficient service. Reliability measures the ability of the institution to provide accurate and dependable services. The tangibles dimension is the physical surroundings of the institution, including interior design and employee appearances. Assurance is a different feature of the institution that makes customers feel confident, such as the polite and trustworthy behavior of its employees. Lastly, empathy measures the readiness of the institution to provide each customer with personal attention.

These five dimensions are measured by asking the respondents to indicate their level of agreement with specific statements on a Likert type scale. These statements have two parts; the expectation of the customer and the perceived quality of actually provided service. Then, a gap score is calculated, which is the difference between the perception score and the expectation score. The higher gap score implies the higher perceived service quality.

Cronin and Taylor (1992) argued that these five dimensions of service quality could be measured by using only perception of customers, hence, expectation should not be included. Thus, they carved SERVPERF model out of SERVQUAL model. Therefore, in SERVPERF model the number of items to be measured was reduced by 50% (Babakus and Boller, 1992; Hartline and Ferrell, 1996). In this procedure, the respondents are asked to answer some questions to measure these five dimensions of the perceived service quality they experienced on a Likert-type scale. The responses of customers to these questions are then passed through an internal consistency test and categorized into these five service quality dimensions.

Method of Data Analysis

To address the objective, descriptive statistics and econometric analysis were used to analyze the data collected from respondents.

1.1.3. Descriptive Analysis

It is necessary to be familiar with the demographic and socioeconomic characteristics of the farmers in order to get a clear understanding of the findings of the study. Descriptive statistics were used to explore, explain and compare the demographic background of the respondents and factors that affect credit utilization and repayment by farmers. Using IBM SPSS Statistics 26 and R-studio software, these data were analyzed using frequencies, means, standard deviations, percentages, and tables. Furthermore, using the t-test and chi-square test, the difference between credit users and non-users, loan defaulters and non-defaulters, and adequacy and inadequacy of loan for farmers' plan with respect to selected variables was carried out.

1.1.4. Independent Double Hurdle Model for Credit Utilization

The selection of econometric models is usually based on the nature of the dependent variable. Therefore, based on the nature of the dependent variable, the following econometric models are selected.

Farmers make two decisions that can be dependent, separate, or sequential to each other. The decisions are whether or not to use credit and how much to use, each of which can be influenced by a different or similar set of explanatory variables. Firstly, the farmers decide whether to take credit or not. Then, the second decision is the amount of money to be taken. In such cases, we can use either the univariate Tobit model or the Double-Hurdle model for analysis purposes. However, the Double-Hurdle model proposed by Cragg (1971) is the best and most frequently used model for analyzing such two-stage decision processes. The advantage of the Double-Hurdle model over the univariate Tobit model is that it provides a more flexible framework for modeling observed behavior of farmers as a combination of two decisions rather than a single

decision. As a result, it allows the investigation of whether credit utilization and received loan amount have the same or different set of determinants.

Let D be a dichotomous variable which assigned a value of 1 when the farmer decides to use credit or 0 otherwise. The probability of D being equal to 1 can be analyzed using a binary-response model, which is the probit model for this research. Conditional on D being equal to 1, the farmer decides how much money to receive. Let Y^* be the latent variable of the received loan amount, and Y be the observed amount of received loan. Then, the set of equations for the Double-Hurdle model can be written as follows;

$$D_i^* = \alpha Z_i' + \varepsilon_i \quad (2)$$

$$Y_i^* = \beta X_i' + \mu_i \quad (3)$$

$$\begin{pmatrix} \varepsilon \\ \mu \end{pmatrix} \sim N \left[\begin{pmatrix} 0 \\ 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & \sigma^2 \end{pmatrix} \right]$$

Where Z_i' is a vector of variables affecting the decision of farmers to use credit, X_i' is a vector of variables affecting the amount of received loan; α and β are two set of parameters to be estimated; and ε_i and μ_i are error terms. As shown in the diagonal of the covariance matrix, the error terms are assumed to be independently and normally distributed.

The first hurdle Equation 2, which is the probit regression model,

$$D_i = \begin{cases} 1, & \text{if } D_i^* > 0 \\ 0, & \text{otherwise} \end{cases} \quad (4)$$

The second hurdle Equation 3, which is truncated regression model,

$$\begin{cases} Y_i = Y_i^*, & \text{if } D_i^* > 0 \text{ and } Y_i^* > 0 \\ Y_i = 0, & \text{otherwise} \end{cases} \quad (5)$$

The *truncreg* package developed by Croissant and Zeileis (2018) was used in R-studio for truncated regression purposes.

1.1.5. Logit Model for Loan Repayment

In this case, the dependent variable is a dummy variable or qualitative dichotomous variable that takes the value of 1 if the farmer repaid the loan before the due date (usually after 1 year) and 0 if the farmer did not repay the loan before the due date. Both binary and continuous variables are included in the model as independent variables, depending on the nature of the variables.

There are three models that can be used to analyze the dependent dummy variable. These are the linear probability model, the logit model, and the probit model. According to Maddala (2001), the linear probability model has the drawback that the predicted values can be outside the permissible interval (0, 1). In this model, the dependent dummy variable is expressed as the linear function of the independent variables. Because this model employs the ordinary least squares estimation procedure, it may result in inconsistent and biased results. In addition, it has a serious imperfection in that the estimated probability may fall outside of the normal interval (0, 1).

The logit and probit models are the most common frameworks used in econometric applications to model such dichotomous dependent variable (Greene, 2000). The logit model is an extremely flexible and easily used function, and it lends itself to a meaningful interpretation. Therefore, the logistic regression model is used for this particular study. The logit model is the natural logarithm of the odds ratio and can be specified as follows;

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{z_i}} \quad (6)$$

$$Z_i = \beta_0 + \beta_i X_i + \mu_i \quad (7)$$

Where;

X_i = i^{th} explanatory variable

β_0 = Constant term

β_i = Coefficient of explanatory variables to be estimated

P_i = the probability in favor of the farmer is non-defaulter (repays loan on time),
so the probability of farmer being a defaulter is $1-P_i$.

Therefore,
$$\left(\frac{P_i}{1-P_i}\right) = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{Z_i} = e^{(\beta_0 + \beta_i X_i + \mu_i)} \quad (8)$$

$(P_i/1-P_i)$ is the odds-ratio that implies the probability of a farmer is non-defaulter (P_i) to the probability of the farmer is defaulter ($1-P_i$).

By taking the natural logarithms we get,

$$\ln\left(\frac{P_i}{1-P_i}\right) = Z_i = \beta_0 + \beta_i X_i + \mu_i \quad (9)$$

This log-odds ratio is a linear function of the explanatory variables and is called a logit model. The best method to estimate the model is the method of the maximum likelihood function. The objective is to maximize the log-linear function to obtain the values of the unknown parameters, in the maximum likelihood estimation procedure (Gujarati, 2003).

1.1.6. Factor Analysis for Farmers' Satisfaction

The purpose of factor analysis is to summarize the information from original variables into a smaller set of new composite dimensions (factors) with a minimum loss of information (Akterujjaman, 2016). Thus, factor analysis seeks to identify and define the proportions underlying the original variables (Subadra et al., 2010). In addition, Tabachnick and Fidell (1996) suggested that factor analysis is useful for investigating a theory of the underlying process of nature. The reduction in the number of variables gives a meaningful interpretation of the model. The factor equation is given in matrix form as;

$$Z = \lambda F + \varepsilon \quad (10)$$

Where; Z = a vector of the $p \times 1$ dimensional variable

λ = matrix of the $p \times m$ dimensional factor loads

F = $m \times 1$ dimensional factor vector

ε = $p \times 1$ -dimensional error vector (Sharma, 1996).

The reliability analysis is carried on to test the internal consistency of the data. The Alpha (Cronbach) value greater than 0.7 indicates that the data is internally consistent, based on the average inter-item correlation (Connelly, 2011). In factor analysis, the Bartlett's test of sphericity and the Kaiser–Meyer–Olkin (KMO) test of sample adequacy are applied to the divisibility of the correlation matrix into factors. The null hypothesis “variables are orthogonal, i.e., not correlated” is tested by the Bartlett's Test of Sphericity. If the null hypothesis of Bartlett's test is rejected, then the data is suitable for factor analysis (Sharma, 1996). Regarding the KMO test, obtaining a value greater than 0.5 indicates that the relationships between the variables can be explained by other factors (Çelik et al., 2018). Some researchers have pointed out that KMO values of 0.6, 0.7, 0.8, and 0.9 are mediocre, middling, meritorious, and marvelous, respectively (Sharma, 1996; Tahtali, 2019).

In order to group variables measuring the same component, the component matrix that shows the Pearson correlation coefficient between variables and components is used. These correlations are called factor loadings. In this case, one variable may correlate with multiple components. To solve the cross-loading problems, the Varimax "variable maximization" method is used to obtain the rotated component matrix. This rotation redistributes the factor loadings such that each variable measures one factor. This rotation method is widely used by many authors (Ali et al., 2017; Ali and Raza, 2017; Amin, 2012).

The factor scores are added to the data and used as predictors in regression analysis. SPSS software can generate and add these scores to the data during factor analysis, but it is not suitable for interpretation. Because the factor scores generated by SPSS are z-scores with a mean of 0 and a standard deviation of 1, the interpretations are

complicated. Thus, the factor scores are computed as means from variables measuring the same components.

To access the impact of extracted dimensions of MFI service quality, multiple linear regression was carried out on farmers' satisfaction towards MFI services. The equation is defined as:

$$y_i = \alpha + \beta_i + \varepsilon_i \quad (11)$$

Where; y = dependent variables (farmers' satisfaction)

α = intercept term

β = regression coefficients

x = explanatory variables (extracted dimensions)

ε = error terms

The employed method for this analysis was followed by many authors to assess customer satisfaction with different financial institutions (Ali and Raza, 2017; Kant et al., 2017; Shanka, 2012). The structural model for this study is presented in Figure 0.4.

1.1.7. Test for Multicollinearity

The existence of multicollinearity among the explanatory variable affects the estimation of the parameters. Therefore, before fitting the model it is important to check the problem of multicollinearity among continuous variable and the associations among discrete variables. Variance Inflation Factor was used to check the existence of multicollinearity among explanatory variables. Variance Inflation Factor (VIF) depicts how the presence of multicollinearity inflates the variance of an estimator (Gujarati, 2003). The procedure is that each continuous variable is regressed on all other independent continuous variables; then, the coefficient of determination (R^2) is calculated in each case. When the explanatory variable is regressed against all other variables, R^2 is the adjusted square of the multiple correlation coefficients that result. If the value of VIF is greater than 10, it implies the existence of the multicollinearity

among explanatory variables included in the model (Vittinghoff *et.al.*, 2012). VIF is computed as the follows;

$$VIF = \frac{1}{1 - R^2} \quad (12)$$

Where;

VIF = Variance Inflation Factor

R^2 = adjusted R square

Model Variables and Their Measurements

Based on the reviewed literature under section 0 and section 0, the following variables were selected to analyze the credit utilization and loan repayment of the farmers with microfinance institutions. Accordingly, the following independent variables were selected to analyze the dependent variables of credit utilization, loan amount, and loan repayment of the farmers.

1.1.8. Dependent Variables

Credit Utilization (Y_1) is a dependent dummy variable taking the value of 1 if the farmer received credit from microfinance institutions, in our case Oromia Credit and Saving Share Company (OCSSC), and 0 otherwise. The purpose of this variable is not to reflect the purpose of credit utilization, but rather to reflect the situation of the farmer, whether or not he/she is accessing and utilizing loans from microfinance institutions.

Loan Amount (Y_2) is a positive continuous variable with 0 thresholds indicating the amount of money taken as a loan from microfinance institutions by farmers, measured in Ethiopian Birr (ETB). The amount of the loan varies among farmers depending on different explanatory variables.

Loan Repayment (Y_3) refers to the status of farmers who repay their loans before or on the due date; typically, the loan repayment period for microfinance institutions is one year from the date the borrower took the loan. It would be dummy variable taking

value of 1 if the farmer repaid his/her loan on time (non-defaulter) and 0 if the farmer failed to repay his/her loan before or on the given due date (defaulter).

1.1.9. Independent Variables

The list of independent variables included in all models is given in Table 0.1 below with their expected effects.

Table 0.1. List of independent variables and expected signs

Variables	Description	Expected Sign		
		Y ₁	Y ₂	Y ₃
Gender	1 for male and 0 otherwise.	+ ¹	+ ²	+/-
Age	The age of the farmer in years	+ ³	-	+ ⁴
Literacy	1 for high school and above, and 0 otherwise	+ ⁵	+	+ ⁶
Family size	The total number of people in the household	- ⁷	-	+ ⁸
Dependency	Dependency ratio in the family			+
Marital status	1 for married and 0 otherwise	+ ⁹	+	+
Farm income	Annual farm income in thousands of ETB	+	+	+
Off-farm incomes	Annual off-farm income in thousands of ETB	-	+	+
Land	Farm size in hectare	+	+	+
Livestock	Number of the owned livestock in TLU	-	+	+
Saving habit	1 for yes and 0 otherwise	+	-	+
Distance	Distance from farmer residence to MFI in km	-	-/+	-
Perception of repayment period	1 for not-suitable and 0 otherwise	-	-	-
Training	Number of participations in agricultural training	+	+	+

¹ Lemessa and Gemechu (2016)

² Ayele and Goshu (2018)

³ Zeller (1994)

⁴ Rao et al. (2019)

⁵ Etonihu et al. (2013)

⁶ Teklu (2006)

⁷ Isitor et al. (2014)

⁸ Haile (2015)

⁹ Jappelli (1990)

RESULTS AND DISCUSSIONS

Socio-economic Profile of Farmers

The summary statistics of the socio-economic characteristics of the sampled farmers are presented in Table 0.1. The minimum age of respondent farmers was 18 and the maximum was 70. The mean age of farmers was 34.59, with an 11.43 standard deviation. The family size of the respondents ranged from 1 to 23. The higher number of family sizes could be attributed to the culture of the community, as some male respondents have two or more wives. The average family size of respondents was 6.36, with a 3.71 standard deviation. The majority of farmers in the study area make their income solely from the sale of their farm crops and livestock products. Thus, they allocate that income for the whole season until the next season of harvesting. Therefore, both the farm and off-farm income of the respondents were given on an annual basis. The annual farm income of the respondents ranges from 0.5 to 90 thousand ETB, with a mean of 32.04 thousand ETB. The annual off-farm income of the respondents ranges from 0 to 100 thousand ETB, with a mean of 7.09 thousand ETB.

The size of land that is owned by respondents ranges from 0.25 to 5 hectares. The average size of land owned by respondents was 2.36 hectares, with a 0.99 standard deviation. The average land size owned by the farmers in the study area was quite higher than the average land size at country level, which is about 1.2 hectares. The respondent farmers own a diverse range of livestock. These livestock were converted into tropical livestock units and used for analysis purposes. The mean was 9.87, with a 7.33 standard deviation. The number of tropical livestock units owned by the respondents ranges from 0 to 47. The mean distance of microfinance institutions from the residences of the respondents was 12.34 km, with a 5 and 20 km minimum and maximum distance, respectively.

There is a training center named the Farmers' Training Center (FTC) in each kebele, with three trainers that are specialized in different fields of agriculture. These trainers are called "Development Agents" (DA). The farmers residing in the kebele were

invited to participate in different trainings organized by FTC throughout the year. On average, respondents participated in the training organized twice times a year. Some farmers have participated six times a year, while some have not participated at all. The farmers are also able to contact the DA on their own to get some advice.

Out of 270 total respondents, 45 were females, which is only 17% of the total sample. About 89% of total respondents were married, and the others were either single, divorced, or widowed. About 60% of respondents had not attended high school, hence being categorized as middle school and below. About 36% of the respondents were Muslims. Out of 270 total respondents, 194 have a saving habit, which is about 72% of total respondents.

Table 0.1. Socio-economic profiles of sampled farmers

Variable	N	Mean / Proportion	Std. Dev.	Min	Max
Age (year)	270	34.59	11.43	18	70
Family size (person)	270	6.35	3.71	1	23
Dependency ratio (%)	270	1.52	1.05	0	6
Farm income (thousand ETB)	270	32.04	17.87	0.50	90
Off-farm income (thousand ETB)	270	7.09	16.98	0	100
Land (hectare)	270	2.36	0.99	0.25	5
Livestock (TLU)	270	9.87	7.33	0	47
Distance (km)	270	12.34	3.26	5	20
Training (count)	270	1.69	1.44	0	6
Gender (%)	270				
Female	45	17			
Male	225	83			
Marital status (%)	270				
Not married	30	11			
Married	240	89			
Literacy (%)	270				
Middle school and below	162	60			
High school and above	108	40			
Religion (%)	270				
Not Muslim	172	64			
Muslim	98	36			
Saving habit (%)	270				
No	76	28			
Yes	194	72			

Credit Utilization

The t-test and chi-square tests of independence were given in Table 0.2 to give some insight into the socio-economic difference between microfinance credit users and non-users. Out of 270 respondents, 111 used microfinance credit (41.1%) and 159 did not (58.9%). The mean age and family size are lower for microfinance credit users, but there were statistically insignificant. The mean farm income and landholding size were larger for microfinance credit users and statistically significant at 5% and 1%, respectively. This could be attributed to the fact that farmers who own large amounts of land demand credit to cover farm operation costs, and this results in high income from farm products. The average number of livestock in tropical livestock units was higher for microfinance credit users and statistically significant at 1%. Microfinance institutions use livestock as a loan guarantee. Hence, farmers who own a large number of livestock have a higher possibility of taking loans from microfinance institutions.

Participating in the training and frequently contacting DA helps the farmers have an idea of what to produce and which inputs to use for better productivity. Consequently, the mean number of participating in training and DA visits for microfinance credit users were higher, and statistically significant at 1% and 5%. Out of the total 111 credit users, 84.7% and 15.3% were males and females, respectively. About 89.2% of microfinance credit users were married, and the rest were either not married, divorced, or widowed. Of the total 111 microfinance credit users, 45.9% joined or completed their high school education and the rest did not. Regarding religion, about 36% of microfinance credit users were Muslims, and the rest were non-Muslims.

Farmers who practice saving are more likely to gain access to credit and receive larger loans from microfinance institutions. Out of the total 111 microfinance credit users, 91% have a saving habit. The chi-square test of the proportion difference between credit users and non-users was strongly significant for saving habits, at 1%. This implies that farmers who have a saving habit have a higher probability of accessing credit. The

chi-square test result of farmers' perception of the repayment period showed that farmers who perceive the loan repayment period as suitable are most likely to use credit from microfinance institutions.

Table 0.2. Tests of mean and proportion between credit users and non-users

Variable	Non-User (N=159)		User (N=111)		Test (t / χ^2)
	Mean	SD	Mean	SD	
Age (year)	35.35	12.56	33.51	9.54	-1.36
Family size (person)	6.37	3.67	6.32	3.78	-0.09
Dependency ratio (%)	1.51	1.07	1.53	1.03	0.14
Farm income (thousand ETB)	30.19	17.93	34.69	17.53	2.06**
Off-farm income (thousand ETB)	7.21	18.9	6.93	13.80	-0.14
Land (hectare)	2.23	1.01	2.56	0.94	2.82***
Livestock (TLU)	8.75	6.87	11.48	7.70	2.99***
Distance (km)	12.54	3.67	12.05	2.57	-1.32
Training (count)	1.39	1.31	2.13	1.51	4.17***
Gender (%)					0.11
Female	17.60		15.30		
Male	82.40		84.70		
Marital status (%)					0
Not married	11.30		10.80		
Married	88.70		89.20		
Literacy (%)					2.37
Middle school and below	64.20		54.10		
High school and above	35.80		45.90		
Religion (%)					0
Not Muslim	63.50		64		
Muslim	36.50		36		
Saving habit (%)					
No	41.5		9		32.55***
Yes	58.5		91		
Perception of repayment period (%)					44.05***
Not suitable	99.4		72.10		
Suitable	0.60		27.90		

Note: ***p < 0.01, **p < 0.5, *p < 0.1

Loan Repayment

Statistics and the tests of mean and proportion between loan-defaulter and non-defaulter groups were given in Table 0.3. The results of the t-test showed that the mean

off-farm income of non-defaulter group was significantly higher than those of loan-defaulter group. This indicates the off-farm income of the farmers plays an important role in repaying their credit. Similarly, the size of owned land and the number of tropical livestock owned by non-defaulter group was higher than those of their counterparts. Non-defaulter farmers have a larger size of land and higher number of tropical livestock relative to loan-defaulter farmers. In addition, the difference in perception of two groups about loan repayment period is significantly different.

Table 0.3. Test of mean and proportion between loan-defaulter and non-defaulter groups

Variable	Defaulters (N=40)		Non-defaulters (N=71)		Test (t / χ^2)
	Mean	SD	Mean	SD	
Age (year)	32.10	9.06	34.31	9.78	1.20
Dependency ratio (%)	1.57	1.16	1.51	0.96	-0.22
Farm income (thousand ETB)	32.98	15.87	35.66	18.43	0.81
Off-farm income (thousand ETB)	3.28	9.73	8.986	15.32	2.40**
Land (hectare)	2.21	0.70	2.76	1.01	3.37***
Livestock (TLU)	8.20	4.25	13.32	8.58	4.20***
Distance (km)	11.60	2.83	12.30	2.40	1.31
Training (count)	1.95	1.43	2.23	1.55	0.94
Gender (%)					0.04
Female	17.50		14.10		
Male	82.50		85.90		
Marital status (%)					0
Not married	10		11.30		
Married	90		88.70		
Literacy (%)					1.30
Middle school and below	62.50		49.30		
High school and above	37.50		50.70		
Saving habit (%)					0.38
No	12.50		7		
Yes	87.50		93		
Perception of repayment period (%)					6.25**
Not suitable	87.50		63.40		
Suitable	12.50		36.60		

Note:

***p < 0.01, **p < 0.5, *p < 0.1

Adequacy of the Loan

The amount of credit requested is determined by the purpose and the anticipated expense. Thus, the farmers could say the received credit was sufficient, if the credit met their credit needs. Out of the total 111 microfinance credit users, 56 of them said they received credit that did not meet their credit needs. Then, the t-test and chi-square tests of mean and proportion were done to filter out the important socio-economic variables. As the farmers who own large amounts of land received a higher amount of credit, the mean land size of farmers who said they received a sufficient amount of credit was higher and statistically significant at 10%. Participating in training helps farmers learn how to manage their costs. Thus, the mean number of participations in training for the farmers who said they received a sufficient amount of credit was higher and statistically significant at 10%. The result of the chi-square test of independence showed the marital status of the farmers and the sufficiency of the credit are dependent and significant at 5%. Similarly, the farmers' religion and the sufficiency of their credit are both dependent and significant at 5%. Therefore, the results of the t-test and χ^2 show that the most important factors that determine the sufficiency of the credit received by farmers are land size, training participation, marital status, and religion of the farmers (Table 0.4).

Table 0.4. Tests of mean and proportion between adequacy and inadequacy of received loan

Variable	Not sufficient (N=56)		Sufficient (N=55)		Test (t / χ^2)
	Mean	SD	Mean	SD	
Age (year)	33.11	9.52	33.93	9.64	0.45
Family size (person)	6.13	4.52	6.53	2.87	0.56
Dependency ratio (%)	1.40	1.18	1.65	0.85	1.28
Farm income (thousand ETB)	33.30	16.22	36.11	18.80	0.84
Off-farm income (thousand ETB)	6.04	13.06	7.84	14.58	0.69
Land (hectare)	2.40	1.09	2.73	0.74	1.85*
Livestock (TLU)	11.04	9.63	11.93	5.10	0.61
Distance (km)	11.65	2.80	12.45	2.27	1.64
Training (count)	1.86	1.53	2.4	1.45	1.92*
Gender (%)					2.38
Female	21.40		9.10		
Male	78.60		90.90		

Marital status (%)			4.44**
Not married	17.90	3.60	
Married	82.10	96.40	
Literacy (%)			0.46
Middle school and below	50	58.20	
High school and above	50	41.80	
Saving habit (%)			2.65
No	14.30	3.60	
Yes	85.70	96.40	

Note: ***p < 0.01, **p < 0.5, *p < 0.1

Results of Independent Double-Hurdle Model

The results of the independent double-hurdle model for determinants of credit utilization decisions of farmers and loan amounts are presented in Table 0.5 and Table 0.6, respectively. A log-likelihood ratio test was done to compare the model against an intercept-only model, and a Wald test was done to make sure that a specified set of independent variables significantly contributed to the model. In both models, probit and truncated, the log-likelihood ratio test was highly significant, implying that both models are better than the intercept-only model, and the Wald test also confirmed that a specified set of variables significantly contributed to the models.

1.1.10. Determinants of Credit Utilization

The results of probit as the first-hurdle model representing the decision of credit utilization and the estimated statistically significant variables of the model are presented in Table 0.5. The model was tested against the intercept-only model, and the result of the log-likelihood ratio test showed that the model is better than the intercept-only model. The chi-square value of the log-likelihood test on 13 degrees of freedom was 97.9 and significant at a 1% significance level. Furthermore, a Wald chi-square test was carried out to check the significance of variables included in the model. The chi-square value of the Wald test was 55.1 and significant at a 1% significance level. Thus, the set of independent variables included in the model significantly contributes toward the estimation of the dependent variable. The McFadden's Pseudo R² value of the model was

0.27, which is quite good. Out of 13 independent variables that are included in the model, 4 of them were found to be significantly affecting farmers' credit utilization decisions.

Off-farm Income: The off-farm income of farmers consists of all income except that generated from farm activities. It was hypothesized to have a negative impact on credit utilization decisions of farmers. According to the findings of the model, the variable of off-farm income had a negative impact on the farmers' credit utilization decisions and was statistically significant at a 10% significance level. The model result predicted that as the off-farm income of the farmer increased by one unit (a thousand birr), the probability of microfinance credit utilization decreased by 0.4%, keeping other things constant. The income from off-farm activities enables the farmers to purchase farm inputs from their own wallets without demanding additional credit. Their livelihoods might also be stable even during seasons of agricultural production losses due to different natural calamities, such as drought. On the other hand, farmers who do not earn income outside of farm activities might not be able to cover the cost of farm inputs; hence, they apply for a loan to purchase farm inputs and repay the loan after the harvesting season. The result was in line with the findings of Lin et al. (2019) and Moahid and Maharjan (2020), who found a negative impact of off-farm income on the credit utilization of the farmers. However, it was inconsistent with the findings of Danso-Abbeam et al. (2016), who found a positive relationship between the off-farm income and credit utilization of farmers.

Perception of farmers about loan repayment period: Perception of the farmers towards loan repayment period was hypothesized to negatively affect microfinance loan utilization by farmers. The model result confirmed the prior expectation and estimated that perceiving loan repayment period as not good decreased the probability of loan utilization by 64.3%, keeping other things constant. This effect was significant at a 1% significance level. This result is in line with the findings of Ayele and Goshu (2018), Chauke et al. (2013) and Yehuala (2008), who found that credit utilization was negatively influenced by the perception of farmers towards the loan repayment period.

Saving habits: The findings of the model showed that farmers who have a saving habit are more likely to use credit from microfinance institutions than those who do not have a saving habit. The saving habits of the farmers had a positive impact on the credit utilization of farmers and were statistically significant at a 1% significance level. The result of the model estimated that, keeping other things constant, being a farmer who has a saving habit increased the probability of microfinance loan utilization by 32.1%. Saving exposes farmers to the credit market environment and enables them to understand the advantages of using credit. In addition, lending institutions lean on farmers' savings as a guarantee for repayment. The result coincided with the findings of Waje (2020) and Twumasi et al. (2020), who also found a positive impact of the farmers' saving habits on the credit utilization.

Training: The findings of the model revealed that the frequency of participation that farmers participated in the training positively affected the credit utilization decisions of the farmers and was statistically significant at a 1% significance level. The results comply with prior expectation. The model output revealed as a number of participations in training increased by one unit, the likelihood of microfinance loan utilization increased by 6.8%, keeping other things constant. This is attributed to the fact that farmers who participate in different trainings have a better understanding of productive farm inputs and seek credit to purchase these inputs than their counterparts. The result is consistent with the findings of Kabayiza et al. (2021), who found a positive impact of the good agricultural practice and credit management training on credit utilization of farmers.

Table 0.5. The first-hurdle (Probit regression) estimates of determinants of credit utilization

Variables	Estimate	Std. Error	VIF	Marg. Eff.
(Intercept)	0.92	0.77		
Gender (Male)	0.10	0.25	1.06	0.04
Age	-0.01	0.01	2.24	0.00
Marital status (married)	-0.10	0.35	1.40	-0.04
Literacy (High school and above)	0.03	0.25	1.94	0.01
Family size	-0.04	0.04	2.81	-0.01
Farm income	0.01	0.01	1.34	0.01
Off-farm income	-0.01*	0.01	1.32	-0.01

Land	0.12	0.12	1.79	0.05
Livestock	0.02	0.02	1.77	0.01
Perception of repayment period	-2.23***	0.49	1.03	-0.64
Saving habit (Yes)	0.90***	0.26	1.35	0.32
Training	0.18***	0.07	1.19	0.07
Distance	-0.03	0.03	1.16	-0.01
Observations	270			
Pseudo R ²	0.27			
LR χ^2 (13)	97.90***			
Wald χ^2 (13)	55.10***			
Akaike Inf. Crit.	295.80			
Log-Likelihood	-133.90			

Note:

***p < 0.01, **p < 0.05, *p < 0.1

1.1.11. Determinants of Loan Amount

The results of the second-hurdle model, which is truncated regression, for determining the amount of loan received are presented in Table 0.6. The log-likelihood ratio test was carried out to compare the model with the intercept-only model. The test result confirmed the performance of the over the intercept-only model. The chi-square value of the test was 74.5 and significant at a 1% significance level. Wald test also showed that the set of independent variables included in the models significantly contributes to the model. The chi-square value of the Wald test was 98.3 and significant at a 1% significance level. A total of 13 independent variables were included in the model, and 3 of them were found to be significantly related to the amount of loans received by farmers.

Age: The age of the farmers was found to be one of the significant variables that significantly affected the loan amount taken by farmers. The findings of the model rejected the prior expectation and proved the positive influence of the farmer's age on the loan amount taken, and the impact was significant at a 10% significance level. The model output predicted that as the farmer's age increased by one unit, the amount of loan taken would increase by 5.3%, ceteris paribus. This could be attributed to the fact that aged farmers have more collateral that enables them to request a higher loan than younger farmers. The result was inconsistent with the findings of Ibeleme et al. (2013), who found a positive relationship between the farmers' age and loan amount taken by farmers.

Farm income: The income generated from farm activities per annum was found to be one of the statistically significant determinants of loan size taken by respondents. The result of the model predicted that a one unit (a thousand birr) increase in the farm income of farmers would increase the amount of loans taken by 4.7%, and this effect was significant at a 1% significance level. The reason might be that farmers who make a lot of money from farming demand a larger loan size to invest more on their farms. The result is in line with the findings of Oboh and Kushwaha (2009), who found a positive impact of farm income on the amount of loans taken by farmers. However, it was inconsistent with the findings of Ayele and Goshu (2018), who found an inverse relationship between the income level of the farmers and the amount of loans taken by them.

Off-farm income: The income generated from non-agricultural activities had a significant positive impact on the loan amount taken by farmers from microfinance institutions. The model predicted that as off-farm income increased by one unit, the amount of loan received increased by 2.3%, while all other variables remained constant. This effect was significant at a 10% significance level. The first-hurdle result revealed that as off-farm income of farmers increased, the probability of utilizing credit decreased. However, the result of the second-hurdle showed that once they decide to apply for a loan, they apply for a higher loan to invest more and earn more income from off-farm activities.

Table 0.6. The second-hurdle (truncated regression) estimates of loan amount received by farmers

Variables	Estimate	Std. Error	VIF
(Intercept)	-2.23	1.46	
Gender (Male)	0.80	0.50	1.08
Age	0.05*	0.03	2.75
Marital status (married)	0.01	0.74	1.62
Literacy (High school and above)	0.59	0.50	2.09
Family size	0.13	0.09	3.90
Farm income	0.05***	0.01	1.51
Off-farm income	0.02*	0.01	1.20
Land	0.25	0.24	1.74
Livestock	0.03	0.04	2.60
Perception of repayment period	-0.30	0.41	1.13

Saving habit (Yes)	0.30	0.70	1.30
Training	0.18	0.12	1.15
Distance	0.12	0.08	1.33
sigma	1.78	0.13	
Observation	270		
Log-Likelihood	-219		
Wald χ^2 (13)	98.3***		
LR χ^2 (13)	74.5***		
<hr/>			
<i>Note:</i>	***p < 0.01, **p < 0.5, *p < 0.1		

Results of Logit Model for Loan Repayment

The results of the logistic regression model are presented in Table 0.8. A Variance Inflation Factor was calculated for each variable that was included in the model for multicollinearity diagnostics purposes by using the *DescTools* package developed by Signorell et al. (2021). There was no variable that had a VIF value greater than 3 in the model, which indicates there was no multicollinearity problem in the model. Thus, multicollinearity was not found among any of the independent variables included in the model.

The Likelihood Ratio Test statistic was used to compare the model with the intercept-only model. This test compares the likelihood of the data under the full model against reduced model, intercept-only. The null hypothesis holds that the reduced model is true. The value of the Chi-square goodness of fit test was 38.79, with 13 degrees of freedom, and the result is significant at less than 0.01 probability. Thus, the null hypothesis that all coefficients except the intercept are zero is rejected.

Another method that was used to test the goodness of fit of the model was the Hosmer-Lemeshow Goodness of Fit Test for logistic regression proposed by Hosmer and Lemeshow (1980). This test uses observed number of events and non-events to compare how well the model predicted the probability of the event and non-event. Specifically, it arranges the predicted values from the lowest to the highest, and then separates them into several groups (10 groups are standard recommendation) of equal size. Then, it calculates the expected number of events, which is the sum of the predicted probabilities for all individuals in the group, as well as the observed number of events and non-events. The expected number of non-events is the difference between the group

size and the expected number of events. Lastly, Pearson's χ^2 is calculated to compare the observed counts with the expected counts, with the number of groups minus 3 degrees of freedom. The null hypothesis for the test is that there is no need of interactions or non-linearities in the model, the model fits the data. If the null hypothesis is rejected, it indicates there is a lack of fit in the logistic regression model. For this research, the test was done in RStudio by using *ResourceSelection* package by Lele et al. (2019). The value of Pearson's χ^2 was 9.23, with 8 degrees of freedom. The corresponding p-value was 0.32, hence, the null hypothesis is accepted. The result of the test suggested there was no lack of fit in the model (Table 0.7).

Table 0.7. Hosmer and Lemeshow goodness of fit test

χ^2	df	p-value
9.23	8	0.32

The last measure of goodness of fit used for the model was the Count R^2 , which is an extension of the Hosmer-Lemeshow goodness of fit test. It counts the number of sample observations correctly predicted by the model. The typical cut-off value for the probability of an event and a non-event is 0.5. For this research, an individual observation is grouped as a loan-defaulter if it has a predicted probability of less than 0.5, otherwise it is grouped as a non-defaulter. The model correctly predicted 88 of 111 total sample observations. Then, the accuracy of the model can be calculated, which is the percentage of total observations that are correctly predicted by the model. The model correctly predicted 79.28% of the model, which indicates the good performance of the model (Table 0.8). Out of 13 independent variables that are included in the model, 5 of them were found to be significantly affecting the loan repayment of farmers.

Table 0.8. Results of Logistic regression for loan repayment

Factors	Estimate	Odds ratio	VIF	Std. Error
(Intercept)	-3.50	0.03		2.13
Age	0.04	1.04	2.21	0.04
Gender (Male)	-0.02	0.98	1.17	0.67
Marital status (Married)	-2.12*	0.12	2.61	1.21
Literacy (High school and above)	1.01	2.75	2.16	0.71

Dependency ratio	0.12	1.13	1.81	0.33
Saving habit (Yes)	0.08	1.08	1.42	0.91
Distance	0.19*	1.20	1.42	0.11
Land	0.75*	2.11	1.94	0.42
Livestock	0.14**	1.15	1.75	0.07
Farm income	-0.01	0.99	1.62	0.02
Off farm income	0.04	1.04	1.12	0.02
Training	0.08	1.08	1.24	0.18
Perception of repayment period	-1.63**	0.20	1.17	0.64
Observation	111			
Log Likelihood	-53.16			
Pseudo R ²	0.27			
Count R ² (Accuracy)	0.79			
LR χ^2 (13)	38.79***			
Akaike Inf. Crit.	134.32			

Note:

***p < 0.01, **p < 0.5, *p < 0.1

Marital Status: The marital status of the farmer was hypothesized to have a positive relationship with loan repayment. The result of the logistic regression rejected the prior expectation on the marital status of the farmers. The model estimated that being a married farmer decrease the odds-ratio of loan repayment by 0.12. This effect is statistically significant at a 10% significance level. The result could be due to the fact that married farmers incur more expenses than single farmers, as they strive to meet the financial needs of their household members. The result corresponded with the findings of Wongnaa and Awunyo-Vitor (2013), who also found a negative relationship between the marital status and the loan repayment performance of the farmers. On the other hand, some authors revealed a positive relationship between the marital status and the loan repayment performance of households (Eze and Ibekwe, 2007; Ojiako and Ogbukwa, 2012). These results might be attributed to the fact that single farmers have fewer responsibilities than married farmers.

Distance from microfinance institution: The distance between the residences of farmers and microfinance institutions was found to significantly affect the loan repayment of the farmers. It was hypothesized to have a negative impact on the loan repayment. Despite the hypothesis, the output from the logistic regression model

revealed a positive relationship between the distance from the farmers' residence to the microfinance institution. The model estimated that a one-kilometer increase in the distance from farmers' residences to microfinance institutions was associated with a 20.4% increase in the odds of loan repayment. This effect was statistically significant at a 10% significance level. The result might be attributed to the fact that farmers residing far from microfinance institutions plan repayment in advance as they do not have frequent contact with the institution. On the other hand, farmers who reside near the institution might experience reluctance in planning toward loan repayment. The result was not in line with the findings of Jote (2018), who found a negative relationship between the distance of the farmers' residences from lending institutions and the loan repayment probabilities of the farmers. The results might be due to the ease with which the lender can monitor the business of the borrower and the potential of the borrower to repay their loans.

Land size: The size of the land owned by the farmers was hypothesized to have a positive impact on the probability of loan repayment. The odds-ratio for land size indicates that for every one-hectare increase in land size, a farmer is 2.1 times more likely to repay the loan on time. And this effect was statistically significant at a 10% significance level. Thus, the prior expectation of the impact of land size on the loan repayment was accepted. This could be attributed to the fact that microfinance institutions lean on the land of the farmers as collateral. Thus, farmers would not want to take a risk on their land. Furthermore, as the size of the farmers' land increases, so does their capacity to produce a larger quantity of product, which enables them to repay their loans on time. The result was in line with the findings of Gebeyehu et al. (2013) and Awunyo-Vitor (2012), who found that farmers who own large size of land were less likely to default their loans.

Number of livestock: The number of livestock owned by the farmers was found to significantly affect loan repayment. This result is attributed to the fact that livestock is sources of cash and serve as security against crop failure. Farmers who own a large number of livestock can sell them to repay loans, during crop failure. The model

estimated that a unit increase in the livestock owned by the farmers is associated with a 15% increase in the odds of loan repayment. This effect was significant at a 5% significance level. This result is consistent with the findings of Gebeyehu et al. (2013), who found that having a larger number of livestock is positively related to loan repayment performance.

Perception of farmers about loan repayment period: The perception of farmers towards the repayment period was hypothesized to negatively impact loan repayment. In other words, if the farmers thought the repayment period was suitable, they were expected to repay the loan on time. The model result confirmed this hypothesis and revealed a significant negative relationship between farmers’ perception of the loan repayment period and loan repayment. This implies farmers who perceive that the loan repayment period is suitable for them pay their debt on time. On the other hand, farmers who have a negative perception towards the loan repayment period are most likely to default on loans. This indicates the suitability of the loan repayment period is essential to prevent loan repayment default. The model estimated that being a farmer who has a negative perception of the repayment period would decrease the odds-ratio of loan repayment by 0.20. This effect is statistically significant at a 5% significance level. This result was consistent with the findings of Haile (2015), but inconsistent with the findings of Belay (1998).

Factors Influencing Farmers’ Satisfaction from Financial Institutions

Before starting factor and regression analysis, a reliability analysis was performed to ensure the internal consistency of the data. Cronbach's alpha was 0.77, indicating that the data are trustworthy and suitable for further factor analysis and regression (Table 0.9).

Table 0.9. Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.77	0.78	13

Furthermore, the Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy were carried out on the data. The Bartlett's test of sphericity was significant at an alpha level of 0.05, and the null hypothesis was rejected. This indicates that the data is appropriate for factor analysis. The overall KMO value for the data was about 0.72. This also confirms the appropriateness of the data for modeling and factor extraction (Table 0.10).

Table 0.10. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.72
Bartlett's Test of Sphericity	Approx. Chi-Square	355.97
	df	78
	Sig.	0.00

The procedure of the Kaiser-Guttman criterion with Principal Component Analysis was followed to decide the number of components to be extracted. According to the criterion, components with Eigen values greater than 1 have a subsequent contribution and are kept for further analysis. Consequently, only five factors were extracted for further analysis. The total variance explained by extracted factors is presented in Table 0.11. As shown in the table, the cumulative variance explained by all five factors is 66.49%, which is quite good and considerable (Table 0.11).

Table 0.11. Variance explained by extracted factors

	Reliability	Empathy	Schedule	Responsiveness	Terms of credit
Variance explained	28.15	13.00	9.34	8.10	7.90
Cumulative variance	28.15	41.15	50.49	58.59	66.49

The extent to which extracted components explain the variance of original variables is represented by an r-square value, called communalities. The communalities, which are the proportions of variance of the original variables that are explained by their extracted components (Table 0.12).

Table 0.12. Communalities (Extraction Method: Principal Component Analysis)

	Initial	Extraction
MFI keeps records accurately	1.00	0.72
Required preconditions are appropriate	1.00	0.55
The repayment period is suitable	1.00	0.63
Staffs are trustworthy and dependable	1.00	0.63
Staffs are always ready to help customers	1.00	0.69
The credit I received met my credit demand	1.00	0.45
MFI credit limits are reasonable	1.00	0.66
MFI disburses loans without delay	1.00	0.66
Staffs give customers personal attention	1.00	0.81
Staffs understand and cooperate customer problems	1.00	0.84
Interest rate is quite good	1.00	0.79
Required collateral is appropriate	1.00	0.47
I can contact MFI when I need any guidance	1.00	0.75

The variables were grouped into the factors based on the factor loadings presented in Table 0.13.

Table 0.13. Rotated Component Matrix (Rotation Method: Varimax with Kaiser Normalization)

Factors	Items	Component				
		1	2	3	4	5
Reliability	MFI keeps records accurately	.82	.10	.03	.13	.14
	MFI credit limits are reasonable	.74	.32	.10	-.03	-.11
	Staffs are trustworthy and dependable	.58	.06	.48	.20	.15
Empathy	Staffs understand and cooperate customer problems	.11	.91	-.01	.02	.07
	Staffs give customers personal attention	.26	.83	-.01	.20	.12
Schedule	MFI disburses loans without delay	.09	-.03	.78	.12	.18
	The repayment period is suitable	.13	-.07	.58	.48	.19
	The credit I received met my credit demand	.36	.18	.40	-.11	.33
Responsiveness	I can contact MFI when I need any guidance	-.06	.22	.02	.83	-.09
	Staffs are always ready to help customers	.36	-.02	.24	.68	.20
	Required preconditions are appropriate	-.02	.17	.13	.03	.71
Terms of credit	Required collateral is appropriate	.06	-.01	.24	.02	.64
	Interest rate is quite good	.44	-.05	-.46	.22	.58

The mean scores for five factors are presented in Table 0.14. In this table, the highest mean is scored by schedule followed by responsiveness and terms of credit. The least mean is scored by empathy dimension, followed by reliability. The highest mean score of the schedule dimension, which is 3.87, indicates that MFI is good at scheduling loan disbursement and collection periods. The second dimension was responsiveness, with a mean score of 3.84, implying that MFI is performing at a satisfactory level, reacting quickly and positively to customer needs as per rated by their customers. The mean score of the terms of credit is 3.77, indicating that the required preconditions, collateral, and interest rate changed on the loan were good as per the responses of their customers. The mean score of the reliability dimension is 3.71, followed by the empathy dimension, which is 3.37. MFI performed lowest in terms of the empathy dimension, which indicates cooperating with customer problems and giving personal attention to customers.

Table 0.14. Mean score of extracted factors

	Mean score	Std. deviation
Reliability	3.71	0.80
Empathy	3.37	1.04
Schedule	3.87	0.71
Responsiveness	3.84	0.88
Terms of credit	3.77	0.72

As shown in Table 0.15, farmers' satisfaction has significant correlation with five extracted dimensions. It has correlation with reliability (0.70), schedule (0.57), terms of credit (0.56), responsiveness (0.50), and empathy (0.47).

Table 0.15. Correlation between dimensions and farmers' satisfaction

	Satisfaction	Reliability	Empathy	Schedule	Responsiveness
Reliability	0.70				
Empathy	0.47	0.37			
Schedule	0.57	0.44	0.15		
Responsiveness	0.50	0.35	0.22	0.37	
Terms of credit	0.56	0.33	0.20	0.32	0.22

The regression analysis applied to farmer satisfaction as the dependent variable and reliability, empathy, schedule, responsiveness, and terms of credit as independent

variables. The R-squared value is 0.73, indicating the combined variables contribute to 72.7% of the variance of the dependent variable, which is farmer satisfaction. The F-value was 55.84 and was significant at a 1% significance level, indicating the model fits the data better than an intercept-only model. Therefore, the hypothesis that says the service quality dimensions of microfinance institutions have a positive impact on customer satisfaction is accepted.

Multiple regression results for farmers' satisfaction in Table 0.16 revealed that reliability and terms of credit dimensions have the highest impact on farmer satisfaction as their β -values are 0.31 and 0.26, respectively. All five dimensions have a positive and statistically significant impact on the farmers' satisfaction with MFI services. Therefore, the improvement in these dimensions will be followed by an improvement in farmers' satisfaction with MFI services. This findings are in line with past studies (Ali and Raza, 2017; Shanka, 2012)

Table 0.16. Multiple regression results for farmers' satisfaction

	β	Std. Error	t	Sig.
(Constant)	-0.04	0.24	-0.18	0.86
Reliability	0.31	0.05	5.95	0.00
Empathy	0.13	0.04	3.58	0.01
Schedule	0.20	0.06	3.55	0.01
Responsiveness	0.14	0.04	3.32	0.01
Terms of credit	0.26	0.05	5.14	0.00
Observations	111			
R ²	0.73			
Adj. R ²	0.71			
F-statistic	55.84***			

CONCLUSIONS

The agricultural sector makes an enormous contribution to the economic development of developing countries, especially in Ethiopia. Improving agricultural production necessitates farmers using credit that is used to purchase different farm inputs. Many authors have pointed out some problems that are associated with credit utilization by farmers, especially in developing countries like Ethiopia. Such literature motivated the researcher to investigate the factors related to credit utilization of farmers from Oromia Credit and Saving Share Company in Wadera Woreda, Oromia Region, Ethiopia. The objective of the study was to explore the extent to which the credit utilization and loan repayment of farmers from microfinance institutions are associated with different demographic and socio-economic characteristics of the farmers and institutional characteristics of microfinance institutions. In addition, to extract some important factors of MFI service quality for determining farmers' satisfaction with microfinance institution services.

A total of 270 farmers who reside in the Wadera District were included in the study. The primary data collected through structured interviews and secondary data were used to achieve the objective. Descriptive statistics were used to summarize the profiles of sampled farmers. A double-hurdle model was used to identify factors influencing credit utilization decisions and the loan amount taken from the MFI. A logistic regression model was used to investigate factors associated with loan repayment. Factor analysis with the principal component analysis method was used to obtain a few meaningful factors related to the satisfaction of farmers with MFI services.

Smallholder farmers dominate the agricultural production in the country. However, the credit disbursed from formal financial sectors that goes to smallholder farmers is neglectable even though the sector has been prioritized by credit policies since the Imperial period. In the Socialist regime, only 9% of the agricultural credit disbursed by banks went to smallholder farmers, which is even worse. Although there were some improvements during the Derg regime, the agricultural sector, particularly smallholder

farmers, continued to be marginalized from agricultural credit. In the study area, currently, only about 41% of the farmers have received loans from formal institutions, specifically microfinance institutions. The main reason for the farmers who didn't receive loans from microfinance institutions was that they perceived the loan repayment period as unsuitable for repayment and feared being unable to repay. The average size of landholdings in the study area is higher than the average size of landholdings at country level. However, farmers in the study area are operating agriculture at a subsistence level.

This study concluded that the mean farm income of farmers that used loans from microfinance institutions was higher than their counterparts. This implies that there is a positive contribution of the MFI loan to the production capacity of the farmers. Therefore, providing enough training regarding the benefits of utilizing loans to farmers may help to improve awareness of farmers toward MFI loans, followed by improved production capacity of farmers. Because the probit model used for the first-hurdle regression confirmed the positive impact of training on the credit utilization decisions of farmers. The saving habits of farmers also have a positive effect on the credit utilization decisions of farmers. The training that aims to raise the awareness of farmers towards improving their saving habits could play an important role in credit utilization decisions.

The perceptions of farmers towards the loan repayment period have an impact on credit utilization and repayment by farmers. The probit and logit regression model results suggest that the repayment period suitability is important for farmers when deciding to apply for loans and repay their loans, respectively. This is because, by nature, the income generated from agriculture is not smooth relative to other sectors; it fluctuates with seasons. So, there might be a season in which farmers demand credit and are capable of repaying their loans. Therefore, the schedule of loan disbursement and collection periods is important for farmers.

Some statistical analyses were carried out to identify the factors affecting loan repayments of farmers. The independent t-test between the loan defaulter and non-defaulter groups revealed that off-farm income, farm income and the number of livestock owned by the non-defaulter group is higher than their counterparts. This

indicates that the diversification of livelihoods plays a crucial role in the loan repayment of farmers. Farmers who earn income rather than from agriculture could repay their debts even when agriculture fails due to some natural hazards.

The researcher modified the SERVPERF model in accordance with which it can measure the service quality of microfinance institutions providing credit for poor farmers. As a result, two service quality dimensions are modified. Thus, the tangibles and assurance components were replaced by the schedule and terms of credit components. Accordingly, the responsiveness, empathy, reliability, schedule and terms of credit components were identified as service quality dimensions for MFIs. The MFI in the study area showed good performance, but all the service quality dimensions need improvements, especially the empathy and the reliability dimensions. The result of a multiple regression model showed that all five dimensions of service quality are positively and significantly related to farmers' satisfaction with MFI services. Therefore, microfinance institutions should focus on these five dimensions to improve farmers' satisfaction as it plays a crucial role in the success of microfinance institutions.

Based on the results of the study, the following actions are recommended to improve credit utilization, loan repayment, and satisfaction of farmers in the medium and long term in the study area in particular and where OCSSCs are working in general.

- ❖ The government, OCSSCs and other concerned bodies should raise farmers' awareness to improve their saving habits in formal institutions, including OCSSCs. Most of the farmers in the study do not even have a bank account, and they have no idea how formal financial institutions work, especially banks. Therefore, the FTC, along with banks and MFIs, should provide farmers with information to raise their awareness of the importance of savings.
- ❖ The government, in cooperation with OCSSCs, should give enough training to farmers. The content of training should focus on the benefits of using credit and repaying it on time. The farmers should get clear information about the loan application process and gain insights into the consequences of loan default.

- ❖ To ensure that farmers are satisfied with loans, an OCSSC should improve their service quality by focusing on these five dimensions, especially empathy and reliability.
- ❖ OCSSCs should adjust the schedule of loan disbursement and loan repayment based on the preference of the farmers. In addition, OCSSCs should guide farmers, especially illiterate and female farmers, throughout the entire process, starting from the loan application period to repayment. The guidance service might consist of providing enough and brief information regarding procedures to be passed through to acquire a loan.
- ❖ The research findings suggest that the diversification of farmers' livelihoods is essential to ensure on-time loan repayment. Therefore, concerned bodies should raise the awareness of farmers towards livelihood diversification and help them if needed.
- ❖ Finally, the following research issues are recommended in the study area for prospective researchers:
 - ✓ Evaluation of land use efficiency
 - ✓ Analysis of livelihood diversification
 - ✓ Developing a procedure for measuring farmers' satisfaction

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ETHICS COMMITTEE DECISIONS



ONDOKUZ MAYIS ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER ARAŞTIRMALARI ETİK KURUL KARARLARI

KARAR TARİHİ	TOPLANTI SAYISI	KARAR SAYISI
24.09.2021	09	2021/750

KARAR NO: 2021-750
Üniversitemiz Lisansüstü Eğitim Enstitüsü öğrencisi Gutama Girja Urago' nun Prof. Dr. Mehmet BOZOĞLU danışmanlığında “ Çiftçilerin Mikrofinans Kurumlarından Kredi Kullanımları ve Memnuniyetleri: Wadera İli Oromia Kredi ve Tasarruf Hisse Şirketi Örneği (Etiyopya)” isimli yüksek lisans tezine ilişkin anket çalışmasını içeren 28202 sayılı dilekçesi okunarak görüşüldü.

Üniversitemiz Lisansüstü Eğitim Enstitüsü öğrencisi Gutama Girja Urago' nun Prof. Dr. Mehmet BOZOĞLU danışmanlığında “ Çiftçilerin Mikrofinans Kurumlarından Kredi Kullanımları ve Memnuniyetleri: Wadera İli Oromia Kredi ve Tasarruf Hisse Şirketi Örneği (Etiyopya)” isimli yüksek lisans tezine ilişkin anket çalışmasının kabulüne oy birliği ile karar verildi.

CURRICULUM VITAE

Gutama Girja URAGO completed his high school education at Wadera Secondary and Preparatory School, Ethiopia, in 2015. In 2018, he graduated with a BSc degree in Agricultural Economics from the College of Agricultural and Environmental Science at Haramaya University. After one year of work experience as a Graduate Assistant at Haramaya University, he won a Turkish scholarship and pursued his MSc studies in Turkey.

Languages

Oromo	Native
Amharic	C1
English	C1
Turkish	C1

Work Experience

Graduate Assistant in the department of Agricultural Economics, Haramaya University, (2018 - 2019), Ethiopia.

Computer Skills

R Programming, SPSS, STATA, POM, Python, LaTeX, and MS Office.

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Publications

1. Urago, G. G., and Bozoglu, M. (2022). Literature review on farmers' access to agricultural credit in Ethiopia. *Anadolu Journal of Agricultural Sciences*, 37/2, 301-316.