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# The Impacts of Village Saving and Loan by Association on Women's Econ Empowerment in East Belessa Woreda.

Shumye, Worku

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**BAHIR DAR UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ECONOMICS**

**The Impacts of Village Saving and Loan Association on Women's  
Economic Empowerment in East Belessa Woreda.**

**By**

**Worku Shumye Berihun**

**June, 2023**

**Bahir Dar, Ethiopia**

**BAHIR DAR UNIVERSITY**  
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**The Impacts of Village Saving and Loan Association on Women's  
Economic Empowerment in East Belessa Woreda.**

**By**

**Worku Shumye Berihun**

A Thesis Submitted to Bahir Dar University, College of Business and Economics, Department of Economics in Partial Fulfillment of the Requirement for the Degree of Masters of Science in Development Economics.

**Adviser: Eshetu Seid (PhD)**

**June, 2023**

**Bahir Dar, Ethiopia**

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## Declaration

This is to certify that the thesis entitled "The Impacts of village saving and loan association on Women's economic empowerment in East Belessa Woreda, submitted in partial fulfillment of the requirements for the degree of Master of Science in Development Economics of the Department of Economics, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificate.

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## ACRONYMS

ATT	average treatment effect on the treated
DFID	Department of international development
IGA	income generating activities
ILO	international labor organization
MFI	microfinance institution
MOA	ministry of agriculture
NBE	national bank of Ethiopia
NGO	non-government organization
OXFAM	Oxford Committee for Famine Relief
PS	propensity score
PSM	propensity score matching
PSNP	productive safety net program
RUSAACO	rural saving and credit cooperation
SIDA	Swedish International Development Cooperation Agency
SNNPR	south nations, nationalities, and people region
Sweep	water for food security, women's empowerment and Environmental protection
UN	united nations
UNIFEM	United Nations Development Fund for Women
USAID	United States Agency for International Development
VSLA	village saving and loan association
WEAI	women empowerment agricultural index

## ABSTRACT

*VSLA is an informal microfinance serving as an alternative source of finance for poor individuals, especially women. CARE Ethiopia was implementing women-centered village savings and loan associations (VSLA) in East Belessa Woreda. Empirical studies on the impact of VSLA on women's economic empowerment are insufficient. In addition, existing studies did not use appropriate sampling and impact evaluation methods. Thus, the main objective of this study was to evaluate the impacts of VSLA on women's economic empowerment. The paper used personal savings, personal annual income, and asset ownership and control indicators to measure women's economic empowerment in East Belessa Woreda, Amhara region, Ethiopia. A quasi-experimental impact analysis method called propensity score matching was applied using cross-sectional data collected from a randomly selected 184 VSLA members and 200 non-member sample women. The finding reveals religion, household head, respondent's level of education, membership of other MFI, and participation in extension service have a positive and significantly affected likelihood of women joining VSLA. On the other hand, age and household size have significantly and negatively affected. Propensity score matching results show that VSLA positively and significantly impacted women's personal cash savings, asset ownership and control, and annual income. Relative to non-member women, respectively, VSLA member women have additional personal cash savings, asset ownership, and personal income with ATT values 5510.716, 10251.617, and 7408.99. This indicates that VSLA positively and significantly impacted women's economic empowerment in the study area. So, the government and non-governmental organizations should allocate a budget to expand the village savings and loan association and make it accessible to women. It should prepare rules, laws, guidelines, and strategies to implement VSLAs and give them to the implementing bodies. Should pay special attention to promoting, implementing, monitoring, and increasing the awareness of women about VSLA.*

**Keywords:** *village saving and loan association; women economic empowerment*

# INTRODUCTION

## CHAPTER ONE

### 1.1 Background of the Study

Women's empowerment, which had radical origins in the 1980s, is now a common development issue. Women's empowerment is quickly rising to the top of the global agenda and bringing many countries together. It has been on the agenda for international NGOs, multinationals, and governmental organizations and institutions. This is because women's improved status at home and in the community could have a high contribution to economic development. Women's empowerment includes economic, sociocultural, and psychological empowerment (Barros et al., 2016).

Economic empowerment takes the lion's share of empowering women. The evidence is clear that when women have equitable control over resources and equal economic opportunities, they have the power to improve the quality of life for themselves, their families, and entire communities. When women gain financial power and control, they make investments that benefit their families and communities. In addition to personal impact, if women participated in the economy on an equal footing with men, the annual global GDP in 2025 would increase by 25 percent. It is comparable to the current sizes of the US and Chinese economies. Therefore, it is not unexpected that women's empowerment is recognized as an important part of achieving sustainable development goals such as poverty eradication (Hendriks, 2019).

But still, globally, women's economic empowerment is lower than men's. For instance, women's participation in the labor market is 63 percent, compared to men's 94 percent. The unemployment rate for women is higher than that of men, while the unemployment rate for men is 5.5 percent and for women, it is 6.3 percent (ILO, 2020). Women are paid less than men. Women spend 2.5 times more time on unpaid work than men (UN, 2021). Women are less likely to use financial institutions than men, with 58 percent of women and 65 percent of men reporting having accounts at formal financial institutions (World Bank,

2019). Women are less likely to create their businesses and own and control assets (Galiè et al., 2019).

In Africa, due to limited access to productive resources (land, credit, transport, extension services, etc.), African women have not been able to profit from investments and the growth of trade in agricultural products. Women own less than 1% of Africa's land (Guyalo et al., 2022). Maternal mortality rates are still very high. At all educational levels, girls receive less schooling than boys, and they are significantly underrepresented in numerous professions (Wekwete, 2019).

According to the World Bank 2020 rankings, Ethiopia ranks 82nd globally with 70.5 achievements on the Gender Gap Index. Ethiopia ranks 148th globally for gender equality, with men being more likely to be employed. Women make up a smaller percentage of managers and senior officials (26.5%) than they do of skilled professionals (32.6%). There are still some restrictions for women who belong to certain socioeconomic or ethnic groups (World Economic Forum, 2019).

The above report figures show the need for more work to empower women and benefit from their capacity. Financial institutions, especially microfinance institutions, play a significant role worldwide in enhancing the poorest people's, especially women's, access to financing (Allen, 2002). In Ethiopia, the results show that microfinance programs contribute significantly to women's economic empowerment in spending decision-making, increasing asset ownership, and reducing family conflict (Haile et al., 2012). According to Mengstie (2022), microfinance significantly enhances women's additional sources of income, raises asset ownership rates, increases monthly savings amounts, and fosters women's entrepreneurs and business exposure.

But more than half of the world's population, especially the poor, lacks access to formal banking services. Village Savings and Loan Associations (VSLA) are serving as a window of hope for the poor, especially women. VSLA is an alternative informal financial institution. In a VSLA, members contribute to the group's savings and have access to its borrowing. It is entirely based on members' savings and loan interest rates (Nnama-Okechukwu et al., 2019). The

purpose of a VSLA is to provide simple savings and loan facilities in areas that do not have easy access to formal financial services (Brannen & Sheehan-Connor, 2016).

The VSLA strategy facilitates to promote economic development and provides women with a forum and opportunity to advocate for gender equity and rights. The VSLA establishes a solid foundation to address other issues crucial to women (Karlan et al., 2017). It enables participants to grow their economic capacity and to be able to cope with unexpected events (Wosene, 2014).

In Ethiopia, the approach, which provides a financial service to the rural poor people, was launched in 2004. Since then, CARE spread and promoted the system throughout the nation, onwards with other foreign and domestic NGOs (CARE Ethiopia, 2020). The VSLA is currently implemented and promoted in Ethiopia by the government and various non-governmental organizations. The total number of established groups in all regions has reached 34896. Out of the overall groups, 19% are organized by CARE Ethiopia, and the rest by the government and other organizations. The number of organized members is also 691,397, out of which 71% are women. The total amount saved is 74,671,088 birr (Krause, 2021).

VSLA has been promoted in East Belessa Woreda<sup>1</sup> through the SWEEP project since 2018. It has established 50 VSLA groups with 960 rural women members in East Belessa Woreda (CARE Ethiopia, 2019).

The purpose of the study was to estimate the impacts of the village saving and loan association on women's economic empowerment, especially asset ownership and control, personal income, and personal saving in East Belessa Woreda.

## **1.2 Statement of the Problem**

Microfinance and microcredit continued to expand in the 1980s and 1990s after Muhammad Yunus' achievement with the Grameen Bank in the 1970s. Since

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<sup>1</sup> Woreda is the 3<sup>th</sup> administrative unit in the current Ethiopian administration organization.



the 1990s, development organizations have turned to microfinance as a window of hope for economic progress (Sida, 2004; Alfred, 2007).

Microfinance services are a successful means of empowering the underprivileged and eradicating poverty globally. Particularly for women, this is done by giving them greater access to and control over their income, improving their production, trading knowledge, and abilities, and boosting their involvement in household decision-making (Hansen et al., 2021; G. Fredrik, 2013). Women's improved status at home and in the community may alter social perceptions and attitudes.

As stated by Yenus (2015), formal financial institutions such as commercial banks imposed economic apartheid on the poor because they rejected the poor as beneficiaries of credit. Low-income Women are not lucky enough to get services from these banks as the collateral they require.

The origin of micro-financial institutions in Ethiopia is mainly based on the mission of eradicating poverty. MFIs in Ethiopia used to collect savings from customers and provide loans to them. Some MFIs have started offering other services such as pension fund transfer and money exchange. Nationally, over half of MFI clients are women, and most come from rural households. Following the adoption of the microfinance policy in 1996, women started to receive microcredit and use the services provided by various MFIs. But due to several reasons, inaccessibility, lack of ability to offer collateral, high interest, lack of information regarding loans, and lack of awareness, their involvement in MFIs is not at its desired level. As a result, they prefer to participate in community-based credit and savings groups (Kurke & Negashb, 2010; Nachimuthu et al., 2018; Mengstie, 2022).

Community-based credit and savings groups are more convenient for women in terms of availability. It helps them deal with people from their surrounding community. But the amount is too small and is spent only on specific income-generating activities (Alemu, 2015).

VSLA was launched in Ethiopia by Care Ethiopia in 2004. VSLA is an informal microfinance organization. VSLA is a self-managed savings and loan

association. It has opened access to the country's poorest citizens in rural and urban areas. VSLA is a complement to microfinance organizations. MFI states that citizens should borrow to lift themselves out of poverty. VSLA instead says that citizens should increase their wealth by saving rather than risking themselves by borrowing (Alemu, 2015; Beyene & Dinbabo, 2019). The Ethiopian government and several foreign NGOs have adopted and promoted the VSLA financing model since 2004. It enables participants to grow their economic capacity and to be able to cope with unexpected events (Wosene, 2014).

Existing studies about the impact of VSLA in Ethiopia are limited. Some of these studies are concerned with the contribution of VSLA to poverty reduction Beyene & Dinbabo (2019) Their finding shows that VSLA has a significant and positive contribution to poverty reduction. Household wealth Roza (2017) and household empowerment Emebet (2020). Their result indicates that VSLA contributed to household wealth and empowerment positively and significantly.

Also, studies were conducted on general women empowerment Hossaena (2013); Martha (2015). These studies have focused on the impact of VSLA on women's empowerment in general. But women's empowerment is vast and challenging to cover in a single study. This is because women's empowerment is a broad topic that includes various broad components (for example, women's economic empowerment, political empowerment, sociocultural, and psychological empowerment).

Empirical studies on the impact of VSLA on women's economic empowerment are insufficient. Studies conducted on the impact of VSLA on women's economic empowerment by Edengenet (2016) used only descriptive statistics for data analysis rather than impact evaluation method. On the other hand, Wosene (2014) used a qualitative method of data analysis to analyze the impact of VSLA on women's economic empowerment. These studies only sampled women who were only VSLA members. In addition, these studies do not clearly explain the impact of VSLA on asset ownership and control. Most studies evaluating VSLA's impact on women's empowerment have drawn data only from VSLA members. They used the information obtained by asking about their

status before and after joining the association. Therefore, this does not confirm whether the change is due to VSLA. The relevant existing research leaves room for further investigation of at least two aspects. First, they did not use a proper impact evaluation method to assess the impact of VSLA on women's empowerment. Second, they did not evaluate using actual counterfactual samples.

Therefore, this study attempted to fill the mentioned knowledge gaps using the propensity score matching impact assessment method and taking appropriate counterfactuals from members and non-members. In addition, the paper used three outcome variables, namely personal savings, personal income, and asset ownership and control to estimate the impacts of participation in VSLA on women's economic empowerment in East Belessa Woreda, Amhara region, Ethiopia.

### **1.3 The Objective of the Study**

#### **1.3.1 General Objective of the Study**

The general objective of this study is to estimate the impacts of village saving and loan associations on women's economic empowerment in East Belessa Woreda, Amhara region, Ethiopia.

#### **1.3.2 Specific Objective of the Study**

The study tried to address the following specific objectives

- Estimate the contribution of village saving and loan associations on women's personal savings.
- Evaluate the contribution of village saving and loan associations on women's access to assets.
- Estimate the contribution of village saving and loan associations on women's personal annual income.

### **1.4 Research Questions**

- How had VSLA contributed to improving women's personal savings in the study area?

- How had village saving and loan associations contributed to women's access to assets?
- How had VSLA contributed to improving women's personal annual income in the study area?

### **1.5 Scope and Limitation of the Study**

The study was conducted in four Care Ethiopia intervention kebeles in East Belessa Woreda, Amhara region, Ethiopia. The study is restricted to estimating how village saving and loan associations impacted women's economic empowerment. As a result, this study excludes other aspects of women's empowerment, such as social, political, and cultural empowerment. It helps to get a better result if it is done by using the baseline data of the users and non-users to make the impact evaluation estimate. Since it was not available to the socioeconomic statistics records of women before the establishment of VSLA, the study used the PSM method of impact estimation. Thus, the study is conducted by collecting cross-sectional data.

### **1.6 Significance of the Study**

Although women play a significant role in society and have great potential for different reasons, they do not participate in or make decisions on social and economic issues. The researcher could not find any studies on the impacts of VSLA on women's economic empowerment in the study area. For this reason, this work can be used as a resource for other scholars who work more on the issue. In addition, this study provides input on policy issues for stakeholders.

### **1.7 Organization of the Paper**

This study consists of five chapters. The first chapter includes the background of the study, a statement of the problem, the objective, the scope, limitations, and the importance of the study. The second chapter presents theoretical and empirical literature reviews on the nature and relationship between women's economic empowerment and village savings and loan associations. The third chapter contains a brief description of the research method. The fourth chapter presented the data analysis, findings, and discussion. In the last chapter, the study includes the conclusion of the study and policy implications.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Theoretical Review

##### 2.1.1 The Concept of Women's Economic Empowerment

Empowerment means having the freedom to choose and do things, improving control over resources and choices that affect life, and increasing decision-making capacity (World Bank, 2017). In the context of social work, empowerment is a procedure that enables people, households, and communities to strengthen their socioeconomic and political positions and enhance their quality of life. The discourse increasingly focuses on the idea is "participation of the poor" in development (Völker & Doneys, 2020).

The concept of empowerment plays a significant role in the current discourse of world development organizations. This shows that the area of global development is not exempt from this passion for the phrase. The idea started gradually to gain traction on the worldwide agenda for gender and development in the 1990s. When it comes to gender empowerment, it is closely linked to women's emancipation, which is one of the primary human rights necessary to create a more stable, prosperous world (Alsop et al., 2009).

According to the World Bank (2017), women's empowerment means creating an environment for women to make decisions and contribute from their abilities. It is a process where women learn to manage their assets, claims their autonomous right to make decisions and increase their self-reliance to challenge and end their subordination.

According to Kabeer (1999), women can be empowered by supporting their feelings of self-worth, their freedom to make their own decisions, and their right to influence and change themselves and society. Empowering women involves giving them the ability to influence choices, assets, institutions, and policies that affect their well-being (Donnell et al., 2020). In the feminist empowerment concept, Women empowerment has three main components. It includes

economic empowerment, social empowerment, and political empowerment. (Mayoux, 2020).

Women's economic empowerment has proven to be one of the most effective methods for reducing poverty. It increases the productivity of women's small businesses and other sources of income (UNIFEM, 2016). Women's economic empowerment is about improving women's ability to asset ownership and control and increase their ability to negotiate, influence, and participate in the decision-making processes of everyday life (Edengenet, 2016). According to Sida (2015), Women's economic empowerment means empowering women to have more control over assets and make business decisions about their lives and social priorities. Equal access to, participation in, and empowerment of critical economic resources lead to women's economic empowerment.

A woman is considered economically empowered when she has the power to succeed and grow economically and to make and execute economic decisions. Microfinance institutions play a higher role in doing this (Golla et al., 2011). To reduce the high transaction costs of providing microloans and savings accounts, commercial banks ignore having low-income groups. In addition, the majority of poor people lack the assets that are often required as collateral. As a result, lenders view them as too dangerous to give them loans (Nagarajan & Meyer, 2005).

Microfinance institutions provide finance to those who ordinarily are not eligible for modest financial institutions. Consequently, it has been viewed as a tool for achieving gender equality and financial sustainability goals in addition to several other objectives such as economic empowerment, improved well-being, and political and social empowerment for women (Gebisa & Dassa, 2019; Niaz & Iqbal, 2019).

In an ideal world, microfinance would enable poor, disadvantaged women to access financial services and thus overcome the need for initial capital as they engage in income-generating activities. (Niaz & Iqbal, 2019). Therefore, a lot of attention has been given to ensuring the economic benefit of women in these institutions (Karlan et al., 2017). But the argument that microfinance institutions have to intend for those who can repay loans and high interest made

beneficiaries reluctant. In addition to this lack of awareness, inaccessibility, and lack of ability to offer collateral rural women's involvement in MFIs is not at its desired level. Consequently, they are inclined to participate in community-based loan and saving groups and associations (Moharram, 2020; Aggarwal et al., 2015).

### **2.1.2 Measuring Women's Economic Empowerment**

Women's economic empowerment has many dimensions and varies from context to context. Different projects try to address economic empowerment for women using different pathways depending on their specific context. Indicators suitable for one program or area may not be relevant elsewhere. No universal set of indicators is appropriate for every project in every sector and every context (Golla et al., 2011).

Different researchers have tried to measure women's economic empowerment using various indicators. For example, Lombardini et al. (2017), Solomon & Sharma (2021) Huis et al. (2017) recommend that researchers use personal, relational, and environmental indicators. Also, Mahmud et al. (2012) suggest that self-esteem, freedom of mobility, role in decision-making, and control of material resources are used to measure women's economic empowerment. But Women's economic empowerment programs can follow several different paths. To evaluate the impact of projects on women's economic empowerment, we can prepare indicators based on the characteristics of each project (Golla et al., 2011).

Figure 2.1 illustrates the matrix to measure women's economic empowerment prepared by Golla et al. (2011). As this matrix shows, it uses sample indicators for the different levels at which the results of projects can be measured. These levels range from a project's immediate outcome to medium and long-term effects. These levels range from a project's immediate results to medium and long-term effects. The matrix shows that agency/power and economic growth can be measured separately. Quantitative and qualitative methods are suitable for measurement, depending on what type of data is needed and how it can be collected.

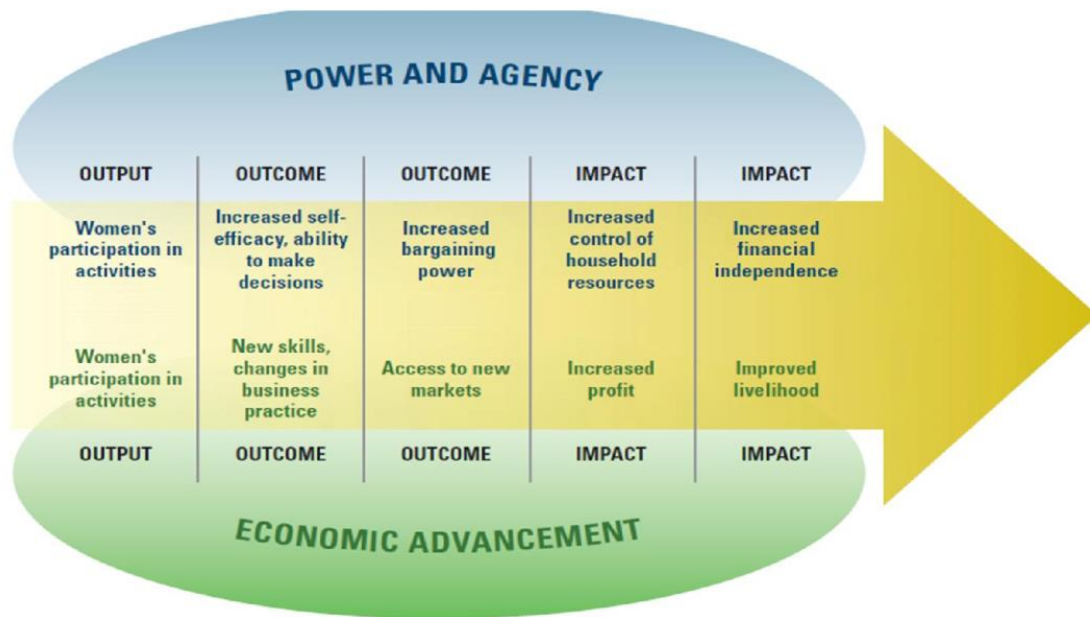


Figure 2.1: A framework to measure women's economic empowerment.

Source: Golla et al. (2011).

### 2.1.3 Village Saving and Loan Association: Structure and Development

The Village Savings and loan association (VSLA) model was created by CARE International in Niger in 1991 (Allen, 2002). In Ethiopia, VSLA was introduced first in south Gondar in 2004. Since then, it has been serving as an alternative to complement MFIs as a source of finance for poor people (Edengenet, 2016). The Ethiopian government and members of various international non-governmental organizations use it as a tool to create economic opportunities and manage unexpected shocks and self-managed loans (Emebet, 2020).

Ten to twenty-five people who self-select are included in a group. Meetings are held in groups once in two weeks, and members save regular savings by buying shares. The group determines the share price at the start of the annual period and is fixed for that cycle. Each member is required to purchase one to five shares at each meeting. Members of a VSLA contribute to the group's savings and access to borrowing. VSLA is entirely based on members' savings and loan interest rates. However, members do undergo a year of intensive training in group leadership and financial administration, allowing them to



become self-sufficient. The group's activities occur in cycles of one year, after which the members receive their share of the accumulated savings and loan profits (Abal, 2022).

Members can save up to five times by purchasing the number of shares they want (Niyirera & Mulyungi, 2018). Then, they could borrow three times their total savings for a maximum of three-month loan tenure. It is easier to get a loan from VSLAs than from microfinance institutions. It requires only paying service fees and guaranteeing members (Okello & Mwesigwa, 2022; Allen & Staehle, 2007). Members could get social insurance in the event of death, birth, or a natural calamity (Ngegba et al., 2016). Finally, at the end of the year, all loans dispersed to members will be collected and distributed to members based on their savings (Bannor et al., 2020).

The purpose of a VSLA is to provide simple savings and loan facilities in areas that do not have easy access to formal financial services (Brannen & Sheehan-Connor, 2016). The VSLA strategy facilitates promoting economic development. It provides a platform and opportunity for women to advocate for gender equity and rights. It establishes a solid foundation to address other issues crucial to women (Karlan et al., 2017).

Various governmental institutions in Ethiopia support the expansion of village savings and credit groups. For instance, the Ministry of Finance and economic development of Ethiopia and the national bank of Ethiopia jointly prepared a financial framework that will last from 2017 until 2025 (MoF, 2020). The National Financial Inclusion Strategy aims to ensure universal access to affordable and high-quality financial services by 2025. The framework states that the government should support informal microfinance. The Ministry of Agriculture has stipulated that 50% of beneficiaries should save through formal and informal financial institutions under the PSNP4 strategy. In addition, the Ministry of Women, Children, and Social Affairs of Ethiopia and the Ministry of Cooperatives of Ethiopia jointly announced that these informal micro-financial institutions should be established and supported (MoA, 2014).

In Ethiopia, the total number of established groups in all regions has reached 34896. About 19% of these groups are organized by CARE Ethiopia. The rest

of the groups are formed by government and other non-governmental organizations. There are 691,397 members, of which 70 percent are women (Krause, 2021).

## **2.2 Empirical Literature Review**

### **2.2.1 Evidence from Developing Countries**

Existing studies have found empirical evidence of a correlation between general women's empowerment and the village savings and loans association in different countries. For instance, Thophilus & Paul (2019) examined the impact of participation in VSLAs on rural women's agencies in Ghana. Membership in VSLA positively impacted women's decision-making, comfort in public speaking, and participation in income-generating activities. But they focused only on the decision-making part of women's empowerment instead of economic empowerment like asset ownership and control.

Maganga (2021) in Malawi and Eriksson et al. (2021) in Rwanda the studies focused on the impact of village savings and loan associations on the empowerment of women. The finding indicates that participation in VSLA reduces vulnerability levels and provides financial provision as a source of finance. But the study was conducted using the descriptive research method from only VSLA members' samples.

Mark et al. (2019) in South Sudan and Simfors & Nilsson (2017) in Kenya conducted studies on the impact of village savings and loan associations on women's economic empowerment. They found VSLA positively impacted women's access to family wealth, managing household resources, wealth, saving, and income. But these studies were conducted using a qualitative research method, and the samples of the study were only members of VSLA. So working without a comparison group may not accurately assess the impact.

An empirical investigation by Lambongang et al. (2020), in Ghana tried to estimate the effect of village savings and credit association participation on household finances. The study results show that families participating in the VSLA have better financial performance than non-participating families by about GH 457.239. But this study estimates this effect using linear regression

by taking VSLA as a dummy independent variable. This means it does not consider any pre-participation differences between participants and non-participants of VSLA. Consequently, the finding is not robust and cannot be attributed only to participation status.

### **2.2.2 Ethiopian Evidence**

In Ethiopia, Martha (2015) assessed how VSLA participation affected rural women's empowerment in Fedis District Oromia, Ethiopia. The borrowing and saving habits of the members were found to be improved. This creates opportunities to participate in productive activities and better access to credit services in village saving and loan associations. The study was conducted on the impact of village savings and loan associations on general women's empowerment. However, it is hard to cover overall women's empowerment in one study. Because women's empowerment is broad, including economic empowerment, political empowerment, social empowerment, psychological empowerment, and more. As a result, it makes the results unreliable. Also, the study used only 90 women members of village savings and loan associations as a sample, and the descriptive statistics method was used for data analysis. Doing without a comparison group and an impact evaluation method does not prove that the result is due to the program.

Edengenet (2016), the study conducted in SNNPR Lake Abaya, Ethiopia. The study examined the impact of VSLA on women's economic empowerment with 60 women samples from VSLA members. The study used descriptive statistics for data analysis. Results indicate that 70 percent of women say they can increase their share of household expenses, and 73 percent said they receive little help from their families as their burden grows. Women can independently select 48 percent of the IGA types and 36 percent of the VSLA loan amount, and 75 percent of respondents said they engaged in at least one kind of official or informal organization. VSLA had a significant contribution to women's economic empowerment. The study focused on asking about the status of women before joining VSLA and there at the current time. Thus calling into question the results. Because it is not possible to prove that the current status of women's economic empowerment is due to the influence of VSLA.

A similar study by Wosene (2014), the research was carried out in Ethiopia, West Harergie. The study was focused on assessing the contribution of VSLA to women's socio-economic empowerment. A qualitative approach and 35 sample respondents were used for data collection from VSLA members. The finding indicates that the VSLA significantly impacted women's social capital, children's school enrollment, and decision-making, household harmony, improved saving culture, increased social contact, self-confidence, and optimism for a brighter future. This study conducted used a qualitative method and used only 35 VSLA members. This does not provide information on quantitative results. Measuring women's economic empowerment needs quantitative data. Therefore, the results of the study will not be complete.

In general, previous studies on the impact of village savings and credit associations on women's empowerment in Ethiopia were conducted using descriptive statistics. Furthermore, the studies only sampled VSLA members. Similarly, the studies conducted regarding the impact of village savings and credit associations on women's economic benefits have used descriptive statistics or qualitative methods. However, to assess the impact of VSLA on women's economic empowerment is used an impact evaluation method will be preferred. Since women's economic empowerment has a quantitative outcome, the impact of the program can be estimated if it is done using a quantitative method. Therefore, it is necessary to compare using the PSM model about the effect of village savings and credit association on women's economic empowerment. Additionally, a comparison between members and non-members is needed to examine the impact of VSLA on women's economic empowerment.

### **2.3 Conceptual Framework**

This conceptual framework is prepared by reviewing different kinds of literature. There are many indicators to measure women's economic empowerment. For this study, to study the impacts of village savings and loan associations on women's economic empowerment parameters that are directly related to village savings and loan associations are selected. These are personal income, personal cash savings, and ownership and control over assets. These

parameters are directly related to the village savings and loan group. When women are members of village savings and loan associations, they are legitimate for savings and loan services. This, in turn, increases their income. When they receive savings services, their savings rate increases, and their savings habits improve. Apart from contributing to personal income, they use their savings for various income-generating activities and asset purchases. These selected outcome variables can significantly measure women's economic empowerment. In addition, various independent variables affecting the decision to join VSLA are selected. The variables are Age, religion, level of educational status, household size, marital status, household head, and member of other microfinance institutions, initial wealth, and participation in extension service

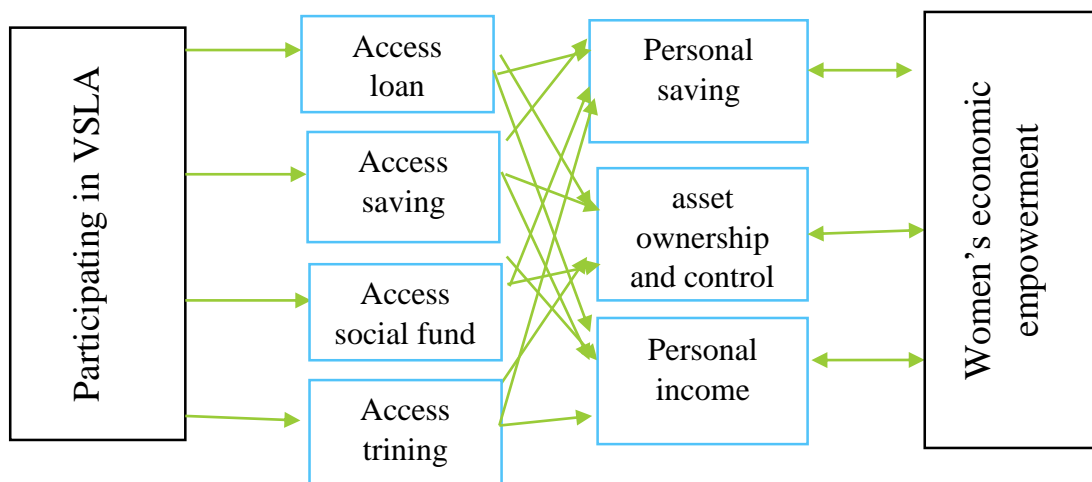


Figure 2.2: Conceptual framework .

Source: (Researcher own formulation based on literature reviews, 2023).

## **CHAPTER THREE**

### **3. RESEARCH METHODOLOGY**

#### **3.1 Description of the Study Area**

The study was conducted in the East Belessa Woreda, Central Gondar Zone, Amhara region, Ethiopia. It is bordered in the southwest by Ebinat Woreda, West Belessa Woreda to the west, and the Wegera Woreda to the northwest, Jan-Amora Woreda to the north, and Sahila and Dahina Woreda of Wag Hemra Zone to the east. East Belessa Woreda is organized into 30 kebeles and two towns: Hamusit and Guhala. East Belessa's Woreda capital town, Guhala, is found 122 km east of Gondar, the capital city of the central Gondar zone, 183 km northeast of Bahir Dar, the capital of the Amhara region, and 729 km northwest of Addis Ababa, the capital of Ethiopia. The total area is estimated to be 1848.29 square kilometers. According to the East Belessa Woreda plan commission (2022), East Belessa Woreda has 26 rural and four urban kebeles. It has a total population of 158305, of whom 80612 are men and 77693 are women. 13,057 (13.4%) of the Woreda population live in urban areas. 98% of locals are followers of the Ethiopian Orthodox Tewahido Church, and the remaining 2% of the population are Muslims and others. East Belessa has an altitude range between 1496 and 2000 meters above sea level. It has low annual rainfall and a desert climate. Despite the Woreda weather conditions and recurrent drought, the population relies on agriculture and grows grains, mainly teff, beans, sorghum, and mung beans. The Woreda is highly exposed to food insecurity problems. All kebeles are supported by the developmental safety net program (PSNP) and various organizations. CARE Ethiopia has been implementing a project in the Woreda since 2018, thus it is working on the protection and development of natural resources, clean water supply, hygiene and sanitation, and women's empowerment in the Woreda. It also organizes and trains women in village savings and loan associations to empower them. There are 960 women organized in 50 VSLA groups in four kebeles.

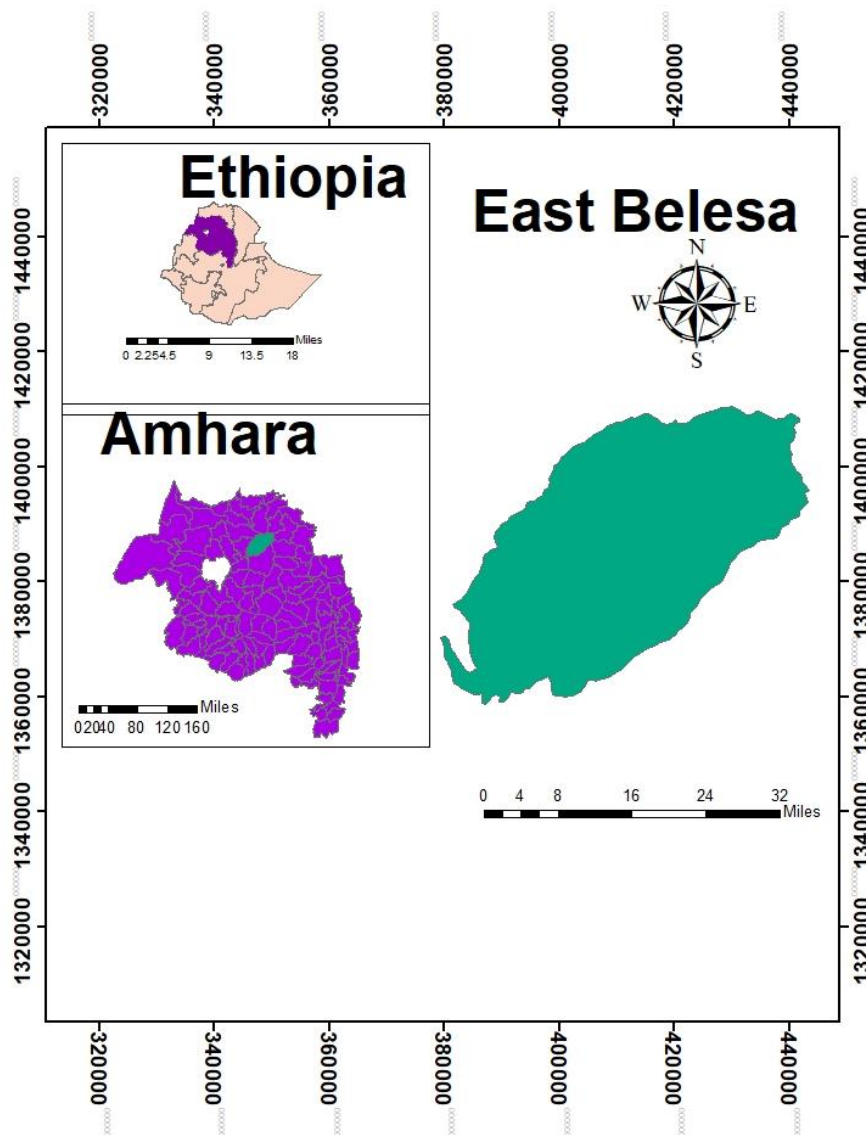


Figure 3.1: Study area map.

Source: GIS shape file of Ethiopian administrative map.

### 3.2 Research Design

The primary objective of this study is to estimate the impact of VSLA on women's economic empowerment. This requires quantifying the effect of participating in VSLA on women's personal savings, asset ownership and control, and contribution to personal annual income. These are inherently quantitative issues that must be addressed using quantitative data collected from sample surveys. This requires a quantitative research approach. So a quasi-

experimental research design along with cross-sectional data are used in this study.

### **3.3 Data Type, Source, and Collection Technique**

To achieve the objective of the study, both primary and secondary types of data were used. Secondary data such as reports and empirical findings that help to facilitate this study were collected from literature and office and organizational reports (East Balsa Woreda women, children, and social affairs office, CARE Ethiopia East Belessa office annual and quarterly reports, and related documents). Primary data on women's demographic, socioeconomic, and institutional characteristics were collected from sample respondents to estimate the impact of participation in VSLA on women's economic empowerment. The questionnaire used for data collection was prepared in English and Amharic. The questionnaire was translated from English to Amharic by experts and language teachers. The women who gave the information were given an orientation about the nature and importance of the questionnaire. Doing this helped streamline the data collection and get accurate information.

### **3.4 Sampling Technique and Sample Size Determination**

According to data from the East Belessa Woreda women, children, and social affairs office, 1036 women are recorded who want to organize in VSLA in the four kebeles where the CARE Ethiopia project is being implemented. According to data from CARE Ethiopia (2019), 960 women in these four kebeles are members of the village savings and loan association. Therefore, the total population of this study was 1996.

To achieve the purpose of this study, a multistage sampling procedure was used to choose representative samples. Due to the availability of VSLA, the East Belessa Woreda was purposefully chosen for the first stage. In the second stage, four kebeles (Dengora, Chamakorach, Woyiba, and Hamusit 01) are selected from among the kebeles in the East Balsa Woreda purposefully. Because the village savings and loans in the woreda are implemented only in these four kebeles. In the third stage, 184 VSLA member women sample respondents were selected by simple random sampling. In the same way, the comparison group



was 200 of the 1036 women who had registered to be organized but did not benefit from the program.

Cochran's (1977) formula gives that is simplified to compute sample sizes.

$$n = \frac{z^2 \cdot p \cdot q}{(e^2)}$$

Where n is the sample size, e = 0.05 is the margin of error, z = 1.96 is the z-score associated with a level of confidence, p is 48% of the VSLA members' sample proportion, and q is 52% of the non-VSLA members' sample size.

Then,

$$n = \frac{(1.96^2) \times 0.48 \times 0.52}{(0.05^2)} = 384$$

Given a 5% margin of error. A sample size of 384 was determined to be suitable. Based on this, VSLA members chosen for this study in the study area account for 48% of the total sample size ( $384 \times 0.48 = 184$ ). Women who are non-VSLA members make up 52% of the sample size ( $384 \times 0.52 = 200$ ). If the sample size of the control group is greater than the treated group, it will help us to find the true anti-effect of the treated groups. Also, the total number of VSLA non-members is higher than non-members. Therefore, the number of treated groups was increased for this study. It should be noted that both VSLA members and non-members were selected to analyze the impact of VSLA on women's economic empowerment. To conduct an impact evaluation, it is necessary to compare the life changes experienced by participants in the VSLA with those experienced by similarly situated individuals who did not take part in the VSLA.

Table 3.1: Sample size distribution

Name of kebeles	Total VSLA members	Total non VSLA member	Samples of VSLA member	Samples of non-VSLA member	Total sample selected in the kebele
Chamak orach	228	283	44	55	99
Dengora	297	306	57	59	116
Hamisit 01	334	322	64	62	126
Woyiba	101	125	19	24	43
Total	960	1036	184	200	384

Source: own calculation (2023).

### 3.5 Method of Data Analysis

The empirical analysis of this study employed both econometric and descriptive statistical methods of data analysis. Stata version 16 software was used for the regression analysis.

#### 3.5.1 Descriptive Statistics

Descriptive statistics give a clear picture of the behavior of VSLA members and non-VSLA member women. The descriptive statistics data analysis method was used to compare and describe different sample groups using standard deviation, chi-2 test, t-test, percentage, and frequency.

#### 3.5.2 Propensity Score Matching

Impact evaluation based on observational data requires a quasi-experimental methodology (Rubin, 2006). Using observed characteristics, a statistical comparison group is created to build a model of the probability of participation in therapy propensity score matching (PSM). Then, participants and nonparticipants are matched based on this probability or propensity score. Next,

the statistical difference in outcomes between these two groups is computed to determine the program's average effect of the treatment.

The PSM validity depends upon two conditions: (a) conditional independence (meaning, that participation is unaffected by unobserved circumstances.) and (b) the propensity scores between the nonparticipant and participant groups show substantial overlap or common support (Shahidur et al., 2010). However, in the case of observational data, the non-random differences between the two groups mean that the treatment and control groups are not comparable, which may lead to treatment group self-selection. It's challenging to tell if the results we observe are the result of the treatment or these biased selection-induced nonrandom alterations. Therefore, we cannot be certain that the distinction between the two groups is the consequence of treatment effects. PSM eliminates non-random differences by comparing treatment cases with the greatest number of similar control instances (Caliendo & Kopeinig, 2008).

Therefore, this study used PSM to analyze observational data on the impacts of VSLA on women's economic empowerment. The PSM estimation technique was first proposed by Rosenbaum and Rubin (1983). By pairing each treatment unit with a non-treatment unit that has similar features. The researcher can establish an artificial comparison group using the quasi-experimental technique called propensity score matching (PSM). Using these matches, the scholar can calculate the effect of an intervention. In data processing, matching is a useful technique for assessing the effects of a project or event that can't be randomly assigned due to logistical or ethical reasons. When evaluating policy outcomes, the greater similarity between both the treatment and control groups revealed a reduction in sample selection bias, leading to a more effective evaluation of policy outcomes (Andrillon et al., 2020). The advantage of PSM has been its ability to transform a multivariate into such an index, specifically a propensity score (PS), and to use the PS value to compare the treatment and control groups. This considerably reduces confounded bias and self-selection, enabling more reliable treatment outcomes (Caliendo & Kopeinig, 2008).

PSM was employed to examine the impacts of village saving and loan associations on women's economic empowerment in areas of VSLA

implementation. PS is used to describe how likely it is that a person would be impacted by VSLA. The basic steps of the PSM estimation approach are as follows:

**Step 1: Estimation of PS:** The conditional probability of every sample member being a member of the VSLA was calculated using logistic regression. The PS value seems to be the outcome of this calculation. The logistic regression propensity score is provided by:

$$P(D=1|x_1, \dots, X_p) = \frac{\exp(\beta_0 + \beta_1 x_1 + \dots + \beta_p x_p)}{1 + \exp(\beta_0 + \beta_1 x_1 + \dots + \beta_p x_p)}$$

$D_i$ : Event intake indicator for a person  $i$

$$D_i = \begin{cases} 1 & \text{indicates if individual } i \text{ is member of VSLA} \\ 0 & \text{indicates if individual } i \text{ is not member of VSLA} \end{cases}$$

A group of factors called  $X_p$  affects women's VSLA membership. It acts as a confounding factor in the PS model as well. The estimated coefficient is represented as indicated by  $\beta_p$

**Step 2: Matching algorithm of PS:** VSLA member women were matched to non-VSLA members in the comparison group with comparable PS values. By doing this, it was possible to ensure that the main characteristics of the treated and control groups were as close as possible. Unmatched samples were removed. For PSM, there are several matching strategies. This study used three methods frequently found in the academic literature, including nearest neighbor matching, radius matching, and kernel matching.

**Step 3: Assessment of matching quality (effect):** If there are any statistically significant differences between the two groups after matching, the balance requirement is assessed to see if there are any. This was a guarantee that the data were balanced by the matching techniques and that the randomization experimental design had the expected outcome.

**Step 4: Calculation of the average treatment effect on the treated (ATT):** Following matching, the ATT and impact of the VSLA on the treated and control groups were compared.

$$E (Y1i-Y0i/Di=1) =E (Y1i/Di=1)-E (y0i/Di=1)$$

Where  $Y1i$  and  $Y0i$ , respectively, stand for the women's economic empowerment of the sample members of the treatment and control groups.

**Step 5: Sensitivity Analysis:** Factors that are not observed in the treatment effect affect the treatment results. The effect of these excluded variables was calculated by sensitivity analysis. The study used Rosenbaum's parameters. A sensitivity parameter gamma ( $\gamma$ ) was used to determine the probability of assignment to the intervention group by using Rosenbaum's bounds. Empirically, gamma = 1 indicates random treatment, that is, the absence of sampling bias caused by omitted variables. Under the null hypothesis of no hidden bias, the Hodges-Lehmann estimate obtained using Rosenbaum's thresholds was examined to determine whether there was a hidden bias in the treatment effect. Rejecting the null hypothesis has a large value on gammas.

The likelihood of being a member of VSLA was then determined to be:

$$P_i = P(x_i, u_i) = P(D_i=1|x_i, u_i) = F(\beta x_i + \lambda u_i)$$

Where:  $D_i$  = equals 1 if a woman is a member of VSLA

$x_i$  = are the observed characteristics for unit  $i$

$u_i$  = the unobserved variable

$\lambda$  = is the effect of  $u_i$  on the participation decision

If  $\lambda$  is zero and the only factors influencing someone's likelihood of experiencing the VSLA are the impacts of  $x_i$ , the research is free of hidden bias.

### 3.6 Specification of Key Variables

Variables are chosen for this investigation based on economic theory and past empirical results from the available literature on related studies. The covariates used for impact evaluation research must have similarities for members and non-members. (i.e., the treated and untreated groups share  $X$  covariates). According to Heckman et al. (1997), Covariates affecting program participants and non-participants should be considered when estimating propensity scores. Accordingly, in this study, covariates that affect VSLA members and non-

members are chosen based on the observable traits of the respondents in the study area.

**Outcome variables:** In this study, the impact of VSLA on women's economic empowerment is measured by using three outcome variables: average annual personal income (AYHI), personal cash savings (PCS), and asset ownership and control (AOS).

**Average annual personal income:** Personal annual income means the income earned by women themselves who have income-generating activities. This study did not consider income earned by husbands and other family members. This variable tests how much women contribute to the household's annual income..

**Personal cash saving:** Personal savings means the money saved in the name of the woman in the bank, Amhara Credit, and other Savings Institutions. This does not include the money saved by her husband and other family members.

**Control and ownership of assets:** Asset ownership and control include assets purchased by women, registered in women's names, and controlled by selling, renting, and managing by women. This study does not include assets registered by the name of the spouse and other family members. These assets include livestock, chickens, houses, radios, mobile phones, and various household appliances. For comparison, the estimated current market value of their property is taken.

**Dependent (treatment) variable:** The dependent or treatment variable is the membership status of VSLA. They are assigned a value of 1 if they are VSLA members and 0 if they are not members of VSLA.

**The independent variables (covariates )** are selected based on different existing literature influencing the decision to membership in VSLA, including age, religion, level of educational status, household size, marital status, head of the household, being a member of another microfinance, having initial wealth, and participation in extension serves.

**Age (AGE)** is a continuous variable. Years are used as the unit of measurement. Age can boost or diminish confidence. As a woman ages, it is generally considered that she is less willing to take risks and invest in worthwhile endeavors. According to the theory, younger women are more likely to participate in different activities that improve income by participating in various income-generating activities. A negative relationship is expected with women's decision to join VSLA. Because aged women may have less income to save.

**Religion** The religion is a dummy variable, having "1" if the woman is Orthodox and "0" if she is a follower of other religions. Religion is an influencing variable in women's decision to join VSLA. There is an assumption that Muslim women may not join VSLA because of the interest rates in VSLA. Thus, religion may affect women's probability of joining VSLA. The expected sign is either positive or negative.

**Marital status (MRST):** It is a dummy variable that has a value of "1" for the woman if she is married; otherwise, it has a value of "0". Thus, it is predicted that married women are much more likely to have lower levels of involvement in income-generating activities and ownership of assets than either single, widowed, or divorced women. This variable will affect women's decisions to join the VSLA. The expected sign will be positive.

**Household Size (HHS):** It is anticipated that household size will affect women's decisions as members of VSLA. Because as the number of families increases, the family's expenses will also increase. Therefore, women may not have enough money to save. On the other hand, households with smaller family sizes may have less money to spend on household expenses.

**Level of formal education (EDUC):** This variable represents the number of years attended education that women have completed. It is a continuous variable. As a woman receives more formal education, the probability of participating in VSLA rises. A woman may be more likely to engage in activities that generate income if she is relatively well-educated. It is expected to positively and significantly affect women's decision to join VSLA.

**Head of the household (HHD):** It is a dummy variable: 1 if a woman is the head of the house and 0 if her husband. This variable has influenced the decision of women to join VSLA. When the woman is the head of the household, she can easily decide on her own to join VSLA. But if the head of the family is her husband, she may find it difficult to decide for herself. Therefore, expected has a positive and significant influence on the decision of women to join VSLA.

**Member of another MFI (MAMFI)** is a dummy variable that has the value “1” if the women are customers of another MFI and “0” otherwise. It had a negative or positive impact on the decision to join VSLA.

**Initial wealth (IWLTH):** This variable is a dummy. It has a value of "1" if women have primary wealth and "0" if not. This variable influences women's decision to join a village savings and loan association. Because if the woman has the initial wealth, she will have money for savings as she can do various income-generating activities. Therefore, this variable will factor into women's decision to join VSLA. The expected sine will also be positive.

**Extension Participation (EXTPART):** This describes any extension services offered locally by governmental sectors. To gauge extension activity attendance, many extension activities are frequently attended. The Office of Agriculture and the Office of Health were the sources of extension in the research area for farmers. It is hypothesized that participating in the extension will favorably affect women’s decisions to join the VSLA. The expected sign was positive.



Table3.2: Variable definition and hypothesis

Variable	Description of variable	Expected sign
Outcome	personal income	+
	Personal saving	+
	Asset ownership and control	+
$Y_i$	Membership	
	Membership of respondent ('1' =VSLA member & '0'= non-member of VSLA)	
$X_1$	Age	-
$X_2$	Religion	+/-
	The religion of respondents ( 1 Orthodox, & 0 Muslim)	
$X_3$	Marital status	+
	Marital status of the respondent ( '1' = Married, & 0 = either never married, Divorce or Widowed)	
$X_4$	Household head	+
	The head of the household ( 1= woman head of the household & 0= otherwise)	
$X_5$	Family size	-/+
$X_6$	Educational level	+
	The highest educational level attained by the respondent in years of schooling	
$X_7$	Participation in extension service	+
	Respondent the status of participation in extension service (1= respondent participate & 0= not participate)	
$X_8$	Membership of other MFI	+
	The respondent's membership status of other MFIs (1= member & 0= not member )	
$X_9$	Having initial wealth	+
	respondents having initial weal = 1 & not having = 0	

Source: own computation (2023).

### 3.7 Reliability and Validity

The data collection questionnaire was checked by experts and tested by sampling. Doing this also ensures that the relevant variables are included and

closes the query for all variables. Before estimating the PSM model, the data is checked for model goodness of fit, heteroscedasticity by Brush-pagan, and multi-collinearity problems by variance inflation factor.

### **3.8 Ethical Consideration**

Respondents willingly offered their responses, and we try to protect the confidentiality of those responses. The data collection, analysis, and result reporting accuracy was also verified. All research participants who were a part of the study were given appropriate information regarding the research goals, the research methods that would be employed, and the requirements of the study.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

This chapter presents the statistical analysis part of the study. It was collected 384 questionnaires effectively from the total sample of female respondents. Regarding the response rate of the questionnaire, 100% of all respondents answered and returned the questionnaire. Then, the collected data was analyzed and presented using econometric and descriptive statistical tools. Descriptive tools such as mean, percentage, standard deviation, and frequency distributions are used to compare and contrast the demographic, economic, and institutional characteristics of members and non-members of VSLA. Likelihood chi-square and t-test statistics are used to measure the difference, strength, and relationships between the means of the compared groups. The propensity score matching (PSM) impact assessment method was applied to estimate the impact of membership in VSLA on women's economic empowerment. Data analysis is done using STATA version 16 statistical software packages.

#### **4.1 Descriptive Analysis**

Demographic and socioeconomic characteristics of respondents influence women's empowerment and economic growth. Therefore, in this study, the characteristics of the respondents that are identified and analyzed are age, marital status, religion, level of education, household size, household head, membership of other MFIs, participation in extension service, having initial wealth, personal cash savings, asset ownership and control, and personal annual income.

##### **4.1.1 Descriptive Statistics for Categorical Variables**

The descriptive statistics result of religion indicates, 293 (76.3%) and 91 (23.7%) are followers of Orthodox and Muslim religions, respectively. Among the member respondents, 158 (85.87) and 26 (14.13) members are Orthodox and Muslim, respectively. Also, among non-members, 135 (67.5) and 65 (32.5) are Orthodox and Muslim. In Table 4.1, the chi-square test results show a

significant difference between VSLA members and non-members regarding their religion at the 1% significance level with a chi-square value of 18.4082.

Marital status of the respondents, 274 (71.35%) of the total sample are married, while 110 (28.65%) are single, divorced, or widowed. Among VSLA members, 116 (63.04%) are married, and 68 (36.96%) are divorced, single, or widowed. Among non-VSLA members, 158 (79%) are married, and 42 (21%) are divorced, single, or widowed. In Table 4.1, the chi-square test result indicates a significant marital status difference between members and non-members of VSLA, with a chi-square value of 12.0005 at a 1% significance label.

The Descriptive statistics result of household heads are shown in Table 4.1 below, 207 (53.9%) respondent households are male-headed, and 177 (46.1%) are female-headed. Also, 104 (56.52%) and 80 (43.48%) of the total village savings and loan association members responded that the heads of the household are male-headed and women-headed, respectively. Similarly, among the non-members, 73 (36.5%) are male-headed, and the remaining 127 (63.5%) are women-headed. Chi-square test results show a significant difference between VSLA members and non-members regarding their household head, with a chi-square value of 15.56 at a 1% significance level.

Participating in extension service, 222 (57.81%) of the total respondents had participated in an extension program, while 162 (42.19%) had never participated. Among VSLA members, 122 (66.3%) had taken part in an extension service, and 62 (33.7%) had never. Among non-VSLA members, 100 (50%) had participated at least once, and 100 (50%) had never. As indicated in Table 4.1, the chi-square test results show that there is a difference in participating in extension service between VSLA members and non-members, with a chi-square value of 10.51 and significance at a 1% significance level.

Membership of other MFIs, The results indicate that 250 (65.1%) respondents are customers of other MFIs. On the other hand, 134 (34.9%) respondents are not members. Among the members of VSLA, 154 (83.7%) have been members, and only 30 (16.3%) have never been members. In contrast, of the respondents who were not VSLA members, 96 (48%) had been members, and 104 (52%) had never been members. Table 4.1 shows that the chi-square test result between

VSLA members and non-members has a chi-square value of 56.16, and there is a significant difference in membership in other microfinance institutions at the 1% level.

Having initial wealth, accordingly, 275 (71.61%) of the total respondents had initial wealth, while 109 (28.39%) of them did not. Among VSLA members, 141 (76.63%) had their initial wealth, and 43 (23.37%) did not. Similarly, among the non-members, 134 (67%) of women having initial wealth, and the remaining 66 (33%) are not having. In Table 4.1, the chi-square test result between VSLA members and non-members has a chi-square value of 4.4, and there is a significant difference in having initial wealth at the 5% level.

Table 4.1: Descriptive statistics result for categorical variables

Variables	Category	VSLA members T=184	Percept	Non-VSLA members T=200	Percept	Total T=384	Frequency	Percept	Chi-square value
Religion	Orthodox	158	85.87	135	67.5	293	76.3	18.00	(0.001)
	Muslim	26	14.13	65	32.5	91	23.7		
Marital status	Married	116	63.04	158	79	274	71.35	12.00	(0.001)
	Single	68	36.96	42	21	110	28.65		
Household head	Husband	104	56.52	73	36.5	207	53.91	15.56	(0.000)
	Women	80	43.48	127	63.5	177	46.1		
Participating in extension	Yes	122	66.3	100	50	222	57.81	10.51	(0.001)
	No	62	33.7	100	50	162	42.19		
Member of other MFI member	Member	154	83.7	96	48	250	65.1	56.16	(0.000)
	Not member	30	16.3	104	52	134	34.9		
Having initial wealth	Having	141	76.63	134	67	275	71.61	4.40	(0.036)
	Not having	43	23.37	66	33	109	28.39		

Source: own computation (2023).

#### **4.1.2 Descriptive Statistics for Continuous Variables**

Respondent's family size, the family size of the respondents ranges from two up to ten for both members and non-members. The mean household size of the VSLA member group is 4.92, and the mean household size of the non-member group is 5.68. Both member and non-member respondent groups have an average household size of 5.32. The difference in mean household size between members and non-members is 0.76 (which is significant at the 1% significant level), which rejects the null hypothesis that there is no difference in family size between members and non-members.

Age of the respondents, the age of the respondents indicates the average age of the total respondents is 37.66 years. The age range of the respondents is between 23 and 46 years. Also, the result shows that members of the VSLA are in the age group of 25 to 46 years. On the other hand, non-VSLA members are in the age group of 23 to 46 years. VSLA members had an average age of 36.35, and non-VSLA members had an average age of 38.86. The t-test result indicates the mean age difference between members and non-members is statistical significance at the 1 percent significance level. Based on these results, non-member respondents have high a mean age than member respondents.

The educational level of the respondents, as we can see in Table 4.2 below, the highest level of education of the respondents is 14, and the average level of education is 2.36. The Village Savings and Loan Association member women have 14 years of high educational level and have a 3.4 mean level of education. On the other hand, the Village Savings and Loan Association non-member women have 13 years of the maximum level of education, and the average education level is 3.4. The mean educational level difference between members and non-members is statistically significant at the a1 percent significance level. Based on these results, member respondents have a higher mean level of education than non-member respondents.

Table 4.2: Descriptive Statistics result for continuous variables

Variable	VSLA members N=184		Non-VSLA members N=200		Combined N=384		Mean Difference	T-value
	Mean	SD	Mean	SD	Mean	SD		
Age	36.35	3.8	38.86	4.02	37.66	4.11	2.5	6.25***
Family size	4.92	2.02	5.68	2.09	5.32	2.09	0.76	3.62***
Education level	3.4	3.58	1.4	2.16	2.36	3.09	2.00	6.7***

\*\*\*, \*\*, and \* are significant at 1%, 5%, and 10% significant level respectively.

Source: own computation (2023).

#### 4.1.3 Descriptive Statistics for outcome variables

According to the descriptive statistics result of personal saving, 89 (23.18%) respondents have no savings, and 295 (76.82%) have savings. All members of the Village Savings and Loan Association have savings. In contrast, only 111 (55.5%) non-members have savings. The average amount of savings of the total sample is 4186.049 Birr. The maximum saving amount is 48960 birr, and the minimum amount of savings is 150 birr. From the t-statistics test, the mean difference in personal savings between members and non-members is 6091.282, and the p-value is 0.0000. This is significant at the 1% significance level. This confirms the rejection of the null hypothesis that there is no difference in personal savings between members and non-members. This shows that VSLA members have better savings than non-members.

Respondent's asset ownership, the mean of the current estimated selling price of all assets managed by the respondents is 22936.56. The minimum and maximum values of assets managed by respondents are 1400 and 104000 birr. Looking at VSLA members only, the average current selling price of assets is 28745.43, with a minimum of 2450 and a maximum of 104000. Non-VSLA members have a mean selling price of 17592.4, the minimum assets price is 1400, and the maximum price is 80000 birr. From the t-statistics test, the mean difference in personal savings between members and non-members is 11153.03,

and the p-value is 0.0000. This is significant at the 1% significance level. This leads us to reject the null hypothesis that there is no difference in asset ownership and control between members and non-members (see Table 4.3). This shows that VSLA members have better asset ownership and control than non-members.

According to the descriptive statistics result, the annual income of all sample respondent women ranges from 0 to 96,000 birr. They have a mean yearly income of 15477.6 birrs. The mean income of women members of VSLA is 20170.65 birr, and that of non-member women is 11160 birr. From the t-statistics test, the mean difference in annual income between non-members and members is 9010.652 birr, and the p-value is 0.0000. This is significant at the 1% significance level. This leads us to reject the null hypothesis that there is no difference in annual income between members and non-members. This indicates that VSLA members have a better yearly income.

Table 4.3: Descriptive statistics result for outcome variables

Variable	VSLA members N=184		Non-VSLA members N=200		Combined N=384		Difference	T-value
	Mean	SD	Mean	SD	Mean	SD		
Personal saving	7358.59	6710.92	1267.31	3986.9	4186.05	6250.93	6091.28	-10.91***
Control of Assets	5.43	3.16	2.4	6.96	.56	.82	3.03	-5.31***
Personal annual income	20170.65	17524.7	11160	12600.57	15477.6	15797.27	9010.65	-5.82***

\*\*\*, \*\*, \* are significant at 1%, 5%, and 10% significant level respectively.

Source: own computation (2023).

## 4.2 Econometrics Analysis

### 4.2.1 Impact Analysis

At this stage, the impact of the Village Savings and Loan Association on women's economic empowerment is evaluated using the PSM model. Also, the study uses a binary choice logit model to estimate the propensity score. Before



estimating the PSM model, the data is checked for model goodness of fit, heteroscedasticity, and multi-collinearity problems.

The presence of a multi-collinearity problem between the selected explanatory variables was tested using the variance inflation factor (VIF). The VIF result shows there is no multi-collinearity problem between the explanatory variables (see Appendix Table 4).

Heteroscedasticity is tested by applying the Brush-Pagan test. So the chi2 result shows that the chi2 value is 1.31 and the prob > chi2 value was 0.2528. This indicates that the model does not have the heteroscedasticity problem (see Appendix Table 5).

From the link test result, the LR chi2 result was 138.73, the p-value was less than 1% significant, and the log-likelihood value was 196.468. This shows that the chi2 is statistically significant, thus indicating that the model is a good fit.

#### **4.2.1.1 Estimating the Propensity Score**

The first step in propensity score estimation is to select a suitable model and estimate the propensity score. The logistic regression model was chosen to estimate the propensity score. A propensity score, which is an individual's probability of being affected by VSLA, is a set of observed covariates. These covariates are age, religion, household head, marital status, family size, level of education, participation in extension services, membership in other microfinance institutions, and initial wealth. Being a VSLA member is used as the treatment variable and takes "1" if she is a member and "0" if she is not.

Table 4.4 below shows the dependent and independent variables with their estimated values. This estimates the parameter coefficient ( $\beta_i$ ) and predicts the marginal values of the membership determinants. Regression parameters and diagnostic statistics were estimated using maximum likelihood estimation. According to the Logit model findings, among the total of nine independent variables, age, religion, household head, family size, level of education, membership in other microfinance institutions, and participation in extension service all have a significant influence on women's decision to be a member of VSLA.

Table 4.4: Binary choice logit result of propensity score estimation

Variable	dy/dx	Std. Err	Z	P> z
Age	-.0337205	0.00831	-4.03	0.000***
Religion	.2286302	0.06663	3.16	0.001***
household head	.196113	0.08069	2.37	0.015**
marital status	-.0459015	0.09181	-0.50	0.617
household size	-.033366	0.01511	-2.21	0.027**
level of education	.037546	0.01119	3.36	0.001***
member of other MFI	.3259093	0.05785	5.02	0.000***
participating in extension	.1705719	0.06138	2.71	0.005***
having initial wealth	.033964	0.06885	0.49	0.622
<i>observations</i>	384			
<i>Pseudo R<sup>2</sup></i>	0.2596			
<i>and Log likelihood =</i>	-196.82175			
<i>LR chi<sup>2</sup>(9) =</i>	138.03			

\* , \*\* , and \*\*\* indicates variable significant at 10%, 5%, and 1%, respectively.

Source: own computation (2023).

The sign of the marginal effect is the same as the sign of the parameter estimated, while the significant variables have a higher t value. The results show religion, household head, level of education, membership in other MFIs, and participation in extension service positively and significantly influence the likelihood of women joining village savings and loan associations. On the contrary, age and household size have a negative influence.

The age of a woman has a negative influence on the probability of her joining VSLA. The p-value result shows that it has a significant influence on women's decisions to join VSLA at the 1% significance level. Holding other factors constant, the probability of a woman joining VSLA decreases by 3.37 percent when her age increases by 1 year. Because older women have a lower probability of choosing a job that generates their income relative to younger ones, they do not want to join VSLA. The result is consistent with the paper conducted in the Kassena-Nankana West District of Ghana by Bannor et al. (2020) and Nardos & Dinbabo (2019). On the other hand, the research

conducted by Merga Gemeda (2018) indicates that age negatively influences the decision to join VSLA.

Religion positively and significantly affected women's decisions to join VSLA at the 1% significance level. The study's findings show that controlling for other factors, the probability of women joining VSLA increased by 22.86 percent if the respondent's religion is other than Islam relative to Muslim women. This might be because Muslim women are less likely to join VSLA in cases related to interest rates. The finding is consistent with the research by Alesane et al. (2019).

The econometric result coefficient of 0.1961 shows household heads significantly affect women's decisions to join VSLA at the 5% significance level. Keeping other factors constant, a woman who is the head of the household is more likely to be a member of the VSLA relative to a woman in a household headed by men. This may be because a woman who is the head of the family joins VSLA on her initiative. The result is in line with the studies conducted in Ethiopia by Nardos L. Beyene (2018).

The decision to join VSLA is expected to be influenced by the number of family members. Household size significantly affects women's decisions to join VSLA at the 5% significance level. Also, the finding shows that holding all other factors constant, the probability of women joining VSLA decreases by 3.33 percent as the number of family member's increases by one. The reason for this may be related to family income and consumption expenses. Assuming a constant and fixed income, as the size of the household increases, so does its consumption expenditure. Therefore, the amount of money required to regularly save for VSLA membership may be difficult for women. This is one of the reasons why women do not join VSLA. The finding is consistent with the paper conducted in Uganda by Moses et al. (2019).

The respondent's level of education was one of the factors expected to encourage women to join VSLA. Table 4.4 indicates education level significantly affects women's decisions to join VSLA at the 1% significance level. Controlling for other factors, uneducated women are less likely to join VSLA, while educated women are 3.75 percent more likely to join VSLA than

uneducated women. The result is similar to a study conducted in Tanzania by Kesanta and Andre (2015) and the research conducted in Ghana by Oduro (2019).

This independent variable is being a member of other microfinance institutions (credit and savings experience). It significantly affects the probability of women's decision to join VSLA, with a coefficient of 0.1705 at the 1% significance level. *Ceteris paribus*, women who are MFI members are more likely to join VSLA than non-MFI members. Women who are members of other microfinance institutions will have better knowledge about savings, credit utilization, and investment. If they have this knowledge, it will enable them to join VSLA. The result is consistent with the study conducted in Uganda by Moses et al. (2019).

Participating in extension service, this variable affects women's probability of joining VSLA at a 1% significance level. In addition, the results show that holding all other factors constant, the likelihood of women joining VSLA increases by 17.05 percent when women participate in extension service relative to women not participating in extension service. This is because women who participate in various extension service programs could have a good understanding of the benefits of saving. The finding is similar to the studies conducted in Ethiopia by Nardos L. Beyene (2018).

#### **4.2.1.2 Common Support**

As shown in Table 4.5 below, the propensity score estimation results show that the treated propensity score is between 0.371 and 0.983, with a mean of 0.646. In contrast, the comparison group's propensity score ranges between 0.210 and 0.951, with a mean of 0.326. Accordingly, we take the minimum from the treated group and the maximum from the control group based on the minima and maxima criteria. Thus, our common support region is a sample whose propensity score is between 0.0370825 and 0.950716. Therefore members of the treated and comparison groups with propensity scores outside of 0.370825 and 0.950716 are not included in the analysis. Out of the total sample, the propensity score result excluded 11 VSLA members from the common support region. Thus, 173 members (from the treatment group) and 200 non-members

(from the comparison group) are in the common support region. This means there is a high degree of overlap between the two groups, which meets the common support condition (97.14%).

Table 4.5: Distribution of estimated propensity scores

p-score	Obs.	Mean	Std. Dev.	Min	Max
Treated	184	0.645794	0.2272326	0.0370825	0.9827974
Control	200	0.3258695	0.2362082	0.210082	0.950716
Total	384	0.4791667	0.2815516	0.0210082	0.9827974

Source: own computation (2023).

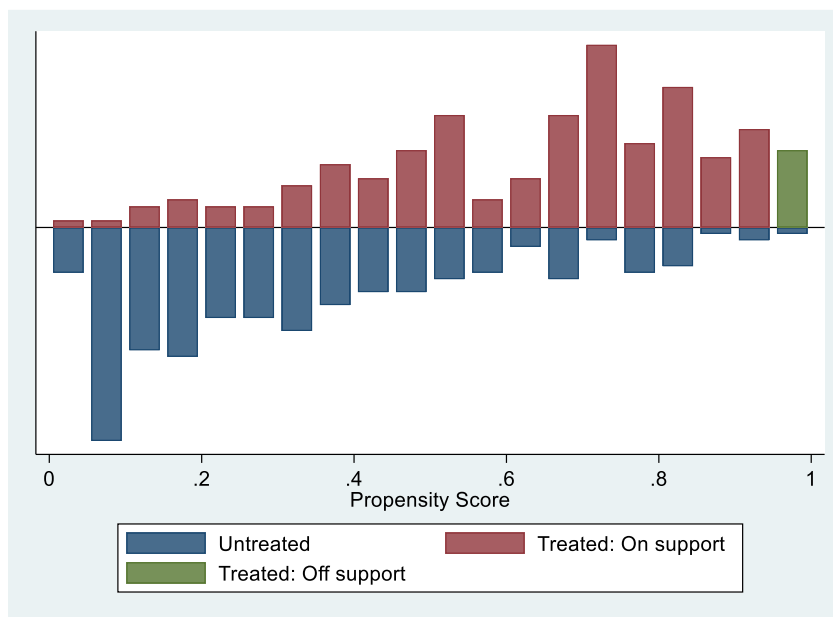


Figure 4.1: Propensity score distribution and common support

Source: own estimation (2023).

#### 4.2.1.3 Choosing Matching Algorithm

In this step, we will choose the best one among the various match estimators. Although there are different types of matching methods, radius matching, neighbor matching, and kernel matching were selected for this study. We used these matching methods to match the treated and control groups within the common support region. This paper used various selection criteria to choose the best among these matching estimators. The selection criteria for this study are a low pseudoR<sup>2</sup>, a high matching sample, a low mean bias, and a high chi-2 value. Therefore, as shown in Table 7 below, the radius (0.5) matching method was

selected according to the criteria of a low pseudoR2 (0.006), a large sample (373), a low mean bias (4.3), and a high LR chi2 (3.07).

Table 4.6: Checking matching algorithm

Matching algorithm	Pseudo R <sup>2</sup>	Mean Bias	LR chi <sup>2</sup>	Matched samples
Radius (0.5)	0.006	4.3	3.07	373
Radius (0.25)	0.018	9.6	8.75	373
Neighbor (5)	0.009	5.5	4.13	373
Neighbor (1)	0.019	7.6	8.99	373
Kernel (0.06)	0.019	7.6	8.99	373
Kernel (0.1)	0.019	7.6	8.99	373

Source: own computation (2023).

#### 4.2.1.4 Testing the Balance of Covariates

After matching, it should be tested if the matching procedure can equalize the distribution of relevant variables in both the control and treatment groups. The first criterion for evaluating the matching balance is that after matching, the mean bias and pseudo-R2 values between the two groups should decrease. Second, from the t-test, the covariates were significant before matching and should become insignificant after matching. Finally, looking at the overall Rubin's B and Rubin's R values, Rubin's B value should be less than 25, and Rubin's R-value should be between 0.5 and 2. Based on the criteria listed above, the quality of the propensity score matching in this study was evaluated. Thus, the results show that the mean bias difference between the two groups was 47.3 before matching and decreased to 2.6 after matching. The pseudo-R2 value decreased from 0.25 to 0.006 after matching. According to Table 8 below, the covariates that were significant before matching became insignificant after matching. Finally, when we compare Rubin's B value and Rubin's R-value, the absolute standardized mean difference between the control and treated groups (Rubin's B) was 18.9, and the ratio of treated to control variances (Rubin's R) was 1.36. Another criterion was verified using the kernel density plot of the common support assessment. This confirms that there is enough overlap in the characteristics of the treated and untreated sections to find enough matches, as the red and blue lines in the graph below shows.

Generally, the above result suggested it supports the claim that, after matching, the covariates X in the treated and untreated groups have similar distributions (i.e., the attributes of the two groups are equally balanced). In addition, the results of all the above test show that the matching method chosen and used in the comparison is the best for this data set. As a result, now viable to estimate the ATT for VSLA members.

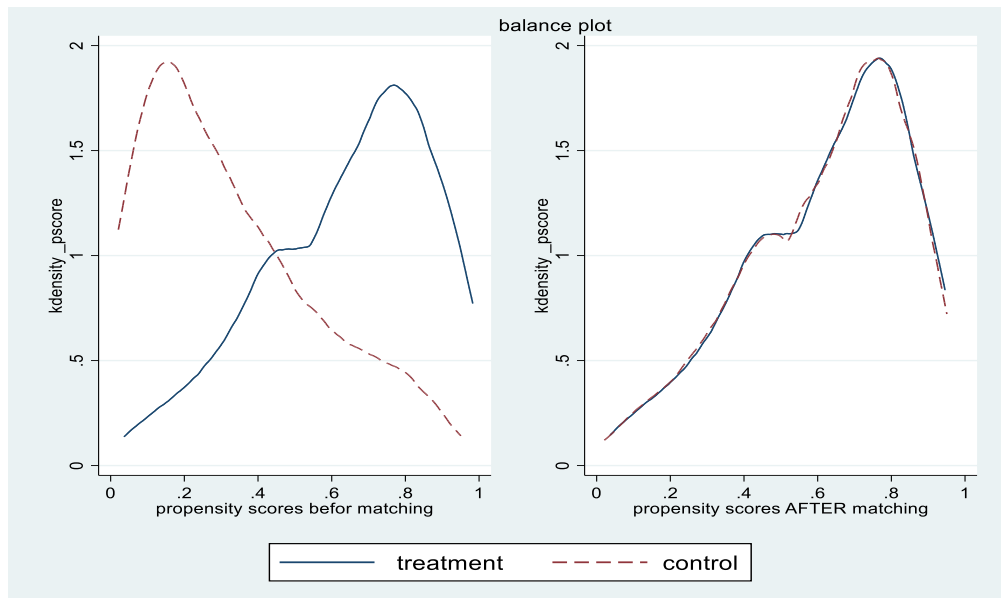


Figure 4.2: kernel density plot.

Source: own estimation (2023).

Table 4.7: Propensity scores and covariates balancing

Variable		Mean		%reduct		t-test	
		Treated	Control	%bias	bias	T	p> t
Age	Unmatched	36.353	38.855	-63.9	96.9	-6.25	0.000
	Matched	36.636	36.558	2.0		0.18	0.861
Religion	Unmatched	.8587	.675	44.4	94.3	4.32	0.000
	Matched	.84951	.83918	2.5		0.27	0.788
househol d head	Unmatched	.56.522	.365	40.9	95.9	4.00	0.000
	Matched	.53757	.54584	-1.7		-0.15	0.788
marital status	Unmatched	.63043	.79	-35.6	65.8	-3.50	0.001
	Matched	.65896	.7135	-12.2		-1.09	0.276
family size	Unmatched	.4.9185	5.68	-37.0	93.3	-3.62	0.000
	Matched	5.0173	5.0681	-2.5		-0.23	0.816
education	Unmatched	3.4022	1.4	67.8	96.1	6.70	0.000
	Matched	3.0809	3.0038	2.6		0.24	0.814
member of MFI	U matched	.83696	.48	81.0	94.7	7.88	0.000
	Matched	.82659	.84554	-4.3		-0.47	0.635
participat ing in extension	Unmatched	.66304	.5	33.4	81.4	3.27	0.001
	Matched	.64162	.61127	6.2		0.58	0.561
having initial wealth	Unmatched	.7663	.67	21.5	77.7	2.10	0.037
	Matched	.75145	.77291	-4.8		0.47	0.639

Sample	Ps	LR	p>chi2	Mean	Med	B	R	%
	R2	chi2		Bias	Bias			Var
Unmatched	0.258	137.13	0.000	47.3	40.9	132.7*	0.95	33
Matched	0.006	3.07	0.962	4.3	2.6	18.9	1.36	67

If the variance ratio outside [0.75; 1.34] for U and [0.74; 1.35] for M  
Source: own estimation (2023).

#### 4.2.1.5 Estimation of Average Treatment Effect on the Treated

After controlling for pre-intervention factors, this section assessed the program's effect on the outcome variable (i.e., asset ownership, personal cash savings, and average yearly income).



#### 4.2.1.6 The Impact of Village Saving and Loan Association on Personal Cash Saving

Looking at women's savings, as shown in Table 4.8 below, the average personal savings of VSLA members is 7452.145 birr, whereas that of non-VSLA members is 1941.429 birr. The difference in ATT between VSLA members and non-members is 5510.716 birr, which is positive and significant at a 1 percent level. This result indicates that the VSLA program increased the personal cash savings of women in the study area compared to non-members. Because VSLA members can increase their savings amount as they save in VSLA, also, by availing of a loan from VSLA, they can earn money that can increase their income as they engage in income-generating activities; this is the way they increase savings amount. In addition, as members of VSLA, they receive various training and gain experience to increase their saving culture. This result is similar to the findings of other studies by Eriksson et al. (2021) conducted in Ruanda, Martha, (2015) and Edengenet (2016) the studies were conducted in Ethiopia. Their research focuses on the impact of VSLA on women's empowerment. The studies confirmed that village savings and loan has a significant role in improving and increasing women's cash saving savings.

Table 4.8: Average treatment effect on the treated for personal cash saving

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Personal saving	Unmatched	7358.59	1267.31	6091.28	558.27	10.91
	ATT	7452.14	1941.43	5510.72	712.44	7.74***

\*\*\* indicates significant at 1 significant label.

Source: own estimation (2023).

#### 4.2.1.7 The Impact of Village Saving and Loan Association on Women's Asset Ownership

Asset ownership and control are computed by taking the current estimated selling price of the property they control and managing to sell, rent, or convert. Accordingly, as shown in Table 4.9 below, the asset ownership of women who are members of the Village Savings and Loan Association is 28523.468, while that of those who are not members is 18271.85. The result of the ATT shows that the difference in asset ownership and control between members and non-members is 10251.617. The finding is positive and significant at the 5 percent level. Therefore, this result assures us that VSLA improved members' asset

ownership and control compared to non-members. Accordingly, we can say that VSLA impacted women's asset ownership in the study area. The main reason is that VSLA members have received various training and participated in various income-generating activities, which will increase their ability to own and control assets. This result is consistent with the findings of other studies that have studied the relationship between VSLA and women's empowerment Mark et al. (2019; Maganga (2021; Simfors & Nilsson (2017). Their study focused on evaluating the impact of VSLA on women's empowerment. One of the indicators used to assess women's empowerment is women's asset ownership and control. Based on their findings, VSLA has a significant role in women's asset ownership and control.

Table 4.9: Average treatment effect on the treated for asset ownership and control

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Asset ownership	Unmatched	28745.43	17592.4	11153.03	2099.29	5.31
	ATT	28523.46	18271.85	10251.61	2692.48	3.81**

\*\* indicates significant at 5 significant label .

Source: own estimation (2023).

#### 4.2.1.8 The Impact of Village Saving and Loan Association on Women's Personal Annual Income

In terms of annual personal income, the ATT for this study is calculated based on the contribution of women to household income. Total household income was not considered for this study. Therefore, as shown in Table 4.10 below, the average annual income of women members of VSLA is 20261.8497 birr, while that of non-members is 12852.8561 birr. Looking at ATT, it is 7408.99365 birr, which is significant and positive at the 1 percent significance level. This shows that women who are members of VSLA have more annual income than non-members. The main reason for this is that women members of VSLA are trained in choosing, planning, and managing income-generating activities. Based on the training, they can select different income-generating activities, which helps to increase their income. In addition, they always share gain profits based on the amount they have saved in VSLA every year, thus increasing their annual

income. This result is similar to the findings of other studies by Mark et al. (2019) conducted in South Sudan, and Wosene (2014) conducted in Ethiopia. The studies focused on evaluating the impact of VSLA on women's economic empowerment. The findings of these studies confirm that VSLA plays a significant role in women's economic empowerment. In particular, it shows that it has a significant role in providing credit options and allowing women to participate in various income-generating activities. They ensure that this was increase the women's annual income and increase their contribution to the family income.

Table 4.10: Average treatment effect on the treated for personal annual income

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Personal annual income	Unmatched	20170.65	11160	9010.65	1548.64	5.82
	ATT	20261.84	12852.86	7408.99	2038.13	3.64***

\*\*\* indicates significant at 1 significant label.

Source: own estimation (2023).

#### **4.2.1.9 The Impacts of Village Saving and Loan Association on Women's Economic Empowerment**

As shown above, among the outcome variables selected for this study, personal cash savings and average personal annual income are positive ATT and statistically significant at the 1% significance level. Asset ownership outcome variable has positive ATT and significance at a 5% significance label.

Thus, the VSLA intervention produced positive and statistically significant mean differences in personal cash savings, asset ownership, and personal annual income between VSLA members and non-member women. This shows that the Village Savings and Loan Association improved women's economic empowerment in the study area.

#### **4.2.1.10 Sensitivity Analysis**

If the calculated coefficient indicates a significant effect, we must check how much it is invulnerable for an unmeasured covariate (Li et al., 2011). A sensitivity test is done to determine how much such "choosing on invisible" distorts our estimation of the program's impact. Rosenbaum's approach, which

enables the analyst to ascertain the extent to which an unobserved variable influences the choice of treatment, is one method for resolving this issue. Latent biases may appear if correlational assumptions are not sound or if unobserved variables affect the outcome variable and treatment choice at the same time (Everitt & Howell, 2005).

The result is shown in bellow table 4.11 that even though non-participant and participant households were permitted to have different odds of receiving treatment up to the maximum value of gamma 5 with 0.5 increments, in terms of unobserved covariates, the inference of the program's effect is not changing. This indicates that the ATT of each outcome variable was assessed at various levels of the gamma critical value. The outcome demonstrated that the p-values were significant, demonstrating further that we had taken pertinent covariates into account that affected both the treatment and outcome variables. Although we set gamma up to 5, we could not find a critical value of gamma where the estimated ATT is suspect. Therefore, conclude that our effect estimates (ATT) are driven solely by program effects and are unaffected by unobserved selection bias.

Table 4.11: Sensitivity analysis result

<b>Gamma</b>	<b>sig+</b>	<b>sig-</b>	<b>t-hat+</b>	<b>t-hat-</b>	<b>CI+</b>	<b>CI-</b>
<b>1</b>	0	0	2884	2884	2465	3400
<b>1.5</b>	0	0	2140	3843	1695	4448
<b>2</b>	0	0	1600	4576	1315	5220
<b>2.5</b>	0	0	1360	5130	950	5948
<b>3</b>	0	0	1100	5600	725	6580
<b>3.5</b>	0	0	850	6185	615	7280
<b>4</b>	3.3e-16	0	725	6580	500	7681
<b>4.5</b>	1.3e-14	0	650	7100	425	8070
<b>5</b>	2.4e-13	0	580	7380	390	8591

---

Gamma	differential assignment due to unobserved factors
-------	---

---

sig+	the upper bound significance level
sig-	the lower bound significance level
t-hat	upper bound Hodges-Lehmann point estimate
t-hat	lower bound Hodges-Lehmann point estimate
CI+	upper bound confidence interval ( $\alpha = .95$ )
CI-	lower bound confidence interval ( $\alpha = .95$ )

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Source: own estimation, 2023.

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

#### 5.1 Conclusion

Village saving and loan associations (VSLA) are informal microfinance models. VSLA does not require any external administrative or financial support. It is an alternative method to using informal microfinance institutions. The VSLA strategy facilitates to promote economic development and provides women with a forum and opportunity to advocate for gender equity and rights. The VSLA establishes a solid foundation to address other issues crucial to women. It enables participants to grow their economic capacity and to be able to cope with unexpected events.

So the main objective of this study was to estimate the impact of participation in VSLAS on women's empowerment in East Belessa Woreda, Amhara region, Ethiopia. Descriptive and econometric analysis tools were applied using data from 384 sample respondents from East Belessa.

The descriptive statistical analysis finding reveals a statistically significant difference between member and non-member women's demographic and socio-economic factors. Further, it indicates that annual personal income, personal savings, and asset ownership have significant differences between members and non-members. But since the descriptive analysis does not account for the comparability of households' characteristics between the two groups, one could not conclude this difference is aroused because of the VSLA membership status difference alone. So to adjust for women's pre-VSLA participating character, PSM was applied.

The result of binary choice logistic regression shows that religion, female head of household, education level, membership of other MFIs, and participation in extension service are the factors that positively and significantly influence women's decision to join VSLA in the study area. On the other hand, age and family size have a negative and significant influence.

This study also assessed the impacts of the village savings and loan association on women's economic empowerment. The study shows that the village savings and loan association plays a significant role in women's economic empowerment. Personal cash savings, asset ownership and control, and annual income were used to measure women's economic empowerment. The study confirms that total village savings and loan association member women's savings of ATT are 5510.716, asset ownership has an ATT value of 10251.617, and women's annual income has an ATT value of 7408.99. Therefore, the study shows that there is a positive and significant relationship between being a member of a village savings and credit association and women's economic empowerment. The results of ATT confirm that village savings and loan associations impacted positively and significantly the economic empowerment of member women in the study area.

## **5.2 Recommendation**

This study helps us understand the role of village savings and credit associations in empowering women. Specifically, this study helps us understand how the Village Savings and Loan Association has fostered and improved the personal savings, annual personal income, and asset ownership and control of its member women. In addition, the study helps us know about the factors that determine women's joining a village savings and loan association.

Therefore, based on the findings of the study, the following recommendations are given to those who want to support, promote, and implement the village savings and loan association:

The local government expanding the village savings and loan association and making it accessible to women is a solution to improving women's economic empowerment. If the government can pay attention to this organization and work, it can empower women economically. Therefore, the local government should allocate a sufficient budget to organize, monitor, train, and provide materials for women in village savings and loan associations. In addition, the village savings and loan association does not have a legal document prepared by the government. Therefore, the government should pay attention and prepare rules, laws, guidelines, and strategies to implement VSLAs and give them to the

implementing bodies. To further strengthen this organization and make it accessible to women, it should be coordinated with development strategies such as agriculture, health, education, and cooperatives. The Woreda's women's and social affairs office and the cooperative's office should work together to increase women's awareness and help organize unorganized women.

VSLA membership and religion have a positive and significant relationship. Muslim women may not be interested in joining VSLA because of interest rates. Therefore, if the government and other non-governmental organizations set up an interest-free organization as an alternative for Muslim women to organize and save on their own. They should carefully incorporate this into their organizational policies and procedures. In the current situation, it is necessary to create awareness that Muslim women can organize alone without joining other religious followers.

Participating in extension service and membership in VSLA has a positive and significant relationship. Women who participate in extension services have an increased probability of joining VSLA. Agricultural and health extension workers should pay special attention to women in their awareness programs and make them access extension services alone and with their husbands.

Other non-governmental organizations that work on empowering women should be able to establish and support women in village savings and loan associations in their programs. In addition, they should help the government financially to develop guidelines, regulations, and strategies. Because this program plays a significant role in achieving their goals.

The Woreda women should join this association realizing that joining the village savings and loan association will enable them to empower economically. To avoid the problem of interest, it should be noted that Muslim women can determine interest rates free when they prepare their bylaws after they are organized.



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## APPENDIX

**Appendix: Table 1 model specification (link test) test result**

<b>treatment</b>	<b>Coef.</b>	<b>Std. Err</b>	<b>Z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>	
<b>Hat</b>	.997607	.1079667	9.24	0.000	.7859961	1.209218
<b>Hat sq.</b>	- .0547232	.0645092	-0.85	0.396	-.181159	.0717126
<b>cons</b>	.0717524	.1500206	0.48	0.632	-.2222825	.3657874
<b>Number of observation</b>	384					
<b>LR chi2(2)</b>	138.73					
<b>Prob &gt; chi2</b>	0.0000					
<b>Pseudo R2</b>	0.2609					
<b>Log-likelihood</b>	-196.46807					

Appendix: Table 2 Multicollinearity test between explanatory variables

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
<b>Household head</b>	1.84	0.543958
<b>Marital status</b>	1.82	0.549234
<b>education</b>	1.11	0.898006
<b>Member of other MFI</b>	1.11	0.904901
<b>Having initial wealth</b>	1.06	0.940076
<b>religion</b>	1.05	0.956538
<b>Participate in extension service</b>	1.03	0.967952
<b>Family size</b>	1.03	0.974301
<b>Mean VIF</b>	1.26	



**Appendix table3 Heteroskedasticity test result**

**Breusch-Pagan / Cook-Weisberg test for heteroskedasticity**

**Ho: Constant variance**

**Variables: fitted values of age**

**chi2(1) = 1.73**

**Prob > chi2 = 0.1880**

**Appendix Table 4 Correlation test result**

	<b>age</b>	<b>religion</b>	<b>House head</b>	<b>Marital status</b>	<b>Family size</b>	<b>Educated</b>	<b>Member of other MFI</b>	<b>Participating in extension service</b>	<b>Having initial wealth</b>
<b>Age</b>	1.0000								
<b>Religion</b>	-0.1213	1.0000							
<b>Household head</b>	-0.0091	-0.0744	1.0000						
<b>Marital status</b>	0.0452	-0.0145	-0.6621	1.0000					
<b>Family size</b>	0.1415	-0.0479	-0.0795	0.0928	1.0000				
<b>Education</b>	-0.2207	0.1225	0.1125	-0.1428	-0.0993	1.0000			
<b>Member of MFI</b>	-0.1785	0.1188	0.0851	-0.0288	-0.0596	0.2359	1.0000		
<b>Participating MFI</b>	0.0287	-0.0048	0.0600	-0.0514	-0.0706	0.0910	0.1158	1.0000	
<b>Having initial wealth</b>	-0.0471	-0.0384	0.1071	-0.0412	0.0314	0.1427	0.1571	0.1171	1.0000

**Appendix Table 5 Propensity estimating logit result**

					<b>Number of obs=384</b>
					LR chi2(9) = 138.03
					Prob > chi2 = 0.0000
					Pseudo R2 =0.2596
<b>Log likelihood = -196.82175</b>					
<b>treatment</b>	<b>Coef. Std.</b>	<b>Err.</b>	<b>z</b>	<b>P&gt;z [95%</b>	<b>Conf. Interval]</b>
<b>Age</b>	-	.0335779	-	0.000	.2011713 -
	.1353598		4.03		.0695483
<b>Religion</b>	.9629589	.3046404	3.16	0.002	.3658747
					1.560043
<b>Household head</b>	.7962613	.3358435	2.37	0.018	.1380202
					1.454502
<b>Marital status</b>	-	.3680042	-	0.617	.9053013
	.1840264		0.50		.5372486
<b>Family size</b>	-	.0606649	-	0.027	.2528377 -
	.1339367		2.21		.0150357
<b>Education</b>	.1507157	.0448086	3.36	0.001	.0628926
					.2385389
<b>Member of MFI</b>	1.388394	.27641	5.02	0.000	.8466401
					1.930147
<b>Participating in extension</b>	.6941496	.25583	2.71	0.007	.1927321
					1.195567
<b>Having initial wealth</b>	.1366583	.2778356	0.49	0.623	.4078895
					.6812061
<b>_cons</b>	2.960942	1.365899	2.17	0.030	.2838302
					5.638055

**Appendix Table Common support region result**

<b>psmatch2:</b>	<b>psmatch2: Common Support</b>		
<b>Treatment assignment</b>	Off support	On support	Total
<b>Untreated</b>	0	200	200
<b>Treated</b>	11	173	184
<b>Total</b>	11	373	384

**BAHIR DAR UNIVERSITY**

**College of Business and Economics Department of Economics**

**Questionnaire**

Worku Shumye is an MSc student at Bahir Dar University conducting a study on **the impact of Village saving and loan associations on women’s economic empowerment**. The purpose of this survey is to gather data to analyze the village saving and loan association participation and its impacts on women’s economic empowerment in the woreda. In addition to partially fulfilling the criteria for the MSc in Development Economics, it aims to make a scientific contribution to the women empowerment sector.

*The personal information that you give will remain confidential. I would like to thank you all for your cooperation and time.*

**A) Household information**

1. Kebele -----
2. Age of the respondent \_\_\_\_\_
3. 19. Do you a member of VSLA? Yes  No
4. Religion  
Orthodox  Muslim   
Protestant  catholic  others
5. Sex of the household head  
Male  Female
6. Marital status  
Unmarried  Married   
Divorced  Widowed
7. How many family members do you have? \_\_\_\_\_
8. How many members are aged below 15 and above 65 fill in the next table.

Aged < 15		Aged > 65	
Male	Female	Male	Female

8. What is the highest level of education attained by the respondent and your spouse?

8.1 Respondent. -----

8.2 Your Spouse. -----

9. What is your job?

Small trade       Agriculture   
Employer       Other

10. Are you a user of microfinance institutions? (Like ACSI, RUSSACO)

Yes       No

11. Do you participate in extension services by agricultural experts, health extension workers, and NGO workers?

Never       Sometimes       Always

12. Do you have initial wealth?

Yes       No

**B. Saving information**

13. Do you have personal savings in RUSACCO, ACSI, or Bank?

Yes       No

14. If your answer is yes to the above, please mention

No	Type of savings	Annual Saving in Birr	
1	In-kind	Crop	
		Jewelry	
		Others	
2	In cash		
	Total		

15. Who decides your saving?

Me       my spouse   
Me and my spouse jointly       my spouse only

**C. Asset ownership information**

What kind of and how much livestock and assets do you purchase, control, and have?

No	Types of livestock or asset	Unit	Quantity	current market value in birr	Who controls
1	House	Number			
2	Cows	Number			
3	Oxen	Number			
4	Sheep	Number			
5	Goats	Number			
6	Calves	Number			
7	Mules	Number			
8	Donkeys	Number			
9	Bee	Hive			
10	Hen	Number			
11	Radio	Number			
12	Jewelry	Number			
13	Mobil phone				
14	Others				
Total					

**Choose from the following options for who controls**

Me = 1    my spouse = 2    Me and my spouse jointly = 3    my spouse only = 4

**D. Income information**

17. Do you participate in different income greeting activities?

Yes  No

18. If yes is your answer to the above question, how much is your contribution to the household's annual income?

No	Income type	Annual income in birr
1	Small trade	
2	Handcraft	
3	Selling local drinks	
4	Farming	
5	Charcoal and firewood selling	
6	Poultry farming	
7	Animal production	
8	Wag labor service	
9	Monthly salary	
10	Other	
	Total	

**E. Village saving and loan association membership information**

19. Do you a member of VSLA?

Yes  No

20. if yes your answer to the above question;

21. How do you evaluate the impact of the Village Saving and loan association program to improve your saving?

Very High  High   
 Medium  Low   
 Very low  No impact   
 Negative impact  I don't know

22. How do you evaluate the impact of the village saving and loan association program to improve your contribution to household income?

Very high  High   
 Medium  Low   
 Very low  No impact   
 Negative impact  I don't know

23. How do you evaluate the impact of the village saving and loan association program to improve your access and control over resources?

Very high	<input type="text"/>	High	<input type="text"/>
Medium	<input type="text"/>	Low	<input type="text"/>
Very low	<input type="text"/>	No impact	<input type="text"/>
Negative impact	<input type="text"/>	I don't know	<input type="text"/>

24. Explain if VSLA negatively affect your cash saving, the contribution of household income, and asset ownership -----  
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