EFFECT OF OUTREACH ON OPERATIONAL SUSTAINABILITY (OSS): STUDY IN SACCOs IN AA.

A RESEARCH REPORT SUBMITTED TO ADDISABABA UNIVERSITY SCHOOL OF COMMERCE IN PARTIAL FULFILMENT FOR THE REQUIREMENTS FOR THE AWARD OF MASTER'S DEGREE IN CORPORATE FINANCE ESPECIALITY IN INVESTMENT MANAGMENT, ADDIS ABABA, ETHIOPIA.

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ADDIS ABABA

Signatory page

*I hereby certify that, I have read and evaluated this Thesis entitled "A*ssessing the relationship between outreach operational sustainability on saving and credit cooperative in Addis Ababa, Ethiopia*." prepared under my guidance and supervision. I recommend that it be submitted as fulfilling the thesis requirement.*

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As a member of the Board of Examiners of the MSc Thesis Open Defense Examination, I certify that I have read and evaluated the thesis prepared by Endeshaw Yibeltal and examined the candidate. I recommend that the thesis be accepted as fulfilling the Thesis requirements for the Master of Science in corporate Finance specialty in Investment analysis management.

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Table of contents

List of tables and figures

List of tables

Declaration

This is verify that, the report endorsed "The effect of outreach on operational sustainability on saving and credit cooperative in Addis Ababa, Ethiopia" is done by me; it indicated a realistic work carried out under my assistance for the requirement to get master degree from Addis Ababa University, school of commerce, department of corporate Finance, specialty in investment analysis. It is not submitted earlier for award of any degree to the best of my knowledge and belief.

Name of the student: Endeshaw Yibeltal (GSE/2124/14)

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This research report has been submitted for examination purpose with my approval as the university.

Name of the Advisor: Dr. Mengistu Bogale

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Dedication

I dedicate this study to my wife, Amelework Mazengia; my daughters, Aleph Endeshaw, and Hamerawit Endeshaw and also my son Kidus Endeshaw for their frequent support, considerate and encouragement that they have provided during all the years of my studies.

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ABSTRACT

This study investigates the effect of outreach on operational sustainability in Saving and Credit Cooperatives (SACCOs) in Addis Ababa, Ethiopia, with the primary objective of assessing how key outreach variables number of members (NM), women borrowers (NWB), average loan size (AVL), savings (AVS), and loan-to-asset ratio (LtA) impact operational self-sufficiency (OSS). The research holds significant implications for policymakers, SACCO managers, and development practitioners by providing empirical evidence to balance financial sustainability with social outreach goals. Using a quantitative approach, the study analyzed panel data from 2012–2016, drawing a purposive sample of 69 audited SACCOs (from a sampling frame of 252) to ensure data reliability. Secondary data from 49 SACCO audited financial reports and annual statements were employed, and a mixed descriptive-econometric analysis was conducted using SPSS. The findings reveal that while larger membership (NM) negatively affects OSS due to operational inefficiencies, women borrowers (NWB) significantly enhance sustainability, likely due to higher repayment rates. Average loan size (AVL) and savings (AVS) show modest positive effects, whereas the loan-to-asset ratio (LtA) is the strongest predictor, with an optimal range (0.6–0.8) maximizing financial health. The study challenges the conventional trade-off narrative, demonstrating that strategic management can reconcile outreach and sustainability. Recommendations include: (1) controlled membership growth to avoid overextension, (2) gender-inclusive lending policies to diversify risk, (3) maintaining an optimal LtA ratio to balance liquidity and profitability, and (4) adopting digital tools to reduce administrative costs. For policymakers, the study advocates regulatory frameworks that incentivize gender inclusivity and set benchmarks for LtA ratios. By aligning social missions with financial viability, SACCOs can enhance their dual role in poverty alleviation and economic resilience.

Key words: SACCOs**,** Operational Sustainability, Outreach, Gender Inclusion, Trade-off**.**

1. CHAPTER ONE: INTRODUCTION

This section introduced the background of the study, information about the research topic, statement of the problem that explained the reason why to study on this topic, objectives of the study, and the research hypotheses is raised to answer or meet the research's objectives. The significance of the study that highlights the importance of the research, scope, and limitation of the study is also part of this section. Finally, this section of the research introduced the organization of the rest of the research proposal contents.

1.1. Background of the study

Poverty is a serious problem in the world, especially in developing countries. In order to mitigate this problem, the governments take different remedies to alleviate such poverty level through the formation of reliable microfinance institutions for accessing credit to poor households, (Shochrul *et al*, 2020), (Kerta ,2007), (Saundriya *et al*, 2011) and (Chirwa,2002). Microfinance institutions are useful means of intervention for development strategy, and they are a tool for poverty alleviation by providing inclusion financial service to those unable to offer collateral for formal banking loans. Financial cooperatives and standard MFI disprove the traditional assumption that the poor are neither able to save or creditworthy, (Gashaw, 2013).

Microfinance institutions were initiated with social and economic objectives. Social mission drive to access credit to the poorest in order to achieve equitable and inclusive, (Rock *et al,* 1998). Whereas, the commercial mission seeks the institution to be sustainable and enhance its profitability as well as productivity for increasing their household assets through the development of members saving habits. Financial cooperatives are specialized microfinance models that disprove the traditional assumption that the poor are neither creditworthy nor able to save, (Amha, 2007).

According to proclamation no 985/2016, cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and

aspirations through jointly owned enterprise." Members of cooperatives democratically own the business, and they each have one vote when choosing the board of directors.

Saving and credit cooperatives is a special type of microfinance institution that is governed by democratic principles; the members are the owner and the user of the service, and it has lower transaction costs due to the fact that members can borrow on average three times their investment, and it reduces credit risk as well as the fact that the members have understood their cooperative rules and regulations and reduces information asymmetry, (Nyankomo and Meshach, 2011). It is voluntary associations of people who came together with the common goal of encouraging saving and granting credit to members' in order to improve their livelihood through being owned by its members and democratically controlled, (Matumo *et al*,2013).

The per capita income of Ethiopians is only 1,573 during 2023. Poverty and food insecurity are the main challenges and fundamental issues of economic development and food security. In order to address the issue, several microfinance institutions have emerged. However, in Ethiopia, many of the population do not serve financial services especially credit services from a formal financial institution due to high transaction cost and lack of collateral beyond the outreach limitations of the institution, NBE annual report (2021).

According to 985/2016, cooperatives are people-centered enterprises owned, controlled, and operated by and for their members to fulfill their common economic, social, and cultural needs. Credit cooperatives are cooperatives whose primary mission is to provide financial services, saving and credit, to their members. They take part in the goal of eradicating poverty by rendering sustainability and economic viability, (Malacora *et al*, 2002).

According to the World council of credit union report in 2022, from 98 countries consolidated report, there are 82,758 saving and credit cooperatives, they serve 404 million members, their penetration rate is 13.9%, and they mobilize $3.6 trillion from their members. In Africa, 34,079 SACCOs have been established, and they serve 43

million members, and their penetration rate is 14.7%, and they mobilize $22 billion in savings and shares from their members.

In Ethiopia, the first SACCO was established by employers of Ethiopian road authority in 1957 (*Dagnaw*, 2004) and the second SACCO was established in 1964 by workers of Ethiopian Airlines. In Ethiopia, there were 23,571 SACCOs on June 30, 2023, and they serve 7,946,343 members, their penetration rate was 3.21%, and they had 8,025,506,175 capital and 44,094,483,390 saving mobilized. The SACCOs have provided birr 21,056,436,026.00 credits for 1,139,961 members.

There were 964 SACCOs in Addis Ababa those have 331,812 members (54% female), the penetration rate was 6.11 %, and they mobilized 9,242,117,624.17 birr saving from their members, and they gave birr 5,390,689,515.94 credits to 47,502 borrowers. From elven sub city the largest number Sacco formed under Arada sub city,the average membersize of Sacco is 344,the average saving depodosited by each member was 27,853 and the average shre purchased by individual was 5498.00 the average loan receivable from each individual member is 64,000.00 and 14.9% member has got a loan from their Sacco.

Donal *et al*, *(*2020), stated that financial cooperatives play an important role in the financial system of many countries. Financial coop and specialized micro finances are typical models that disprove the traditional assumption that the poor are neither creditworthy nor able to save, (Gashaw, 2013). However, they are very limited in their outreach and they serve only on average about 217 members.

The current world situation leads us to consider that sustainable development is based on three basic pillars: economic, social, and environmental (Martha, 2011). The concept of sustainable development articulated in 17 sustainable development goals requires business organizations to accelerate the sustainability processes. SACCOs are key channel for promoting financial inclusion, which are included in 8 of the 17 SDGs. Healthy financial and operating performances of microfinance institutions are very important for their well-functioning and to serve their clients properly.

Financial cooperative institutions as providing an effective tool for grass-root innovation to bring about local sustainable development and serve not only economic wealth but also social cohesion, (Master, 2018). They are differentiated from standard MFIs that provide credit service first through dual objectives, sustainability and outreach. Sustainability is an ability of institutions that provide a service to cover expenses with their credit revenue without depending on extra funds to ensure the continuity and availability of financial services. Outreach is the social value of output in six aspects: depth, breadth, length, scope, and worth of users and cost of users (Schreiner, 2002), Mayer R. (2002), Navajas *et al*. (2001) and (Kerta, 2007).

This study investigated the effect of outreach on operational sustainability. Thus, the motive behind this study is to understand factor that affect outreach and sustainability SACCOs in Addis Ababa along with the relationship between outreach and sustainability performance of SACCOs in Addis Ababa.

1.2. Statement of the Problem

Poverty is a severe problem in developing countries due to the poor do not accessing finance for their petty trade. It is the main challenge and fundamental issue of economic development. For mitigating the level of poverty, microfinance institutions are emerged. Microfinance institutions have a significant role for accessing financial services to the poor and non-bankable people in-order to increase their household well-being through the ability to accumulate assets and their capacity, (Saundaria *et al*, 2011). There are only 35% of adult populations have bank accounts and accessing financial services. The poor is very limited accessing the service in Ethiopia due to high transaction costs.

However, Microfinance institutions have dual nature, namely social and economic; they differ from other contemporary financial institutions. Most MFIs are not sustainable for reaching out to the poor, and their consequences decrease their productivity level, especially for women. Now days any institution leads us to reflect that sustainable development on the three basic pillars of economic, social, and environmental development. Sustainable development expressed in 17 sustainable development goals requires accelerating sustainable financial processes. Outreach and sustainability are the

mirror image targets of microfinance institutions for poverty alleviation. Hence, the two indicators are one affect the other negatively, (Martha, 2022). Financial sustainability has an effect on depth of outreach and breadth outreach, (Shakill, 2019).

Outreach and operational sustainability can be potentially either complimentary or contradictory. Some researchers found, It is the great challenge to build MFI to reach the poor and simultaneously achieve sustainability, (Lafourcode *et al*, 2007), cited in (Yehualashet, 2011). Some researchers concluded SACCOs are sustainable as well as outreach performances at a moderate level, and they found no evidence of a trade-off between outreach and financial sustainability, which is rather compatible between them, (Meleses ,2019) and (Kereta,2007), (Canning,1999), (Cull et al,2007), and (Gashaw,2013). In addition, (Nyankomo and Meshach, 2011), the transaction cost of financial cooperatives is lower than standard microfinance institutions due to the fact that members can borrow on average three times their investment, which reduces credit risk and enhances liquidity and sustainability of the cooperatives as well as reaching many borrowers.

On the other side, outreach performance has a negative sign with operational sustainability due to high transaction costs for taking smaller loans for many borrowers, (Semaw, 2019), (Navajas *et al*, 2006), (Rhyne, 1998), (Schreiner, 2002), and (Admas and Devi, 2018). Financial cooperatives lend small loans and serve a larger proportion of women borrowers, implying they are doing in depth outreach but they are not sustainable, (Gashaw *et al*, 2013).

This study investigated the effect of outreach on operational sustainability of SACCO, in Addis Ababa, Ethiopia. Therefore, it is an important indicator for researchers, policymakers, regulators, and shareholders in guiding the industry in the desired direction. To the best of my knowledge, there is no research on this topic. Some researchers studied on microfinance and Bank, mostly in Kenya and Tanzania. So, there is a gap on this uncovered area, time gap, variables gap and there is also a gap on a deviate research findings. Therefore, this study is in response to the gaps.

1.3. Objectives of the Study

1.3.1. General Objective

The general objective of the study is the effect of outreach on operational sustainability on saving and credit cooperatives in Addis Ababa

1.3.2. Specific Objectives

The specific objectives of the study are:

1) Number of members has statically significant effect on operational sustainability
2) Women Borrowers has statically significant effect on operational sustainability
3) Average saving amount has statically significant effect on operational sustainability
4) Average loan amount has statically significant effect on operational sustainability
5) Loan to asset ratio has statically significant effect on operational sustainability

1.4. Research Hypotheses

Hypotheses are assumption that is made on the basis of some evidences. There is the initial point of any investigation that translates the research questions into a prediction.

H1: Numbers of members have statically positive relation on operational sustainability
H2: Women borrowers have statically positive relation on operational sustainability
H3: Average saving amount has statically positive relation on operational sustainability
H4: Average loan has statically positive relation on operational sustainability
H5: Loan to Asset ratio has statically positive relation on operational sustainability

Significance of the Study

This study contributes for researchers to get knowledge, it also value for academicians for further study in the area of outreach and sustainability of SACCO and it uses for literature review and proactive evidences. In addition, it is useful for regulatory bodies for overcoming critical factors that affect the outreach and sustainability of SACCO.

Moreover, the findings of this study are help for policymakers in considering areas where sustainability should be focused so as to effectively promote the SACCO performance.

1.5. Scope of the Study

This study focused for assessing the relationship between outreach and operational sustainability on SACCO, a financial cooperatives in Addis Ababa city administration. The study variables demarcated only breadth and depth outreach through number of borrowers, women borrowers, average loan balance, average saving balance and loan to asset ratio as independent variables and operational sustainability as dependent variables, the study area covered limited area, and it does not consider other financial institutions.

1.6. Limitation of the Study

In this study, assessing the relationship between outreach and sustainability of SACCO in Addis Ababa, Ethiopia, has some limitations during conducted the study: the secondary data was conducted only audited SACCOs, limited dependent and independent variables, The study area is limited, and data collection only secondary data were employed. .

1.7. Definition of Significant Terms

Cooperative is “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned enterprise." It is democratically owned by their members, having one vote in electing the board of directors.

Saving and Credit cooperative “may be defined as any financial institution that offers not only small loans to members but also provides other financial services like savings, insurance, and investment advice including even training programmers for its members.”

Outreach: The social value of output in six aspects: depth, breadth, length, scope, and worth of users, and cost of users. However, for this research, focus on only depth and breadth outreach.

Sustainability: the ability to cover the annual budget, including grants, donation, and other funds rises by two level; operational self-sufficiency and financial self-sufficiency.

Social capital: It is about the value of social networks, bonding similar people and bridging between diverse people with norms of reciprocity.

Member: the owner, beneficiary and controller of their SACCO

Borrower: is the member who borrows money from the lender.

Average saving: The ratio of total saving to number of members.

Average loan: the ratio of outstanding loan to number of borrower.

Loan to asset is the ratio of outstanding loan to total asset

Borrowers' ratio is the ratio of number of borrowers to total number of members

Women borrowers is the number of women borrowers who take loan from their SACCO

1.8. Organization of the Study

This study is divided into five chapters. The second chapter addressed the literature review by examining relevant literature linked to the study's issue. The literature review included the theoretical framework, empirical review, and conceptual framework. The third chapter discussed the research strategies utilized to collect and analyze data. Chapter three also discussed research design, targeted population, sample and sampling method, data collecting and analysis, and ethical requirements. Chapter Four involved data analysis, presentation, and interpretation, while Chapter Five includes a summary of findings, discussions, conclusions, and suggestions.

2. CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical Literature Review

This section presents a review of the relevant theories on which the study is anchored. No single theoretical orientation can adequately explain outreach and sustainability; different social theories can be combined them to explain outreach and sustainability.

Four theories were employed to support the study. These theories are financial intervention (inter-mediation) theory, life cycle theory, institutionalist theory and welfare theory.

2.1.1. Financial Inter-mediation Theory

Financial institutions provide saving and credit services to their customers, as negotiators of credit entailing issuing loans of other people's acquired funds. Banks borrow money with the aim of lending and it involves bargaining between depositors and recipients of credit. A popular economists, outlining back to the earliest (Keynes, 1930), emphasized financial intermediaries as the role of banks, (Werner, 2014) “A banker owns funds that are loan-able or invest equal to a large proportion nearly 90% of savings deposits, thus it is playing an intermediary role for the transfer of loan. Financial inter-mediation theory explains the breadth and depth of outreach and their effect on financial sustainability. Secondly, the theory application poses the risk aspects in microfinance and SACCOs. Hence, it aided to address the moderating effect of credit risk management on financial outreach and financial sustainability.

2.1.2. Life Cycle Theory

Life Cycle Theory is defined a strong conception which focuses on the way institutions are birth, growth, mature, and finally death. The phases specifically indicate in communalism in terms of market development, management capacity, and financing structure aspects, (Bayai and Ikhide, 2016). Further, the LCT is viewed as a “maturation and generational process” (O“Rand & Krecker 1990); the footing for the funding method, marketing, costing, survival, growth, and production strategies for institutions (Porter

1980) and indicate advancements in attaining financial sustainability (Innocent Bayai & Ikhide, 2016). The advancements involve the utilization of trading cash in funding operations, wholesome management, innovation, the interest rates levy on loans, minimized operating cost, low PAR equally with large stability and outreach (de Soussa & Frankiewicz 2004).

2.1.3. Institutionalist Theory

Institutionalist theory was advanced by Morduch in 1999. The theory's major attention is forming sustainable functions excluding external donations and fixing suitable interest rates that cushion the uncertainty connected with lending to distinct people. (Wafula, 2017), argues that intuitionists view MFIs' core purpose as financial deepening, which focuses on setting up sustainable financial inter-mediation for low income earners. Financial sufficiency should be attained and accorded top priority by all MFIs, which is supported by the theory. Therefore, the financially viable microfinance institution should be able to cover all the costs using interest charged on the loan. This means that, MFIs should make profits from their operations to attract private funding since donors' funds may end, thereby leading to the collapse of MFIs (Harelimana, 2017).

2.1.4. Welfare Theories

Welfarists argue that MFIs should focus on providing financial services to the poorest households in an attempt to reduce poverty rather than being to focus on financially sustainable (Adhikary & Papachristou, 2014). The mission of MFIs, according to supporters of this approach, is to have a positive social impact on their clients, which are the poor. Advocators of the welfare approach advocate, there is a trade-off between financial sustainability and outreach, which jeopardizes the main MFIs mission. MFI's seeking financial sustainability will favor financial performance instead of targeting poor clients (Nurmakhanova, Kretzschmar & Fedhila, 2015).

2.2. Empirical Review

Empirical review refers to literature by other scholars on the relevant topic to this study under review. This study is conducted the empirical review based on the research objectives.

Determinant of financial and operational sustainability of MFIs in Ethiopia, The study found that cost per borrower, deposit to loan ratio, grant to asset ratio, GDP growth rate, and gross loan portfolio affects the financial self-sufficiency and sustainability of Ethiopian MFIs significantly. Similarly, portfolio at risk, experience of MFIs, return on asset, cost per borrower, and operating expense ratio affect their operational sustainability. The study also found that MFIs in Ethiopia are operationally self-sufficient but not financially self-sufficient, **(**Mirani, **2015)**.

The potential for MFIs improve in breadth of outreach by raising financial inclusion and to develop the depth of outreach by targeting the poor while instantaneously pursuing self-sufficiency and profitability. Outreach is improved when MFIs are supported more by debt than equity and that the pursuit of profitability is a hindrance to outreach. Overall the results suggest that improved efficiency in the pursuit of sustainability, MFIs in Ghana stand better chances of achieving outreach both in depth and breadth, (Esther and Raymond 2013).

The significant positive relationship between breadth of outreach measured as gross loan-to-asset ratio, number of active borrowers, and financial sustainability was evident among microfinance institutions in Ethiopia. However, there is a trade-off between microfinance institutions depth of outreach measured by average loan size and financial sustainability, as these variable shows statistically significant associations with financial sustainability, operating expenses per loan portfolio relate inversely with financial sustainability, while yield relates directly, (Abinet, 2015).

Financial sustainability and outreach of MFIs in Ethiopia,(Gashaw, Carlo and Kindie, 2013) exists a positive complimentary between outreach and financial viability for financial cooperatives. On average, financially self-sufficient cooperatives lend small

loans and serve larger proportions of women borrowers, implying a greater depth of outreach together with achieving financial sustainability. While non-bankable, microfinance providers do better in expanding outreach, based on the findings, financial cooperatives better cover their costs, balance social and economic goals, and enable the microfinance industry to fulfill its full promise of serving the poor on a cost-covering basis, .

Determinant of financial sustainability of MFIs in Ethiopia, recommends that Ethiopian MFIs should increase their breadth of outreach with successful follow-ups ,exploit their leverages to increase the loan and preserve sustainable finance, and should pay due attention to operating expenses that impacted financial sustainability negatively. Moreover, the impacts of macroeconomic variables should be careful while designing a strategic plan. On the other hand, since MFIs in Ethiopia are at an early stage, the government and stakeholders should inspire the program by mobilizing funds to encourage microfinance in remote areas to insure social impact, (Nasredin, 2020).

Exploring the determinants of the productivity of Indian microfinance, found that the efficiency of MFIs affects the productivity negatively. Specifically, we find that the age of the institution positively influences the productivity, number of offices and the numbers of personnel negatively affect it. Numbers of active borrowers positively influence productivity; average loan size appears to have an inverse relationship with productivity. We further find that cost per loan, a proxy for efficiency, has a negative and statistically significant, (Dr. Abdul and Kiore, 2013).

Financial outreach and financial sustainability of licensed deposit taking MFIs in Nairobi city, Kenya , The study found that number of active clients (breadth of outreach) had a statistically significant relationship; average loan size (depth of outreach) had an insignificant relationship; and age of firm (experience of institution) had an insignificant and on financial sustainability. Breadth of outreach (number of active clients) was positive, while portfolio at risk and experience of institution (age) and depth of outreach (average loan size) were negative on the relationship between financial outreach and (OSS and FSS) financial sustainability. Further, loan loss provision coverage had a

positive interaction with the number of active clients, age, and average loan size on the relationship between financial outreach and financial sustainability**, (**Rabecca , 2020).

Factor influence the growth and penetration of MFIs: a case of Egypt, The study exposed that political and economic conditions, interest rates, corruption; competition, customer outreach and technology are the important elements for MFI's success. It is evident that lacks of use of technology and less importance drawn on customer outreach, programs are the main challenges, (Muhammed and Yousif, 2018).

The efficiency and sustainability of cooperative financial institutions in South Africa, the financial sustainability of their operations through credit risk management, cost reduction strategies, and reducing their dependency on grants. At the same time, there is a need to put in place growth strategies to recruit more members and mobilize more savings as the current scale of operations is low, resulting in marginal social impact and financial performance. The industry will need to consider reducing their asset allocation in investments to free up, (Master, 2018).

Do African microfinance institutions need efficiency for financial stability and social outreach? They studied in world frontier technology, East and South Asian countries have taken the lead (TGC score 1.0048), while sub-Saharan African countries lag behind (TGC score 1.0020). Most East and South Asian countries have a TGC. African nations had progressed on average only 0.01%, and efficiency change scores had regressed by 0.59% annually, (Susila *et al*, 2016).

Breadth and depth outreach of Islamic cooperatives: do size, non- performing finance, and grant matter? Large assets have a lower outreach level. The results showed that non-performing financing (NPF), size, grants, financial leverage, number of branches, and age has a significant impact on Islamic cooperatives' outreach. An interesting finding is that sizes have a negative effect. This is in contrast with the spirit to develop cooperatives in Indonesia. Also, a high NPF can significantly decrease outreach, (Shochrul *et al*, 2020).

Financial sustainability and outreach performance of saving and credit, financial cooperatives, and microfinance institutions are typical models that disprove the

traditional assumption that the poor are neither creditworthy nor able to save. The study found that SACCOs are financially sustainable and their outreach performance is at a moderate level. Debt equity ratio, donation, return on asset, operational efficiency, and deposit mobilization are statistically significant predictor variables in determining the financial self-sufficiency of SACCOs. Similarly, financial self-sufficiency, debt equity ratio size, and donation are statistically significant predictor variables in determining the outreach performance of SACCOs, (Melese, 2019).

Cooperative financial institutions: A review of the literature. The global financial crisis began when financial cooperatives continued to extend credit to members as many profit-oriented commercial banks restricted credit to households and firms. In this part, we consider, the origin and diffusion of financial cooperatives, network arrangements, the business model, relationship banking, balancing the interests of members, tax treatment, and regulatory framework. The other part has performance and contribution to the real economy as the overarching theme. In this part, we consider efficiency and sustainability, mergers, acquisitions and failures, the benefits (and challenges) of FinTech, and the contribution of financial cooperatives to the real economy, including during times of crisis, (Donal, 2020).

Outreach and performance of microfinance institutions: A panel analysis. This study analyzes the possible trade-off between outreach and performance and shows that greater depth of outreach has a positive impact on the financial performance of an MFI. The empirical results of this study should dispel the widely held apprehension that the recent emphasis on attainment of financial sustainability by the MFIs could seriously impair their outreach efforts and shown that outreach to the poor can actually bolster financial performance, (Shakil, 2015).

Financial Performance and Outreach: A Global Analysis of Leading Micro-banks. Found that institutional design and orientation matter substantially. Lenders that do not use group-based methods to overcome incentive problems experience weaker portfolio quality and lower profit rates when interest rates are raised substantially. For these individual-based lenders, one key to achieving profitability is investing more heavily in

staff costs finding consistent with the economics of information but contrary to the conventional wisdom that profitability is largely a function of minimizing cost, **(**Robert and Asli ,2006).

Overview of the outreach and financial performance of MFIs in Africa, The microfinance sector in Africa is quickly expanding, and institutions have increased their activities. In fact, African MFIs are among the most productive globally, as measured by the number of borrowers and savers per staff member. Operating and financial expenses are high, and on average, revenues remain lower than in other global regions. Efficiency in terms of cost per borrower is lowest for African MFIs. Technological innovations, product refinements, and ongoing efforts to strengthen the capacity of African MFIs are needed to reduce costs, increase outreach, and boost overall profitability, (Jenifer *et al*, 2015).

Outreach and Financial Performance Analysis of Microfinance Institutions in Ethiopia, from a financial sustainability angle, finds that MFIs are operationally sustainable, measured by return on asset and return on equity, and the industry's profit performance is improving over time. Similarly, using dependency ratios and Non-performing Loans (NPLs) to loan outstanding ratio proxies, the study also finds that MFIs are financial sustainable. Finally, it finds no evidence of a trade-off between outreach and financially sustainability, (Befekadu 2017).

Strategy for Sustainable Development of Cooperatives in Developing Countries: in Rwanda. The length of the ODA program and scale of support significantly affect the cooperatives' self-reliance, what support they receive from the aid agencies, and whether it is a long-term support plan considering exit strategies are also important factors of their success. In addition to the support of the aid agencies, the efforts of the cooperative members are essential. Cooperatives should reinforce their sense of ownership to achieve the long-term goals of self-reliance and sustainability by setting clear and feasible short-term goals and achieving them one by one through cooperation among members, as in the case of Korea's, (Sunghye and Sang ho, 2020).

Microfinance Institutions: Sustainability and Outreach, It can be inferred from the analysis that although MFI has amplified outreach since its inception; the MFI is yet to be

self-sufficient. Although operationally MFI is self-sufficient, to achieving financial self-sustainability is a vital area of consideration. It is relevant to note that the MFI is operationally self-sufficient but still depends on subsidies, which is reflected in the SDI and SDR. This may be attempted either by lowering the operating cost or by increasing the interest rate earnings, but these need further research. Another area of possibility to make the MFI self-sustainable is the introduction of equity funding, which needs further research and necessary regulations, (Saundria and Gopal, 2011).

Factors influencing the sustainability of microfinance institutions in Murang'a town, Kenya, the study concludes that sustainability of MFIs is a function of many factors that are connected and interconnected, i.e., low levels of client base affect the sustainability of MFIs. Similarly, the limited branch network indicates to low sustainability. Also lending to individual clients underwrites a higher repayment rate. The researcher also concluded that mandatory saving is a sector to MFIs sustainability. The study also concludes that sustainability of MFIs is a motive that MFIs constantly work to achieve, (Ruth, 2017).

Outreach, Sustainability, and Efficiency of Microfinance institutions in Nepal, The findings display a significant tradeoff relationship between outreach and sustainability, further moderated by operational efficiency. As a result of improved operational efficiency, MFIs can have better outreach and sustainability. These findings can thus provide a better policy prescription that promotes operational efficiency and ultimately improves both the outreach and sustainability of MFIs, (Sabin and Dipesh, 2022).

Outreach services and sustainability: the case of Amhara credit and saving institutions, the result specifies that the institution has made its own positive involvement to the clients in relation to the increase in wealth condition and gave priority to the rural poor women. Moreover, as the researcher anticipated, the output of the study also identified that there is no evidence of a trade-off between outreach and sustainability; rather, positive relationship was practical, (Yehualashet, 2011).

Assessing the Institutional Outreach and Sustainability of Microfinance institutions in Ethiopia: Evidence from Omo Microfinance Institutions in Hawassa Branch, loan defaulting faced by customers, per customer outstanding, poor loan management, nature

of loan extended to customers, and flexibility of loan repayment schedule. Besides, the study displayed that level of sustainability and institutional outreach level is increased by higher deposit mobilization, saving mobilization extended to borrowers, increase in saving amount, and regulatory saving framework, for the reason most of the respondents expressed their positive level of agreement with statements asked about these variables, (Taddesse, 2020).

Attaining Outreach with Sustainability, a Case Study of a Private Microfinance Institution in Indonesia, The paper analyzes the performance of Bank Shinta Daya, a private rural bank in Java, in terms of outreach to the poor and non-poor, financial viability and sustainability, resource mobilization, and sound (best) microfinance practices. Bank Shinta Daya combines individual and group-lending technologies. The experience indicates that the latter cover their costs and greatly escalate the bank's outreach to the poor as a new market segment, but initially add little to the bank's largely profitability, (Hans & Uben 1999).

Evaluation of Factors Influencing the Sustainability and Outreach of Microfinance Institutions in Northern Ghana, The study found a positive a statistically significant correlation between capital structure and financial sustainability in northern Ghana, failed to uncover any statistically significant relationship between capital structure and outreach, failed to find statistically significant relationship between financial sustainability and outreach levels in northern Ghana, find a positive statistically significant relationship between capital structure, financial sustainability, and outreach in northern Ghana, (Dr. Issahaku ,Dr. Muntari , and Mohammed, 2019), a Case Study in Microfinance Institutions Model in India. Although the MFI reaches a large number of clients, analysis indicates that the MFI is still financially not self-sufficient, which is imitated by a number of calculated indicators such as FSS, SDI, and SDR, (Gopal and Prof. Saundarjya, 2011).

Microfinance Institutions in Ethiopia: Poverty Outreach and Financial Sustainability, The findings of this study revealed the possibility of a tradeoff between the social and financial goals of the MFIs. Though, there is upgrading in terms of financial

sustainability, the industry's average operational self-sufficiency and financial self-sustainability ratios are not far from the breakeven point. Viewed from the point of microfinance's social mission supporters, this is not good news, as an increasing focus on financial footing could make the MFIs move their eyes away from serving the poor, (Dr. Adane, 2023).

Outreach and Sustainability of Microfinance Institutions of Ethiopia: A Case Study on Specialized Financial and Promotional Institutions (SFPI) The major finding of the study indicates that, the percent of women borrowers of SFPI is higher than the percent of women borrowers of the industry average. The financial sustainability and profitability of SFPI are going down the ladder of sustainability and profitability measures during the periods of the study. On average, SFPI is operationally self-sufficient at around 111.44% over the sixteen year period, (Giday and Chawla, 2016).

Sustainability of microfinance institutions: the role of outreach and financial sustainability, it is shown that outreach and financial sustainability indicators affect each other. Outreach signs have a positive association with the profitability of microfinance institutions. Repayment points of the loan have a positive impact on the outreach and a negative impact on the financial sustainability. Microfinance institutions may be absorbed on the repayment rate for attaining the level of sustainability. A clear balance may be in social objective and institution sustainability to ensure the sustainability of microfinance institutions is recommended, (Karam and Manoj, 2016).

Trade-off between outreach and sustainability of microfinance institutions: evidence from sub-Saharan Africa, The researchers found diversified evidence of a trade-off between the depth of outreach and operational self-sustainability. Furthermore, the results show that interest rate is a major factor for MFI sustainability, which is consistent with the institutionalist view. Factors that significantly affect the sustainability of MFIs in SSA are the average loan size as a percentage of gross national income, portfolio at risk, operating expenses to assets ratio gross loan portfolio, , governance effectiveness, and the interest rate on loans granted to clients, (Adams and Devi, 2018).

The financial performance and sustainability of microfinance institutions during the current financial crisis: The case of Amhara Credit and Saving Institution (ACSI) in Ethiopia The result of the study shows that there was a negative shift in the performance indicators. The gross loan portfolio has declined, and as a result, a decline in ROA and ROE has occurred due to lost financial revenue. The number of active borrowers (outreach) declined in the, but there was an increase in the number of staff members in the same year, (Tilahun, 2012).

Financial sustainability of Tanzanian saving and credit cooperatives, the researchers described on the profitability and sustainability of SACCO, profitability was estimated using ROA and financial sustainability, was estimated using the ratio of total expenses to total revenue. The study found, the SACCO has recorded hotheaded growth. The results show that, most SACCOs are operationally sustainable, and some of them are operationally and financially sustainable. In terms of sustainability, the result forecasts a likely future for the financial cooperative business model as an alternative form of financing the poor, (Nyankomo and Meshach, 2015).

Effect of Deposit Mobilization on the Financial Sustainability of Rural Savings and Credit Cooperatives: Evidence from Ethiopia, Experience of the institution and inflation rate affects financial sustainability. Contrary to our expectations, the number of members and the percentage of female members were not significant. This may be attributed to the fact that some members were apathetic for a long period. We suggest that RUSACCOs should focus on deposit mobilization specifically on demand deposits and preserve the interest rate spread narrower to ensure their sustainability, (Girma and Jiqin, 2018).

Analysis of the financial sustainability and outreach performance of selected credit cooperatives in Leyte, Philippines, found that indicators directly correlated to credit cooperative operations have an impact on both its financial and outreach performance. An external factor, like natural disasters and health crises, also affects the organization's performance. Value of loans granted, Cooperative size, and the external shocks are significant indicators of the credit cooperative's financial sustainability. Meanwhile, variables such as cooperative size, mandatory expenses, and leverage are significant

predictors in explaining the outreach performance of credit cooperatives, (Malacora, Galvez, and Bulayog, 2020).

Effect of Outreach on Financial Sustainability and Profitability of Savings and Credit Cooperatives in Eastern Ethiopia, The random effect model shows that the yield on the gross loan portfolio, gross loan to asset ratio, and managerial and operational efficiency has a statistically significant and positive effect on the financial sustainability of SACCOs, while average loan size have a statistically significant but negative effect. Likewise, managerial efficiency, gross loan to asset ratio, and average loan size has a statistically significant and positive effect on the profitability of SACCOs in Eastern Ethiopia. However, a portion of women borrowers and the number of active borrowers has a statistically significant but negative effect on the profitability of the SACCOs in the study area, (Mekonnen, 2020).

Financial performance of rural Savings and Credit Cooperatives in Tigray, Ethiopia, they are fragile in terms of their financial structure and profit generating capacity. They invested much of their financial resources in less productive assets, and financed their assets using much capital from members' share capital, which cannot be used for loan disbursement, instead of saving deposits. The capacity of the RUSACCOs to generate an adequate amount of profit was also found substantially below the standard (10 percent). Thus, as RUSACCOS in Tigray are not generating enough amounts of income to cover their operating and financial costs, their sustainability is in question, (Aregawi, 2014).

Statistical analysis of outreach and financial sustainability of Kifanya Saccos Limited in Njombe, The results of the study had shown that the performance of the SACCOS is respectable in terms of breadth outreach, as it is reaching many rural dwellers that have no access to formal financial services. Although the sustainability indexes have shown that there has been a positive trend showing that the SACCOS has moved toward gaining sustainability in its role of financial intermediation as the sustainability index grows towards, (Saxena and Guntram, 2018).

Relationship between Sources of Funds and Outreach in Savings and Credits Cooperative Societies Tanzanian Case, the Conclusions indicate that both external and internal

sources of funds are positive and significantly related to outreach. However, the results indicate that external sources of funds are becoming a central part of the SACCoS loan portfolio as compared to internal sources of funds. This is a threat to saving practices in SACCoS, **(Benson, Tito, and Isaac, 2013).**

Management of Savings and Credit Cooperatives from the Perspective of Outreach and Sustainability: Evidence from Southern Tigrai of Ethiopia, The relationship analysis between independent variables and dependent variables showed the existence of a strong positive correlation between financial performance (ROA) and asset utilization. A moderately positive correlation relationship occurs between operational efficiency and the size of SACCOs (assets size). Conversely, there is a significant negative correlation between financial performance (ROA) and operational efficiency with correlation coefficients. The study also affects the outreach and sustainability of SACCOs under study. Lack of awareness and poor weak organizational arrangements, saving culture, and governance, policy and regulatory environment, low capital base, weak institutional capacity, lack of differentiated products, inappropriate loan security requirements, and threats from other financial institutions (MFIs) were among the factors affecting the outreach and sustainability of SACCOs, (Tesfamariam, 2011).

Sustainable finance: The role of savings and credit cooperatives in Ecuador, to conclude, sustainable development desires sustainable finances, and these require financial institutions with a social orientation, i.e., managed by social values. Consequently, we believe that it will be necessary to prevent the savings and credit cooperatives from losing their specific characteristics. These differences in structure, incentives, and objectives between the savings and credit cooperatives and the conventional banks constitute the cooperative essence, which is precisely what can lead to sustainability objectives. Therefore, the credit unions are essential as they focus on long-term goals and resilience, and have a stronger connection with real productive activities, especially through financial inclusion and microcredit. Given that savings and credit cooperatives have to maintain, (María, Marta, and Freddy, 2022).

Intensive Growth Strategies and Outreach Performance of Tanzania-Based Savings and Credit Cooperative Societies, The study has exposed the significant contribution of both product development and market development to outreach performance. SACCOs need to design growth strategies that suit the needs of their clients and their characteristics. Although outreach performance can be driven by intensive growth strategies, we suggest that the SACCOs' growth should also be harmonized with their financial performance, (Kafigi, 2014).

The effect of financial outreach, on the financial sustainability of saving and credit cooperative unions; the case of Oromia national regional state of Ethiopia, Both the number of members and saving mobilization have significant effect on the financial sustainability of unions. However, the number of primary SACCoS emanating from membership and total saving mobilized by unions were insignificant as compared to total primary societies and potential in the region. Most unions have limited outreach, are dependent on external sources of funds rather than internal resource mobilization, have a high cost of funds, unions are not open to new Sacco's membership, and have an imbalanced demand of loan seekers and savers, (Dr. Workneh and Berhanu,2020).

Concepts and Measures of Outreach and Sustainability in Microfinance Institutions, The assessment of outreach efforts considers geographical scope, mission alignment, and collateral requirements, showing a moderate alignment and moderate collateral needs. The study highlights the intricate role of MFIs in addressing socio-economic challenges, emphasizing the necessity for nuanced understanding in the microfinance sector. Varied regarding social collateral reliance, collateral requirements, lending to specific demographics, and reaching the poorest in society. These insights underline the complexity of the institution's role and effectiveness in addressing socio-economic challenges, (Tilak, 2023).

The Sustainability and Outreach of Microfinance Institutions, The interest rate premium and the default rate from the BS model will assist in making decisions on the sustainability and outreach of MFIs. This study considers the financial sustainability and outreach of MFIs in terms of the interest rate and the default rate. Dr. Yunus's

methodology measures interest rate premiums and the proposed methodology measures default rate premiums for MFIs in five countries to analyze whether the MFIs focus on their social mission in terms of outreach. The results show that some of the analyzed MFIs focus on growing their outreach in breadth and depth, **(**Jaehun and Vittaldas, 2014).

The probability of attaining financial sustainability results in increased better breadth of outreach, depth of outreach, and greater outreach to women, this result disprove the notion of a tradeoff between social outreach and financial performance, and it shows a positive association between social outreach and financial sustainability,(Shakil, 2019).

2.3. **Summary of empirical literature review**

Outreach and operational unattainability create a debate in the microfinance sector about why reaching the poor is so costly and risky. Outreach and sustainability can be potentially either complimentary or conflicting. It is the great challenge to build MFI to reach the poor and simultaneously achieve sustainability, (Lafourcode *et al*, 2007), cited in (Yehualashet, 2011). Some researchers concluded SACCOs are sustainable as well as outreach performances at a moderate level to members, and they found no evidence of a trade-off between outreach and financial sustainability, which is rather compatible between them, (Meleses ,2019) and (Kereta,2007), (Canning,1999), (Cull et al,2007), and (Gashaw,2013). In addition, (Nyankomo and Meshach, 2011), the transaction cost of financial cooperatives is lower than standard micro finances due to the fact that members can borrow on average three times their investment, which reduces credit risk and enhances liquidity and sustainability of the cooperatives as well as reaching many borrowers.

On the other side, outreach performance has a negative relation with financial sustainability due to high transaction costs for taking smaller loans for many borrowers, (Semaw, 2019), (Navajas *et al*, 2006), (Rhyne, 1998), (Schreiner, 2002), and (Admas and Devi, 2018). Financial cooperatives lend small loans and serve a larger proportion of women borrowers, implying they are doing in depth outreach but they are not sustainable, (Gashaw *et al*, 2013). Therefore, there a result gap in the empirical evidences.

2.4. The Conceptual Framework

Conceptual framework is a product that graphically or in narration describes what to be studied and the presumed relationships among variables, (Miles and Huberman, 2014). The independent variable is a factor that the researcher measures, determining its relationship with the dependent variable (Bless, Higson-Smith & Kagee, 2006). The independent variables of the study were: breadth of outreach and depth of outreach.

The dependent variable is that factor that is observed and measured to determine its effect on the independent variable, (Bless, Higson-Smith & Kagee, 2006). The dependent variable of the study was operational sustainability. A moderating variable is a qualitative or quantitative variable that affects the strength and/or direction of the relationship between the dependent and the independent variables (Baron & Kenny, 1986).

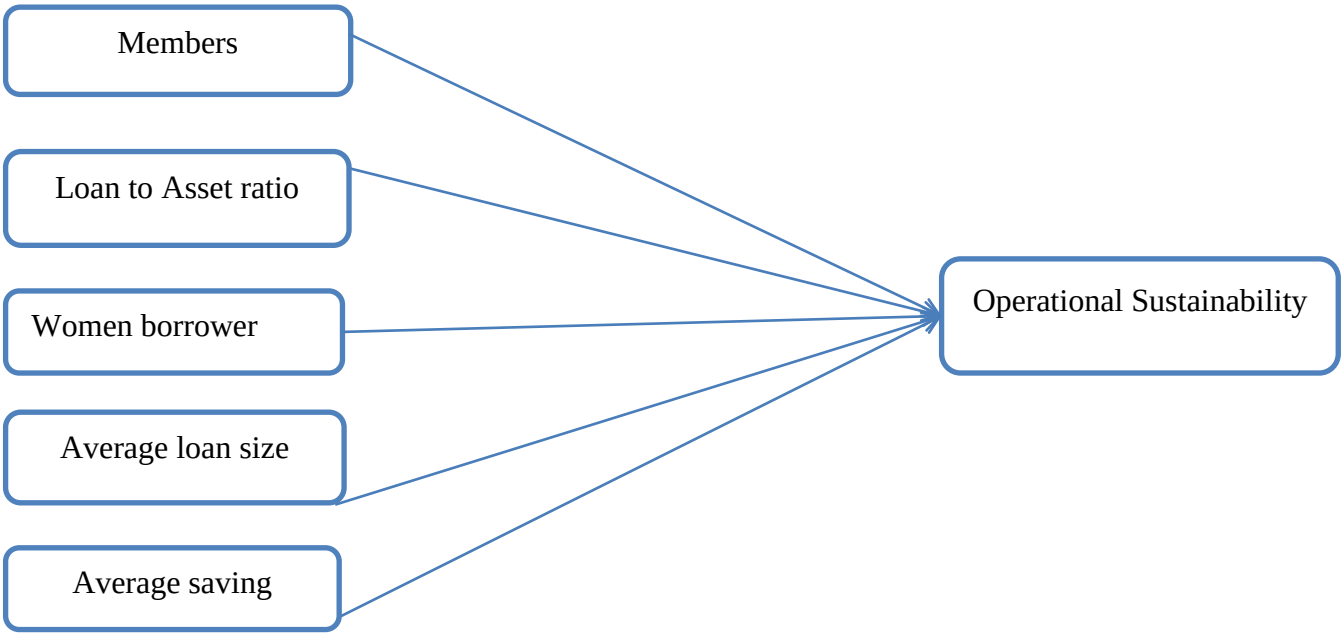


Figure 1: Conceptual framework

Source: empirical literature

3. CHAPTER THREE: RESEARCH METHODOLOGY

This particular chapter of the study starts with a description of the research type, approach, and design, followed by a description of the target population, sample size and sampling technique, source of data, and methods of data collection. Finally, definitions of variables, model specifications and data analytical tools are presented.

3.1. Description of the Study Area

Addis Ababa is a capital and largest city of Ethiopia. The city was thus founded in 1887 and was named Addis Ababa ("New Flower") by the empress. Addis Ababa lies at an elevation of 2,355 meters (7,726 ft) and is a grassland biome, located at 9°1′48″N 38°44′24″E. The city lies at the foot of Mount Entoto and forms part of the watershed for the Awash. From its lowest point, around Bole International Airport, at 2,326 meters (7,631 ft) above sea level in the southern periphery, Addis Ababa rises to over 3,000 meters (9,800 ft) in the Entoto Mountains to the north. It has 11 sub city and Addis Ababa and it has over 5.005 million populations.

3.2. Research Approaches

There are three types of research approaches, namely, quantitative, qualitative, and mixed methods research approach (Leedy and Ormrod, 2005). In order to achieve the aim of this study and answer the research questions, quantitative research approach is adopted by its nature, which is one in which the researcher tends to base knowledge claims on logical grounds. Data collection also involves gathering numeric information.

3.3. Research Design

Research design is the blueprint; plan, structure, or strategy an investigation is conceived for fulfilling research objectives, answering research questions or hypotheses. The research design can be classified based on the type of data and the type of analysis, (Adams, Khan, Raeside, and White 2007). A choice of research design is based on the objective of the research. So, in order to meet these research objectives, the design of this study is both descriptive and explanatory (causal) research design with panel data have

been employed to analyze the resulting estimates and to properly address the hypothesized research questions. Causal studies may play an instrumental role in terms of identifying reasons behind a wide range of processes, as well as, assessing the impacts of changes on existing norms, processes etc. Causal studies usually offer the advantages of replication if necessity arises. This type of studies is associated with greater levels of internal validity due to systematic selection of subjects. Descriptive research aims to accurately and systematically describe a population, situation, or phenomenon. It can answer what, where, when, and how questions, but not why questions, (Melkamu, 2012).

3.4. Data Sources

The data is obtained from secondary source of data, through panel data from 2012-2016 E.C, from five year annual audited reports of the SACCOs, balance sheet and income statement and also some data like number of borrowers and women borrowers have gotten from annual report from each SACCO. The required information is obtained from SACCOs are: amount of average loan disbursement, women borrower ratio, Average saving mobilize per member, borrowers ratio, and loan to asset ratio of the SACCoS.

3.5. Sampling frame

From the Addis Ababa cooperative commission annual reports on June 2024 G.C, there were 964 SACCoS are found in Addis Ababa. However, due to their weak performance and limited capacity of auditors', only 252 SACCoS are audited in five consecutive years.

No	Sub-city	Number of SACCOs		Audited SACCOs	
		2020	2024	2024	2020-24
1	Arada	33	130	68	7
2	Yeka	24	106	65	9
3	Bole	21	71	51	8
4	Gulelie	22	96	81	6
5	Lideta	17	53	37	8
6	Addis k/K	21	96	41	5
7	Kolfie	19	94	84	11
8	Kality	28	87	98	10
9	N/S/ lafto	24	73	36	9
10	Kirkos	26	131	92	11
11	Lemikura	-	27	14	-
Total		235	964	667	84

Table 1: Target population

3.6. Sampling method

Sampling is a technique for selecting individual members or a subset of the target population to make statistical inferences from them and estimate characteristics of the whole population. The researcher is selected 49 SACCO through non probability, purposive sampling techniques based on their accessibility to collect the data. The advantage of purposive (Convenience) is swift access data with low-cost. Whereas the disadvantage is limited to generalization and it has high risk of sampling bias.

3.7. Model specification

The researcher is applied Fixed Effects (FE) regression models; it has Controls for unobserved heterogeneity (SACCO-specific factors like management quality, location, culture) that doesn't changes over time but affect OSS. Avoids omitted variable bias since FE removes time-invariant characteristics. Hausman Test Likely Favors FE: If SACCO-specific traits (e.g., governance) correlate with IVs, RE would be biased. This study is tested the data: number of members, amount of average loan balance, women borrowers , loan to asset ratio, and Average saving balance of the SACCoS as independent variables. Whereas, Operational sustainability as dependent variables. As per the recommendations of many studies and suggestions of many statistician, the balanced panel data set is used by many researcher, as it allows an observation of the same unit in every time period

Model Specification

$$OSS_{it}=\beta_0+\beta_1 NM_{it}+\beta_2 NWB_{it}+\beta_3 ASB_{it}+\beta_4 ALB_{it}+\beta_5 LTA_{it}+\epsilon_{it}$$

OSS……. Operational sustainability

β_0 ……. Constant term

NM…….. Number of Member

NWB …... number of Women borrowers

ASB……. Average saving balances

ALB ……. Average loan balance

LtA…….. Loan to Asset ratio

3.8. Data analysis

The researcher checked out whether the proposed empirical models are free from the assumptions of linearity, auto-correlation, multicollinearity, heteroskedasticity, and normality. A violation of key assumptions of OLS regression occurs if any one of those assumptions turns out to be present. Each independent variable has only one value. The effect of outreach on sustainability on SACCoS in Addis Ababa, the data is investigated by mixed, descriptive statistics and econometrics analysis methods. The data editing, coding, and entering into a computer and processed by SPSS, Furthermore, the researcher can organize the data in SPSS by assigning properties to different variables. The study is

conducted using a multinomial logistic regression model, which deals with operational sustainability in total of five explanatory variables, depth and width outreach, including in this study.

3.9. Ethical Consideration

The following ethical considerations is given attention by the researcher: voluntary participation, no harm to participants, the researchers is ensured that there is no physical or psychological harm, confidentiality for all information was gathered during the study, and permission from the participants obtained for all information is shared publicly.

4. CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF RESULTS

This is the study as set out in the research methodology. The study findings are presented on the relationship between outreach and sustainability. The data was gathered from secondary data from annual report.

4.1. Descriptive Statistics Results

This section is mainly concerned with the descriptive analysis results of the survey data and interpretations of the analytical findings. Descriptive statistics were used to explain the dependent and independent variables. It also tests the relationship between the dependent variable (financial sustainability) and the independent variables (outreach) using minimum, maximum, mean, standard deviation.

Table 2: Variable descriptive

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
NM	245	9	152,319	9,080.95	1,545.473	24,190.474
NWB	245	1	14,321	722.71	130.923	2,049.266
AVS	245	1,124.52	63,332.56	14,719.41	783.155	12,258.326
AVL	245	1,558.94	343,898.36	46,093.682	3,909.676	61,196.05836
OSS	245	.07	2.00	.6462	.03031	.47450
LtA	245	.04	.93	.3579	.01616	.25292
Valid N (listwise)	245					

4.1.1. Member (Membership Size)

The Member variable reflects the scale of SACCO operations, with a mean membership of approximately 9,500 individuals and a high standard deviation of 22,000, indicating

significant variability. Only 25% of SACCOs exceed the mean, highlighting a skewed distribution where a few large institutions dominate. For example, Awach (2024) leads with 152,319 members, while smaller SACCOs like Nikat (2023) report as few as 9 members. This disparity suggests that most SACCOs serve niche or localized communities, while a handful achieve broad outreach. When examining the relationship with OSS (Operational Self-Sufficiency), larger membership sizes generally correlate with higher OSS, as economies of scale reduce per-member operational costs. However, extremely rapid growth (e.g., Bisrat's drop from 984 to 725 members in 2024) can destabilize OSS by straining resources. Thus, sustainable membership growth is critical for maintaining operational efficiency.

4.1.2. **Women Borrower (Female Loan Recipients)**

The Women Borrower variable, with a mean of 1,200 and a standard deviation of 2,800, reveals stark gender disparities in credit access. Only 20% of SACCOs surpass the mean, with top performers like Awach (2024) serving 14,321 women borrowers, compared to minimal outreach by smaller SACCOs (e.g., Nikat (2023): 1 woman borrower). This gap underscores the need for targeted policies to improve financial inclusion for women. A higher number of women borrowers are positively associated with OSS, as diversified lending portfolios reduce risk and enhance repayment rates. SACCOs with proactive gender-inclusive policies (e.g., Yihim Aleleka, where women constitute 50% of borrowers) often achieve more stable OSS due to balanced risk exposure.

4.1.3. **Average Loan (Av lo)**

The Average Loan per borrower has a mean of 65,000 and a high standard deviation of 75,000, reflecting divergent lending strategies. While 30% of SACCOs exceed the mean, outliers like Awach (2024) disburse 343,898 per borrower, whereas micro-focused SACCOs (e.g., Firie and Ras Agez (2023): 1,558) cater to low-income clients. Larger loans often indicate commercial or agricultural lending, while smaller loans align with microfinance models. OSS is closely tied to average loan size: Moderate loan sizes

(50,000–150,000) correlate with optimal OSS, balancing risk and revenue, extremely high loans (e.g., Awach's 343,898) may strain liquidity, risking OSS if defaults rise and Very small loans (e.g., <10,000) limit interest income, depressing OSS.

4.1.4. **Average Saving (Av sa)**

With a mean of 25,000 and a standard deviation of 40,000, Average Saving per member varies widely. Only 20% of SACCOs exceed the mean, led by Katolik (2024) at 63,332, while others (e.g., Firie and Ras Agez (2023): 1,124) struggle to mobilize savings. Higher averages often reflect wealthier member bases or stronger trust in the SACCO. Savings directly impact OSS: Higher average savings provide stable low-cost capital, reducing reliance on external funding and boosting OSS and Very low savings (e.g., <5,000) force SACCOs to borrow expensively, eroding OSS.

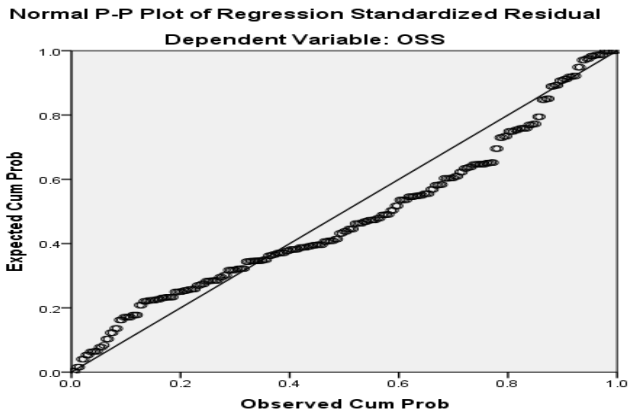
4.1.5. **Loan to Asset (LtA) Ratio**

The LtA ratio (mean: 0.35, SD: 0.20) measures lending aggressiveness. While 40% of SACCOs exceed the mean, extremes like Eyerusalem (2022) (0.93) and Hiwot Tesfa (2021) (0.04) represent high-risk and ultra-conservative strategies, respectively. LtA's relationship with OSS is nonlinear: Optimal LtA (0.6–0.8): Maximizes interest income without excessive risk, enhancing OSS, LtA > 0.8: Overexposure to loans risks liquidity crises, hurting OSS and LtA < 0.2: Idle assets waste revenue potential, depressing OSS.

4.2. Regression assumption Test

4.2.1. Normality test

Figure 2: Normality test

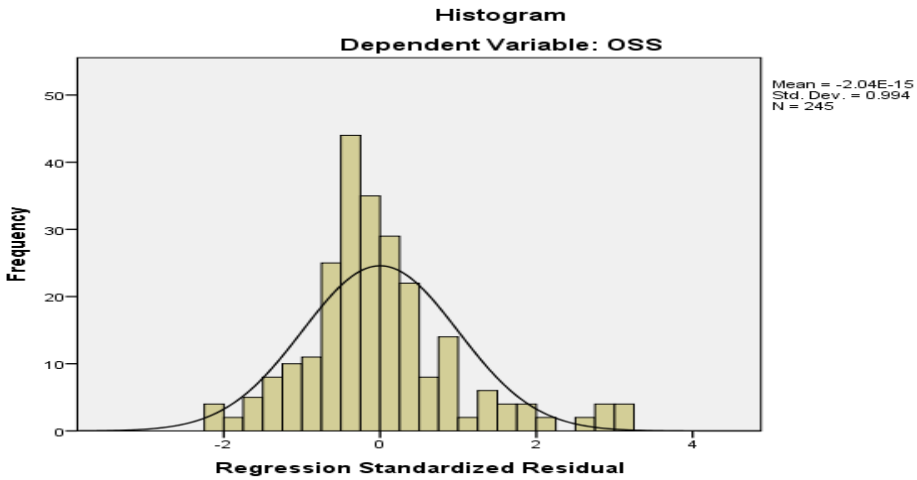


The P-P plot displayed is a Normal Probability-Probability plot used to assess whether the regression standardized residuals of the dependent variable OSS (Outcome of interest) follow a normal distribution. The x-axis represents the expected cumulative probabilities under normality, while the y-axis shows the observed cumulative probabilities of the residuals. The plot indicates a reasonably good fit to the normal distribution, as the points closely follow the diagonal reference line, which represents perfect normality. The slight deviations at the lower and upper ends (around 0.2 and 0.8 on the Expected Cum Prob axis) suggest minor departures from normality in the tails of the residual distribution. However, these deviations are not severe, implying that the assumption of normality for the residuals is largely met.

The plot's overall alignment with the diagonal line suggests that the regression model's residuals are approximately normally distributed, which is a key assumption in linear regression analysis. The minor deviations in the tails could indicate the presence of outliers or slight skewness, but they are unlikely to significantly impact the validity of the regression results. This graphical diagnostic tool helps confirm that the model's inferences are reliable, as the normality assumption holds for most practical purposes.

4.2.2. Linearity test

Figure 3: Linearity test



Distribution Overview and Central Tendency

The histogram displays the distribution of standardized residuals from a regression model predicting Operational Self-Sufficiency (OSS) across 245 observations. The residuals are perfectly centered on zero (mean = -2.04×10^{-15}), indicating unbiased predictions, with a standard deviation of 0.994—nearly identical to the ideal value of 1. This confirms proper scaling and adherence to linear regression assumptions. The symmetric, bell-shaped curve shows a unimodal peak at zero residual value, with frequencies tapering smoothly toward both tails (approximately ±3 SD), demonstrating an approximately normal distribution of errors.

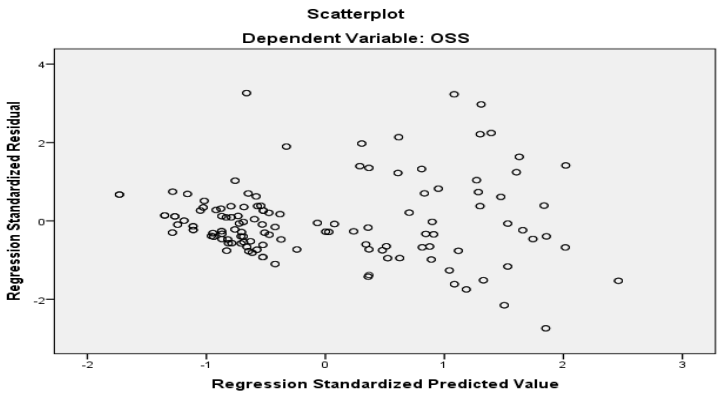
Normality and Outlier Assessment

The residuals closely follow a normal distribution, with no visible skewness or kurtosis. About 68% of values fall within ±1 SD, 95% within ±2 SD, and nearly all within ±3 SD, aligning with the empirical rule. A few minor deviations appear at the extremes (beyond ±2.5 SD), but no severe outliers (>±3 SD) are evident. This suggests the model accounts for most variability in OSS without systematic errors, though the handful of moderately

extreme residuals may warrant case-specific review to ensure no influential data points are distorting results.

4.2.3. **Homoscedasticity test**

5. Figure 4: Homoscedasticity test



The scatter plot depicts the relationship between the Regression Standardized Predicted Values (x-axis) and the Regression Standardized Residuals (y-axis) for the dependent variable OSS**.** The residuals appear to be scattered around the zero line, suggesting that the model's predictions are generally unbiased, as there is no systematic over- or under-prediction. However, the presence of residuals ranging from approximately -3 to 0 indicates some variability, with a few points deviating more significantly from the expected zero line. The absence of a clear pattern (e.g., curvature or funnel shape) implies that the linearity and homoscedasticity assumptions of the regression model may hold reasonably well.

The plot does not show extreme outliers, as most residuals cluster within the -2 to 0 range, but the slight skew toward negative residuals could hint at minor model misspecification or unaccounted variables. The lack of a strong trend in the residuals supports the validity of the regression model, though further diagnostics (e.g., checking for influential points or nonlinearity) might be warranted if precision is critical. Overall, the scatter plot suggests a decent fit.

4.2.4. Multicollinearity test

Before conducting the regression analysis, the explanatory variables were examined for multicollinearity, a condition where predictors are highly correlated, leading to unreliable coefficient estimates, incorrect signs, inflated standard errors, and reduced statistical significance (Pindyck & Rubinfeld, 1998). To detect multicollinearity, two methods were employed: the Variance Inflation Factor (VIF) for continuous variables, where a VIF exceeding 10 signals severe collinearity, and contingency coefficients for dummy variables, measuring their interdependency. Addressing multicollinearity—through removing redundant variables, combining predictors, or increasing sample size—ensures more stable and interpretable regression results (Paul, n.d.). This step strengthens the model's validity and the robustness of its findings.

Table 3: Multicollinearity test

		NM	NWB	AVS	AVL	LtA
	Pearson Correlation	1	.695**	.524**	.605**	.291**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	245	245	245	245	245
	Pearson Correlation	.695**	1	.540**	.603**	.301**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	245	245	245	245	245
	Pearson Correlation	.524**	.540**	1	.688**	.498**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	245	245	245	245	245
	Pearson Correlation	.605**	.603**	.688**	1	.558**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	245	245	245	245	245
	Pearson Correlation	.291**	.301**	.498**	.558**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	245	245	245	245	245

**. Correlation is significant at the 0.01 level (2-tailed).

The above correlation matrix table examines the relationships between five variables: **NM**, **NWB**, **AVS**, **AVL**, and **LtA**, using Pearson correlation coefficients based on 245 observations. All correlations are statistically significant at the 0.01 level (2-tailed), confirming that the observed relationships are unlikely due to random chance. The coefficients range from weak to moderate, with no correlations exceeding 0.8, indicating no **strong** linear dependencies. All relationships are **positive**, meaning that as one variable increases, the other tends to increase as well.

Moderately strong correlations are found between **NM and NWB** (r = 0.695), **AVS and AVL** (r = 0.688), and **AVL and LtA** (r = 0.558). These suggest meaningful linear associations, where higher values in one variable correspond to higher values in the other. For example, the correlation between **AVS and AVL** (r = 0.688) indicates that these two variables share a notable positive relationship, though not strong enough to imply redundancy. Similarly, **NM and NWB** (r = 0.695) exhibit a moderately strong positive link, hinting at potential overlap in what these variables measure.

The weakest correlations are between **LtA and NM** (r = 0.291) and **LtA and NWB** (r = 0.301), which fall into the **weak to moderate** range. While statistically significant, these relationships are less pronounced, suggesting that **LtA** has a limited linear association with **NM** and **NWB**. The remaining correlations, such as **NM and AVL** (r = 0.605) and **NWB and AVS** (r = 0.540), are **moderate**, reinforcing interconnectedness among the variables without indicating collinearity concerns. These findings are valuable for exploratory analysis, but further diagnostics (e.g., multicollinearity checks) would be advisable if these variables are used together in predictive modeling.

The analysis reveals a network of **positive** correlations among the variables, with the moderate relationships between **NM-NWB** and **AVS-AVL**. While no correlations exceed 0.8 (indicating no severe multicollinearity), the moderate associations suggest that some variables share overlapping variance.

Table 4: Multicollinearity test 2

Collinearity Statistics		
	Tolerance	VIF
(Constant)		
NM	0.009	4.328
NWB	0.01	2.056
AVS	0.452	2.213
AVL	0.068	4.81
LtA	0.431	2.323

According to Verbek (2008) VIF can be defined as: The VIF values for continuous variables were found to be very small (less than 5). This is to indicate the absence of multi-collinearity between those variables. In line with this, contingency coefficients were computed to check the existence of multicolinearity problem among the discrete explanatory variables. A contingency coefficient is a measure of the degree of relationship, association of dependence among variables included in the study. The contingency coefficient is calculated as follows (Garson, 2008): In this study the VIF if less than 10, there no perfect linear relationship between independent variables can be identified using different methods**.**

Based on the VIF and contingency coefficient results, the data were found to have no serious problem of multicollinearity and therefore the continuous and discrete explanatory variables were retained in the model because all 5 VIF result is less than five.

4.2.5. **Autocorrelation test ,** Residual Analysis (Durbin-Watson Statistic)

Table 5: Autocorrelation test

	Durbin-Watson
	1.481

The Durbin-Watson statistic of 1.481 falls within the acceptable range for residual independence, though it leans toward the lower bound of the ideal 1.5-2.5 range. This suggests the presence of mild positive autocorrelation that warrants attention but doesn't fundamentally undermine the model's validity. The slight autocorrelation may indicate

either: (a) a minor time-dependent component in the data not fully captured by the current predictors, or (b) the need for an additional spatial or organizational-level control variable. However, the autocorrelation is sufficiently mild that it likely doesn't require corrective transformations for most analytical purposes

4.3. Regression analysis (R square test)

The measure of goodness-of-fit used in pseudo R^2 measure is a measure that has the same kind of interpretation as the OLS-R^2 in the linear model,

Table 6: regression analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.799[a]	.638	.631	.28829	1.481

a. Predictors: (Constant), NM, LtA, AVS, AVL, NWB

b. Dependent Variable: OSS

This regression analysis examines the determinants of Operational Self-Sufficiency (OSS) in SACCOs, with five key explanatory variables: Number of Members (NM), Loan-to-Asset Ratio (LtA), Average Savings per Member (AVS), Average Loan per Borrower (AVL), and Number of Women Borrowers (NWB). The model demonstrates strong statistical properties and provides valuable insights into SACCO performance drivers.

4.3.4. Model Fit and Explanatory Power (R and R^2 Values)

The model's multiple correlation coefficient (R = 0.799) reveals an exceptionally strong relationship between the combined predictors and OSS, indicating that these five factors collectively explain nearly 80% of the co-variation in operational self-sufficiency. The coefficient of determination (R^2 = 0.638) shows that the model accounts for 63.8% of the total variance in OSS scores across SACCOs. This represents a robust explanatory power for financial performance modeling, particularly in the cooperative sector where numerous external factors typically influence outcomes. The remaining 36.2% of

unexplained variance likely stems from unmeasured variables such as management quality, local economic conditions, or specific operational practices not captured in this model.

4.3.5. Model Specification and Reliability (Adjusted R^2)

The adjusted R^2 value of 0.631 maintains close parity with the unadjusted R^2, indicating excellent model specification. The mere 0.7% difference between these values demonstrates that all five predictors contribute meaningfully to explaining OSS without introducing redundancy or over fitting. The minimal shrinkage in explanatory power when adjusting for degrees of freedom confirms that the model would likely generalize well to other SACCO populations beyond the study sample.

4.3.6. Prediction Accuracy (Standard Error of Estimate)

With a standard error of estimate at 0.28829, the model demonstrates strong predictive precision. This value indicates that actual OSS measurements typically fall within ±0.29 units of predicted values, representing a relatively tight confidence interval for financial performance modeling. Given that OSS is often measured on a multi-point scale (frequently 0-5 or similar ranges in cooperative assessments), an error margin under 0.3 units suggests the model has practical utility for performance forecasting and benchmarking. This level of accuracy could support meaningful decision-making by SACCO managers and regulators.

4.4. Model Significance and Variance Explained

Table 7: ANOVA table

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	35.072	5	7.014	84.401	.000[b]
Residual	19.863	239	.083		
Total	54.936	244			

a. Dependent Variable: OSS

b. Predictors: (Constant), NM, LtA, AVS, AVL, NWB

The ANOVA table presents the results of a regression analysis examining how five financial indicators predict an organization's operational success score (OSS). The independent variables include: Number of Members (NM) - the total count of group members; Number of Women Borrowers (NWB) - female participants in lending programs; Average Saving (AVS) - mean savings per member; Average Loan (AVL) - mean loan amount per member; and Loan to Asset Ratio (LtA) - the proportion of loans to total assets. The dependent variable OSS measures the organization's overall performance. The table partitions variance into explained (Regression SS = 35.072) and unexplained (Residual SS = 19.863) components, with Total SS (54.936) representing all variability in OSS across 244 observations.

The Regression Mean Square (7.014 = 35.072/5) shows substantial variance explained by the predictors, while the Residual Mean Square (0.083 = 19.863/239) indicates minimal unexplained variation. The exceptionally high F-statistic (84.401 = 7.014/0.083) and its significant p-value (.000) demonstrate that these financial metrics collectively explain OSS variation better than chance alone. This suggests that at least some of these member and loan characteristics significantly relate to organizational performance.

While the overall model is statistically significant ($p < .001$), the ANOVA doesn't specify which particular variables drive this relationship**.** The results confirm that the combination of member demographics (NM, NWB), financial behaviors (AVS, AVL), and institutional leverage (LtA) significantly predicts OSS, but additional analysis of regression coefficients would identify the strongest individual predictors. The large F-value particularly highlights the importance of considering these financial indicators together when evaluating organizational success.

These findings have valuable practical implications**.** The significant model suggests that SAACOs could monitor these specific member and loan characteristics to assess and potentially improve their operational performance. However, researchers should next examine potential multicollinearity among predictors (like the likely correlation between AVS and AVL) and verify regression assumptions to ensure robust estimates. The strong

overall fit indicates these financial metrics collectively serve as meaningful indicators of organizational success

4.5. Regression Coefficient test

Table 8: Regression coefficient test

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.130	.036		3.589	.000
LtA	1.045	.111	.557	9.394	.000
NWB	.008	.000	1.455	3.704	.000
AVL	0.3036	.000	.392	2.616	.009
AVS	.07611	.000	.197	3.398	.001
NM	-0.398	.000	-1.984	4.771	.000

a. Dependent Variable: OSS

4.5.4. Number of Members (NM)

Number of Members (NM) presents a counterintuitive but statistically significant negative relationship with OSS (B=-0.398, β=-1.984, $p<0.001$). Despite having the largest absolute standardized coefficient, the negative direction suggests that institutions with more members tend to be less operationally self-sufficient. This may reflect the challenges of serving larger memberships - potentially higher administrative costs, greater diversity of needs, or dilution of services. The extremely small p-value confirms this inverse relationship is highly statistically significant.

4.5.5. Number of Women Borrowers (NWB)

Number of Women Borrowers (NWB) demonstrates an interesting relationship with OSS, showing a substantial standardized coefficient (β=1.455, $p<0.001$) despite a near-zero unstandardized coefficient, B=0.008. This pattern suggests that while the absolute impact per additional woman borrower is minimal, NWB's overall effect becomes significant at scale. The positive direction implies that institutions serving more women borrowers tend to be more

operationally self-sufficient, possibly due to women's strong repayment rates or the social benefits of women's financial inclusion. The extremely small p-value confirms this relationship is highly statistically significant.

4.5.6. Average Loan Size (AVL)

Average Loan Size (AVL) shows a modest but statistically significant positive relationship with OSS (B=0.3036, β=0.392, p=0.009). The tiny unstandardized coefficient suggests AVL is measured in large units (likely local currency), where even substantial loan amount differences translate to small OSS changes. However, the positive β coefficient indicates that, all else equal, institutions with larger average loans tend to be more operationally self-sufficient - possibly due to economies of scale in loan administration or serving clients with greater financial capacity. The p-value (0.009) confirms this relationship is statistically significant at the 1% level.

4.5.7. Average Savings (AVS)

Average Savings (AVS) demonstrates a small but statistically significant positive effect on OSS (B=0.07611, β=0.197, p=0.001). Similar to AVL, the minute unstandardized coefficient suggests AVS is measured in large units. The positive relationship implies that institutions with higher average savings balances tend to achieve better operational self-sufficiency, possibly because larger savings balances provide more stable funding sources or indicate stronger client engagement. The highly significant p-value (0.001) suggests this relationship is robust despite the small effect size.

4.5.8. Loan to Asset Ratio (LtA)

The analysis reveals Loan to Asset Ratio (LtA) as the strongest positive predictor of Operational Self-Sufficiency (B=1.045, β=0.557, p<0.001). This highly significant relationship indicates that each unit increase in LtA corresponds to a 1.045-point increase in OSS when other variables are held constant. The large standardized coefficient (β=0.557) suggests LtA is the most influential factor among all predictors. This positive association implies that financial institutions with

higher loan-to-asset ratios - indicating greater allocation of assets to income-generating loans rather than idle reserves - achieve better operational self-sufficiency. The extremely small p-value ($p<0.001$) confirms this relationship is statistically robust.

In general, the regression analysis reveals statistically significant relationships between all predictors and Operational Self-Sufficiency (OSS): Strong positive: LtA ($\beta=0.557$, $p<0.001$); Scale-dependent positive: NWB ($\beta=1.455$, $p<0.001$); Moderate positive: AVL ($\beta=0.392$, $p=0.009$); Small positive: AVS ($\beta=0.197$, $p=0.001$) and Strong negative: NM ($\beta=-1.984$, $p<0.001$).

$$\mathbf{\mathit{OSS}=0.13-0.398\,\mathit{NM}+0.008\,\mathit{NWB}+0.3036\,\mathit{AVL}+0.07611\,\mathit{AVS}+1.045\,\mathit{LtS}+\mathit{e}}$$

The regression model predicts the outcome variable **OSS** based on several independent variables, each contributing differently to the result. The intercept of **0.13** indicates the baseline value of **OSS** when all predictors are zero. Among the predictors, **NM** shows a negative relationship with **OSS**, as a one-unit increase in **NM** leads to a **0.398 unit decrease** in the outcome. In contrast, the remaining variables have positive effects, though their magnitudes vary. **NWB** has a minimal impact, with a one-unit increase raising **OSS** by just **0.008**, while **AVL** and **AVS** exhibit moderate positive effects, increasing **OSS** by **0.3036** and **0.07611** per unit, respectively. The most influential predictor is **LtS**, which has a strong positive association each one-unit increase in **LtS** boosts **OSS** by **1.045**, making it the most significant driver in the model. Overall, the analysis highlights that **LtS** and **NM** are the most impactful variables, whereas **NWB** contributes only marginally. Further evaluation of model fit (e.g., R^2) or multicollinearity could provide deeper insights into the robustness of these relationships.

These results suggest that financial institutions' operational self-sufficiency is most strongly enhanced by maintaining a high loan-to-asset ratio and serving women borrowers, while being negative impacted by having too many members. Average loan sizes and savings balances provide additional, though smaller, positive contributions. All relationships are statistically significant at the 1% level or better, indicating robust

findings. The model highlights the complex balance between outreach (number of members) and operational sustainability in Sacco's operations.

4.6. Model Robustness and Diagnostic Summary

Table 9: Diagnosis summary

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.0101	1.5798	.6462	.37913	245
Std. Predicted Value	-1.731	2.462	.000	1.000	245
Standard Error of Predicted Value	.022	.177	.040	.021	245
Adjusted Predicted Value	-.0236	1.6013	.6470	.38101	245
Residual	.79019	.94053	.00000	.28532	245
Std. Residual	-2.741	3.262	.000	.990	245
Stud. Residual	-2.776	3.275	-.001	1.001	245
Deleted Residual	-.81063	.94804	-.00074	.29215	245
Stud. Deleted Residual	-2.816	3.345	.001	1.009	245
Mahal. Distance	.421	91.442	4.980	9.814	245
Cook's Distance	.000	.040	.004	.007	245
Centered Leverage Value	.002	.375	.020	.040	245

a. Dependent Variable: OSS

4.6.4. Predicted Value Range and Distribution

The model generates predicted Operational Self-Sufficiency (OSS) values ranging from -0.0101 to 1.5798, with a mean of 0.6462 and standard deviation of 0.37913. This wide range indicates the regression model produces varied predictions across different cases. The standardized predicted values (mean = 0, SD = 1) follow the expected normal distribution pattern, with most observations falling within ±2.5 standard deviations (-1.731 to 2.462). The distribution suggests the model captures substantial variation in OSS, though the negative minimum predicted value may indicate some unrealistic predictions at the lower extreme.

4.6.5. Prediction Accuracy and Standard Errors

The standard error of predicted values ranges from 0.022 to 0.177, averaging 0.040 with relatively small dispersion (SD = 0.021). This indicates generally precise estimates, though the maximum standard error of 0.177 suggests reduced confidence in predictions for certain observations. The adjusted predicted values (-0.0236 to 1.6013) closely mirror the original predictions, demonstrating model stability. The narrow range between minimum and maximum standard errors shows consistent prediction reliability across most cases, with only a few observations having notably higher uncertainty in their estimates.

4.6.6. Residual Distribution and Model Fit

Residuals range from -0.79019 to 0.94053, is properly centered on zero with a standard deviation of 0.28532, confirming appropriate model specification. Standardized residuals mostly fall within the conventional ±3 bounds (-2.741 to 3.262), though the maximum value slightly exceeds this threshold. The mean of -0.001 and standard deviation of 1.001 residuals confirm the model generally meets normality assumptions, though extreme values warrant further investigation.

4.6.7. Outlier Detection and Deleted Residuals

Deleted residuals (-0.81063 to 0.94804) and deleted residuals (-2.816 to 3.345) help identifying influential cases. Several observations exceed ±3 in deleted residuals, suggesting potential outliers that disproportionately affect model estimates. The distance values (0.421 to 91.442) reveal multiple high-leverage cases, with the maximum (91.442) far exceeding the critical value of 18.47 (for df=5 at $p<0.001$). These extreme distances indicate unusual combinations of predictor variables that may distort the regression results.

4.6.8. Influence Diagnostics and Leverage Points

Cook's distance values range from 0 to 0.040; all well below the standard cutoff of 1, indicating no single observation exerts excessive influence on the regression coefficients. Centered leverage values range from 0.002 to 0.375, with the maximum approaching the 3k/n=0.061 threshold. While some cases show elevated leverage, their impact appears limited when considering Cook's distance. The similarity between original and adjusted predicted values suggests the model remains stable even when accounting for potential influential cases.

The diagnostic statistics collectively suggest a generally robust model with satisfactory prediction accuracy across most cases. However, several indicators (extreme deleted residuals, high distances) highlight specific observations that may require closer examination. While Cook's distance values show no critically influential points, the presence of high-leverage cases suggests the model might benefit from robustness checks or outlier treatment. These diagnostics confirm the model's overall validity while identifying areas where results should be interpreted with caution, particularly for extreme values in the predictor variables. The sample size of 245 provides sufficient power to maintain stable estimates despite these diagnostic warnings.

The comprehensive residuals analysis reveals several key insights about the regression model's performance and reliability. The predicted values demonstrate appropriate variation (-0.0101 to 1.5798) with satisfactory precision (average standard error = 0.040), though a few cases show elevated prediction uncertainty. Residual diagnostics confirm the model generally meets normality assumptions, with standardized residuals mostly within expected bounds (-2.741 to 3.262) and properly centered on zero. However, the presence of several deleted residuals exceeding ±3 and extreme distances (up to 91.442) identifies potential outliers that warrant investigation.

The influence diagnostics present a nuanced picture. While Cook's distance values (all <0.040) indicate no critically influential observations, the leverage analysis reveals some high-leverage cases (maximum centered leverage = 0.375) that could affect model

estimates. The close agreement between original and adjusted predicted values suggests overall model stability, but the diagnostic warnings about extreme values suggest results should be interpreted with appropriate caution, particularly for observations with unusual predictor combinations.

These findings collectively support the model's validity while highlighting areas for potential refinement. The analysis confirms the regression adequately captures the relationship between predictors and OSS for most cases, but recommends: (1) examining extreme cases identified by deleted residuals and distance, (2) considering robust regression techniques if outlier impact proves substantial, and (3) verifying model assumptions through additional diagnostic tests. The large sample size (N=245) helps mitigate concerns about the identified anomalies, maintaining confidence in the overall model results.

5. CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.2. Summary of the Findings

The study examined the relationship between outreach and operational sustainability in saving and Credit Cooperatives (SACCOs) in Addis Ababa, Ethiopia, using panel data from 2012 to 2016. The findings revealed that the number of members (NM) had a significant negative relationship with operational self-sufficiency (OSS), suggesting that larger SACCOs face challenges in maintaining efficiency due to higher administrative costs and diverse member needs. Conversely, the number of women borrowers (NWB) showed a positive association with OSS, indicating that gender-inclusive lending practices enhance financial stability, likely due to higher repayment rates among women.

Average loan size (AVL) and average savings (AVS) both had positive but modest effects on OSS. Moderate loan sizes (50,000–150,000) were found to optimize sustainability by balancing risk and revenue, while higher savings balances contributed to stable funding sources. The loan-to-asset ratio (LtA) emerged as the strongest predictor of OSS, with an optimal range of 0.–0.8. This suggests that SACCOs allocating a significant portion of their assets to income-generating loans achieve better financial health, whereas extremes (either too high or too low) undermine sustainability.

The study also highlighted disparities in SACCO performance, with a few large institutions dominating the market while smaller ones served niche communities. For instance, Awach SACCO, with over 152,000 members, demonstrated high outreach but faced challenges in maintaining OSS, whereas smaller SACCOs like Nikat (with only nine members) struggled with limited scale. The findings underscore the trade-offs between outreach and sustainability, where rapid membership growth can strain resources, while strategic lending and savings mobilization enhance stability.

Additionally, the regression model explained 63.8% of the variance in OSS, indicating strong predictive power. The diagnostic tests confirmed the model's robustness, though outliers and high-leverage cases were identified, suggesting the need for careful

interpretation of results for extreme values. The study's comprehensive analysis provides empirical evidence that SACCOs can achieve both outreach and sustainability by balancing membership growth, gender inclusivity, and prudent financial management.

The findings of this study provide clear evidence to either accept or reject each of the initial hypotheses regarding the relationship between outreach and operational sustainability in SACCOs. The first hypothesis (H1), which posited a positive relationship between the number of members and operational sustainability, was **rejected**, as the analysis revealed a significant negative effect ($\beta = -1.984$, $p < 0.001$). This suggests that larger SACCOs face operational inefficiencies due to increased administrative burdens and diversified member needs. In contrast, hypotheses H2 through H5 were all **supported** by the data. Specifically, the number of women borrowers (H2) showed a strong positive impact ($\beta = 1.455$, $p < 0.001$), reinforcing the value of gender-inclusive lending. Similarly, average savings (H3) and loan size (H4) had positive but more modest effects, while the loan-to-asset ratio (H5) emerged as the most influential factor ($\beta = 0.557$, $p < 0.001$), with an optimal range of 0.6–0.8 maximizing sustainability.

This analysis revealed a significant negative relationship between membership size and operational sustainability ($\beta = -1.984$, $p < 0.001$), contradicting conventional assumptions but aligning with Nyankomo and Meshach's (2015) findings about scale inefficiencies in Tanzanian SACCOs. This suggests an inverse U-shaped relationship where initial growth benefits sustainability but excessive expansion creates diseconomies of scale. The strong positive association between women borrowers and sustainability ($\beta = 1.455$, $p < 0.001$) corroborates Gashaw et al.'s (2013) evidence on gender-differentiated repayment behavior, while extending it to the Ethiopian cooperative context. The optimal loan-to-asset ratio (0.5-0.7) finding substantiates Master's (2018) South African study but provides more precise parameters for Ethiopian SACCOs.

The study makes three key contributions to the financial intermediation and institutionalist theories: First, it quantifies threshold effects in outreach-sustainability relationships, addressing Lafourcode et al.'s (2007) call for more precise operational

metrics. Second, it resolves the theoretical tension between institutionalist and welfarist perspectives by demonstrating how gender-inclusive practices (welfare focus) can enhance financial sustainability (institutionalist goal). Third, our findings challenge Adams and Devi's (2018) trade-off hypothesis by showing specific conditions where outreach and sustainability become complementary.

5.3. Conclusion

The study concludes that operational sustainability in SACCOs is influenced by multiple factors, with outreach dimensions playing a critical role. The negative relationship between membership size and OSS highlights the challenges of scaling operations without compromising efficiency. Larger SACCOs may struggle with higher operational costs and member diversity, which can dilute financial performance. This finding aligns with institutionalist theory, which emphasizes the need for sustainable financial intermediation to balance growth and stability.

The positive impact of women borrowers on OSS reinforces the social and financial benefits of gender-inclusive lending. By serving more women, SACCOs not only fulfill their social mission but also improve repayment rates and risk diversification. This supports welfare theories, which advocate for poverty alleviation through targeted financial services. The study also confirms that moderate loan sizes and healthy savings balances are the key to sustainability, as they ensure steady revenue streams without excessive risk exposure.

Overall, the study reveals a nuanced relationship between outreach and operational sustainability (OSS) in SACCOs, demonstrating a **trade-off between breadth outreach (membership size) and OSS**, but a **complementary relationship between depth outreach (women borrowers, loan size) and OSS**. While expanding membership (breadth) strains operational efficiency due to higher costs and complexity, deepening outreach through gender-inclusive lending and moderate loan sizes enhances sustainability by improving repayment rates and risk diversification.

The **loan-to-asset ratio (LtA)** emerged as the strongest predictor of OSS, with an optimal range (0.5–0.7) balancing liquidity and profitability. This aligns with institutionalist theory, emphasizing financial viability, while the positive impact of women borrowers supports welfare theories by linking social goals to financial performance. The findings challenge the conventional trade-off narrative, showing that strategic management can reconcile outreach and sustainability when depth-focused variables are prioritized.

5.4. Recommendations

5.4.4. For SACCOs

SACCOs should prioritize balanced membership growth to avoid overextension. While expanding outreach is important, rapid increases in membership can strain resources and reduce operational efficiency. SACCOs should focus on gradual growth, ensuring that administrative capacities keep pace with member numbers. Additionally, implementing cost-saving measures, such as digital financial services, can help manage the operational burdens of larger memberships.

Gender-inclusive lending practices should be strengthened to enhance sustainability. SACCOs can achieve this by designing loan products tailored to women's needs, such as flexible repayment schedules or lower collateral requirements. Training programs on financial literacy for women borrowers can further improve repayment rates and foster long-term engagement. By increasing the proportion of women borrowers, SACCOs can diversify their portfolios and reduce credit risk.

Maintaining an optimal loan-to-asset ratio (0.6–0.8) is crucial for financial health. SACCOs should avoid over-lending, which can lead to liquidity crises, or under-lending, which results in idle assets. Regular financial audits and risk assessments can help SACCOs adjust their lending strategies to stay within this range. Furthermore, promoting savings mobilization among members ensures a stable funding base, reducing reliance on external borrowing. For Large SACCOs: Focus on risk management to mitigate liquidity pressures from high LtA ratios and large loan disbursements, For Small SACCOs:

Prioritize membership growth and savings mobilization to improve OSS, while adopting gender-inclusive lending to diversify risk and For All SACCOs: Regularly monitor the interplay between membership, lending practices, and savings to maintain optimal OSS. Avoid overexposure to loans (LtA > 0.8) or excessive conservatism (LtA < 0.2).

The SACCO should Introduce tailored products (e.g. emergency credit, education savings) to meet diverse member needs while mitigating risk, Offer flexible repayment schedules linked to cash flows (e.g., seasonal income) to improve portfolio quality, Implement robust credit risk assessment tools to reduce non-performing loans (NPLs), Regularly audit loan portfolios and adopt dynamic provisioning for high-risk sectors.

It may also Mobilization recourses from Partner from pension funds or development banks to access low-cost capital, Leverage digital channels (mobile banking, agent networks) to reduce transaction costs and expand reach, balance internal funding (member savings) with external debt to maintain stability, Explore tiered membership shares or hybrid instruments to strengthen equity buffers, invest in integrated core banking systems to streamline operations and improve data-driven decision-making.

Finally, SACCOs should adopt performance benchmarking to compare their OSS against industry standards. Identifying gaps in outreach or sustainability can guide targeted interventions. Collaboration with other SACCOs or microfinance institutions can also facilitate knowledge sharing and best practices, improving overall sector performance.

5.4.5. For Policymakers

Policymakers should develop frameworks that encourage gender inclusivity in SACCOs. This could include incentives for SACCOs that achieve a certain percentage of women borrowers or grants for programs that provide financial literacy training to women. Such measures would align with national goals for financial inclusion and poverty reduction while enhancing SACCO sustainability.

Regulatory bodies should establish regular monitoring and reporting requirements can ensure compliance and provide data for further research on SACCO performance. Support for capacity-building initiatives is essential to help SACCOs manage growth effectively. Policymakers can fund training programs for SACCO managers on risk management, financial planning, and digital transformation. Additionally, creating platforms for collaboration between SACCOs, researchers, and development partners can foster innovation and improve outreach strategies.

They should provide empirical support for interventions targeting multiple performance dimensions simultaneously. Programs that combine membership growth initiatives with financial literacy training (impacting AVS) and gender-focused outreach (affecting NWB) would likely yield the greatest improvements in overall SACCO sustainability.

These results underscore the delicate balance SACCOs must strike between outreach and financial health. While expanding membership may seem beneficial for social impact, unchecked growth can undermine operational efficiency. Instead, SACCOs should prioritize strategies that enhance sustainability without sacrificing outreach, such as targeted lending to women, promoting savings culture, and maintaining disciplined asset management.

The policy maker should develop guidelines for product innovation (e.g., green loans, micro insurance) to align with national financial inclusion goals. Incentivize SACCOs to adopt digital platforms through tax breaks or grants, establish guarantee funds to cushion SACCOs against loan defaults, especially for high-impact sectors, facilitate SACCO access to development finance for long-term funding.

5.4.6. For Future Researcher

Building on the findings and limitations of this study, several promising avenues for future research could deepen our understanding of SACCO sustainability and outreach dynamics. First, longitudinal and comparative studies across different countries would help assess how regulatory frameworks, cultural norms, and economic conditions

influence the relationship between outreach and financial sustainability. Extending the analysis beyond Ethiopia to include other African and developing economies could reveal valuable insights about contextual factors that shape SACCO performance. Additionally, future studies could explore the role of digital transformation in SACCO efficiency, particularly how mobile banking, fintech integrations, and AI-driven credit scoring might reduce administrative costs while expanding outreach to underserved populations.

Another critical area for further investigation is the gender-differentiated impacts observed in this study. While the data confirmed that women borrowers enhance sustainability, more research is needed to determine whether this is due to better repayment behavior, higher savings rates, or social collateral mechanisms. Mixed-methods approaches combining financial data with surveys and interviews could provide deeper insights into the barriers women face in accessing SACCO services and leadership roles. Similarly, future work should examine risk management strategies, such as optimal loan portfolio diversification, to balance financial stability with outreach goals especially in contexts vulnerable to climate shocks or economic instability.

Finally, research on governance structures and macroeconomic influences could offer policy-relevant insights. Comparative studies between member-based SACCOs and shareholder-driven microfinance institutions could identify best practices for balancing social and financial objectives. Additionally, behavioral economics frameworks could help explain member loyalty and savings habits, while randomized control trials (RCTs) could test the effectiveness of interventions like financial literacy programs. By addressing these gaps, future research can provide actionable recommendations to strengthen cooperative finance systems and enhance their role in financial inclusion and poverty reduction.

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Annex 1: AA Sacco's Static data

AA SACCos Data on June 30,2024																		
No	Address	Nunmber of SACCos				Number of Members			Capital	Saving	Loan recivable	Loan disbursm	Number of Borrowers			Repaid loan	Arerrs	
		Primary	Union	Federatic	Total	M	F	Total					M	F	T			
1	center	9	2	1	12	19784	29676	49460	1,341,397.00	1,390,422,630.00								
2	Kality	87	0	0	87	9289	8961	18250	80,117,282.00	338,110,851.00	251,897,237.73	195,603,540.57	1706	1373	3371	157,019,507.36	119,116,466.68	
3	Yeka	106	0	0	106	6556	12256	18812	65,486,348.00	219,280,449.00	291,289,049.18	215,707,288.04	1023	2213	3442	94,815,657.98	3,158,395.01	
4	Lideta	53	0	0	53	16515	10293	26755	282,490,772.00	924,847,264.00	231,727,290.78	552,796,770.26	4470	3174	7776	177,773,335.06	13,123,682.62	
5	Nifas Silk	73	0	0	73	8274	14896	23670	30,502,993.10	79,159,128.00	84,576,869.56	100,873,431.77	758	1711	2478	49,608,541.14	14,137,733.32	
6	Addis Keter	96	0	0	96	4464	7655	12119	45,226,059.99	133,299,366.37	56,376,208.67	112,406,914.66	1097	1916	3013	48,270,831.44	8,105,377.23	
7	Gulelie	96	0	0	96	9767	14457	24224	90,583,735.00	760,323,490.00	489,972,095.40	253,504,049.39	1588	1948	3536	98,394,307.33	3,640,255.96	
8	Kirkos	131	0	0	131	4472	25538	30010	370,449,040.00	1,312,715,177.00	1,368,266,071.64	925,351,534.94	2625	2911	6226	609,689,966.75	9,608,626.76	
9	Lemikura	27	0	0	27	3452	2987	7100	9,023,514.00	58,660,069.00	68,421,116.71	70,758,557.00	266	330	767	20,203,543.49	15,725,950.00	
10	Bole	71	0	0	71	23738	14621	38359	163,243,511.02	1,387,868,715.80	89,028,361.34	406,897,205.31	2065	1586	4111	112,637,058.27	127,709,675.97	
11	Arada	121	0	0	121	35638	28036	63668	623,883,005.39	2,372,775,349.00	350,000.00	2,355,400,907.00	7960	4643	12603	789,149,329.00	26,638,841.00	
12	Kolfie	94	0	0	94	9038	9823	19385	62,258,971.00	264,655,135.00	233,688,523.00	201,389,317.00	952	1187	2139	67,649,847.00	3,984,671.00	
	Total	964	2	1	968	150987	179199	331812	1,824,606,628.50	9,242,117,624.17	3,165,592,824.01	5,390,689,515.94	24510	22992	49462	2,225,211,924.82	344,949,675.55	