The Role of Microfinance in Strengthening Sustainable Livelihoods Among Pastoralist Communities in the Somali Regional State

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Abstract

The intricate links between microfinance initiatives and sustainable pastoralist livelihoods in the Somali Regional State are examined in this extensive study. Using a multifaceted methodology, the study examines how microfinance affects the five essential aspects of livelihood assets—natural capital, financial capital, physical capital, social capital, and human capital. The study offers evidence-based insights into the transformative potential of microfinance programs by methodically examining these links. According to the data, respondents reported improvements in their living conditions, social networks, educational possibilities, credit availability, savings, and environmental sustainability. Nonetheless, issues including exorbitant borrowing rates and a lack of financial awareness were noted, highlighting the necessity of all-encompassing support programs. According to the study's findings, microfinance is essential for increasing livelihood assets, but tackling problems calls for specialized interventions including financial education and a range of financial products. The findings have important ramifications for practitioners, policymakers, and microfinance organizations, directing the creation of programs that support pastoralist communities' long-term resilience and prosperity.

Keywords: Microfinance, Livelihood Assets, Financial Inclusion, Sustainable Livelihood

1. Introduction

Poverty is a pervasive issue globally, and combatting it stands at the core of various anti-poverty approaches and programs. In developing nations like Ethiopia, microfinance has emerged as a sustainable tool for poverty reduction. It goes beyond being a mere banking service for low-income families, offering an avenue for self-sufficiency through savings, microcredit, and insurance. Microfinance, initially introduced by Nobel Laureate Muhammad Yunus in Bangladesh in the 1970s, has expanded globally as a means of providing financial services tailored to the unique needs of the poor. While often associated with microcredit for microenterprises, microfinance encompasses a broader range of services such as loans, insurance, savings, and remittances. This inclusive approach recognizes the diverse financial needs of individuals, households, and enterprises, especially those living in poverty. In Ethiopia, formal microfinance emerged in the 1990s, marked by the establishment of deposit-taking Microfinance Institutions (MFIs) following the Microfinance Proclamation in 1996. With a rapidly growing but economically challenged population, Ethiopia presents a compelling case for examining the impact of microfinance on poverty reduction and sustainable development. As the country has experienced significant economic growth, particularly in industry and services, exploring the role of microfinance becomes crucial in understanding its contribution to poverty alleviation. (World Bank, 2020).

Microfinance plays a crucial role in promoting sustainable livelihoods in the Somali Regional State by driving economic development, job creation, and financial inclusion. Islamic microcredit has been shown to enhance women's financial empowerment and self-confidence (Hilif et al., 2024), while increased access to microcredit correlates with job opportunities and economic growth, especially for low-income groups (Ayanle et al., 2022). Additionally, micro-insurance serves as a risk management tool, enhancing financial inclusion and resilience among vulnerable populations.(Otero, 1999) characterizes microfinance as the provision of small monetary assistance specifically targeting vulnerable and self-employed individuals grappling with poverty. Traditionally, these financial services encompass loans and deposits. However, (Ledgerwood, 1998) expands the scope by including additional services like insurance and payments. Building on this, (Schreiner & Colombet, 2001) assert that microfinance represents an initiative to enhance access to small-scale deposits and loans for households that are typically overlooked by mainstream financial intermediaries. In essence, microfinance services encompass a range of financial products, including credit, savings, and insurance, designed for the benefit of poor households situated in both urban and rural settings, who often remain underserved by the formal financial sector.

Statements of the problem

Pastoralist communities in the Somali Regional State face persistent challenges related to economic vulnerability, environmental degradation, and limited access to financial services. Traditional livelihood strategies, primarily centered on livestock production, are increasingly threatened by climate change, recurrent droughts, and market constraints (De Haan et al., 2016). As a result, many pastoralists struggle to accumulate assets, access healthcare and education, and sustain their livelihoods in an increasingly volatile economic environment. Microfinance has been widely recognized as a potential tool for poverty alleviation and economic empowerment in marginalized communities (Armendariz, 2010). However, its impact on pastoralist livelihoods remains an underexplored area, particularly in the context of Somali pastoralists. Unlike urban and agrarian communities, pastoralists require financial

products tailored to their unique economic cycles, seasonal cash flows, and mobility patterns (Cull et al., 2018). Conventional microfinance models, which emphasize fixed repayment schedules and asset-based collateral, often fail to accommodate the needs of these communities, limiting their ability to leverage financial services effectively (Little et al., 2001).

Despite the growing presence of microfinance institutions (MFIs) in Ethiopia, there is limited empirical evidence on how microfinance interventions influence different forms of capital—human, financial, physical, social, and natural—within pastoralist settings. While studies have demonstrated that microfinance can enhance human capital by improving access to education and healthcare (Asnake, 2015; Banerjee et al., 2015), its role in strengthening financial capital, such as savings and income diversification, remains ambiguous in pastoral economies. Similarly, the impact of microfinance on physical capital, including infrastructure development and productive assets, has not been systematically assessed in the Somali Regional State. Moreover, social capital, which plays a crucial role in pastoralist resilience through communal resource-sharing and cooperative networks, may be either strengthened or weakened by microfinance interventions, depending on the design and accessibility of financial products (Barrett & Carter, 2013). Additionally, the link between microfinance and natural capital—particularly in promoting sustainable resource management and climate resilience—remains insufficiently explored in the context of pastoralist communities.

Given these gaps in the literature, this study seeks to critically examine the role of microfinance in shaping sustainable pastoralist livelihoods by analyzing its effects on human, financial, physical, social, and natural capital. By addressing these dimensions, the study aims to provide policymakers, development practitioners, and microfinance institutions with evidence-based insights to design more inclusive and context-specific financial interventions for pastoralist communities in the Somali Regional State.

Research Questions

The study seeks to examine the role of microfinance in sustainable pastoralist livelihoods through the responses to the following fundamental questions:

1) In what ways does microfinance assist in developing and building human capital among societies engaged in microfinance interventions?
2) In what ways does microfinance facilitate financial capital accumulation and enhancement among individuals and households that engage in microfinance initiatives?
3) How does microfinance help in the development and maintenance of physical capital, e.g., assets and infrastructure, within the targeted communities?
4) How does microfinance facilitate the construction and development of social capital, e.g., networks, trust, and cooperative relationships among the participants?
5) To what extent does microfinance help in the preservation and sustainable utilization of natural capital, e.g., environmental resources, within the targeted communities?

Objectives of the Study:

The primary purpose of this study is to explore the interconnections between microfinance initiatives and the sustainability of pastoralist livelihoods in the Somali Regional State in a systematic way. In particular, the study seeks to:

- Investigate the effect of microfinance on human capital, specifically education, skill development, and health status.

- Evaluate the contribution of microfinance to financial capital, such as savings, income levels, and access to credit.
- Evaluate microfinance's effect on physical capital, i.e., housing, infrastructure, and productive assets.
- Examine the effects of microfinance on social capital, i.e., trust, networks, and cooperation at the community level.
- Determine the role of microfinance in enhancing natural capital, i.e., sustainable land use and resource management.

Research Hypotheses

In order to give this research scientific grounding, the study hereby proposes the following hypotheses:

1) There is a significant positive correlation between the number of loan cycles and the development of human capital.
2) There is a significant positive correlation between the number of loan cycles and the financial capital accumulation.
3) There is a significant positive relationship that can be seen between the number of loan cycles and physical capital improvements.
4) There is a significant positive relationship between the number of loan cycles and the strengthening of social capital.
5) There exists a positive significant relationship between loan cycle numbers and sustainable natural resource management.

2. Literature Review

A comprehensive literature review is crucial to understanding theoretical foundations, empirical evidence, and conceptual frameworks related to microfinance and sustainable pastoralist livelihoods. This section examines key theories, existing research, and the relationship between microfinance and livelihood sustainability. Drawing from academic sources, books, and institutional reports, the review highlights critical knowledge gaps and provides a foundation for the study. Several theoretical perspectives inform the analysis of microfinance's role in sustainable livelihoods. The Sustainable Livelihood Framework (SLF) (DFID, 2000) emphasizes the importance of human, financial, physical, social, and natural capitals in achieving resilience and well-being. Social Capital Theory (Putnam, 2000) highlights how networks, trust, and collaboration enhance community development, making microfinance a tool for fostering social cohesion. Behavioral Economics (Thaler, 2008) explores how cognitive biases and financial behavior shape microfinance borrowers' decisions, promoting long-term planning and reducing short-term financial constraints. Empowerment Theory (Kabeer, 1999) underscores the role of microfinance in increasing financial autonomy, particularly for women, contributing to household welfare.

The SLF provides a structured approach to analyzing the factors influencing sustainable livelihoods, particularly in pastoralist communities facing environmental and economic challenges. It identifies five core livelihood capitals: human capital (education, health, and skills), financial capital (savings, credit, and income-generating activities), physical capital (infrastructure, equipment, and technology), social capital (community networks, trust, and cooperation), and natural capital (land, water, and biodiversity). These capitals interact to shape resilience, and microfinance interventions can enhance them by facilitating access to financial

services, promoting asset accumulation, and improving economic stability (Otero, 1999; Zeller & Meyer, 2002). However, livelihood sustainability is also influenced by external vulnerability factors, including shocks (droughts, conflicts), trends (economic and demographic changes), and seasonality (fluctuations in income and resources) (UNCDF USA, 2006). Tailoring microfinance products to mitigate these risks can enhance long-term livelihood stability.

Empirical research indicates that microfinance plays a pivotal role in poverty reduction and economic development. Microfinance institutions (MFIs) provide financial and social intermediation services, ensuring access to savings, credit, and training, which significantly improve household income and well-being (Ledgerwood, 1998; Littlefield et al., 2004). Study in Malaysia (Samer et al., 2015) found that microfinance enhances women's economic participation and fosters financial inclusion. Similarly, research in Ethiopia (Berhanu Lakew & Azadi, 2020) shows that microfinance contributes to improving livelihoods, reducing poverty, and strengthening social capital. However, concerns remain regarding over-indebtedness and the limited outreach of microfinance services to the most vulnerable groups (Al-Shami et al., 2014; Siyoum et al., 2012). The link between microfinance and sustainable livelihoods is further reinforced by its role in achieving global development goals. Studies indicate that microfinance contributes to Millennium Development Goals (MDGs) by enhancing food security, education, and healthcare access (Challapalli et al., 2019; UNCDF, 2006). Microfinance also plays a critical role in supporting micro-enterprises and small businesses, fostering economic growth and job creation (Hameed et al., 2020). Moreover, research highlights that ICT advancements improve microfinance outreach and sustainability (Ali et al., 2021), allowing institutions to better serve remote and marginalized populations.

The Sustainable Livelihood Approach (SLA) offers a conceptual framework for analyzing livelihood resilience, emphasizing vulnerability contexts, livelihood assets, transforming structures and processes, livelihood strategies, and outcomes (Hassan & Tufte, 2001; Hossain et al., 2010). SLA underscores the importance of policy, institutional support, and market accessibility in shaping sustainable livelihoods. For instance, Shariah-compliant microfinance models align financial services with cultural and religious norms, fostering greater acceptance and participation (Ashley & Carney, 1999). Furthermore, studies suggest that microfinance interventions should focus on capacity-building initiatives, such as education and vocational training, to enhance long-term livelihood outcomes (Ghimire et al., 2020). Microfinance significantly contributes to sustainable livelihoods by improving financial access, fostering economic diversification, and enhancing social capital(Brodziński et al., 2020). However, for microfinance to achieve long-term, sustainable impacts, it must be integrated with policies addressing livelihood vulnerabilities, environmental sustainability, and equitable resource distribution (Lakner et al., 2020). By leveraging microfinance as a tool for resilience-building, pastoralist communities in the Somali Regional State can enhance their adaptive capacity and long-term economic stability. The researchers used the analytical framework (Norton & Foster, 2001) proposed as shown in Figure.1 for examining the impact of microfinance on sustainable rural livelihood.

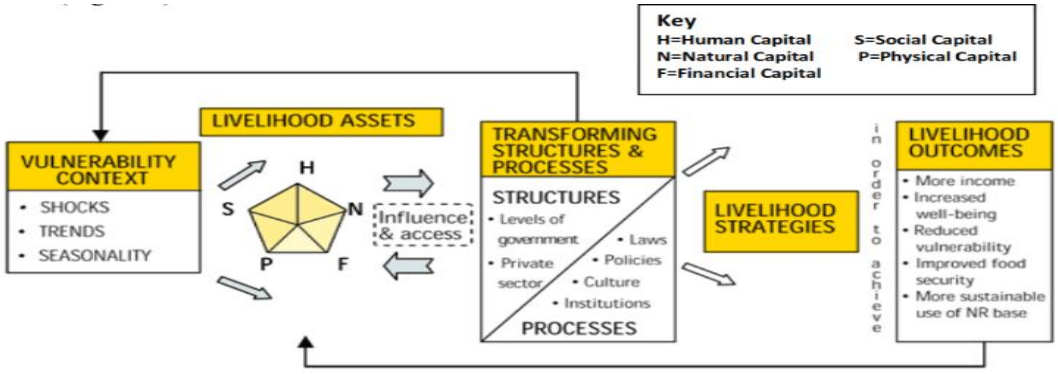

Figure 1: Sustainable Livelihood Frame Work

[Source: Department for International Development (2001)]

3. Material and Methods

This study employs a mixed-methods research design to examine the impact of microfinance on sustainable pastoralist livelihoods in the Somali Regional State. By integrating quantitative and qualitative approaches, the research utilizes surveys, statistical analysis, and open-ended questions to assess the effects of microfinance interventions on human, financial, physical, social, and natural capital. The study targets beneficiaries of the Somali Microfinance Institution (SMFI), the leading provider of Shariah-compliant financial products in the region. The selected branches—Jigjiga, Awbere, Kebribayah, and Degehabur—were chosen based on a minimum client base of 1,000, totaling 11,794 registered beneficiaries. A stratified random sampling technique ensures representative data collection, with a final sample size of 387 respondents, determined using (Yamane, 1967) formula. To collect data, the study employs structured questionnaires and key informant interviews (KIIs). Surveys gather quantitative data on loan cycles and their impact on livelihood capitals, while open-ended questions provide qualitative insights into the social, institutional, and contextual factors influencing microfinance outcomes. The study identifies microfinance engagement as the independent variable, while dependent variables include human, financial, physical, social, and natural capital—each measured using specific indicators such as education levels, income, asset ownership, social networks, and environmental sustainability. Data analysis involves descriptive statistics to summarize key variables and one-way ANOVA to evaluate the impact of microfinance across livelihood dimensions. Content analysis is used to interpret qualitative responses, capturing experiences, perspectives, and contextual factors. This comprehensive analytical approach ensures a robust understanding of microfinance's role in enhancing pastoralist livelihoods and informs evidence-based recommendations for sustainable financial inclusion and resilience-building strategies in the Somali Region.

4. Results and Discussions

Descriptive Analysis

Table 1 presents respondents' ages distributed, pointing out key demographic characteristics. The highest cohort (32%) belongs to the 26–35 years age bracket, followed by 36–45 years, constituting 37%. Those aged 46–55 years make up 17%, with those over 55 years taking up 14%. This analysis offers a definitive demographic overview of the study population.

Table 1. Distribution of Survey Respondents by Age Groups.		
Age Group	Number of Respondents	Percentage
26-35	116	32%
36-45	137	37%
46-55	63	17%
> 55	50	14%
Total	366	100%

Respondents Educational Qualification

Table 2 illustrates the educational qualifications of 366 respondents, the highest proportion of which held a Bachelor's degree. Secondary school accounts for 25.96%, and Diploma or Technical level accounts for 19.13%. Primary school accounts for 10.93%, and smaller numbers of respondents are illiterate (3.28%) or possess a Master's degree (2.19%). This distribution indicates the level of education of the participants surveyed.

Table 2. Distribution of Survey Respondents by Education Qualification		
Educational Qualification	Number of Respondents	Percentage
Illiterate	12	3.28%
Illiterate but can sign	8	2.19%
Primary	40	10.93%
Secondary	95	25.96%
Diploma/Technical	70	19.13%
Bachelor’s degree	100	27.32%
Master’s degree	41	11.20%
Total	366	100%

Number of Family Members in Household

The family size of the 366 participants varies. 9% of them live alone, and 12% of them are two in number. Three-member (22%), four-member (33%), and five-member families (18%) are most prevalent. 6% of the subjects have six and more family members in their households, reflecting the distribution of family size.

Table 3 Distribution of Respondents by Number of Family Members in Household.		
No. of Family Members	Number of Respondents	Percentage
1	32	9%
2	44	12%
3	81	22%
4	120	33%
5	66	18%
6 or more	23	6%
Total	366	100%

Family Composition of Respondents

Table 4 provides data on the family composition of respondents, of which 83.61% are with children and 16.39% without children. Among the 306 respondents with children, 5.23% have one child, 26.14% have two, 16.34% have three, 13.07% have four, and 6.54% have five. Surprisingly, 32.68% have six and more children, reflecting the heterogeneity in the family sizes among the population being studied.

Table 4 Family Composition: Presence of Children and Number of Children

Have Children	Number of Respondents	Percentage
Yes	306	83.61%
No	60	16.39%
Total	366	100%
No. of Children	Number of Respondents	Percentage
1	16	5.23%
2	80	26.14%
3	50	16.34%
4	40	13.07%
5	20	6.54%
6 or more	100	32.68%
Total	306	100%

Educational Engagement and Associated Expenses

Table 5 determines educational enrollment and education expenditures of the household among 306 respondents who have children. The results show 5.23% have one child enrolled, 26.14% have two, 16.34% have three, 13.07% have four, 6.54% have five, and 32.68% have six and more. Regarding education expenditures, 40.52% spend over Br4000, 17.32% spend Br2001–3000, 11.11% spend Br1001–2000, and 8.17% spend Br1000 or less. Interestingly, 1.96% report no education spending, giving data on the expenditure of sampled households on money.

Table 5 Educational Engagement and Associated Expenses in Survey Respondents		
No. of Children Attending School/College	Number of Respondents	Percentage
1	16	5.23%
2	80	26.14%
3	50	16.34%
4	40	13.07%
5	20	6.54%
6 or more	100	32.68%
Total	306	100%
Education Expenses for School-Going Children	Number of Respondents	Percentage
0	6	1.96%
1-1000	25	8.17%
1001-2000	34	11.11%
2001-3000	53	17.32%
3001-4000	64	20.92%
More than 4000	124	40.52%
Total	306	100%

Residential Property Ownership Status

Table 6 presents the home-ownership status of 366 respondents, reflecting diverse housing conditions. 42% own homes, 34% have rented homes, and 24% reside in government-sponsored homes. This is informative about the housing conditions of the sampled population.

Table.6 Residential Property Ownership Status in Respondents'		
Ownership Status of House	Number of Respondents	Percentage
Owned	154	42%
Rented	124	34%
Given by Govt.	88	24%
Total	366	100%

Economic Empowerment Variables

1) Loan Distribution Among Respondents

Table 7 outlines the respondents' borrowing patterns, which point towards a diversified trend of loans. To be specific, 32% borrowed loans of Br100,000 or less, 45% borrowed loans between Br100,000 and Br300,000, and 23% borrowed loans greater than Br300,000. This categorization gives valuable information about the financial support availed in the studied community.

Table 7 Loan Distribution Among Respondents: Amount of Loan Received		
Amount of Loan Received	Number of Respondents	Percentage
Below or equal to 100,000	116	32%
Between 100,000-300,000	166	45%
Above 300,000	84	23%
Total	366	100%

2) Borrowing Patterns

Table 8 presents the distribution of loan cycles for 366 respondents, which demonstrates a relatively regular pattern of borrowing. That is, 34% have gone through one loan cycle, 32% have gone through two cycles, and 33% have gone through three cycles. This information contains very significant insights into the distribution of loan use among the survey population.

Table 8 Borrowing Patterns of Survey Respondents: Number of Loan Cycles		
Number of Loan Cycles	Number of Respondents	Percentage
One cycle	126.00	34%
Two cycles	118.00	32%
Three cycles	122	33%
Total	366.00	100%

3) Borrowing Motivations among Respondents

Table 9 highlights the broad spectrum of borrowing purposes of 366 respondents, echoing the importance of microfinance in economic and social well-being. The majority (43.72%) borrowed for income generation, and 30.05% borrowed working capital to operate businesses. 24.59% borrowed for asset acquisition and house improvement, echoing long-term financial security. Education (13.66%), health expenses (9.56%), and emergencies (10.93%) also illustrate extensive use of microfinance. As the respondents could select more than a single reason, the data reveals microfinance's great impact in empowering enterprise, improving livelihood, and achieving financial stability among the population surveyed.

Table 9 Microfinance Borrowing Motivations Among Respondents		
Purpose of Loan	Number of Respondents	Percentage
Income generation	160	43.72%
Working capital	110	30.05%
Asset acquisition	90	24.59%
Housing improvement	90	24.59%
Education and skill development	50	13.66%
Health-related expenses:	35	9.56%
Emergencies and unforeseen circumstances	40	10.93%
Total	366	157%

4) Average monthly income of the member beneficiary

Table 10 also provides some insight into the income distribution among the respondents and shows a wide range of income. 19.13% of the respondents have an income of less than Br2,000, 17.76% have between Br2,000–4,000, 10.93% between Br4,000–6,000, 27.32% between Br6,000–8,000, 16.39% between Br8,000–10,000, and 8.47% have more than Br10,000. The above distribution clearly shows the picture of the economy in the sample population.

Table.10 Average Monthly Income Distribution Among Respondents

Average Monthly Income	Number of Respondents	Percentage
<2,000	70	19.13%
2,001-4,000	65	17.76%
4,001-6,000	40	10.93%
6,001-8,000	100	27.32%
8,001-10,000	60	16.39%
>10,000	31	8.47%
Total	366	100%

5) Saving Patterns and Average Monthly Savings

Table 11 shows the respondents' saving habits show that 32.79% do not save, 38.25% save regularly, 19.13% save occasionally, and 9.84% save seldom. As far as average monthly savings are concerned, 21.86% save less than Br2,000, 27.32% save Br2,001–4,000, 16.39% save Br4,001–6,000, 13.66% save Br6,001–8,000, 10.93% save Br8,001–10,000, and 9.84% save more than Br10,000. This spread reflects the differences in savings behavior, with the implication that a substantial percentage saves regularly, whereas others struggle to cope with financial means.

Table 11 Saving Patterns and Average Monthly Savings Among Respondents

Saving Pattern	Number of Respondents	Percentage
No Savings	120	32.79%
Regularly	140	38.25%
Occasionally	70	19.13%
Rarely	36	9.84%
Total	**366**	**100%**
Average Monthly Savings	Number of Respondents	Percentage
<2,000	80	21.86%
2,001-4,000	100	27.32%
4,001-6,000	60	16.39%
6,001-8,000	50	13.66%
8,001-10,000	40	10.93%
>10,000	36	9.84%
Total	366	100%

6) Average Monthly Consumption Expenditure

Table 12 provides a summary of respondents' saving culture and financial habits. The results reveal that 32.79% do not save, 38.25% save often, 19.13% save sometimes, and 9.84% save rarely. On average monthly savings, 21.86% save less than Br2,000, 27.32% save Br2,001–4,000, and 16.39% save Br4,001–6,000. Additional savings are made by 13.66% (Br6,001–8,000), 10.93% (Br8,001–10,000), and 9.84% (above Br10,000). This analysis gives us a full overview of saving behavior, highlighting steady savers and strugglers alike.

Table 12 Average Monthly Consumption Expenditure

Average Monthly Consumption Expenditure	Number of Respondents	Percentage
<2,000	80	21.86%
2,001-4,000	100	27.32%
4,001-6,000	60	16.39%
6,001-8,000	50	13.66%
8,001-10,000	40	10.93%
>10,000	36	9.84%
Total	366	100%

7) Value of Productive Assets Distribution

Respondent statistics on ownership of productive assets have varied distribution. 15% own assets valued below Br60,000, 19% between Br60,001–Br80,000, 31% between Br80,001–Br100,000, and 36% above Br100,000. The above division is helpful to give information about the pattern of asset ownership reflecting the economic status and financial strength of the targeted population.

Table 13: Value of Productive Assets Distribution

Value of Productive Assets (Br)	Number of Respondents	Percentage (%)
Less than 60,000	55	15%
60,001 – 80,000	70	19%
80,001 – 100,000	113	31%
More than 100,000	128	36%
Total	366	100%

Challenges Faced by Microfinance Borrowers

Table 14 clarifies the challenges faced by the participants, which reflects noteworthy financial hurdles. High interest rates (19.13%) and unmanageable debt (24.59%) are dominant challenges, since lenders often end up taking out multiple loans. Lack of financial literacy (10.93%) and insufficient business support (13.66%) hinder sound financial management and development. Collateral requirements (8.20%) limit borrowing opportunities to more sizeable loans, whereas exposure to external shocks (16.39%) affects actors in informal and agricultural sectors. Social pressure within group lending (19.13%) adds finance pressures, and limited access to financial services (10.93%) indicates more inclusive financial instruments. As more than one challenge could be selected by the respondents, the figures are indicative of comprehensive microfinance solutions that benefit the borrowers effectively.

Table 14 Challenges Faced by Microfinance Borrowers		
Challenges Faced by Microfinance Borrowers	Number of Respondents	Percentage
High Interest Rates	70	19.13%
Over indebtedness	90	24.59%
Lack of Financial Literacy	40	10.93%
Inadequate Business Support	50	13.66%
Lack of Collateral	30	8.20%
Vulnerability to External Shocks	60	16.39%
Social Pressure and Group Dynamics	70	19.13%
Limited Access to Diverse Financial Services	40	10.93%

Strategies for Managing Loan Repayment Difficulty

Table 15 discusses respondents' methods of coping with challenges in loan repayment, where more than one answer totaled a combined percentage of more than 100%. The most prevalent method discovered was loan consolidation or refinancing at 30.05%, followed by assistance obtained from social networks at 27.32% and loan repayment prioritization at 24.59%. Additionally, 21.86% negotiated with MFIs and 16.39% depended on budgeting and cash flow management techniques. Seeking secondary sources of income (19.13%) and exploring government/NGO aid programs (21.86%) were also suggested as major coping mechanisms. The findings underscore the resourcefulness of the borrowers in meeting financial hardship and repaying loans.

Table 15 Strategies for Managing Loan Repayment Difficulty		
Strategies for Managing Loan Repayment Difficulty	Number of Respondents	Percentage
Communication with the Microfinance Institution (MFI)	80	21.86%
Budgeting and Cash Flow Management	60	16.39%
Prioritizing Loan Repayment	90	24.59%
Seeking Additional Income Sources	70	19.13%
Loan Refinancing or Consolidation	110	30.05%
Seeking Support from Social Networks	100	27.32%
Exploring Government or NGO Assistance Programs	80	21.86%
Total	366	161%

Impact of microfinance on livelihood assets

This section presents a critical examination of the evaluation given by respondents of their livelihood assets after accessing microfinance services. Microfinance is pivotal in enhancing financial, physical, human, social, and natural capital, thereby empowering individuals to initiate or expand their enterprises, generate income, and accumulate assets. Through the eyes of respondents, the examination identifies enhancement in financial security, ownership of assets, skill development, social networks, and environmental sustainability. Given the range of experiences framed by geography and program participation, these findings provide useful pointers to policymakers, microfinance institutions, and development practitioners in formulating targeted and impactful interventions for the poor.

1) Financial Capital

The results of the survey indicate that the perception of the respondents regarding the effects of microfinance on financial wealth is positive. The respondents concurred that microfinance has boosted the capacity to save, maintain cash reserves, and invest in income-generating activities. Furthermore, access to credit has considerably improved, thereby enhancing financial stability and lowering vulnerability to economic shocks. The high mean value combined with a low standard deviation indicates strong consensus building among the respondents, thereby revealing that participation in microfinance activities is strongly associated with higher financial well-being.

Table 16 Perceptions of Microfinance Impact on Financial Capital		
Statements	**Mean**	**STD**
Microfinance has helped me save money and build financial reserves for the future.	4.5	0.548
Microfinance has provided me with access to credit and loans when I need them.	4.2	0.748
Microfinance has increased my ability to invest in income-generating activities.	4.6	0.547
Microfinance has improved my financial stability and reduced my vulnerability to economic shocks.	4.4	0.663
Participating in microfinance programs has enhanced my overall financial well-being.	4.8	0.447

1) Human Capital

Table 17 reveals respondents' positive attitudes regarding the impact of microfinance on human capital. Most of the respondents agree that microfinance has enhanced their knowledge and skills, increased access to training and education, and improved employment and income levels. A number of respondents also believe that participation in microfinance schemes has contributed to personal development and overall well-being. But views of its implications for health and access to healthcare are less uniform, a reflection of diverse experiences in this sector. On the whole, the evidence indicates a high positive relationship between involvement in microfinance programs and human capital development on several fronts.

Table 17 Perceptions of Microfinance Impact on Human Capital		
Statements	**Mean**	**STD**
I have acquired valuable skills and knowledge through participating in microfinance programs.	4.2	1.166
Microfinance has improved my educational opportunities and access to training programs.	4.4	1.14
Microfinance has positively impacted on my employment prospects and income levels.	4.6	0.836
Microfinance has enhanced my overall well-being and personal development.	4.6	1.303
Participating in microfinance programs has improved my health and healthcare access.	3.6	1.166

2) Physical Assets

Table 18 reveals positive attitudes of the respondents regarding the contribution of microfinance to physical capital. The majority of them agree that microfinance has improved their standards of living and housing and facilitated access to clean water and sanitation. The respondents also strongly believe that microfinance has improved community infrastructure, such as roads and electricity. Microfinance is also largely seen as a helpful tool for acquiring productive assets like agricultural equipment and tools. In general, the results show that there is a significant positive relationship between microfinance participation and physical resource improvements at both the community and individual levels

Table 18 Perceptions of Microfinance Impact on Physical Capital		
Statements	Mean	STD
Microfinance has enabled me to improve the quality of my housing and living conditions.	4.2	1.17
Microfinance has helped me access clean water and sanitation facilities.	4.4	1.30
Microfinance has contributed to the development of necessary infrastructure in my community (e.g., roads, electricity).	4.6	0.80
Microfinance has provided me with resources to acquire productive assets (e.g., agricultural equipment, tools).	4.8	1.17
Participating in microfinance programs has positively impacted the physical resources available to me and my community.	4.4	1.30

3) Social Capital

Table 19 shows favorable impressions of respondents on the effects of microfinance on social capital. Most of them concur that microfinance has enabled them to establish support networks and enhance participation in community activities. Microfinance has also increased cooperation, trust, and collaboration within the community, leading to more robust social bonds. Respondents further think that microfinance has promoted a capacity to work together for common good. It is noteworthy that there is a strong consensus about the central role played by microfinance in the development of social cohesion and encouraging collective action. Overall, the findings point to a positive association between participation in microfinance programs and improvement across various aspects of social capital.

Table 19. Perceptions of Microfinance Impact on Social Capital		
Statements	**Mean**	**STD**
Microfinance has connected me with a network of supportive individuals and organizations in my community.	4.4	1.1
Microfinance has increased my participation in community activities and organizations.	4.4	1.7
Microfinance has improved trust and cooperation among community members.	4.6	1.3
Participating in microfinance programs has enhanced my ability to collaborate with others for mutual benefit.	4.2	1.2
Microfinance has strengthened the social fabric of my community and promoted collective action.	4.8	0.8

4) Natural Capita

Table 20 brings out the favorable attitudes of the respondents regarding the influence of microfinance on natural capital. According to many, microfinance has facilitated conservation, promoted sustainable land use, and helped protect natural resources such as forests and water bodies. Further, membership in microfinance schemes is associated with enhanced awareness and adoption of environmentally friendly behavior. The respondents are also unanimous that microfinance has spurred the adoption of clean and renewable sources of energy and hence ecological sustainability. The results indicate that there is a positive significant correlation between microfinance participation and the enhancement of different components of natural capital within the community.

Table 20 Perceptions of Microfinance Impact on Natural Capital		
Statements	Mean	STD
Microfinance has encouraged sustainable land use practices and conservation efforts in my community.	4.6	0.55
Microfinance has promoted the preservation and sustainable management of natural resources (e.g., forests, water sources).	4.4	1.14
Microfinance has increased awareness and adoption of environmentally friendly practices among program participants.	4.2	1.17
Participating in microfinance programs has contributed to the overall ecological sustainability of my community and surroundings.	4.4	0.80
Microfinance has supported the use of clean and renewable energy sources in my community.	4.6	1.67

Test of Hypothesis

This section examines the relationship between loan cycles and livelihood assets using one-way ANOVA to test the study's hypotheses. The chapter tests how financial, human, physical, social, and natural capital are influenced by loan cycles. The results display a significant positive relationship between loan cycles and all forms of capital, characterized by big F-values and low variance within groups. Such facts confirm that most differences identified are accounted for by taking part in loan cycles and not chance variation. These results have informative conclusions regarding the effect of microfinance on sustainable livelihoods among the pastoralists of the Somali Regional State, noting cumulative advantages resulting from engaging in multiple cycles of loans concerning various forms of capital.

Hypothesis-1 There is a significant positive association between the number of loan cycles and human capital.

The one-way ANOVA results for human capital indicate a statistically significant difference among groups with varying loan cycles ($F(2, 363) = 763.22$, $p < 0.001$), with a high F-value and low within-group variability, suggesting that increased loan cycles contribute to improvements in education, skills, and professional development rather than being due to chance. These findings support Hypothesis 1, reinforcing that microfinance participation positively impacts human capital. The results align with studies by (Ali et al., 2021), which found that microfinance enhances educational outcomes among rural borrowers, and (Samer et al., 2015), who observed significant improvements in women's education and professional skills in Malaysia's Amanah Ikhtiar microfinance program. However, in the Somali Regional State, these improvements are often tied to pastoralist-specific training, such as sustainable farming and herd management, distinguishing them from findings in urban and rural contexts.

Hypothesis-2 There is a significant positive association between the number of loan cycles and financial capital.

The one-way ANOVA results for financial capital reveal a highly significant difference between groups with varying loan cycle counts ($F(2, 363) = 901.32$, $p < 0.001$), with a low within-group variability, indicating that the number of loan cycles plays a crucial role in financial capital growth rather than chance. These findings support Hypothesis 2, confirming a strong positive correlation between financial capital and loan cycles. The results suggest that multiple loan cycles significantly enhance financial resources, reinforcing the role of microfinance in

improving income generation and saving behaviors. This aligns with (Ledgerwood, 1998; Littlefield et al., 2004), who found that microfinance consistently promotes financial stability among marginalized groups, and (Roy et al., 2020), who observed that microfinance fosters financial independence and revenue diversification, particularly among women in rural India. However, in the Somali Regional State, financial improvements are often linked to livestock-related investments, distinguishing these findings from studies in agrarian areas, where agriculture-based income is more prevalent.

Hypothesis-3 There is a significant positive association between the number of loan cycles and physical capital.

The one-way ANOVA results for physical capital indicate a highly significant difference between groups with varying loan cycles ($F(2, 363) = 980.10$, $p < 0.001$), with low within-group variability, confirming that these differences are more likely due to loan cycle participation rather than chance. These findings strongly support Hypothesis 3, highlighting a positive correlation between physical capital and the number of loan cycles. The results suggest that multiple loan cycles contribute to significant improvements in physical assets, reinforcing the role of microfinance in enhancing housing, sanitation, and infrastructure. This aligns with Schreiner and (Schreiner & Colombet, 2001), who found that microfinance improved borrowers' housing and sanitation, and (Zeller & Meyer, 2002), who emphasized its role in acquiring productive assets like farm equipment. However, in the Somali Regional State, the study highlights infrastructure improvements tailored to pastoralist communities, such as transport networks and mobile water stations, which are less emphasized in urban-focused research.

Hypothesis-4 There is a significant positive association between the number of loan cycles and social capital.

The one-way ANOVA results for social capital reveal a highly significant difference between groups with varying loan cycles ($F(2, 363) = 876.84$, $p < 0.001$), with moderate within-group variability, indicating that these differences are strongly linked to loan cycle participation rather than chance. These findings support Hypothesis 4, confirming a positive correlation between social capital and the number of loan cycles. The results emphasize the role of multiple loan cycles in strengthening social networks, relationships, and community cooperation. This aligns with (Hossain et al., 2010), who highlighted the importance of social capital in fostering trust and collaboration, and (Van Rooyen et al., 2012), who found that group lending enhances community responsibility in Sub-Saharan Africa. However, in the Somali Regional State, the study uniquely explores how microfinance interacts with traditional clan-based social structures, reinforcing pastoralist communities' resilience and adaptability.

Hypothesis-5 There is a significant positive association between the number of loan cycles and natural capital.

The one-way ANOVA results for natural capital reveal a statistically significant difference among groups with varying loan cycles ($F(2, 363) = 814.68$, $p < 0.001$), with low within-group variability, indicating that these differences are strongly linked to loan cycle participation rather than chance. These findings provide strong support for Hypothesis 5, confirming a positive

correlation between natural capital and the number of loan cycles. The results highlight the role of multiple loan cycles in improving access to and sustainability of natural resources, reinforcing their importance in environmental resilience. This aligns with (Brodziński et al., 2020), who found that microfinance promotes eco-friendly activities among European firms, and (Samer et al., 2015), who noted that while microfinance aids short-term resource management in Ethiopia, long-term sustainability remains a challenge. However, in the Somali Regional State, the study uniquely underscores climate risk mitigation, particularly drought resilience, emphasizing the vulnerability of pastoralist communities to environmental shocks.

Table 21 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Human capital.	Between Groups	63.075	2	31.537	763.221	.000
	Within Groups	15.000	363	.041		
	Total	78.074	365			
Financial Capital	Between Groups	134.174	2	67.087	901.323	.000
	Within Groups	27.019	363	.074		
	Total	161.193	365			
Physical Capital	Between Groups	53.375	2	26.687	980.103	.000
	Within Groups	9.884	363	.027		
	Total	63.259	365			
Social capital	Between Groups	103.387	2	51.693	876.844	.000
	Within Groups	21.400	363	.059		
	Total	124.787	365			
Natural Capital	Between Groups	29.932	2	14.966	814.681	.000
	Within Groups	6.668	363	.018		
	Total	36.601	365			

Conclusion

This research explored the link between microfinance initiatives and the sustainability of pastoralist livelihoods in the Somali Regional State, with the aim of establishing empirical facts on how to make microfinance schemes more effective. Using surveys, the research evaluated the effect of microfinance on various forms of capital, such as human, financial, physical, social, and natural capital, with positive results like higher savings, improved access to credit, enhanced education opportunities, and living conditions. The research highlighted the multifaceted uses of microloans, including income generation, asset purchase, education, and emergency needs. At the same time, it also identified outstanding challenges like the weight of over-indebtedness, high interest rates, and low levels of financial literacy, thus underlining the need for a comprehensive approach to overcome these barriers. ANOVA results confirmed the strong positive correlation of loan cycles with all livelihood assets, indicating the success of microfinance in strengthening economic stability and community resilience. Borrowers also employed mechanisms such as budgeting, communication with MFIs, and income diversification to resolve loan repayment challenges. These findings emphasize the necessity for personalized financial education, diversified financial services, and personalized interventions to achieve optimum microfinance effects.

Recommendations

As microfinance remains in the forefront of driving sustainable livelihoods, its effectiveness relies on good policies, institutional framework, and inclusive financial services. In this section, we offer recommendations to policymakers, microfinance institutions (MFIs), and suggestions for promoting financial inclusion.

1) Recommendations to Policymakers: Policymakers play a vital role in creating an enabling

environment for microfinance with good policies and regulations. Some of the key suggestions include constructing regulatory frameworks that establish well-defined policies on interest rates, loan tenors, and borrower protection to enhance responsible lending and institutional sustainability. Subsidy of financial products through grants and subsidies can lower MFIs' operational costs and make credit more available. Facilitating Shariah-compliant microfinance products like Murabaha and Ijarah can expand financial inclusion, particularly in culturally conservative societies like the Somali Regional State. Promoting private sector involvement by tax rebates and co-financing arrangements can leverage investment and broaden financial services, particularly in infrastructure and agriculture. Finally, improving data collection and research via rigorous monitoring and impact evaluations will enable the optimization of microfinance interventions to ensure they remain relevant to changing borrower demands.

2) Empowering Microfinance Institutions (MFIs): To improve efficiency, stability, and responsiveness, MFIs need to implement essential strategies. Enhanced efficiency of operations via digital channels and mobile banking can potentially streamline processes, save costs, and increase rural reach. Capacity building is also crucial, with staff training in financial management, customer care, and cultural sensitivity guaranteeing customized financial products—particularly for pastoralist communities. Diversification of services can be achieved through the extension of financial products, including savings accounts, insurance policies, and group loans, with drought insurance being key protection against climate shocks. Improving risk management using emergency funds, risk-sharing contracts, and guarantees of the government can enhance financial security during crises. Lastly, improving governance and accountability through transparent reporting, independent audits, and ethical lending practices will instill confidence and enhance long-term sustainability.

3) Providing Inclusive Financial Services: Financial inclusion is required for sustainable economic growth in an equitable manner, and for this, special strategies need to be developed for reaching marginalized populations. Economic inclusion can be promoted through specialized financial products such as youth entrepreneurship loans and women savings groups. Using technology through mobile banking and online platforms allows the crossing of geographical distances, making loans and saving facilities accessible to remote populations at convenience. Financial literacy can be promoted through the inclusion of education programs, which empower the borrowers to make intelligent financial decisions, improving loan handling and saving habits. The reduction of entry barriers achieved through simplification of application procedures and lowering of collateral requirements—as exemplified by group lending schemes—improves access, especially for the economically marginalized and women. Moreover, monitoring and evaluation systems that incorporate gender audits guarantee equitable representation and access, thereby improving the effectiveness of microfinance initiatives. The adoption of these suggested interventions will consolidate the microfinance sector and guarantee its ongoing contribution to pastoralist communities. Collaboration between governments, MFIs, private sector operators, and international organizations is paramount to financial inclusion, economic sustainability, and resilient development.

Recommendation for further studies: Further studies should focus on longitudinal impact assessments to ascertain the long-run effects of microfinance on the livelihood of the pastoralists. Comparative research on different communities and geographic areas may provide insights into variations in the outcomes of microfinance. Detailed qualitative analysis may offer more depth to participant experiences and social and economic dynamics. Further research into interest rate designs, non-financial services, and technology adoption is needed to enhance microfinance impact. Research on climate-resilient microfinance models and community

engagement initiatives can help design more sustainable and inclusive interventions for vulnerable groups.

Acknowledgements

This research was supported by the Research and Technology Transfer Directorate of Jigjiga University. We sincerely appreciate the insightful comments and constructive suggestions provided by the reviewers, which have significantly enhanced the quality of this work.

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