Journal of Poverty, Investment and Development
ISSN 2422-846X An International Peer-reviewed Journal
Vol.64, 2025

The Contribution of VSLAs and AMCOS to Income Poverty Reduction in Tanzania: A Case of Her Money, Her Life Project

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*The research is financed by **Bloomberg Philanthropies** – donor for Her Money, Her Life Project*

Abstract
This study examines the contributions of Village Savings and Loan Associations (VSLAs) and Agricultural Marketing Cooperative Societies (AMCOS) to income poverty reduction in rural Tanzania, with household income as a proxy for economic empowerment. Using cross-sectional data from 271 VSLA and AMCOS members across four districts, multiple linear regression was applied to analyze programmatic and socio-demographic factors influencing income. The findings indicates that, participation in VSLAs and AMCOS led to a significant increase in average monthly income that rose from TZS[1] 141,380 before participation to TZS 233,550 after participation, marking a 65% increase (p=0.001). The findings demonstrate a significant positive impact of AMCOS participation on income (B = 23,210.33, p = 0.000), highlighting their critical role in enhancing market access and collective bargaining power. Conversely, collective investment participation was negatively associated with income (B = -54,200.53, p = 0.039), pointing to inefficiencies such as mismanagement and inequitable benefit-sharing. VSLA participation showed a near-significant negative coefficient (B = -14,173.86, p = 0.083), indicating their primary focus on financial resilience rather than income growth. Socio-demographic factors, including age, gender, and education, were not significant predictors of income, emphasizing the influence of structural interventions over individual characteristics. To maximize poverty reduction, development partners should strengthen AMCOS governance, transparency, and member capacity through targeted training and coaching. VSLA promoters should link VSLAs to AMCOS and provide entrepreneurship and financial management capacity building to enhance income-generating potential. Policymakers should incentivize cooperative membership, improve rural infrastructure, and enforce regulations for collective investments. These measures can contribute to addressing structural barriers, improve financial outcomes, and foster sustainable poverty reduction in rural Tanzania.
Key Words: Household Income, Agricultural Marketing and Cooperative Society (AMCOS), Village Saving and Loan Association (VSLAs), Agri-fund, Collective Investment
DOI: 10.7176/JPID/64-06
Publication date: July 31st 2025

Introduction

Poverty reduction remains a critical global challenge, particularly in developing countries where financial exclusion and limited market access exacerbate socio-economic inequalities (Akahome & Ogodo, 2024). In response, innovative mechanisms such as Village Savings and Loan Associations (VSLAs) and Agricultural Marketing Cooperative Societies (AMCOS) have emerged as tools to enhance financial inclusion and income generation in rural communities. These interventions are especially significant in Tanzania, where agriculture is a cornerstone of livelihoods, employing over 67% of the population and contributing approximately 27% to the national GDP (USAID, 2024; AGRA, 2023). VSLAs empower communities by facilitating savings and providing small-scale credit, while AMCOS enhance farmers' collective bargaining power, thereby improving market access and pricing structures (Banerjee & Jackson, 2016; Ksoll et al., 2015; Wanyama et al., 2008).

Income is widely recognized as a key indicator of economic empowerment and poverty reduction. Guided by the Capability Approach (Sen, 1999), this study adopts household income as a proxy for expanded capabilities, emphasizing its significance in enabling valued life outcomes such as improved education, health, and housing.

[1] USD 1 = TZS 2,652.45 in November 2024

By examining the impact of participation in VSLAs and AMCOS on household income levels, the study seeks to demonstrate how these interventions foster financial independence and contribute to sustainable poverty alleviation.

Despite the growing prominence of VSLAs and AMCOS, their combined effects on income poverty reduction remain underexplored in Tanzania. While previous research has documented the role of VSLAs in fostering financial resilience (Ksoll et al., 2015) and AMCOS in improving market access (Banerjee & Jackson, 2016), limited empirical evidence addresses how these mechanisms interact to influence household income. Furthermore, the existing literature seldom incorporates the role of socio-demographic factors such as gender, household size, and education, which are critical to understanding the effectiveness of these interventions (Silisyene et al., 2021; Wanyama et al., 2008). Addressing these gaps is essential for informing policies and programs tailored to the unique challenges faced by rural communities.

This study aims to fill these gaps by analysing the contributions of VSLAs and AMCOS to income poverty reduction in rural Tanzania. Specifically, it investigates how participation in these initiatives, alongside socio-demographic and programmatic factors, influences household income as a measure of poverty alleviation. This research contributes to the growing body of literature on poverty reduction strategies by providing empirical evidence on the combined impacts of VSLAs and AMCOS. The findings offer insights into how resource-based interventions, in conjunction with socio-demographic contexts, shape income outcomes in rural Tanzania and beyond. The implications extend to policy and practice, particularly in designing inclusive financial and market interventions aimed at addressing income poverty.

2. General, Theoretical and Empirical Literature Review

2.1. Theoretical Literature Review

This study is grounded in the Capability Approach, developed by Sen (1999) and expanded by Nussbaum (2000), which emphasizes income as a critical resource for expanding capabilities and achieving valued life outcomes. The approach views income not as an end but as a means to access essential resources such as education, healthcare, and improved living standards, aligning with the study's focus on how participation in VSLAs and AMCOS contributes to income poverty reduction in Tanzania. Income, the primary metric of interest, serves as both an outcome and a driver of expanded capabilities. Higher income levels enable financial independence, resilience, and informed resource allocation, such as investments in education, healthcare, and housing. This reflects the Capability Approach's emphasis on agency, where individuals use increased resources to enhance their well-being and achieve meaningful life improvements (Nussbaum, 2000; Sen, 1999).

Additionally, income mediates socio-economic factors such as gender, education, and household size, influencing its conversion into capabilities. For instance, greater income enhances savings and expenditure patterns, leading to improved non-food essentials such as education and healthcare (Silisyene et al., 2021; Alkire & Foster, 2011). These interactions highlight the importance of addressing inequities in resource access, consistent with the Capability Approach's focus on diversity and context (Robeyns, 2005). This theoretical framing posits income's role as a proxy for capabilities, demonstrating how increased financial resources foster poverty reduction and sustainable well-being through VSLA and AMCOS participation.

2.2 Empirical Literature Review

Effect of VSLAs on Income and Financial Inclusion: VSLAs have been widely studied for their ability to promote savings and provide small-scale credit, thereby enhancing income and financial resilience among marginalized populations. Various studies shows that participation in VSLAs significantly improve household savings and reduced reliance on informal borrowing, fostering income and financial stability (Pienaah & Luginaah, 2024; Skoll et al.,2015). Similarly, a study by Nyamaka (2019) found that VSLAs enabled members to invest in income-generating activities, such as small businesses and agriculture, leading to increased household income. In Tanzania, VSLAs have played a critical role in empowering women by improving their access to financial resources, which translates into better decision-making at the household level (Kim et al., 2020; Nyamaka, 2019).

Influence of AMCOS on Market Access and Income: AMCOS, on the other hand, have been instrumental in enhancing farmers' collective bargaining power, thereby improving access to markets and ensuring better pricing for agricultural produce, thus contributing to improved farmers' income levels amongst other economic outcomes (Rwela, 2023; Zhang et al., 2019; Mojo et al., 2017; Verhofstadt & Maertens, 2014).

Likewise, Banerjee and Jackson (2016) highlighted that AMCOS reduce transaction costs and strengthen farmers' negotiating capacity, resulting in higher returns for smallholders. In Kenya, Wanyama et al. (2008) found that AMCOS facilitated access to improved inputs and technology, further boosting agricultural productivity and household incomes. In Tanzania, AMCOS have shown potential to improve market efficiency for crops such as coffee and cashew nuts, though their impact on smaller-scale farming communities has received less empirical attention (Rwela, 2023; Hussein, 2023; AGRA, 2023; Verhofstadt & Maertens, 2014).

Effect of Agri-fund and Collective Investment on Income: These variables are somewhat linked to VSLA and AMCOS participation but their influence on farmers income levels may be viewed in isolation. Various studies for instance those conducted by Assa et al. (2020) and Chen et al. (2020) found that collective investment and agri-funds have significant effects on income and investment in the agricultural sector. This implies that, these financial instruments are likely to cintribute in improved risk management, increase investment rates, thus potentially enhance farmers' income and overall welbeing.

Role of Socio-Demographic Factors: Socio-demographic factors such as gender, household size, and education level play a pivotal role in determining the effectiveness of VSLAs and AMCOS, as such influencing overall economic outcomes, including income levels. Gender, for example, influences resource allocation and decision-making within households, with women often benefiting more from VSLAs due to their increased control over financial resources (Wanyama et al., 2008; Kim et al., 2020). A study by Dogeje et al. (2024a) revealed that age significantly influences higher income levels, implying that older individuals, due to their greater experience, are more likely to seize various opportunities and overcome challenges in economic activities, thereby contributing to their overall higher income levels.

Similarly, research conducted in Bangladesh (Anik & Rahman, 2020), Sri Lanka (Rathnachandra & Malkanthi, 2022), Thailand (Nath & Athinuwat, 2020), Indonesia (Gigih et al., 2023), and Tanzania (Dogeje et al., 2024b) suggests that education is positively correlated with income levels. These results emphasize on the significance of financial literacy and education are likely to contribute to higher income levels because the same often enhance the ability to leverage financial and market-based interventions effectively. In the same vein, research conducted by Gigih et al. (2023) and McKinnish (2020) has demonstrated that women's income is adversely affected by their marriage status. This indicates that marriage can restrict the economic activities and earnings for women.

Additionally, studies by Kim et al. (2024) and Alkire and Foster (2011) suggest that larger household sizes can dilute the benefits of increased income, as additional household members may increase consumption demands, leaving fewer resources available for savings, investments, or other poverty-reducing activities. Relatedly, various studies indicates that person's disability status significantly impacts income levels, with disabled individuals generally earning less and receiving more benefits compared to those without disabilities (Abellán et al., 2015; Kavaliunas et al., 2015).

Despite socio-economic variables' varying effects on income levels, empirical studies frequently treat them as secondary variables when examing the influnce of VSLA and AMCOS with income levels, leaving gaps in our understanding of how they interact with programmatic interventions like collective investments and agri-fund access to influence income outcomes. Likewise, although VSLAs and AMCOS have been individually studied, their combined contribution on income poverty reduction in Tanzania remains underexplored. Moreover, there is limited empirical evidence addressing the role of socio-demographic factors in shaping the outcomes of these interventions. This gap stresses the need for comprehensive analyses that integrate financial and market-based mechanisms with socio-demographic dynamics to provide a nuanced understanding of poverty reduction strategies in rural contexts.

2.3 Conceptual Framework

Figure 1 illustrates the hypothesized relationships between participation in VSLAs, AMCOS, and income poverty reduction in Tanzania, mediated by socio-demographic and programmatic factors. This framework serves as the foundation for empirical analysis, capturing the direct and indirect effects of these interventions on household income, a proxy for economic empowerment.

The conceptual model posits that participation in VSLAs and AMCOS directly influences household income by enhancing access to financial services, market opportunities, and collective bargaining power. However, the effectiveness of these interventions may be mediated by socio-demographic factors such as age, gender, education level, marital status, and household size, which shape participants' ability to leverage programmatic benefits. Programmatic factors, including access to Agri-funds and collective investments, are also expected to influence income. While these resources aim to increase productivity and financial security, their effectiveness may be constrained by barriers such as inequitable benefit-sharing and management inefficiencies. By integrating these variables, the framework highlights the interplay between socio-demographic contexts and structural interventions in determining income outcomes. Understanding these dynamics provides actionable insights for policymakers, practitioners, and development partners to design inclusive financial and market-based strategies that address rural poverty.

3. Materials and Methods

3.1 Research Design

The study adopted a cross-sectional descriptive research design with a quantitative approach. Multiple linear regression analysis was employed to estimate the contribution of VSLAs and AMCOS to income poverty reduction in Tanzania. The analysis incorporated key socio-economic variables, including age, gender, marital status, education level, household size, and disability status. Income poverty reduction was measured by examining changes in income levels, where higher income levels were considered indicative of a greater likelihood of VSLAs and AMCOS contributing to poverty reduction. This approach was designed to explore the relationship between participation in VSLAs and AMCOS and socio-economic factors, serving as a foundation for testing the hypothesis that null hypothesis, which states that participation in VSLAs and AMCOS and socio-economic variables do not significantly influence income levels as a measure to poverty reduction.

3.1.1 Data Collection and Processing

This study utilized primary quantitative data collected through a cross-sectional survey involving 271 VSLA and AMCOS members residing in four districts across Tanzania's Northern and Southern Highlands tea-growing regions. These districts included Korogwe and Bumbuli in Tanga region, Mufindi in Iringa region, and Busokelo in Mbeya region.

A structured, close-ended questionnaire was administered to randomly sampled respondents from these districts, focusing on their participation in VSLAs and AMCOS activities during the HMHL project period (2021-2024). Data were captured using tablets equipped with KoBoToolBox to ensure accuracy and efficiency in the collection process. Sampling for the quantitative component of the study targeted 12,811 VSLA and AMCOS members across four purposively selected districts: Korogwe and Bumbuli in Tanga Region, Mufindi in Iringa Region, and Busokelo in Mbeya Region. These districts were carefully chosen to represent the project's operational areas within tea-growing regions. See **Figure 2** for a map of the visited areas.

The sample size was determined using Cochran's formula, incorporating adjustments for a finite population and a 6% margin of error, resulting in a target of 265 respondents. To ensure proportional representation across the districts, the sample was distributed as follows: Bumbuli (20%), Korogwe (9%), Mufindi (11%), and Busokelo (61%). Notably, the study achieved a 102% response rate, with 271 respondents completing the survey. To select respondents, lists of VSLA and AMCOS members from each district were used as sampling frames. Unique identification numbers were assigned to each member on these lists, after which a random number generator was employed to select participants. This random selection method ensured an unbiased and representative sample, thereby enabling comprehensive and reliable statistical analysis of the quantitative data.

3.1.2 Variables Measurement

Dependent variable measurement: In this study, income serves as a proxy for expanded capabilities, reflecting participants' ability to enhance their well-being and achieve valued life outcomes. By linking income improvements to the Capability Approach, the study highlights how participation in VSLAs and AMCOS foster financial independence, reduces poverty, and enables individuals to convert resources into meaningful achievements such as better education, health, and housing. Income is measured by household income levels, assessed as a continuous variable in Tanzanian Shilling (TZS) monthly after participation in VSLAs and AMCOS. This measurement approach necessitated the use of multiple linear regression analysis to estimate the influence of VSLAs and AMCOS, alongside selected socio-economic variables, on farmers' income levels as an indicator of poverty reduction. The underlying assumption is that higher income levels indicate a greater likelihood of poverty reduction.

Independent variables measurement: This study employs predictor variables that align with the Capability Approach, emphasizing the role of resources, agency, and socio-economic factors in expanding capabilities and achieving valued life outcomes. These variables were selected to capture a range of individual, household, and program-related factors that influence income levels. Participation in VSLAs, AMCOS, programatic interventions, specifically access to Agri-funds, and collective investments reflect resource-based interventions aimed at poverty reduction. Socio-demographic variables such as age, gender, marital status, education level, household size, and disability status provide insight into individual and contextual factors shaping the conversion of resources into capabilities (see the details in Table 1). This measurement framework ensures a comprehensive analysis of how these predictor variables interact to influence income as a proxy for expanded capabilities, enabling a deeper understanding of the pathways through which poverty reduction is achieved.

Income Estimation Model: Using the dependent and independent variables described earlier, we applied a Multiple Linear Regression model to estimate the influence of VSLAs and AMCOS participation alongside other socio-economic factors on household income. This estimation explores how these variables contribute to income as a proxy for expanded capabilities, reflecting poverty reduction and improved well-being. The model specification is presented below in equation (i):

$$Income\,j\ -\beta_0+\beta_1 X_{ij}+\varepsilon \text{……..……..……..…….....(i)}$$

Whereby:

- $Income_j$: Represents the household income for the j-th individual, measured as a continuous variable in (TZS) on a monthly basis.
- β_0 (Intercept): The intercept, signifying the value of household income if all explanatory variables are assumed to be zero.
- β_i: Coefficients representing the expected change in household income resulting from a one-unit change in the corresponding predictor variable, holding all other variables constant.
- X_{ij}: The *i*-th predictor variable for the *j*-th respondent.
- ε (Error term): The error term, accounting for unobserved factors influencing household income.
- j=Farmer identity where j=1-n (each value of "j" corresponds to a specific farmer within the range of 1 to "n", which entails from the 1st to the last farmer, included in the estimation model).

By including specific predictor variables, the model in equation (i) may be re-written in lengthy in equation (ii)

$$Income_j=\beta_o+\beta_1(VSLA\ Participation)+\beta_2(AMCOS\ Participation)_j+\beta_3(Access\ to\ Agri-fund)_j+\beta_4(Collective\ Investiment\ Participation)_j\ |\ \beta_5(Age)_j\ |\ \beta_6(Gender)_j\ |\ \beta_7(Marital\ Status)_j\ |\ \beta_8(Education\ Level)_j+\beta_9(Household\ Size)_j+\beta_{10}(Disability\ Status)_j+\varepsilon_j$$

…….…… (ii)

Where:

- VSLA Participation: Participation in Village Savings and Loan Associations (1=Participated; 0=Not Participated).
- AMCOS Participation: Participation in Agricultural Marketing Cooperative Societies (1=Participated; 0=Not Participated).
- Access to Agri-fund: Whether the respondent had access to agricultural financing (1=Accessed; 0=Not Accessed).

- Collective Investment Participation: Engagement in collective investment activities (1=Participated; 0=Not Participated).
- Age: Respondent's age, measured in years.
- Gender: Respondent's gender (1=Male; 0=Female).
- Marital Status: Whether the respondent is married (1=Married; 0=Otherwise).
- Education Level: Whether the respondent has formal education (1=Educated; 0=Not Educated).
- Household Size: The number of members in the respondent's household.
- Disability Status: Whether the respondent has a disability (1=Disabled; 0=Otherwise).

3.1.3 Data Analysis

The collected data underwent a thorough cleaning process using Microsoft Excel before being imported into SPSS IBM Statistics Version 26 for analysis. Descriptive statistics, including frequency and proportions, were utilized to summarize the dependent and independent variables. To test the study hypotheses and understand the influence of participation in VSLAs and AMCOS, as well as other socio-economic variables on household income, a Multiple Linear Regression model was employed. The analysis focused on the null hypothesis that variables such as VSLA and AMCOS participation, access to Agri-fund, and collective investments do not significantly influence income as a proxy for poverty reduction. Statistical significance was determined at a 5% level of precision (95% confidence level). Model assumptions were carefully checked and met before conducting the regression analysis. These included ensuring linearity, homoscedasticity, and absence of multicollinearity among the predictors.

4. Results and Discussion

4.1 Descriptive Results

The analysis examines the socio-economic and programmatic characteristics of the study population, focusing on changes in household income following participation in VSLAs and AMCOS.

4.1.1 Dependent Variable

The findings indicates that, participation in VSLAs and AMCOS led to a significant increase in average monthly income that rose from TZS 141,380 before participation to TZS 233,550 after participation, marking a 65% increase (p=0.001). For female respondents, income increased from TZS 139,225 to TZS 227,172 (63% rise), while male respondents saw an increase from TZS 144,951 to TZS 244,118 (69% rise) (p=0.001 (see the details in **Table 2**). The annualized current income of TZS 2,802,600 (USD 1,062) is 9% lower than Tanzania's national per capita income of USD 1,163. However, it marks a significant improvement from the pre-intervention income of TZS 1,696,560 (USD 643), which was 45% below the national average (Statista, 2024).

4.1.2 Independent Variables

These variables, visualized in **Figure 3**, provide insights into factors influencing household income through participation in VSLAs and AMCOS.

Participation in VSLAs was reported by 54% of respondents, demonstrating the program's success in promoting financial inclusion and savings mobilization. Connectedly, membership in AMCOS was noted among 46% of respondents, emphasizing its role in improving market access and collective bargaining power. Access to agricultural financing through Agri-funds remained limited, with only 29% of respondents reporting access, reflecting persistent financial barriers faced by smallholder farmers. On the other hand, participation in collective investment activities was observed among 38% of respondents, highlighting its potential to optimize resource utilization. However, challenges in benefit sharing were noted, underscoring areas for improvement.

Demographically, 62% of respondents were female, while male respondents constituted 38%. Education levels revealed that 72% of respondents had completed primary education, with 22% having no formal education. Likewise, married respondents comprised 68% of the population, illustrating the role of household structures in resource sharing and financial decision-making. Additionally, the age distribution of respondents reveals that young adult (18–35 years) constitute 30% of the sample, middle-aged adults (36–54 years) 46%, and older adults (55+ years) 25%. The average respondent age was 45 years, below the African agricultural average of 60 years (FAO, 2014; Dogeje et al., 2024a; Dogeje et al., 2024b).

On the other hand, household size averaged 4.7 members, close to the national rural average of 4.6 (URT, 2019), with male respondents having slightly larger households (4.9) compared to females (4.6). Furthermore, disability was rare, with only 1% of respondents reporting disabilities, evenly distributed across genders. Disabilities included deafness, intellectual impairments, physical disabilities, and vision impairments. Most cases were reported in Tanga (75%) and Mbeya (25%), with none in Iringa. This might imply limited inclusion of persons with disability in project interventions.

4.2 Inferential Results

Model assumptions: The multiple regression analysis shows that the model is statistically significant, as indicated by the Analysis of Variance (ANOVA) results ($F = 2.528$, $p = 0.006$). This suggests that the predictors collectively explain a significant portion of the variance in income among respondents. However, the strength of individual predictors varies with some of them showing statistically significant contributions and others not. The multiple regression results details are provided in Table 3 appended to this report.

From Table 3, AMCOS participation has a positive and significant effect on income ($B = 23{,}210.33$, $p = 0.000$), indicating an association with higher income levels. Besides, collective investment participation shows a negative and statistically significant effect on income ($B = -54{,}200.53$, $p = 0.039$), suggesting that participation in collective investments is associated with reduced income levels. On the other hand, VSLA participation has a negative coefficient ($B = -14{,}173.86$, Beta = -0.138) and approaches significance ($p = 0.083$), indicating a possible but inconclusive association with reduced income levels.

Other variables, such as access to Agri-funds ($B = -20{,}000.50$, $p = 0.103$), age ($B = 227.25$, $p = 0.617$), gender ($B = -13{,}462.15$, $p = 0.250$), marital status ($B = -3{,}003.31$, $p = 0.602$), education level ($B = -7{,}971.63$, $p = 0.306$), and household size ($B = 3{,}365.11$, $p = 0.251$), do not exhibit significant relationships with income. Connectedly, being a person with disability has a positive coefficient ($B = 43{,}542.24$, $p = 0.328$), but the effect is not statistically significant.

4.2.1 Discussion

The study findings provide nuanced insights into the differential contributions of VSLAs, AMCOS, and collective investments on income poverty reduction in Tanzania. These results align with the Capability Approach (Sen, 1999), emphasizing income to expand capabilities and achieve valued life outcomes. Additionally, they build on existing empirical literature, offering a deeper understanding of the mechanisms through which these interventions influence household income.

AMCOS Participation: The significant positive association between AMCOS participation and income ($B = 23{,}210.33$, $p = 0.000$) demonstrates the role of these cooperatives in addressing structural challenges in agricultural communities. By improving market access, enabling collective bargaining, and reducing transaction costs, AMCOS enhance farmers' financial outcomes. These findings are consistent with studies by Banerjee and Jackson (2016) and Wanyama et al. (2008), which highlight the transformative potential of cooperatives in enhancing income and market efficiency. Furthermore, AMCOS participation aligns with the Capability Approach by providing farmers with financial resources necessary for achieving improved education, health, and housing. Thes findings suggest that AMCOS can serve as a sustainable poverty reduction strategy when supported by interventions aimed at strengthening governance, enhancing transparency in benefit-sharing, and improving access to agricultural inputs and technologies.

VSLA Participation: VSLA participation, while approaching significance with a negative coefficient ($B = -14{,}173.86$, $p = 0.083$), suggests a limited direct impact on income. These findings align with empirical studies (Ksoll et al., 2015; Kim et al., 2020) that identify VSLAs as mechanisms for enhancing financial resilience rather than significant income drivers. This result reinforces the Capability Approach's perspective that VSLAs primarily provide short-term financial security, enabling members to manage risks and meet immediate needs.

Collective Investments: The negative and significant association between collective investment participation and income ($B = -54{,}200.53$, $p = 0.039$) raises concerns about inefficiencies such as mismanagement, inequitable benefit-sharing, and high-risk ventures. This finding aligns with concerns noted in studies by Assa et al. (2020) and Chen et al. (2020), emphasizing the need for governance reforms and capacity-building initiatives to

optimize the effectiveness of collective investments. Improving risk management strategies, ensuring transparent decision-making processes, and fostering inclusive benefit-sharing mechanisms are critical to addressing the challenges observed in collective investments. Without such measures, these initiatives may continue to hinder rather than support income growth. To maximize the potential of VSLAs, complementary interventions such as training on entrepreneurship or linking VSLAs to income-generating initiatives like AMCOS could transform these groups into stronger contributors to household income growth.

Agri-Fund Access: The analysis indicates a non-significant relationship between Agri-fund access and income (B = -20,000.50, p = 0.103). This finding diverges from existing literature, which emphasizes the role of agricultural financing in boosting income and productivity through investments in improved inputs, technology, and risk mitigation (Assa et al., 2020; Chen et al., 2020). Although not statistically significant, the negative coefficient suggests inefficiencies or constraints in utilizing Agri-fund resources effectively. These results may point to structural challenges such as limited accessibility, insufficient loan amounts, or burdensome repayment conditions, which can limit the practical benefits of such financing. Additionally, gaps in financial literacy or capacity among farmers may further hinder the optimal use of Agri-fund resources. Mojo et al. (2017) and Zhang et al. (2019) have similarly observed that the effectiveness of agricultural financing relies heavily on its alignment with the specific needs and contexts of farmers. These findings underline the importance of addressing systemic barriers to ensure Agri-fund mechanisms achieve their intended impact on farmer income and productivity.

Role of Socio-Demographic Variables: The non-significance of socio-demographic variables, including age, gender, marital status, education level, and household size, indicates that individual characteristics do not independently determine income levels in the presence of structural interventions like AMCOS. This finding aligns with the Capability Approach, emphasizing the critical role of programmatic factors in expanding capabilities. However, it contrasts with other studies (Anik & Rahman, 2020; Rathnachandra & Malkanthi, 2022) that highlight the role of socio-demographic factors in influencing income.

Theoretical and Practical Implications: Theoretically, the findings reinforce the Capability Approach (Sen, 1999; Nussbaum, 2000), which reinforces the importance of structural interventions in expanding individual capabilities and enabling meaningful life outcomes. The significant role of AMCOS in improving income highlights how resource-based interventions can reduce poverty by addressing systemic barriers like limited market access and collective bargaining inefficiencies (Banerjee & Jackson, 2016; Wanyama et al., 2008). However, the limited effectiveness of collective investments aligns with studies by Assa et al. (2020) and Chen et al. (2020), suggesting a need for integrating governance reforms and risk mitigation to enhance their potential.

From a practical standpoint, the results highlight the importance of tailoring poverty reduction strategies to the unique strengths and challenges of different interventions. Strengthening AMCOS through capacity-building initiatives and improved governance structures is critical, as supported by empirical evidence on the role of cooperatives in reducing transaction costs and enhancing market access (Rwela, 2023; Zhang et al., 2019). Addressing inefficiencies in collective investments through transparent decision-making and equitable benefit-sharing mechanisms is equally essential, aligning with the insights of Assa et al. (2020) on the pitfalls of poorly managed initiatives.

Additionally, linking VSLAs to complementary programs like AMCOS or income-generating training can transform their financial resilience role into significant drivers of household income growth (Ksoll et al., 2015; Kim et al., 2020). These tailored interventions align with the Capability Approach's emphasis on contextual diversity (Robeyns, 2005), ensuring that programs effectively address the unique needs of rural communities.

5. Conclusion and Recommendations

This study aimed to examine the contribution of VSLAs and AMCOS to income poverty reduction in Tanzania, using household income as a proxy for economic empowerment. The findings reveal a significant positive impact of AMCOS participation on income, highlighting their role in improving market access, collective bargaining, and financial outcomes for smallholder farmers. Conversely, collective investment participation was

negatively associated with income, pointing to challenges such as mismanagement and inequitable benefit-sharing. The near significance of VSLAs with a negative coefficient suggests their primary role in fostering financial resilience rather than substantial income growth. Socio-demographic factors, including age, gender, marital status, education level, and household size, were not significant predictors of income, emphasizing the importance of programmatic over individual characteristics. These findings align with the Capability Approach by demonstrating how structural interventions like AMCOS can enhance capabilities and reduce poverty. However, the limited effectiveness of collective investments underscores the need for better governance and risk management. This study provides valuable insights for designing inclusive financial and market interventions, suggesting that enhancing cooperative governance and linking VSLAs with market-based initiatives can strengthen their impact on income poverty reduction

To enhance the impact of VSLAs and/or AMCOS on income poverty reduction, development partners and AMCOS leaders should prioritize capacity-building initiatives focused on governance, transparency, and equitable benefit-sharing, alongside regular training for cooperative leaders and members on effective management practices. VSLA promoters, in collaboration with AMCOS, should link VSLAs to market-driven opportunities and provide entrepreneurship and financial management training to boost income-generating potential. Morover, the concentration of entrepreneurship and enterprise development components should focus towards individual members from VSLAs. Financial institutions should develop Agri-fund products tailored to smallholder farmers, ensuring affordable interest rates, flexible repayment terms, and complementary financial literacy programs. Policymakers should support the establishment and operational sustainability of AMCOS through incentives for cooperative membership, subsidies for agricultural inputs, and investment in rural infrastructure like storage facilities and transportation networks. Government agencies must implement regulatory frameworks to enhance transparency and accountability in collective investments, addressing inefficiencies and inequities in benefit-sharing. Researchers should conduct longitudinal studies to explore the interplay of socio-demographic and programmatic factors on income, providing evidence for more tailored interventions. These targeted actions by specific actors will strengthen the effectiveness of AMCOS, improve the resilience of VSLAs, and address challenges in collective investments, thereby fostering sustainable poverty reduction in rural Tanzania.

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Notes

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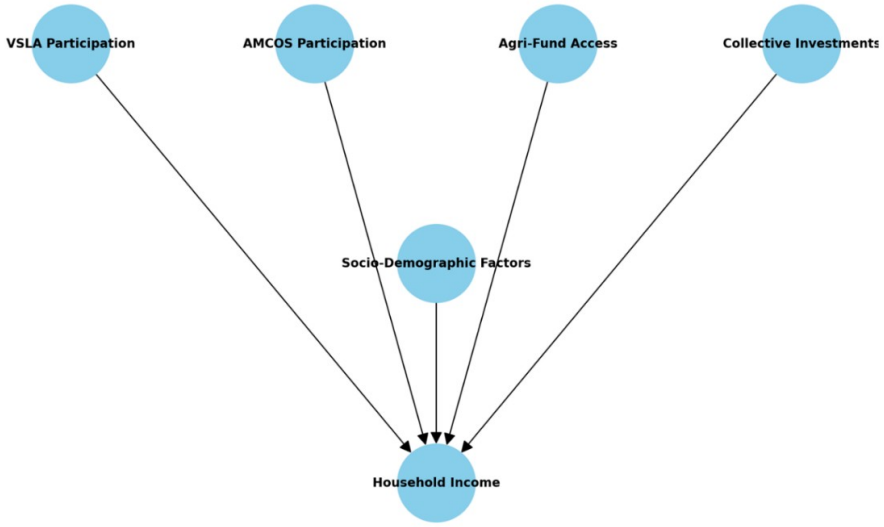

Figure 1: Conceptual Framework of VSLAs, AMCOS, and Income Poverty Reduction

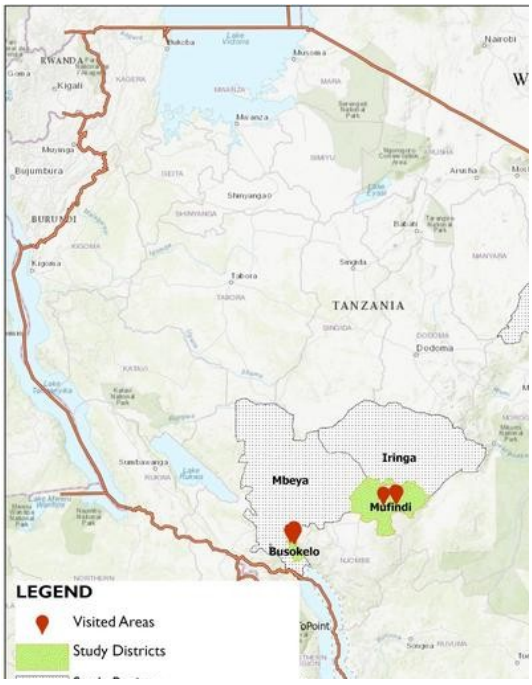

Figure 2: Map of Visited Study Districts

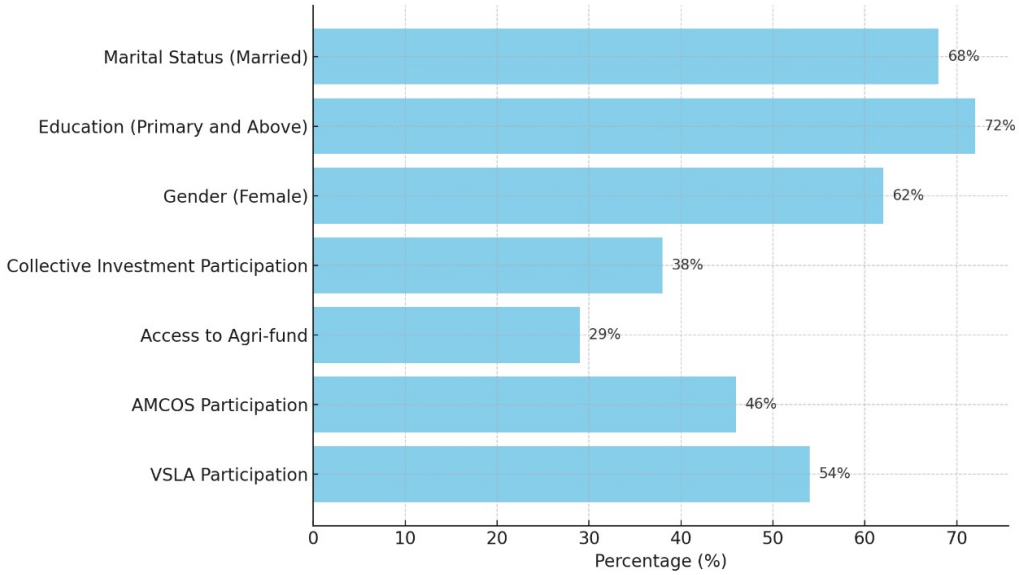

Figure 3: Descriptive Statistics of Independent Variables

Table 1: Independent Variables Measurement

N	Abbreviation	Variable Description	Type of Variable	Variable Measurement	Expected Sign
i.	VSLA	Participation in VSLA	Nominal	1=Participated; 0=Not Participated	+ve
ii.	AMCOS	Participation in AMCOS	Nominal	1=Participated; 0=Not Participated	+ve
iii.	AGRI	Access to Agri-fund	Nominal	1=Accessed; 0=Not Accessed	+ve
iv.	CI	Collective Investment Participation	Nominal	1=Participated; 0=Not Participated	+ve
v.	AGE	Respondent's age	Continuous	Years	+/-
vi.	GEN	Respondent's gender	Nominal	1=Male; 0=Female	+/-
vii.	MAR	Marital status	Nominal	1=Married; 0=Otherwise	+ve
viii.	EDUL	Education level	Nominal	1=Educated; 0=Not Educated	+ve
ix.	HHS	Household size	Continuous	Number of household members	+/-
x.	DIS	Disability status	Nominal	1=Disabled; 0=Otherwise	+/-

Table 2: Respondents Average Monthly Income (TZS) (n=271)

Gender	Mean	SD	% Change	N
Before joining the VSLA/AMCOS				
Female	139,225	59,395	-	169
Male	144,951	62,867	-	102
Total	**141,380**	**60,673**	-	**271**
Annualised income	**1,696,560**			
After joining the VSLA/AMCOS				
Female	227,172	87,682	63%	169
Male	244,118	90,276	68%	102
Total	**233,550**	**88,882**	65%	**271**
Annualised income	**2,802,600**		65%	

Table 3: Results for Parameter Estimates of Multiple Linear Regression Analyis (n= 271)

Coefficients[a]							
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95.0% Confidence Interval for B**	
	B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**
(Constant)	219575.821	103011.694		2.132	0.034*	16732.404	422419.239
VSLA Participation	-14173.862	8158.031	-0.138	-1.737	0.083**	-30238.086	1890.362
AMCOS Participations	23210.329	6544.735	0.258	3.546	0.000*	10322.894	36097.763
Access to fund through Agri-fund	-20000.5	12240.897	-0.111	-1.634	0.103**	-44104.417	4103.416
Collective Investment Participation	-54200.533	26130.651	-0.126	-2.074	0.039*	-105655.182	-2745.884
Age	227.252	454.406	0.035	0.5	0.617	-667.532	1122.036
Gender	-13462.146	11685.482	-0.074	-1.152	0.25	-36472.38	9548.087
Marital Status	-3003.305	5744.34	-0.036	-0.523	0.602	-14314.657	8308.046
Education Level	-7971.634	7770.917	-0.064	-1.026	0.306	-23273.581	7330.312
Household size	3365.111	2923.14	0.074	1.151	0.251	-2390.932	9121.154
Person with disability	43542.236	44473.585	0.059	0.979	0.328	-44032.033	131116.506

a. Dependent Variable: Income

** Statistically significant at p=0.05; ** Statistically significant at p=0.01.*