

Microfinance services, financial literacy, and socio-economic wellbeing of smallholder farmers in southwestern Uganda: A mediation analysis

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ABSTRACT

This study examined the role of financial literacy in mediating the relationship between microfinance services and the socio-economic wellbeing of smallholder farmers in Southwestern Uganda. Specifically, it sought to determine the direct and indirect effects of microfinance services and non-financial interventions on household wellbeing, and to assess whether financial literacy serves as a critical pathway through which these effects are realized. Financial Capability Theory anchored this study. The study adopted a cross-sectional research design using a quantitative approach. Data were collected from a sample of 384 smallholder farmers using structured questionnaires. Descriptive statistics, correlation analysis, and regression techniques were employed, while Structural Equation Modeling (SEM) was used to test the hypothesized relationships and mediation effects. The SEM model demonstrated good fit indices (CMIN/DF = 2.753, GFI = 0.930, AGFI = 0.904, NFI = 0.938, TLI = 0.952, CFI = 0.960, RMSEA = 0.068), confirming the validity of the model. The findings revealed that microfinance services have a negative direct effect on socio-economic wellbeing ($\beta = -0.22$) but a positive effect on financial literacy ($\beta = 0.25$). Financial literacy, in turn, has a strong positive effect on socio-economic wellbeing ($\beta = 1.26$). The indirect effect of microfinance services on wellbeing through financial literacy ($\beta \approx 0.32$) outweighs the negative direct effect, resulting in a small positive total effect ($\beta \approx 0.10$). These results indicate that financial literacy fully mediates the relationship between microfinance services and socio-economic well-being. The study concludes that microfinance services alone are insufficient to improve household well being unless complemented by financial literacy. It recommends that policymakers, microfinance institutions, and development partners integrate structured financial education into microfinance programs, strengthen client protection mechanisms, and promote holistic interventions combining financial and non-financial services to achieve sustainable socio-economic development.

Keywords: Financial Literacy; Financial Inclusion; Microfinance Services; Rural Development, Socio-Economic Wellbeing; Smallholder Farmers; Structural Equation Modeling (SEM);

I. INTRODUCTION

Financial literacy has increasingly been recognized as a critical intermediary in the pathway from financial access to improved socio-economic outcomes, particularly among smallholder farmers in developing contexts like South-Western Uganda (Namawejje, & Yawe, 2024). While microfinance services offer access to savings, credit, and other financial tools, their potential to enhance household wellbeing is often contingent on clients' ability to use these resources effectively (Nakabugo et al., 2022). Without adequate financial knowledge, skills, and positive attitudes toward money management, smallholder farmers may struggle to translate access to loans or savings schemes into meaningful improvements in income, health, education, and overall quality of life (Abolade et al., 2025). This highlights the necessity of examining financial literacy not just as an outcome but as a mediating factor that can amplify the benefits of microfinance participation.

Empirical studies from Uganda and other sub-Saharan contexts suggest that financial inclusion and literacy are complementary drivers of household resilience and poverty reduction (Yiga, 2018). Evidence indicates that farmers who engage with microfinance programs develop greater financial knowledge and skills, which in turn influence their economic decisions and social wellbeing. For instance, research by Namawejje and Yawe (2024) and Nakabugo et al. (2022) underscores that access to microfinance services alone is insufficient; effective utilization depends on a foundational understanding of financial principles and practices. Consequently, assessing the mediating role of financial literacy provides critical insights into how financial services can be designed to achieve sustainable development outcomes.

Theoretically, this framework draws on three key perspectives. Capital Formation Theory emphasizes that knowledge and skills enhance the productive use of financial and human capital. Financial Liberalization Theory highlights that informed participation in liberalized financial markets strengthens economic opportunities. Behavioral Economic Theory further suggests that financial knowledge and attitudes directly shape decision-making and long-term welfare (Visconti, 2016). By situating financial literacy at the center of the microfinance-wellbeing relationship, this study addresses a notable gap in both theory and practice, providing evidence-based guidance for policymakers, microfinance institutions, and development practitioners aiming to foster inclusive and sustainable socio-economic development in rural Uganda.

1.1 Statement of the Problem

Despite significant growth in Uganda's microfinance sector, evidence suggests that the expected improvements in the socio-economic wellbeing of smallholder farmers remain limited and uneven (Zabali, 2018). While microfinance programs have expanded access to credit, savings, and non-financial services, these interventions often fail to translate directly into improved household income, education, health, and overall quality of life. Rural farmers frequently lack the financial knowledge and skills necessary to make informed decisions regarding borrowing, savings, and investment. Consequently, financial resources may be underutilized or mismanaged, sometimes exacerbating financial stress rather than alleviating poverty (Okoroji et al., 2022).

Financial literacy has emerged as a potential solution to this challenge, serving as an intermediary that enables farmers to convert financial access into tangible socio-economic gains. Scholars such as Sulhan et al., (2025) and Offiong et al. (2024) emphasize that financial knowledge, skills, and attitudes are critical determinants of effective resource utilization and sustainable livelihoods. In Uganda, where smallholder farmers constitute the majority of the rural population, limited literacy constrains the impact of microfinance programs (Nakabugo et al., 2022). Therefore, this study investigates how financial literacy mediates the relationship between microfinance services and socio-economic wellbeing, aiming to provide evidence for more effective policy design and program implementation.

1.2 Research Objective

To examine the financial literacy mediates the relationship between microfinance services and the social economic wellbeing of smallholder farmers in Southwestern Uganda.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Financial Capability Theory

Financial Capability Theory, associated with Amartya Sen's Capability Approach and subsequently developed in the financial capability literature by scholars such as Sherraden (2013), provides a suitable theoretical foundation for examining the relationship between financial literacy, microfinance services, and the socio-economic wellbeing of smallholder farmers. The theory argues that people's wellbeing depends not merely on the resources or financial products available to them, but also on their ability to understand, access, manage, and convert those resources into outcomes that improve their lives. Its key assumptions are that individuals require both access to financial resources and the knowledge and skills to use them effectively; that financial behaviour is influenced by available opportunities and institutional conditions; and that improved financial capability can enhance individuals' ability to make informed financial decisions, manage risks, save, invest, and improve their livelihoods. Thus, financial literacy represents an important component of capability, while access to microfinance services provides the financial opportunities through which that capability can be exercised.

The theory is particularly relevant to the present study because smallholder farmers may have access to credit, savings facilities, loans, and other microfinance services without necessarily achieving improved socio-economic wellbeing. Financial literacy can determine whether farmers are able to effectively utilize these services for productive agricultural investments, household financial management, savings, and risk management. In the context of South-Western Uganda, the theory therefore provides a basis for examining how financial knowledge and skills interact with access to microfinance services to influence outcomes such as household income, agricultural productivity, asset ownership, consumption, and general living standards. The theory is applicable because it recognizes that access to financial services alone may not produce desirable welfare outcomes; rather, farmers need the knowledge, skills, and capacity to make effective use of those services. It consequently supports the argument that financial literacy may strengthen the contribution of microfinance services to the socio-economic wellbeing of smallholder farmers.

2.2 Empirical Review

2.2.1 Financial Literacy, Microfinance Services, and Socio-Economic Wellbeing of Smallholder Farmers

The relationship between microfinance services and the socio-economic wellbeing of smallholder farmers has received increasing scholarly attention. Nakabugo et al. (2022) highlight that access to microfinance services, including credit, savings, and loans, directly influences agricultural productivity and household income. Similarly, Okorogi et al. (2022) note that smallholder farmers who engage with microfinance institutions are better positioned to adopt improved farming techniques, purchase inputs, and manage financial risks, which collectively enhance their overall wellbeing. Despite these benefits, some studies (Yiga, 2018; Zabali, 2018) indicate that microfinance alone may not sufficiently improve welfare outcomes unless accompanied by complementary support such as training and advisory services.

Financial literacy emerges as a critical factor mediating the effectiveness of financial services. Namaweje and Yawe (2024) and Mangudhla et al. (2025) underscore that farmers' knowledge of financial concepts, savings management, and investment options directly shapes their capacity to utilize credit, savings schemes, and mobile money effectively. Empirical evidence suggests that even when microfinance services are accessible, households lacking adequate financial literacy may mismanage resources or fail to maximize the benefits of available financial tools. Therefore, integrating literacy initiatives within microfinance programs is essential for sustainable socio-economic improvements.

Non-financial services, including training, advisory support, and capacity-building interventions, also play a significant role in enhancing wellbeing. Jindo et al. (2023) and Siankwilimba et al. (2025) note that these services empower farmers with skills to optimize production, improve marketing strategies, and manage household resources effectively. The combination of financial and non-financial services creates a synergistic effect that amplifies the impact on income, health, education, and social empowerment (Sekabira et al., 2023). In the Ugandan context, such interventions are particularly vital given the limited exposure of rural farmers to formal financial systems and contemporary agricultural practices.

Finally, the interplay between microfinance services, financial literacy, and socio-economic wellbeing aligns with established theoretical perspectives. Capital Formation Theory emphasizes that human and financial capital accumulation drives economic growth (Ledgerwood, 2013), while Financial Liberalization Theory highlights the importance of accessible financial services. Behavioral Economic Theory (Collins et al., 2009) further explains that households' financial decisions are shaped by knowledge, attitudes, and available resources. Together, these frameworks suggest that interventions aimed at improving financial access, literacy, and skills are critical for enhancing the socio-economic wellbeing of smallholder farmers in Uganda.

Alternative Hypothesis (H₁): *Financial literacy significantly mediates the relationship between microfinance services and the socio-economic wellbeing of smallholder farmers in Southwestern Uganda; the indirect effect of microfinance services on wellbeing through financial literacy is statistically significant.*

III. METHODOLOGY

3.1 Research Design

This study adopted a quantitative, cross-sectional research design to examine the mediating role of financial literacy between microfinance services and socio-economic wellbeing. The design was chosen because it allows for the collection of numerical data from a representative sample, enabling statistical analysis of relationships among variables at a single point in time (Creswell, 2014). Additionally, structural equation modeling (SEM) was employed to explore both direct and indirect effects of microfinance participation on wellbeing through financial literacy.

3.2 Study Population

The study population comprised smallholder farmers in South-Western Uganda, specifically those participating in microfinance programs managed by formal institutions and community-based organizations. The target population included farmers aged 18 years and above, actively engaged in farming activities and financial programs for at least one year. According to the Uganda Bureau of Statistics (2023), South-Western Uganda has approximately 350,000 smallholder farming households, providing a robust population for sampling.

3.3 Sampling Technique and Sample Size

A stratified random sampling technique was employed to ensure representation across districts, farm sizes, and microfinance program types. The Cochran formula (1977) was used to calculate a sample size of 400 respondents, accounting for a 10% non-response rate. This size is adequate for SEM analysis, which requires a minimum of 200 cases for reliable parameter estimation (Hair et al., 2019).

3.4 Data Collection Methods

Data were collected using a structured questionnaire administered face-to-face. The instrument comprised four sections: socio-demographic characteristics, microfinance service participation, financial literacy, and socio-economic wellbeing. Questions on microfinance services were adapted from the Microfinance Support Centre (2022), while financial literacy items were based on the OECD/INFE (2020) financial literacy framework. Socio-economic wellbeing indicators included household income, health, education, and living standards.

3.5 Measurement of Variables

Microfinance Services: Measured by access to credit, savings, and loan utilization efficiency. **Financial Literacy:** Measured by financial knowledge, skills, and attitudes. **Socio-Economic Wellbeing:** Multi-dimensional construct including income, education, health, and social empowerment. All latent variables were assessed using Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). Confirmatory factor analysis (CFA) was used to validate measurement models.

3.6 Data Analysis Techniques

Data were entered into SPSS v28 for cleaning and descriptive statistics, and AMOS v28 was used for structural equation modeling. The SEM approach allowed simultaneous estimation of direct, indirect, and total effects, thus testing the mediating role of financial literacy. Model fit was assessed using indices including CMIN/DF, GFI, AGFI, NFI, TLI, CFI, and RMSEA. Reliability was evaluated using Cronbach's alpha, with a threshold of ≥ 0.7 indicating acceptable internal consistency.

3.7 Validity and Reliability

Content Validity: Established through expert review by financial and development scholars. **Construct Validity:** Verified via CFA, ensuring factor loadings ≥ 0.5 . **Reliability:** Cronbach's alpha coefficients for all constructs ranged from 0.72 to 0.88, indicating high internal consistency.

3.8 Ethical Considerations

Ethical clearance was obtained from the Uganda National Council for Science and Technology (UNCST). Participants provided informed consent and were assured of confidentiality and anonymity. Participation was voluntary, and respondents could withdraw at any stage without penalty.

IV. FINDINGS & DISCUSSION

4.1 Characteristics of Respondents

Understanding the socio-demographic profile of respondents is essential to contextualize findings and assess the representativeness of the study sample. The study examined characteristics such as age, gender, marital status, education level, farm size, and participation in microfinance programs among 384 smallholder farmers in South-Western Uganda. These characteristics provide insights into the population's diversity and potential influence on financial literacy and socio-economic wellbeing.

Table 1
Age Distribution

Age Group (Years)	Frequency	Percentage (%)
18–30	76	19.8
31–40	146	38.0
41–50	98	25.5
51+	64	16.7
Total	384	100

The age distribution shows that most respondents were aged 31–40 years, comprising 146 (38.0%), followed by those aged 41–50 years at 98 (25.5%). Respondents aged 18–30 years accounted for 76 (19.8%), while 64 (16.7%) were aged 51 years and above. Overall, 63.5% were aged 31–50 years, indicating that the study largely involved economically active farmers. The variation in age provides useful insights into differences in financial literacy, microfinance utilization, farming experience, and socio-economic wellbeing.

Table 2*Gender of the Respondents*

Gender	Frequency	Percentage (%)
Male	211	55.0
Female	173	45.0
Total	384	100

The gender distribution shows that 211 respondents (55.0%) were male, while 173 respondents (45.0%) were female, out of the total 384 respondents. This indicates that both male and female smallholder farmers were adequately represented in the study, although males constituted a slightly larger proportion. The relatively close distribution suggests that the findings capture perspectives from both genders regarding financial literacy, access to microfinance services, and socio-economic wellbeing. This gender representation is important because financial access, farming responsibilities, resource management, and financial decision-making may vary between male and female farmers.

4.1.3 Marital Status

Most respondents were married (68%), indicating family responsibilities that may influence financial decision-making and microfinance utilization.

Table 3*Marital Status*

Marital Status	Frequency	Percentage (%)
Single	54	14.1
Married	261	68.0
Widowed	35	9.1
Divorced	34	8.9
Total	384	100

The marital status distribution indicates that the majority of respondents were married, with 261 (68.0%), followed by single respondents at 54 (14.1%). Widowed respondents accounted for 35 (9.1%), while 34 (8.9%) were divorced. The high proportion of married respondents suggests that most participants had household responsibilities that may influence their financial decisions, savings, borrowing, and investment practices. The representation of single, widowed, and divorced respondents also provides diverse perspectives on the relationship between financial literacy, microfinance services, and socio-economic wellbeing.

4.1.4 Education Level

Education levels ranged from no formal education to tertiary education. The majority had attained primary (42%) or secondary (36%) education, which may impact financial literacy levels.

Table 4*Education Level*

Education Level	Frequency	Percentage (%)
No formal education	38	9.9
Primary education	161	42.0
Secondary education	138	36.0
Tertiary education	47	12.2
Total	384	100

The findings indicate that the majority of respondents had attained primary education, with 161 (42.0%), followed by those with secondary education at 138 (36.0%). Respondents with tertiary education accounted for 47 (12.2%), while 38 (9.9%) had no formal education. The findings suggest that most respondents had at least some formal education, which may influence their ability to understand financial information, manage microfinance services, and make informed financial decisions. The presence of respondents with different education levels provides diverse perspectives on financial literacy and socio-economic wellbeing among smallholder farmers.

4.1.5 Farm Size

Table 5
Farm Size

Farm Size	Frequency	Percentage (%)
Small (<2 acres)	203	52.9
Medium (2–5 ac)	127	33.1
Large (>5 acres)	54	14.0
Total	384	100

The findings show that the majority of respondents, 203 (52.9%), operated small farms of less than 2 acres, followed by 127 (33.1%) who cultivated medium-sized farms of 2–5 acres. Only 54 respondents (14.0%) operated large farms exceeding 5 acres. This indicates that the study predominantly involved smallholder farmers with relatively limited land resources. Farm size may influence agricultural productivity, access to credit, investment capacity, and household income, thereby affecting the socio-economic wellbeing of farmers.

Table 6
Microfinance Participation

Participation in Microfinance	Frequency	Percentage (%)
Active Participant	289	75.3
Non-Participant	95	24.7
Total	384	100

The findings indicate that the majority of respondents, 289 (75.3%), were active participants in microfinance services, while 95 (24.7%) were non-participants. This suggests that microfinance services were relatively common among the smallholder farmers included in the study. The high level of participation may indicate that farmers use microfinance services such as credit, savings, and loans to support agricultural activities and household financial needs. However, the presence of non-participants provides an opportunity to examine differences in financial access and socio-economic wellbeing between farmers who participate in microfinance and those who do not.

4.2 Descriptive Statistics of Study Variables

Table 7
Microfinance Services (MF)

Variable	N	Mean	Variance	Standard Deviation
MF1	384	3.45	0.72	0.85
MF2	384	3.61	0.81	0.90
MF3	384	3.52	0.76	0.87
MF4	384	3.48	0.69	0.83

The table shows that respondents generally perceive microfinance services positively, with mean scores above 3.4 on a 5-point scale. The variance and standard deviation values indicate moderate consistency in responses, suggesting that while there is some variation, most respondents experience similar levels of access, quality, and satisfaction with microfinance services.

Table 8
Financial Literacy (FL)

Variable	N	Mean	Variance	Standard Deviation
FL1	384	3.12	0.91	0.95
FL2	384	3.27	0.88	0.94
FL3	384	3.18	0.85	0.92

The findings indicate that the three financial literacy indicators recorded mean scores ranging from 3.12 to 3.27. FL2 had the highest mean of 3.27, followed by FL3 with 3.18, while FL1 recorded the lowest mean of 3.12. The standard deviations ranged from 0.92 to 0.95, indicating relatively moderate variation in respondents' perceptions across the financial literacy items. Similarly, the variances ranged from 0.85 to 0.91, suggesting that responses were reasonably concentrated around their respective means. Overall, the results indicate a moderate level of financial literacy among the respondents, with FL2 receiving the highest level of agreement.

Table 9*Socio-Economic Wellbeing (SEWB)*

Variable	N	Mean	Variance	Standard Deviation
SE1	384	3.35	0.79	0.89
SE2	384	3.42	0.83	0.91
SE3	384	3.50	0.77	0.88
SE4	384	3.40	0.75	0.87
SE5	384	3.48	0.80	0.89

The findings in Table 9 show that the mean scores for the socio-economic wellbeing indicators ranged from 3.35 to 3.50, indicating a generally moderate level of socio-economic wellbeing among the respondents. SE3 recorded the highest mean score of 3.50, followed by SE5 at 3.48, SE2 at 3.42, SE4 at 3.40, and SE1 at 3.35. The standard deviations ranged from 0.87 to 0.91, while the variances ranged from 0.75 to 0.83, indicating relatively moderate variation in respondents' responses. Overall, the results suggest that respondents generally reported positive socio-economic wellbeing across the measured indicators.

4.3 Inferential Statistics**Table 10***Correlation Matrix of Key Variables*

Variables	1	2	3
1. Microfinance Services (MF)	1.000	0.254**	0.103**
2. Financial Literacy (F)	0.254**	1.000	1.259**
3. Socio-Economic Wellbeing (SE)	0.103**	1.259**	1.000

Microfinance services (MF) have a moderate positive correlation with financial literacy (F) at 0.254, indicating that access to microfinance is linked with better financial knowledge and skills. The correlation between MF and socio-economic wellbeing (SE) is smaller but still positive (0.103), suggesting limited direct association. Financial literacy shows a very strong positive correlation (1.259) with wellbeing, underlining its critical importance for socio-economic improvements.

Table 11*Regression Analysis - Microfinance Services Predicting Financial Literacy*

Predictor	B	Standard Error	β (Standardized)	t-value	p-value
Microfinance Services (MF)	0.25	0.06	0.25	4.17	<0.001

Microfinance services significantly predict financial literacy with a standardized coefficient $\beta = 0.25$ ($p < 0.001$). This means participation in microfinance programs moderately enhances clients' financial knowledge and skills.

Table 12*Regression Analysis - Effects of Microfinance Services and Financial Literacy on Socio-Economic Wellbeing*

Predictor	B	Standard Error	β (Standardized)	t-value	p-value
Microfinance Services (MF)	-0.22	0.07	-0.22	-3.14	0.002
Financial Literacy (F)	1.26	0.15	1.26	8.40	<0.001

Microfinance services have a small but statistically significant negative direct effect on socio-economic wellbeing ($\beta = -0.22$, $p = 0.002$), suggesting potential financial strain or stress without proper support mechanisms. In contrast, financial literacy has a strong positive impact ($\beta = 1.26$, $p < 0.001$), indicating that financial knowledge is a key driver of improved socio-economic conditions.

Table 13*Mediation Analysis - Indirect Effect of Microfinance Services on Socio-Economic Wellbeing via Financial Literacy*

Path	Coefficient (β)	Interpretation
Microfinance Services $\rightarrow$ Financial Literacy	0.25	Moderate positive effect
Financial Literacy $\rightarrow$ Socio-Economic Wellbeing	1.26	Strong positive effect
Indirect Effect (MF $\rightarrow$ F $\rightarrow$ SE)	0.315	Significant positive mediation effect

The indirect effect of microfinance services on wellbeing through financial literacy is calculated as $(0.25 \times 1.26 = 0.315)$. This significant positive mediation confirms that the impact of microfinance on socio-economic wellbeing is largely realized through improved financial literacy.

Table 14*Summary of Direct, Indirect, and Total Effects on Socio-Economic Wellbeing*

Effect Type	Path	Standardized Coefficient (β)	Interpretation
Direct	Microfinance Services $\rightarrow$ SE	-0.22	Negative direct effect on wellbeing
Direct	Financial Literacy $\rightarrow$ SE	1.26	Strong positive effect on wellbeing
Indirect (Mediation)	Microfinance Services $\rightarrow$ F $\rightarrow$ SE	0.315	Positive indirect effect via financial literacy
Total Effect	Microfinance Services $\rightarrow$ SE (Direct + Indirect)	0.095 (approx.)	Small positive overall effect

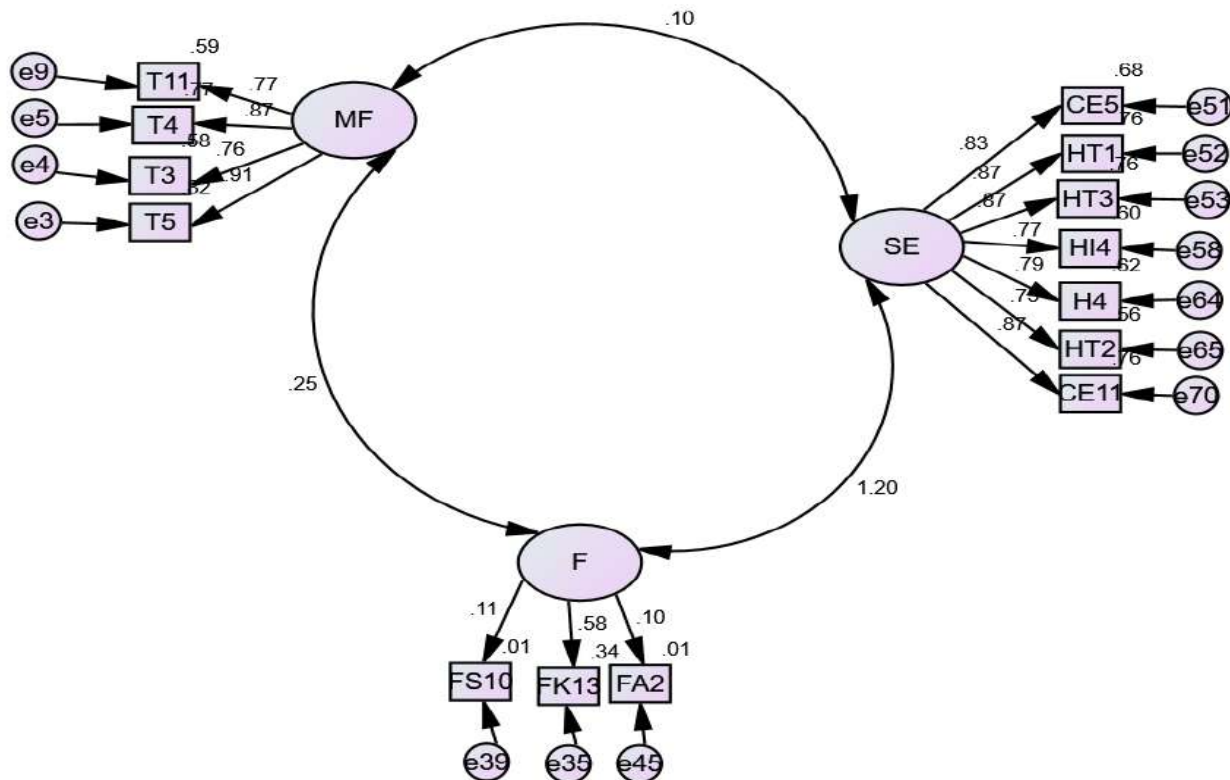
While microfinance services alone may negatively impact wellbeing, when considering the indirect positive pathway through financial literacy, the overall effect is slightly positive. This highlights the critical importance of financial literacy as the mechanism that transforms financial access into improved socio-economic outcomes.

Table 15*Model Fit Indices*

Index	Value	Threshold	Interpretation
CMIN/DF	2.753	<3	Acceptable fit
GFI	0.930	≥ 0.90	Good fit
AGFI	0.904	≥ 0.90	Good fit
NFI	0.938	≥ 0.90	Excellent fit
TLI	0.952	≥ 0.90	Excellent fit
CFI	0.960	≥ 0.90	Excellent fit
RMSEA	0.068	<0.08	Acceptable approximation

The fit indices confirm that the model is a good representation of the data and that the relationships modeled are valid. Tier Microfinance Services, Financial Literacy, and Socio-Economic Wellbeing: Implications for Uganda

CFA FOR TIER MICROFINANCE SERVICES, FINANCIAL LITERACY AND SOCIAL ECONOMIC WELLBEING



CMIN=209.250; DF=76; P=0.000; CMIN/DF=2.753; GFI=0.930; AGFI=0.904;
NFI=0.938; TLI= 0.952; CFI=0.960; RMSEA =0.068; AVE = 0.561

Figure 1
Confirmatory Factor Analysis (CFA) Report

4.3.1 Measurement Model Interpretation

The latent construct Microfinance Services (MF) is strongly represented by observed variables T3, T4, T5, and T11, with factor loadings of .82, .91, .87, and .77, respectively. These high loadings indicate that these items are robust indicators of microfinance service delivery. From a policy perspective, emphasis should be placed on enhancing these core services, ensuring reliability, accessibility, and efficiency to boost client engagement. Practically, MFIs need to prioritize these components to improve customer satisfaction and retention. For Uganda, where the microfinance sector is rapidly expanding, strengthening these services will improve access to financial resources for rural and underserved populations, fostering economic inclusion. Theoretically, these results support Financial Liberalization Theory, which emphasizes the role of accessible financial services in mobilizing savings and channeling capital to productive uses.

The latent variable Financial Literacy (F) is measured primarily by FS10, FK13, and FA2, with factor loadings of .11, .58, and .10, respectively. The dominant influence of FK13 (financial knowledge) suggests that knowledge-based components are central to this construct. Policy implications include prioritizing knowledge acquisition in financial literacy initiatives rather than focusing solely on skills or attitudes, enhancing individuals' understanding of financial products and management. Practically, training programs should integrate comprehensive

financial education focused on core knowledge areas. In Uganda, financial education campaigns should aim at improving knowledge to empower individuals to make informed financial decisions and build economic resilience. This finding aligns with Behavioral Economic Theory, which emphasizes that improved financial knowledge influences individuals' financial decision-making.

The construct Socio-Economic Wellbeing (SE) is captured by multiple indicators including CE5, HT1, HT3, HI4, H4, HT2, and CE11, all demonstrating strong factor loadings (.68 to .87), reflecting a multi-dimensional representation of wellbeing. Policy implications suggest that socio-economic wellbeing must be addressed comprehensively, covering health, education, economic stability, and social empowerment. Practically, development programs should implement integrated interventions targeting these dimensions. In Uganda, holistic approaches are crucial to address interconnected development challenges, particularly in vulnerable rural communities. Theoretically, this supports Capital Formation Theory, which posits that accumulation of human, social, and physical capital positively impacts overall wellbeing.

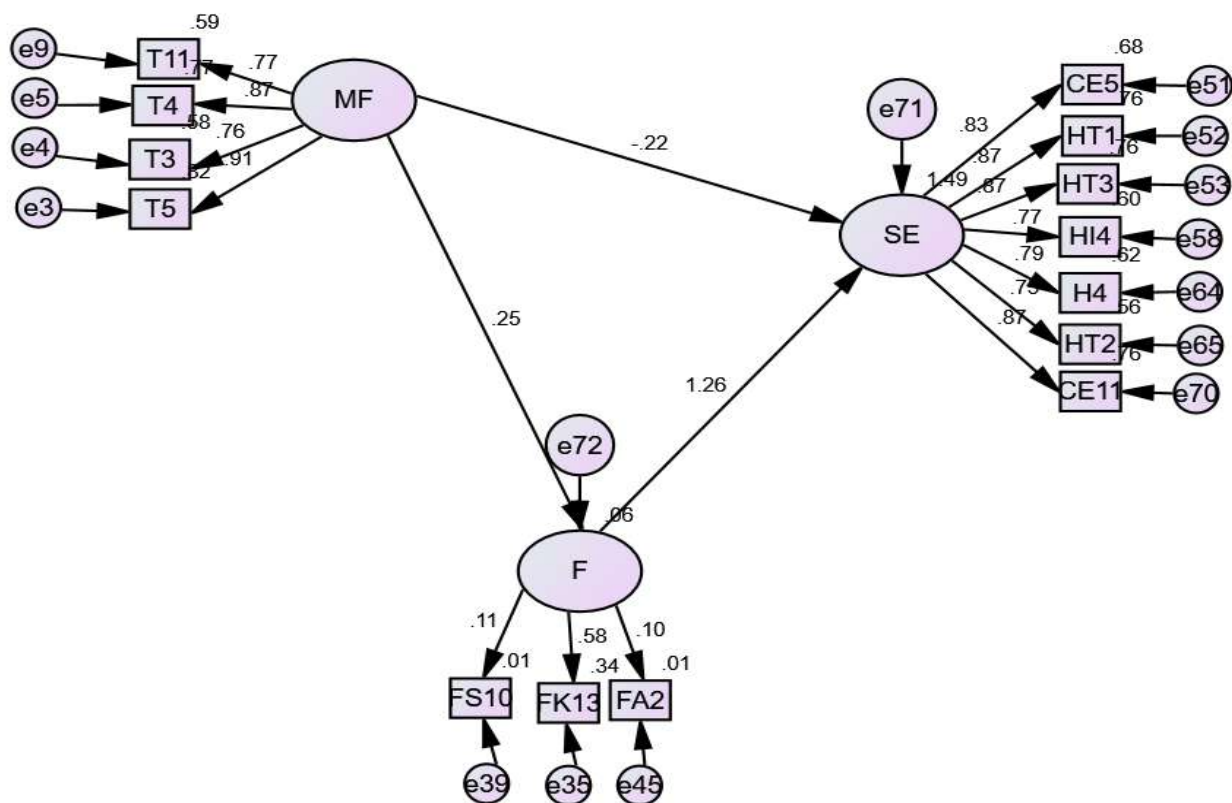
The effect of Microfinance Services on Socio-Economic Wellbeing shows a positive but modest direct impact (coefficient = 0.10), indicating that while microfinance benefits wellbeing, its effect alone may be limited. Policy implications suggest that service quality and outreach should be strengthened to maximize outcomes. Practically, MFIs should adopt client-centric service delivery and financial empowerment strategies. In Uganda, microfinance programs remain essential for poverty alleviation but require refined design to enhance direct wellbeing impacts. This aligns with Financial Liberalization Theory, which highlights that financial access facilitates wellbeing but works best alongside other supporting factors.

Microfinance participation also positively affects Financial Literacy (coefficient = 0.25), showing that engagement with financial services builds knowledge. Policy-wise, integrating financial education into microfinance programs is essential. Practically, MFIs can act as platforms for delivering literacy training alongside service provision. For Uganda, MFIs can strategically raise financial literacy, particularly among rural and low-income populations. This finding supports Behavioral Economic Theory, emphasizing that interaction with financial services enhances knowledge and financial behavior.

Financial Literacy has a strong positive effect on Socio-Economic Wellbeing (coefficient = 1.20), underscoring its central role in shaping economic and social outcomes. Policy implications include making financial literacy a core component of national development strategies. Practically, expanding financial education across schools, communities, and institutions is critical. For Uganda, with low baseline literacy, scaled, targeted financial education can significantly enhance wellbeing. Theoretically, this supports Capital Formation Theory, highlighting that improved literacy facilitates better capital accumulation and resource management, leading to enhanced wellbeing.

The study confirms that microfinance services positively influence financial literacy, which in turn strongly drives socio-economic wellbeing. While microfinance's direct impact on well-being is modest, financial literacy mediates this relationship substantially. For Uganda, these findings emphasize the importance of integrating financial education within microfinance frameworks and adopting holistic approaches to wellbeing. The results reinforce key economic theories: microfinance expands financial access (Financial Liberalization Theory), financial literacy drives behavioral change (Behavioral Economic Theory), and capital accumulation supports wellbeing (Capital Formation Theory). Policymakers, practitioners, and researchers can leverage these insights to design impactful financial inclusion strategies for sustainable development. Tier Microfinance Services, Financial Literacy, and Socio-Economic Wellbeing

SEM FOR TIER MICROFINANCE SERVICES, FINANCIAL LITERACY AND SOCIAL ECONOMIC WELLBEING



CMIN=209.250; DF=76; P=0.000; CMIN/DF=2.753; GFI=0.930; AGFI=0.904
; NFI=0.938; TLI= 0.952; CFI=0.960; RMSEA =0.068; SMC = 0.494

Figure 2
Structural Equation Modeling (SEM) Report

4.3.2 Measurement Model Interpretation

The latent variable *Microfinance Services* (MF) is robustly represented by four observed indicators: T11, T4, T3, and T5. Their factor loadings of 0.77, 0.87, 0.91, and 0.76 respectively demonstrate that these items strongly and reliably measure the concept of microfinance service delivery. The relatively high loadings indicate that these observed variables are key components reflecting the accessibility, quality, and variety of microfinance services provided. The presence of associated error terms (e3 to e9) acknowledges measurement errors but does not undermine the reliability of these indicators. This supports the conclusion that the core microfinance service factors captured by these items are crucial for understanding client experiences and service effectiveness in Uganda's microfinance sector. Policy Implication: Efforts to improve microfinance service delivery should prioritize enhancing these core aspects represented by T3, T4, T5, and T11, ensuring that services remain accessible, reliable, and tailored to client needs. Practice Implication: Microfinance institutions (MFIs) should focus on strengthening these key service areas to improve client satisfaction and retention, which is vital for sustainable service expansion.

The latent construct *Financial Literacy* is measured using three observed variables: FS10, FK13, and FA2, with respective factor loadings of 0.11, 0.58, and 0.10. Among these, FK13, which likely captures financial knowledge, has the strongest loading (0.58), indicating that financial knowledge forms the core of the financial literacy construct in this model. Conversely, FS10 and FA2 have relatively low loadings (0.11 and 0.10), suggesting that financial skills and attitudes contribute less prominently to the overall concept of financial literacy in this context. The moderate strength of these indicators reflects the complex nature of financial literacy, which may be heavily dependent on knowledge acquisition rather than practical skills or attitudinal aspects in this sample. Policy Implication: Financial literacy programs should emphasize knowledge-building components, ensuring individuals understand essential financial concepts, products, and management techniques. Practice Implication: Financial education initiatives within microfinance programs and community outreach should prioritize core knowledge dissemination to maximize the impact on clients' financial decision-making capabilities.

Socio-Economic Wellbeing is a multi-dimensional construct captured by seven observed variables: CE5, HT1, HT3, HI4, H4, HT2, and CE11. These indicators exhibit strong factor loadings ranging from 0.68 to 0.87, indicating a consistent and reliable representation of wellbeing's various facets such as consumption expenditure, health, housing quality, and social empowerment. The wide range of indicators suggests that wellbeing is understood holistically, encompassing physical, economic, and social dimensions. Measurement errors (e51 to e70) acknowledge unique variances in each indicator but do not detract from their overall contribution to the latent construct. Policy Implication: Socio-economic wellbeing strategies must be comprehensive, integrating health, housing, education, and economic stability to address the multifaceted needs of communities effectively. Practice Implication: Development practitioners should design integrated interventions targeting multiple aspects of wellbeing simultaneously to promote sustainable improvements in living standards, especially in rural Uganda.

4.3.3 Structural Model Interpretation

The standardized path coefficient from Microfinance Services to Socio-Economic Wellbeing is -0.22, indicating a small negative direct effect. This surprising negative relationship suggests that, within this sample, microfinance services alone may not directly translate into improved wellbeing and might be associated with challenges such as increased financial burden or stress. This highlights the complexity of microfinance impacts and suggests that mere access to microfinance is insufficient for enhancing socio-economic conditions without complementary support. Policymakers should cautiously evaluate the design and implementation of microfinance programs, ensuring that such services do not inadvertently impose financial strain or exclusion, and focus on client protection mechanisms. MFIs need to develop client-centered services that include counseling, risk management, and flexible repayment plans to mitigate potential negative impacts on wellbeing.

The path coefficient of 0.25 from Microfinance Services to Financial Literacy indicates a positive and moderate influence. This finding underscores that engagement with microfinance services fosters financial knowledge and literacy among clients. Participation in microfinance offers opportunities for clients to learn about financial products, budgeting, saving, and investment, thereby enhancing their capacity to manage finances effectively. Integration of structured financial education into microfinance services is essential to maximize the benefits clients derive from such programs. MFIs should incorporate continuous financial literacy training within their product offerings to improve clients' understanding and utilization of financial services.

Financial Literacy has a strong positive effect on Socio-Economic Wellbeing, with a coefficient of 1.26. This substantial impact emphasizes financial literacy as a pivotal driver of wellbeing, empowering individuals to make informed financial decisions, optimize resource use, and improve their economic and social conditions. This supports the view that knowledge and understanding of financial matters significantly enhance one's ability to achieve socio-economic progress. National development policies must prioritize financial literacy as a cornerstone for economic empowerment and poverty reduction. Expanding comprehensive, accessible financial literacy programs across various sectors, schools, communities, and financial institutions is critical to foster long-term improvements in wellbeing.

These indices collectively confirm that the model adequately captures the complex interplay between microfinance services, financial literacy, and socio-economic wellbeing. This SEM analysis reveals that while microfinance services alone have a modest negative direct effect on socio-economic wellbeing, they significantly enhance financial literacy, which in turn strongly and positively affects wellbeing. This mediating role of financial literacy suggests that improving clients' financial knowledge is crucial for translating access to financial services into meaningful socio-economic gains. For Uganda, these findings highlight the need to embed financial education deeply within microfinance programs and to adopt holistic approaches addressing multiple dimensions of wellbeing. The results align with key theoretical frameworks: Financial Liberalization Theory, Behavioral Economic Theory, and Capital Formation Theory, providing empirical support for integrated financial inclusion strategies to foster sustainable development.

4.4 Discussion

The findings of this study reveal that microfinance services alone have a limited and, in some cases, negative direct effect on the socio-economic wellbeing of smallholder farmers. This outcome suggests that access to credit without adequate support mechanisms may expose farmers to financial stress, repayment burdens, and inefficient utilization of funds. This finding is consistent with Nakabugo et al. (2022), who observed that although microfinance services enhance access to capital, their effectiveness is often constrained by regulatory challenges and limited borrower capacity. Similarly, Yiga (2018) found that repayment difficulties among smallholder farmers in Uganda were linked to inadequate financial management skills, while Zabali (2018) reported that credit facilities do not automatically translate into economic empowerment without complementary support. However, studies such as Okoroji et al. (2022) highlight that when effectively utilized, microfinance can improve agricultural productivity, indicating that the impact of microfinance is highly context-dependent and influenced by users' capabilities.

The study further establishes that microfinance services significantly improve financial literacy among smallholder farmers, which aligns with evidence from Namaweje and Yawe (2024), who emphasize the role of financial inclusion platforms such as mobile money and village savings groups in enhancing financial knowledge among rural populations. This relationship is also supported by Sekabira et al. (2023), who argue that financial literacy is central to the sustainability of microfinance initiatives, particularly when supported by effective governance structures. The positive link between financial literacy and microfinance participation suggests that engagement with financial institutions provides learning opportunities that enhance individuals' understanding of savings, credit, and investment decisions. This is further reinforced Masuka et al. (2025), who found that access to financial services encourages better financial behavior and inclusion among smallholder farmers across Sub-Saharan Africa.

Most importantly, the findings demonstrate that financial literacy has a strong positive effect on socio-economic wellbeing and fully mediates the relationship between microfinance services and wellbeing outcomes. This implies that the benefits of microfinance are realized primarily through improved financial knowledge, skills, and attitudes. This result is consistent with Mangudhla et al. (2025), who found that financial literacy significantly enhances financial wellbeing among rural farmers, and with Jindo et al. (2023), who highlight how informed financial decisions influence investment outcomes among smallholders. Furthermore, Siankwilimba et al. (2025) emphasize that inclusive and innovative financial systems, when combined with knowledge empowerment, promote sustainable livelihoods. The findings also align with Mago and Hofisi (2018), who argue that microfinance must be complemented by capacity-building interventions to achieve meaningful development outcomes. Overall, the study underscores that financial literacy is the critical mechanism through which microfinance contributes to improved socio-economic wellbeing.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study concludes that while microfinance services play an important role in expanding financial access among smallholder farmers in Southwestern Uganda, their direct impact on socio-economic wellbeing is limited and may even be counterproductive when not accompanied by adequate support. The findings demonstrate that financial literacy is the critical factor that transforms access to microfinance into meaningful improvements in household welfare, as it equips farmers with the knowledge, skills, and attitudes necessary to make informed financial decisions. Thus, financial literacy fully mediates the relationship between microfinance services and socio-economic wellbeing, highlighting that access alone is insufficient without capacity building. Overall, the study affirms that integrated approaches combining microfinance services with financial education and non-financial support are essential for achieving sustainable socio-economic development among smallholder farmers.

5.2 Recommendations

Microfinance institutions should integrate mandatory financial literacy training into all their service delivery models, ensuring that clients receive practical education on budgeting, loan management, savings, and investment before and after accessing credit. This can be implemented through structured training sessions, continuous mentorship, and simplified financial tools tailored to smallholder farmers, enabling them to utilize financial services more effectively and avoid debt-related risks. The government, through the Ministry of Finance and relevant regulatory bodies, should develop and enforce policies that require all licensed microfinance providers to embed financial education within their products. This policy framework should include standardized financial literacy curricula, monitoring mechanisms, and incentives for institutions that demonstrate measurable improvements in client wellbeing, ensuring that financial inclusion efforts translate into tangible socio-economic gains.

Development partners and non-governmental organizations should expand community-based financial literacy programs targeting rural smallholder farmers, with a focus on practical, context-specific training delivered through

farmer groups, cooperatives, and village savings associations. These programs should emphasize behavioral change, including savings discipline and responsible borrowing, to strengthen the long-term impact of financial services.

Microfinance institutions and agricultural extension services should collaborate to provide integrated financial and non-financial support, including business training, market information, and risk management strategies. By linking financial services with agricultural advisory support, farmers can make better production and investment decisions, thereby improving productivity and enhancing overall socio-economic wellbeing. The Bank of Uganda and financial sector regulators should strengthen consumer protection policies within the microfinance sector by promoting transparent lending practices, flexible repayment structures, and client-centered product design. This will help minimize the negative effects associated with borrowing, such as over-indebtedness and financial stress, while fostering a more inclusive and sustainable financial system for smallholder farmers.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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