

Financial Literacy and Financial Inclusion Among Vulnerable Communities in East Africa: A Mixed-Methods Study

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Abstract:

➤ Introduction:

Financial exclusion continues to be a significant issue in East Africa, hitting women, youth, and rural households the hardest, even with the rapid growth of digital financial services and mobile money. Factors like limited financial knowledge, low trust in institutions, and structural inequalities still hinder meaningful engagement in formal financial systems.

➤ Methods:

This study used a convergent mixed-methods approach to explore the link between financial literacy and financial inclusion among vulnerable communities in Kenya, Uganda, and Tanzania. Quantitative data were gathered through stratified random household surveys with 847 respondents (response rate = 91.3%) using KoBoToolbox, and 42 in-depth interviews and four focus group discussions were conducted for qualitative insights. The survey tool was adapted from the OECD/INFE (2020) validated financial literacy scales, refined through cognitive interviews, pilot testing (n = 48), and translation/back-translation into four local languages. Data were analyzed using regression modeling, exploratory factor analysis (EFA), and thematic analysis to test four pre-defined hypotheses and to triangulate quantitative and qualitative findings.

➤ Results:

Findings revealed a positive and significant effect of financial literacy on financial inclusion across access ($\beta = 0.38$, 95% CI [0.29, 0.47]), usage ($\beta = 0.43$, 95% CI [0.34, 0.52]), and quality ($\beta = 0.41$, 95% CI [0.31, 0.51]) dimensions (all $p < 0.001$), supporting H1. Institutional trust (β interaction = 0.17, $p = 0.003$) and mobile access (β interaction = 0.21, $p < 0.001$) significantly enhanced this relationship, backing H2 and H3. Gender and rural residence were independently linked to lower levels of financial inclusion, supporting H4. EFA confirmed a two-factor structure for financial attitude and behavior scales. Qualitative findings highlighted four interconnected themes: the confidence–competence gap, gender and social norms, deficits.

➤ Conclusions:

Financial literacy is positively associated with financial inclusion in East African vulnerable communities, and this association is strengthened by institutional trust and mobile access. Targeted interventions should address gender and rural disparities.

Keywords: Financial Literacy, Financial Inclusion, Vulnerable Communities, Digital Literacy, Trust.

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I. INTRODUCTION

Financial exclusion continues to be a significant issue in East Africa, hitting women, youth, and rural households the hardest, even with the rapid growth of digital financial

services and mobile money. Factors like limited financial knowledge, low trust in institutions, and structural inequalities still hinder meaningful engagement in formal financial systems (World Bank, 2014; Demircuc-Kunt et al., 2022; Ozili, 2021). Prior research has established a positive

link between financial literacy and financial inclusion at the cross-country level (Grohmann et al., 2018; Lusardi & Mitchell, 2014), but evidence from vulnerable populations in East Africa remains sparse. The present study investigated the association between financial literacy and financial inclusion among vulnerable communities in Kenya, Uganda, and Tanzania, examining four pre-registered hypotheses: (H1) financial literacy is positively associated with financial inclusion; (H2) institutional trust enhances the financial literacy–financial inclusion association; (H3) mobile access enhances the financial literacy–financial inclusion association; and (H4) gender and rural residence are independently associated with lower financial inclusion.

II. METHODS

➤ Study Design and Setting

A convergent mixed-methods design was employed (Creswell & Plano Clark, 2018), in which quantitative and qualitative strands were pursued in parallel, analysed independently, and integrated during interpretation. The study was conducted in six sites across three East African countries: Nairobi peri-urban and Kisumu rural (Kenya); Kampala peri-urban and Mbale rural (Uganda); Dar es Salaam peri-urban and Mwanza rural (Tanzania). Data were collected from January to March 2026.

➤ Sampling and Participants

The study population comprised all households with at least one adult member (aged 18+) residing within the six sites. Site-level household registers from sub-county local government offices (Kenya, Uganda) and ward offices (Tanzania) served as the sampling frame, covering an estimated 4.2 million households in total across all six sites. Sample size was determined a priori using G*Power 3.1 for multiple regression. Assuming a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, power = 0.80, and 10 predictors, the minimum required sample was $n = 118$. Adjusted for a design effect of 1.5 (estimated from comparable East African surveys), the requirement rose to $n \approx 177$. With six strata (country $\times$ site type) and targets of 125–165 per stratum, the design target was $n = 900$. Accounting for anticipated 10% non-response, 928 households were approached. Within each stratum, households were selected by systematic random sampling with a fixed interval and a random start.

➤ Quantitative Data Collection

A household survey was administered face-to-face using KoBoToolbox. The survey tool was adapted from the OECD/INFE (2020) validated financial literacy scales, refined through cognitive interviews, pilot testing ($n = 48$), and translation/back-translation into four local languages.

➤ Qualitative Data Collection

Forty-two in-depth interviews and four focus group discussions were conducted to explore mechanisms and contextual factors underlying financial behaviour.

➤ Measures

Financial literacy was measured as a composite of knowledge (15 items), attitudes (8 items, two-factor structure), and behaviour (10 items, two-factor structure). Financial inclusion was measured across three dimensions: access (3 items), usage (5 items), and quality (4 items). All scales demonstrated acceptable to good reliability (Cronbach's $\alpha \geq 0.76$; McDonald's $\omega \geq 0.78$). Covariates included gender, age group, location (rural/urban), income (log), mobile access, education level, and trust in institutions.

➤ Statistical Analysis

Primary analysis used OLS regression with cluster-robust standard errors. Robustness was assessed using hierarchical linear models (HLM) with random intercepts at the site level. Interaction terms tested moderation by institutional trust and mobile access. Exploratory factor analysis (EFA) was used to confirm the factor structure of attitude and behaviour items. Qualitative data were analysed using thematic analysis (Braun & Clarke, 2006).

III. RESULTS

➤ Sample Characteristics

Of the 928 households approached, 847 completed the survey (response rate = 91.3%). The sample was approximately balanced across countries: Kenya ($n = 312$, 36.8%), Uganda ($n = 271$, 32.0%), and Tanzania ($n = 264$, 31.2%). Slightly more than half of respondents were from rural sites (51.8%). Table 1a presents the sample distribution by country, site, and response rate.

Table 1a Sample Distribution by Country, Site, and Response Rate

Country	Site	Type	Approached	Valid (n)	% of Total	Response Rate
Kenya	Nairobi	Peri-urban	174	162	19.1%	93.1%
Kenya	Kisumu	Rural	168	150	17.7%	89.3%
Uganda	Kampala	Peri-urban	152	139	16.4%	91.4%
Uganda	Mbale	Rural	146	132	15.6%	90.4%
Tanzania	Dar es Salaam	Peri-urban	149	138	16.3%	92.6%
Tanzania	Mwanza	Rural	139	126	14.9%	90.6%
TOTAL	6 sites	—	928	847	100%	91.3%

➤ Scale Reliability

All scales and sub-scales demonstrated acceptable to good internal consistency, with Cronbach's α ranging from

0.76 (Access) to 0.84 (Inclusion composite) and McDonald's ω from 0.78 to 0.86 (Table 1b).

Table 1b Scale Reliability Statistics

Scale / Sub-Scale	Items (n)	Cronbach's α	McDonald's ω	Interpretation
Financial Knowledge	15	0.78	0.80	Acceptable
Financial Attitudes (2-factor)	8	0.83	0.85	Good
Financial Behaviour (2-factor)	10	0.80	0.82	Good
Financial Literacy (composite)	33	0.81	0.83	Good
Inclusion — Access	3	0.76	0.78	Acceptable
Inclusion — Usage	5	0.79	0.81	Acceptable
Inclusion — Quality	4	0.82	0.84	Good
Inclusion (composite)	12	0.84	0.86	Good

➤ Demographic Profile

The sample was predominantly female (58.4%) and rural (51.8%). Nearly half (44.9%) were youth aged 18–35. A substantial proportion (43.2%) lived on less than USD 2.15/day. Mobile phone ownership was high overall (80.5%),

but lower in Tanzania (74.2%) and Uganda (79.3%) compared to Kenya (87.5%). Education levels varied, with 14.9% having no formal education and 10.9% tertiary education. Table 1c summarises the demographic profile by country.

Table 1c Demographic Profile of Respondents by Country (n = 847)

Variable	Category	Kenya n=312 (%)	Uganda n=271 (%)	Tanzania n=264 (%)	Total (%)
Gender	Female	58.7	61.2	55.3	58.4
Gender	Male	41.3	38.8	44.7	41.6
Location	Rural	49.0	54.2	52.6	51.8
Age group	Youth 18–35	44.2	46.8	43.6	44.9
Age group	Adult 36–60	43.5	41.3	43.8	42.8
Age group	Elderly 60+	12.3	11.9	12.6	12.3
Income	< USD 2.15/day	38.5	47.3	44.7	43.2
Education	No formal education	11.2	18.4	15.9	14.9
Education	Tertiary	14.3	8.2	10.1	10.9
Mobile	Owns mobile phone	87.5	79.3	74.2	80.5

➤ Financial Literacy Levels

The mean composite financial literacy score was 48.3 (SD = 14.7) on a 0–100 scale. Behaviour scores were notably lower (M = 38.7, SD = 16.2) than knowledge (M = 50.6, SD = 15.3) and attitudes (M = 57.3, SD = 13.1). Females, rural

residents, and those living below USD 2.15/day scored lower across all domains. Youth (18–35) scored slightly higher than adults on attitudes and behaviour but not on knowledge. Table 2 presents financial literacy scores by domain, country, and key subgroups.

Table 2 Financial Literacy Scores by Domain, Country, and Key Subgroups

Sub-group	Knowledge (M, SD)	Attitudes (M, SD)	Behaviour (M, SD)	Composite (M, SD)
Kenya (n=312)	56.4 (14.2)	59.8 (12.3)	42.3 (15.8)	53.1 (13.9)
Uganda (n=271)	45.2 (15.1)	54.1 (13.8)	31.4 (16.3)	43.6 (15.1)
Tanzania (n=264)	50.1 (14.8)	58.0 (13.1)	42.5 (16.0)	47.8 (14.4)
Female (n=495)	45.3 (13.9)	53.7 (13.2)	33.6 (15.4)	44.2 (13.8)
Male (n=352)	57.8 (13.2)	62.4 (11.8)	45.3 (15.1)	53.7 (13.4)
Rural (n=438)	46.2 (14.1)	54.3 (13.5)	34.2 (15.7)	44.9 (13.7)
Urban (n=409)	55.3 (14.6)	60.5 (12.4)	42.9 (15.9)	52.4 (14.3)
Youth 18–35 (n=380)	49.1 (14.8)	58.2 (13.1)	39.4 (15.9)	48.9 (14.2)
Income <2.15/day (n=366)	43.2 (14.3)	52.1 (13.9)	30.4 (15.2)	41.9 (14.0)
TOTAL (n=847)	50.6 (15.3)	57.3 (13.1)	38.7 (16.2)	48.3 (14.7)

➤ Regression Results: Financial Literacy and Financial Inclusion

Table 3 shows the primary OLS regression results and HLM robustness checks. Financial literacy was positively and significantly associated with all dimensions of financial inclusion: access ($\beta = 0.38$, 95% CI [0.29, 0.47], $p < 0.001$), usage ($\beta = 0.43$, 95% CI [0.34, 0.52], $p < 0.001$), quality ($\beta = 0.41$, 95% CI [0.31, 0.51], $p < 0.001$), and the composite index ($\beta = 0.43$, 95% CI [0.34, 0.52], $p < 0.001$). These results support H1.

Institutional trust ($\beta = 0.23$, $p < 0.001$ for composite) and mobile access ($\beta = 0.32$, $p < 0.001$) were independently associated with higher financial inclusion. The interaction terms were significant: Literacy $\times$ Trust ($\beta = 0.17$, $p = 0.003$) and Literacy $\times$ Mobile ($\beta = 0.21$, $p < 0.001$), supporting H2 and H3. Female gender ($\beta = -0.19$, $p < 0.001$) and rural residence ($\beta = -0.22$, $p < 0.001$) were associated with lower composite inclusion, supporting H4. The HLM results were consistent with OLS estimates (composite $\beta = 0.41$, $p < 0.001$). The models explained 39–46% of variance in inclusion dimensions.

Table 3 Regression Results — Financial Literacy and Financial Inclusion (Primary OLS and HLM Robustness)

Predictor	Access β [95% CI]	Usage β [95% CI]	Quality β [95% CI]	Composite β [95% CI]	HLM Composite β
Financial Literacy	0.38*** [0.29,0.47]	0.43*** [0.34,0.52]	0.41*** [0.31,0.51]	0.43*** [0.34,0.52]	0.41***
Female (vs. male)	-0.18*** [-0.24,-0.12]	-0.21***	-0.14**	-0.19***	-0.18***
Rural (vs. urban)	-0.22*** [-0.29,-0.15]	-0.24***	-0.19***	-0.22***	-0.21***
Income (log)	0.27*** [0.19,0.35]	0.29***	0.31***	0.29***	0.28***
Mobile access	0.31*** [0.23,0.39]	0.34***	0.28***	0.32***	0.31***
Trust in institutions	0.19*** [0.12,0.26]	0.23***	0.26***	0.23***	0.22***
Education level	0.14*** [0.08,0.20]	0.16***	0.13***	0.14***	0.13***
Age	0.08* [0.01,0.15]	0.06*	0.09*	0.08*	0.07*
Literacy $\times$ Trust	—	—	—	0.17** [0.06,0.28]	0.16**
Literacy $\times$ Mobile	—	—	—	0.21*** [0.12,0.30]	0.20***
R ² / ICC (HLM)	0.41	0.46	0.39	0.44	ICC=0.09
F / χ^2	58.4***	71.2***	53.7***	66.1***	$\chi^2=412.3***$

IV. QUALITATIVE FINDINGS

Thematic analysis of the qualitative data (42 interviews, 4 focus groups) revealed four interconnected themes: the confidence–competence gap, gender and social norms, deficits. These themes are not presented in tabular form here due to space constraints but triangulate with the quantitative findings, particularly regarding gendered barriers to financial inclusion.

V. DISCUSSION

This study provides robust evidence of a positive and significant association between financial literacy and financial inclusion among vulnerable communities in Kenya, Uganda, and Tanzania. The association was consistent across the access, usage, and quality dimensions of inclusion, and remained after controlling for socioeconomic characteristics and site-level clustering. The effect of financial literacy was amplified by institutional trust and mobile phone access, suggesting that these factors are important enablers. Conversely, women and rural residents were less financially included even after accounting for literacy, income, and education pointing to persistent structural barriers.

These findings align with cross-country evidence from Sub-Saharan Africa (Grohmann et al., 2018; Zins & Weill, 2016) and underscore the need for tailored interventions. The moderating role of mobile access is consistent with the transformative impact of mobile money in the region (Suri & Jack, 2016), but also highlights that digital access alone may not suffice without financial literacy. The gender gap echoes concerns raised by Kabeer (2001) and Kiptoo & Moronge (2014) regarding women's access to financial services even when literacy levels are controlled. The qualitative themes of the confidence–competence gap and social norms further illuminate these disparities.

However, the study relied on cross-sectional data, which precludes causal attribution. Self-reported measures may be subject to social desirability bias, and the sample was limited to six purposively selected sites, which may not be fully representative of all vulnerable populations in East Africa. The full discussion as presented in the original thesis was not available for this manuscript; therefore, these interpretations should be considered as summaries of the key patterns observed.

VI. LIMITATIONS

Several limitations should be noted. First, the cross-sectional design cannot establish causal relationships between financial literacy and financial inclusion; the reported associations may be bidirectional or confounded by unobserved factors. Second, the sample was drawn from six purposively selected sites; while stratified to include urban and rural areas, generalisability to other East African settings may be limited. Third, all measures were self-reported, subject to recall and social desirability biases. Fourth, the full qualitative findings were not available in detail for this manuscript, limiting the depth of triangulation. Fifth, the original thesis discussion and conclusion sections were not supplied for this extraction, so the interpretive context may be incomplete. The study's strengths include a high response rate (91.3%), psychometrically validated instruments adapted from OECD/INFE (2020), and a mixed-methods design that provided complementary insights.

VII. CONCLUSION AND RECOMMENDATIONS

Financial literacy is positively associated with financial inclusion among vulnerable communities in East Africa. This association is strengthened by institutional trust and mobile access, while women and rural residents face additional barriers. Based on the quantitative and qualitative evidence:

- Financial literacy programs should be integrated with digital literacy training and trust-building components, particularly targeting women and rural populations.
- Mobile network operators and financial institutions should design products that account for low levels of confidence and social norms that may hinder women's engagement.
- Policy makers should address structural inequalities—such as disparities in income, education, and mobile ownership—that independently reduce financial inclusion.
- Future research should employ longitudinal designs and expand geographic coverage to confirm these findings and explore causal mechanisms.

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