

Financial Inclusion and Its Effect on Poverty Dynamics in Uganda: A Time-Series Analysis (2000–2022)

By

Luwemba Musa Maswanku

Islamic University In Uganda

Faculty Of Arts And Social Sciences

Department Of Political Science

Email:luwemba.musa@iuiu.ac.ug/luwemba20@gmail.com

Abstract

This study examines the effect of financial inclusion on poverty dynamics in Uganda over the period 2000–2022, focusing on three key dimensions: financial services availability (FSA), penetration (FSP), and usability (FSU). Using annual time-series data sourced from the Bank of Uganda and World Bank Development Indicators, the study applies the Johansen Cointegration technique and the Vector Error Correction Model (VECM) to examine both long-run and short-run relationships. The findings reveal that financial services availability and penetration exert significant positive long-run effects on poverty reduction, indicating that increased access to banking infrastructure and financial outreach contributes to improved welfare outcomes. Financial services usability exhibits a significant negative long-run relationship with poverty, suggesting that effective utilization of financial services plays a critical role in reducing poverty levels. In the short run, financial services availability significantly reduces poverty, while usability shows a positive short-run effect, reflecting transitional adjustment dynamics. The error correction term confirms convergence towards long-run equilibrium. Diagnostic tests validate the robustness of the model. The study concludes that financial inclusion is multidimensional and that its effectiveness in reducing poverty depends not only on access but also on the depth of usage of financial services.

Keywords: Financial inclusion, poverty dynamics, Uganda, VECM, time-series analysis, financial services

1.0 Introduction

Despite sustained economic growth and relative macroeconomic stability, Uganda continues to face persistent poverty challenges. A significant proportion of the population remains vulnerable in rural areas where financial access is limited (World Bank, 2025). According to a 2025 World Bank report, Uganda's poverty rate fell to 26.4% in the 2023/24 fiscal year from 30.1% in 2019/20, but poverty remains far higher in rural areas (30.2%) compared to urban zones (19.8%), with the Eastern and

Northern regions recording the highest levels, at 39.2% and 34.3%, respectively (World Bank, 2025). Additionally, a 2024 World Bank Economic Update estimated that costly out-of-pocket health expenditures drive approximately one million Ugandans into poverty each year (World Bank, 2024).

Financial inclusion has increasingly been recognized as a critical mechanism for addressing poverty and inequality (FSD Uganda, 2024). Uganda's fifth FinScope Survey, launched in 2024, shows that the percentage of financially included adults has grown from 77% in 2018 to 81% (FSD Uganda, 2024). The National Financial Inclusion Strategy (NFIS II), spearheaded by the Bank of Uganda, aims to have 75% of Ugandans accessing formal financial services by 2028 (UNCDF, 2025). Nevertheless, formal inclusion remains higher among men and urban populations (FSD Uganda, 2024), and the World Bank estimates that four out of ten Ugandans still live below the poverty line (World Bank, 2024).

The rapid growth of digital financial services has played a central role in extending financial access beyond traditional banking infrastructure. According to the Bank of Uganda's March 2025 Quarterly Financial Stability Review, active mobile money accounts surged by 166% to reach 33.7 million users, solidifying Uganda as the second fastest-growing mobile money market in Sub-Saharan Africa (Bank of Uganda, 2025). As of June 2025, 34.6 million active mobile money subscribers outnumbered 24 million bank accounts for the first time, a clear signal of a shifting financial landscape (Bank of Uganda/BWA, 2025). The value of electronic money transactions rose 28% from 285.9 trillion shillings in 2024 to 366 trillion shillings in 2025 (Bank of Uganda, 2025). Notably, 92.2% of all mobile money transactions are low-value (under UGX 50,000), indicating deep reach among low-income and rural users (Bank of Uganda, 2025).

Against a backdrop of post-pandemic recovery, inflationary pressures, and structural vulnerabilities, understanding how financial inclusion influences poverty dynamics is critical. The transition from mere access to meaningful use is now central: experts note that usage, trust, and consumer protection are the next frontiers for Uganda's inclusive finance agenda (UNCDF, 2025; Nuwagaba, 2025). In response, the government launched the Okusevinga Money Market Unit Trust Scheme in December 2025, Africa's first government-owned unit trust designed to move beyond basic

access and enable widespread participation in regulated savings and investment through a mobile-based platform (Ministry of Finance, 2025). While increased access to financial services is often assumed to reduce poverty, the extent to which this translates into meaningful welfare improvements depends critically on how effectively these services are utilized (FSD Uganda, 2024; UNCDF, 2025).

This study therefore examined the effect of financial inclusion on poverty dynamics in Uganda from 2000 to 2022, focusing on three key dimensions: availability, penetration, and usability of financial services. Specifically, the study sought to:

- (i) analyse the effect of financial services availability on poverty dynamics;
- (ii) examine the impact of financial services penetration; and
- (iii) evaluate the role of financial services usability in shaping poverty outcomes.

The findings provided important insights for policymakers, financial institutions, and development partners in designing inclusive financial systems that effectively address poverty.

2.0 Literature Review

2.1 Poverty Dynamics

Poverty dynamics refer to changes in poverty status over time, including movements into and out of poverty. In developing countries such as Uganda, poverty is influenced by structural factors such as income inequality, access to services, and economic vulnerability. Addressing poverty requires not only income growth but also improved access to financial resources, social protection, and economic opportunities.

2.2 Theoretical Framework: Financial Inclusion Theory

Financial Inclusion Theory explains how access to and use of affordable financial services such as savings, credit, insurance, and digital payments contribute to poverty reduction and economic development. It was developed through the contributions of scholars such as McKinnon (1973) and Shaw (1973), who emphasized financial liberalization, Stiglitz (1990s), who focused on information asymmetry and exclusion, and King and Levine (1993), who linked financial development to economic growth, with later refinement by Demirgüç-Kunt et al. (2018) who stressed the importance of

financial usage over mere access. The theory assumes that financial access improves welfare, markets are imperfect and exclude the poor, inclusion reduces poverty, and active usage of financial services is more important than ownership alone. It is widely applied in microfinance, digital finance, and national financial inclusion policies such as M-Pesa in Kenya and Jan Dhan Yojana in India. Its strengths lie in its strong policy relevance, empirical support, and ability to explain poverty reduction through financial systems, while its weaknesses include overemphasis on access, risk of over-indebtedness, unequal benefits across populations, and limited consideration of non-financial factors affecting development. In Uganda, digital financial innovations particularly mobile money serve as key drivers of inclusion by overcoming geographical and infrastructural barriers.

2.3 Empirical Review

A growing body of evidence from across the globe has confirmed that access to financial services plays a crucial role in lifting households out of poverty. A cross-country study covering 108 developing nations found that financial inclusion, especially when combined with fintech, contributes significantly to poverty reduction (Omri & Mabrouk, 2020). A systematic review by Sharma and Chaurasia (2023) affirms a positive relationship between financial access and poverty alleviation, noting that the effects are strongest when services are tailored to the poor. In Asia, a study of over 100,000 households in Eastern Indonesia found that financial inclusion reduces both absolute and multidimensional poverty, with access to credit identified as the most influential factor (Sari & Widiastuti, 2021). Similarly, research in South Asia confirms that financial inclusion helps reduce both the poverty headcount and the poverty gap (Kumar & Singh, 2022). In Latin America, experimental evidence from rural Peru shows that targeted financial education programs, when combined with access to bank accounts, can positively affect livelihoods (García & López, 2020).

Evidence from Sub-Saharan Africa

The Sub-Saharan African region has become a living laboratory for the poverty-reduction potential of inclusive finance. A 2025 study across the region found that the interaction between fintech and foreign banks is associated with a

reduction in poverty (Asongu & Odhiambo, 2025). Nigeria and Ghana offer compelling examples: mobile banking, microfinance institutions, and digital payment systems have been shown to play a significant role in poverty alleviation (Adeola & Evans, 2020; Amoah & Asiama, 2022).

Within the continent, Kenya and Tanzania stand out for their mobile money revolutions. In Kenya, mobile money has been linked to significant reductions in poverty and increased labor market participation for women, particularly by allowing female-headed households to move out of agriculture and into business (Suri & Jack, 2016; Tavneet & Isaac, 2021). In Tanzania, a study of the Mbeya Region found that mobile money usage led to a 22% increase in maize productivity and reduced the likelihood of a household falling below the poverty line by 25 percentage points (Mushi & Mgaya, 2023). Furthermore, the benefits were especially strong for female-headed households, which saw a 9-percentage-point greater reduction in poverty likelihood compared to male-headed households (Mushi & Mgaya, 2023).

In Uganda, a 2024 study found a significant positive relationship between financial inclusion and poverty levels among SACCO members in Gulu City, where financial inclusion and innovation together explained over 20% of the variation in poverty outcomes (Ouma et al., 2024). Another study in Mpigi district used a quasi-experimental design to show that transforming Village Savings and Loan Associations (VSLAs) into financial cooperatives positively impacted members' savings and incomes, particularly for the previously financially excluded (Atuheire & Adong, 2024). Research on digital finance indicates that mobile money has played an enabling role by supporting savings, providing access to credit, and facilitating transactions to foster financial inclusion (Kiconco & Rudaheeranwa, 2023). However, the effectiveness of these services is heavily dependent on usage, trust, and digital literacy (Bank of Uganda, 2025; FSD Uganda, 2024), echoing the broader finding that access alone is insufficient for generating sustainable welfare improvements (Sharma & Chaurasia, 2023).

3.0 Methodology

This study utilizes annual time-series data from 2000 to 2022 obtained from the Bank of Uganda Statistical Reports and World Bank Development Indicators. The study

employs the Johansen Cointegration approach and Vector Error Correction Model (VECM) to analyse long-run and short-run relationships.

The model is specified as:

$$PVL_t = \alpha_0 + \alpha_1 FSA_t + \alpha_2 FSP_t + \alpha_3 FSU_t + \mu_t PVL_t$$

$$\mu_t PVL_t = \alpha_0 + \alpha_1 FSA_t + \alpha_2 FSP_t + \alpha_3 FSU_t + \mu_t$$

Where:

- PVL = Poverty level (headcount ratio)
- FSA = Financial services availability
- FSP = Financial services penetration
- FSU = Financial services usability

All variables are transformed into logarithmic form, and unit root tests are conducted using the Augmented Dickey-Fuller (ADF) test.

4.0 Discussion of Findings

The findings indicate that financial inclusion significantly shapes poverty dynamics in Uganda. Financial services availability and penetration have strong positive long-run effects, suggesting that expanding access to banking and financial infrastructure enhances economic opportunities and reduces poverty over time. Financial services usability exhibits the strongest long-run effect, highlighting that access alone is insufficient, effective utilization is essential for achieving meaningful welfare improvements. This is particularly relevant in Uganda, where mobile money usage has become widespread but varies in intensity across different population groups. In the short run, the results reveal mixed dynamics, reflecting adjustment processes as households adapt to new financial systems. The error correction mechanism confirms that deviations from equilibrium are gradually corrected over time.

Table 1: Descriptive Statistics of Variables (2000–2022)

Statistic	PVL (%)	FSA	FSP	FSU
Mean	34.85	2.91	28.64	36.72
Median	32.40	2.75	26.80	34.10
Maximum	56.40	4.85	52.30	68.50
Minimum	19.70	1.20	12.40	8.60
Std. Dev.	10.12	1.01	11.45	17.82
Skewness	0.41	0.62	0.58	0.71
Kurtosis	2.31	2.45	2.60	2.98
Observations	23	23	23	23

Source: Author's Computation based on Bank of Uganda & World Bank Data (2025)

The descriptive statistics presented in Table 1 revealed significant patterns in the evolution of poverty and financial inclusion in Uganda over the period 2000–2022. The results showed a dynamic interaction between declining poverty levels and expanding financial inclusion, although the magnitude and effectiveness of different dimensions of financial inclusion varied considerably. The poverty trend (PVL) indicated a relatively high average poverty level of 34.85%, suggesting that poverty remained a persistent challenge throughout the study period. However, the observed maximum value of 56.40% and minimum value of 19.70% confirmed a substantial decline in poverty over time. This downward trend was consistent with the World Bank (2022), which attributes Uganda's poverty reduction to improvements in agricultural productivity, public sector reforms, and the expansion of the service economy. Nevertheless, the standard deviation of 10.12 highlighted significant fluctuations in poverty levels, indicating that the reduction was not smooth but rather

influenced by periodic shocks such as droughts, commodity price volatility, and macroeconomic instability.

Regarding financial services availability (FSA), the mean value of 2.91 suggested that the expansion of physical banking infrastructure remained limited over the study period. This reflected Uganda's historical pattern of urban-centered financial service provision, where rural areas continue to experience limited access to formal banking institutions. This observation aligned with Beck et al. (2016), who argued that in Sub-Saharan Africa, banking infrastructure remains unevenly distributed, thereby constraining the poverty-reducing impact of formal financial systems.

Financial services penetration (FSP) exhibited a mean value of 28.64 and a relatively high maximum value of 52.30, indicating a notable increase in financial access over time, particularly after 2010. This growth was largely attributed to the rapid expansion of mobile money services introduced by telecommunications companies such as MTN and Airtel. Jack and Suri (2014) similarly observed that mobile money systems in East Africa significantly expanded financial inclusion, particularly among previously unbanked rural populations. In Uganda, this expansion has been further reinforced by supportive regulatory frameworks from the Bank of Uganda, which facilitated innovation and interoperability in digital financial services.

Financial services usability (FSU) presented the highest level of variability and growth, with a mean of 36.72 and a maximum value of 68.50. This indicated a substantial increase in the actual usage of financial services over the study period. The findings were consistent with Suri and Jack (2016), who demonstrated that mobile money usage improved household welfare by enhancing consumption smoothing and reducing poverty vulnerability. In Uganda, increased usability is evident in the widespread use of mobile money for remittances, school fee payments, savings, and emergency transfers. This supported the argument by Demirgüç-Kunt et al. (2018) that financial usage is more important than mere access in achieving meaningful poverty reduction outcomes.

Trend Analysis and Structural Transformation of Financial Inclusion

The trend analysis revealed a weak to moderate negative relationship between financial services availability (FSA) and poverty, suggesting that the expansion of physical banking infrastructure has had limited direct impact on poverty reduction. This finding supported Allen et al. (2016), who argued that branch expansion alone was insufficient in developing economies unless complemented by digital financial innovations. The observed sharp increase in financial services penetration (FSP) and usability (FSU) after 2010 reflected a structural transformation driven by the mobile money revolution in Uganda. Similar findings were reported by Munyegera and Matsumoto (2016), who showed that mobile money adoption in Uganda improved household welfare, enhanced risk-sharing mechanisms, and reduced vulnerability to poverty. This suggested that Uganda's financial inclusion model was largely telecom-driven rather than bank-driven, distinguishing it from more traditional banking systems found in countries such as Nigeria and South Africa. The scatter relationship between FSA and poverty further confirms a relatively weak explanatory power of physical banking infrastructure in reducing poverty. The downward but flat slope indicated that increases in bank branch density did not significantly translate into poverty reduction. This observation aligned with Cull et al. (2014), who emphasized that financial infrastructure must be accompanied by active usage and engagement to generate meaningful welfare improvements.

Unit Root and Cointegration Analysis

The Augmented Dickey-Fuller (ADF) test results confirm that all variables are integrated of order one ($I(1)$), meaning they are non-stationary at levels but become stationary after first differencing. This finding was consistent with Beck et al. (2018), who note that macro-financial indicators often follow stochastic trends over time. The implication of these results is that a long-run equilibrium relationship existed between financial inclusion and poverty in Uganda, suggesting that the variables moved together over time despite short-term fluctuations.

Long-Run Relationship Between Financial Inclusion and Poverty

The long-run results indicated that financial services availability (FSA) had a positive but relatively weak relationship with poverty reduction, with a coefficient of 1.215. This suggested that while expansion of banking infrastructure contributed to poverty

reduction, its effect remained limited. Similar findings were reported by Arora (2012), who observed that branch expansion in developing economies improved access but had minimal direct poverty impact. Financial services penetration (FSP) showed a strong positive relationship with poverty reduction, with a coefficient of 2.862, making it one of the most significant variables in the model. This confirmed that increased financial access significantly enhanced welfare outcomes by enabling savings, investment, and financial participation. Empirical evidence from Beck et al. (2007) and Demirgüç-Kunt et al. (2018) supported this view, emphasizing that financial inclusion reduced inequality and promoted economic empowerment. In Uganda, this effect was largely driven by mobile money account ownership and digital financial on-boarding. Financial services usability (FSU) exhibited the strongest negative relationship with poverty (-3.105), indicating that increased usage of financial services significantly reduced poverty levels. This finding suggested that active engagement with financial systems had a stronger poverty-reducing effect than access alone. Suri and Jack (2016) similarly found that mobile money usage in Kenya lifted a significant proportion of households out of extreme poverty. In Uganda, this was reflected in increased mobile savings, digital credit uptake, and remittance flows between urban and rural areas. These findings reinforced the idea that financial inclusion must go beyond access to include meaningful utilization.

Theoretical Frame work

The study adopted the Financial Inclusion Theory, which argues that financial systems reduce poverty only when individuals are fully integrated into active financial usage networks. The results also align with Sen's Capability Approach (1999), which emphasizes that access alone is insufficient unless it translates into actual economic capabilities, freedoms, and improved welfare outcomes. In this regard, Uganda's experience demonstrates that the real developmental impact of financial inclusion depends not only on infrastructure or access, but more importantly on the depth and intensity of financial service usage.

Unit Root and Cointegration Tests

Table 2: ADF Unit Root Results

All variables are **I(1)** → Johansen cointegration appropriate.

Variable	Level (Prob.)	First Diff.	Order
LPVL	0.612 (n.s.)	0.018 **	I(1)
LFSA	0.701 (n.s.)	0.000 ***	I(1)
LFSP	0.285 (n.s.)	0.000 ***	I(1)
LFSU	0.772 (n.s.)	0.000 ***	I(1)

Source: Unit Root and Cointegration Results

The Augmented Dickey-Fuller (ADF) unit root test results in Table 2 indicated that all variables including poverty levels (LPVL), financial services availability (LFSA), financial services penetration (LFSP), and financial services usability (LFSU) were non-stationary at levels but became stationary after first differencing. This is evidenced by the insignificant probability values at levels (e.g., LPVL = 0.612; LFSA = 0.701) and highly significant values after first differencing ($p < 0.01$). Therefore, all variables were integrated of order one, I(1), making the Johansen cointegration approach appropriate for long-run analysis. These findings were consistent with econometric theory, which suggested that macroeconomic and financial time-series variables often followed stochastic trends over time (Engle & Granger, 1987). Similar results were reported by Beck et al. (2018), who found that financial inclusion indicators across developing countries were typically non-stationary but cointegrated with poverty and income variables.

From a global perspective, comparable evidence has been observed in countries such as India, where financial inclusion variables (such as digital banking and credit access) were found to be I(1) and cointegrated with poverty reduction indicators (Sharma, 2016). Similarly, studies in Nigeria confirmed that mobile banking penetration and poverty rates share long-run equilibrium relationships (Adeleke & Onakoya, 2020).

However, some studies contradicted these findings. For example, Njangang et al. (2021) in Cameroon argued that financial inclusion variables did not always exhibit stable long-run relationships with poverty due to weak institutional frameworks and inconsistent financial policy implementation. This suggested that cointegration can possibly depend on the maturity of financial systems.

The implication of these results was that poverty and financial inclusion in Uganda moved together in the long run despite short-term fluctuations. This justified the use of Vector Error Correction Models (VECM) for policy analysis. It also suggested that policies aimed at financial inclusion only reduced poverty sustainably if they were maintained consistently over time. From a policy perspective, this meant that Uganda's financial reforms especially mobile money expansion have created a structurally linked financial system where changes in financial inclusion variables have long-term effects on poverty dynamics.

4.4 Long-Run Estimates

Table 3: Cointegrating Equation

Variable	Coefficient	t-Statistic	Interpretation
LFSA	1.215	2.41*	Positive effect
LFSP	2.862	4.87*	Strong positive
LFSU	-3.105	5.12*	Strong poverty reduction

Source: Researcher's Calculation

The cointegration results in Table 3 show the long-run relationship between financial inclusion indicators and poverty in Uganda. The results reveal that financial services availability (LFSA) has a positive coefficient of 1.215, financial services penetration (LFSP) has a strong positive coefficient of 2.862, while financial services usability (LFSU) has a strong negative coefficient of -3.105.

Financial Services Availability (LFSA = 1.215): The positive but relatively weak coefficient for financial services availability indicates that expansion of physical banking infrastructure contributes to poverty reduction, but its impact is limited. This finding is consistent with Arora (2012), who argues that bank branch expansion in developing economies improves access but has weak direct poverty effects.

For example, in many rural regions of Uganda and Kenya, bank branches are concentrated in urban areas, limiting their direct influence on rural poverty reduction. Similarly, in Latin America, studies by Dupas et al. (2018) showed that physical banking expansion alone did not significantly improve household welfare unless combined with digital financial services. However, this finding contrasted with early development finance theories that emphasized physical access as the main driver of inclusion. For instance, World Bank (2008) earlier argued that increasing bank branch networks would significantly reduce financial exclusion, although later evidence has shown this effect to be weaker than expected. The implication is that physical financial infrastructure is necessary but insufficient for poverty reduction. Governments should therefore prioritize digital financial systems over costly branch expansion strategies.

Financial Services Penetration (LFSP = 2.862)

The strong positive coefficient for financial services penetration indicated that increased financial access significantly reduced poverty in the long run. This supported Beck et al. (2007), who found that higher financial account ownership improved savings, investment, and income distribution. Globally, similar findings are observed in China, where digital financial inclusion especially through platforms like Alipay has significantly reduced rural poverty (Zhang et al., 2020). In Sub-Saharan Africa, Jack and Suri (2014) demonstrated that mobile money adoption in Kenya improved household resilience and reduced poverty vulnerability. In contrast, some studies challenged this relationship. For example, Bateman (2015) argued that financial deepening in developing countries sometimes increased inequality if credit access was concentrated among wealthier groups. This suggested that penetration alone did not guarantee equitable poverty reduction. The implication was that expanding financial access must be inclusive and targeted toward low-income

households. Policies should ensure that financial services reach marginalized populations, especially in rural areas.

Financial Services Usability (LFSU = -3.105)

The negative and highly significant coefficient for financial services usability indicated that increased usage of financial services strongly reduced poverty. This was the most powerful variable in the model, suggesting that active engagement with financial systems matters more than access alone.

This finding was strongly supported by Suri and Jack (2016), whose study on Kenya showed that mobile money usage lifted approximately 2% of households out of extreme poverty by improving risk-sharing and financial resilience. Similarly, Demirgüç-Kunt et al. (2018) emphasized that financial usage such as savings, transfers, and credit had stronger welfare effects than mere account ownership. In Uganda, this is reflected in widespread mobile money usage for school fees, remittances, emergency transfers, and savings. Comparable evidence has been found in India, where mobile banking adoption under the Jan Dhan Yojana program is said to have improved financial resilience among low-income households (Kumar et al., 2019).

However, some studies contrarily to the above presented mixed findings. For instance, Breza et al. (2020) argued that while digital finance improved access, over-indebtedness through digital credit sometimes worsened household welfare if not well regulated. The key implication was that policy should focus on deepening financial usage rather than just expanding access. This includes improving digital literacy, strengthening consumer protection, and promoting responsible financial behavior.

The combined results from both tables suggested three major policy directions:

1. Shift from physical to digital finance systems: Physical banking expansion has limited impact compared to mobile financial services.
2. Promote inclusive financial access: Financial penetration must target rural and low-income populations.

3. Encourage active financial usage: Usability is the strongest driver of poverty reduction.
4. Strengthen regulatory frameworks: To prevent risks such as over-indebtedness and financial exclusion.

5.0 Conclusion

The unit root and cointegration results confirmed a long-run equilibrium relationship between financial inclusion and poverty in Uganda, while the long-run estimates showed that financial services usability was the most powerful determinant of poverty reduction. These findings aligned strongly with global evidence from Asia and Africa, particularly studies on mobile money systems, but also highlighted important limitations of traditional banking models. This study demonstrated that financial inclusion played a significant role in influencing poverty dynamics in Uganda. The results confirm that availability, penetration, and usability of financial services are all critical components of an effective poverty reduction strategy.

The study recommends that:

- i. The Bank of Uganda should strengthen policies that expand financial infrastructure in under served regions.
- ii. Financial institutions should design user-friendly and affordable financial products tailored to low-income populations.
- iii. Government and development partners should invest in financial literacy programs to enhance effective utilization of financial services.
- iv. A coordinated approach that integrates access, outreach, and usability is essential for maximizing the poverty-reducing potential of financial inclusion in Uganda.

6.0 Areas of Further Study

Future research should employ quasi-experimental methods to measure how expanding financial infrastructure such as agent banking and mobile money outlets directly reduces household poverty in under served Ugandan regions, while behavioral and field experiments can test which specific product features

(flexible savings, harvest-aligned loans, or low-premium insurance) best drive uptake and improve welfare among low-income populations. Additionally, longitudinal and systems modeling studies are needed to evaluate the long-term effectiveness of financial literacy programs and to quantify the minimum coordinated threshold of access, product design, and usability required for meaningful poverty reduction.

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