

QUALITATIVE STUDY

## Biometric Authentication, Financial Access, and the Agency of Elderly Smallholder Farmers in Zomba District, Malawi

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### ABSTRACT

Financial inclusion initiatives in sub-Saharan Africa increasingly deploy biometric technology to expand access. Elderly smallholder farmers, a demographic often marginalised in digital finance, face unique barriers. The intersection of ageing, rural livelihoods, and biometric authentication remains under-researched. This study investigates how the introduction of biometric automated teller machine cards influences the perceived financial access and personal agency of elderly smallholder farmers. It aims to understand the lived experiences and socio-technical challenges of this transition. A qualitative, interpretive case study was conducted. Data were collected via 24 in-depth, semi-structured interviews and four focus group discussions with farmers aged 60 and above who had used the new biometric cards for at least one agricultural cycle. Thematic analysis was employed. A dominant theme was a paradoxical increase in physical access yet decrease in perceived control. While 79% of participants reported reduced travel time to cash points, a significant majority expressed a loss of agency, fearing transaction errors they could not independently rectify. Dependence on younger relatives for technical troubleshooting was a recurrent sub-theme, often reshaping intra-household financial dynamics. Biometric authentication can simultaneously enhance and constrain financial inclusion for elderly farmers. The technical solution improved logistical access but introduced new relational dependencies and perceived vulnerabilities, complicating notions of inclusion. Microfinance institutions should integrate assisted-user protocols and design inclusive feedback mechanisms for low-literacy users. Product training must address psychosocial barriers to trust and control, not just operational steps. financial inclusion, biometrics, elderly farmers, agency, Malawi, digital finance This paper provides novel empirical evidence on the nuanced psychosocial impacts of biometric technology on a vulnerable, understudied demographic, challenging assumptions that increased access equates to enhanced user agency.

**Keywords:** *Financial inclusion, Biometric authentication, Sub-Saharan Africa, Elderly populations, Qualitative case study, Smallholder farmers, Digital financial services*

#### Article Highlights

- 79% reported reduced travel time, yet a majority expressed a loss of personal agency.
- Dependence on younger relatives for technical troubleshooting reshaped intra-household financial dynamics.
- The study reveals a paradox: increased physical access coincided with decreased perceived control.

#### Policy Implication

Microfinance institutions must integrate assisted-user protocols and design inclusive feedback mechanisms for low-literacy users.

*This qualitative case study provides novel evidence on the psychosocial impacts of biometric technology.*



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