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Community perception, willingness to pay, and governance of a local digital communication network for climate-resilient agriculture: case of the minodu project local network in three communities of the kara region of Togo

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Abstract

Limited access to timely and relevant agricultural information remains a major constraint to productivity and climate resilience in rural Sub-Saharan Africa. While digital advisory services have shown significant potential, their effectiveness is often hindered by infrastructural constraints, low literacy levels, and limited contextual adaptation. This study examines the case of the Minodu local communication network, an innovative low-tech and community-based information system designed to disseminate agricultural knowledge through audio and video formats in local languages in northern Togo.

The research aims to (i) analyse community perceptions of the Minodu network, (ii) estimate beneficiaries' willingness to pay (WTP) for its sustainability, and (iii) identify appropriate governance mechanisms to ensure long-term functionality. The study adopts an interdisciplinary framework combining development economics, information economics, and institutional analysis. A mixed-methods approach is employed, integrating quantitative household surveys (across three communities) and qualitative focus group discussions.

Community perception is analysed using an adapted Technology Acceptance Model (TAM), capturing perceived usefulness, ease of use, social influence, and institutional trust. Logit model is used to identify key determinants of adoption. WTP is estimated through a contingent valuation method using dichotomous choice formats, allowing for the calculation of mean WTP and identification of socioeconomic drivers.

Results suggest that locally adapted content formats and strong community engagement significantly enhance technology acceptance and usage. Moreover, social networks and trust in local governance structures are expected to play a critical role in both adoption and financial sustainability. The findings contribute to ongoing discussions on multifunctional agro-ecosystems by demonstrating how locally embedded digital innovations can strengthen knowledge systems, improve climate resilience, and support inclusive rural development. The study provides policy-relevant insights for scaling context-sensitive digital extension services in the Global South.

Keywords: Climate resilience, governance, Kara , minodu local network, willingness to pay

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