

Beyond Connectivity: A Qualitative Exploration of Multi-Stakeholder Perspectives on FinTech-Driven Financial Inclusion for Smallholder Farmers in Nigeria

Halima Halilu¹

¹Leicester Castle Business School, Faculty of Business and Law, De Montfort University, United Kingdom

Publication Date: 2026/09/21

Abstract:

➤ Purpose:

Quantitative evidence increasingly confirms that digital infrastructure and FinTech adoption drive financial inclusion among smallholder farmers, but the lived, behavioural, and relational mechanisms underlying these statistical relationships remain poorly understood. This study qualitatively explores how smallholder farmers and the wider FinTech ecosystem experience, interpret, and negotiate the adoption of digital financial services in rural Nigeria.

➤ Design/Methodology/Approach:

The study adopted a qualitative design comprising 18 semi-structured interviews with smallholder farmers, agricultural extension officers, FinTech executives, financial regulators, and traditional financial institution representatives across Nigeria's North Central region. Data were analysed using thematic analysis, supplemented by a systematic stakeholder perspective analysis comparing how different participant groups experienced and framed FinTech adoption. Trustworthiness was established through member checking, thick description, audit trails, and reflexive practice, following Lincoln and Guba's (1985) criteria.

➤ Findings:

Five interrelated themes emerged: financial literacy as a foundational capability; the centrality of the digital financial ecosystem (network reliability, agent presence, and POS infrastructure); structural and perceptual barriers and enablers of adoption (registration requirements, trust and fraud concerns, documentation complexity); uneven financial inclusion outcomes despite growing account ownership; and the pivotal role of social support systems, particularly community leadership and peer demonstration, in normalising adoption. Stakeholder perspectives converged on the centrality of infrastructure and trust, while diverging notably on the practicality of regulatory and business-model solutions.

➤ Practical Implications:

Interventions that address a single barrier in isolation, such as device provision or literacy training alone, are unlikely to achieve sustained adoption. Coordinated, multi-stakeholder interventions that simultaneously build trust, extend agent networks, simplify documentation, and mobilise community leaders as adoption champions are more likely to succeed. Regulators and FinTech providers should work jointly on adaptive frameworks that protect farmers from fraud without imposing barriers disproportionate to rural realities.

➤ Originality:

This study contributes rare, in-depth, multi-stakeholder qualitative evidence, spanning farmers, extension officers, regulators, industry, and financial institutions, on FinTech adoption in an underexplored agricultural context. It illuminates the social and relational mechanisms, particularly trust dynamics and peer-driven social proof, that quantitative models of adoption cannot directly capture, offering a complementary and contextually grounded account of how financial inclusion is actually negotiated in rural farming communities.

Keywords: FinTech Adoption; Qualitative Research; Thematic Analysis; Smallholder Farmers; Stakeholder Perspectives; Financial Inclusion; Nigeria; Trust.

How to Cite: Halima Halilu (2026). Beyond Connectivity: A Qualitative Exploration of Multi-Stakeholder Perspectives on FinTech-Driven Financial Inclusion for Smallholder Farmers in Nigeria. *International Journal of Innovative Science and Research Technology*, 11(8), 3976-3980. <https://doi.org/10.38124/ijisrt/26aug1380>

I. INTRODUCTION

Quantitative studies of FinTech adoption typically model adoption as the outcome of measurable constructs, infrastructure access, perceived usefulness, financial literacy, aggregated across large samples (Rayhan et al., 2024). While such studies establish the strength and direction of key relationships, they are less well suited to capturing the situated, relational, and often improvised processes through which farmers and the wider FinTech ecosystem actually navigate adoption decisions. Trust, fear of fraud, peer influence, and informal community facilitation are frequently cited in the literature as important adoption dynamics, yet they are difficult to fully operationalise within structured survey instruments (Spivak et al., 2024; Khan et al., 2024).

This study addresses this gap through an in-depth qualitative inquiry into how smallholder farmers and a range of ecosystem stakeholders, agricultural extension officers, FinTech executives, financial regulators, and financial institution representatives, experience and interpret FinTech adoption in Nigeria's North Central agricultural region. By triangulating across these stakeholder groups, the study surfaces both convergent and divergent perspectives on the barriers, enablers, and lived realities of financial inclusion for smallholder farmers, complementing survey-based evidence with rich contextual understanding.

The remainder of this paper is organised as follows. Section 2 presents the theoretical framework. Section 3 reviews the relevant literature. Section 4 describes the qualitative methodology. Section 5 presents the thematic findings and stakeholder perspective analysis. Sections 6 to 9 discuss the findings and their theoretical, practical, and research implications, before Section 10 concludes.

II. THEORETICAL FRAMEWORK

The study is informed by Rogers' (2003) Diffusion of Innovation theory, particularly its social system component, which emphasises the role of opinion leaders, change agents, and communication channels within a community in shaping the rate and pattern of innovation diffusion. Where quantitative applications of DOI theory typically model these dynamics as aggregated statistical effects, the qualitative design adopted here allows for close, situated examination of how social system dynamics, trust, peer demonstration, and community leadership, actually operate in practice among Nigerian smallholder farming communities, and among the wider ecosystem of actors that shape their access to financial services.

III. LITERATURE REVIEW

➤ *Trust, Social Proof, and Technology Adoption*

Trust is widely recognised as a precondition for financial technology adoption, particularly in contexts where

users have limited prior exposure to formal financial institutions (Spivak et al., 2024). Social proof, observing peers and community leaders using a technology successfully, has similarly been identified as a powerful adoption mechanism, particularly in collectivist rural communities where individual decisions are strongly shaped by community norms (Khan et al., 2024).

➤ *Multi-Stakeholder Perspectives in Financial Inclusion Research*

Financial inclusion outcomes are shaped by an ecosystem of actors extending well beyond end users, including financial institutions, regulators, and FinTech providers, each operating under distinct incentives and constraints (Ahmed, 2024). Research that engages only farmers, without incorporating the perspectives of these other actors, risks producing an incomplete account of why adoption barriers persist or how they might be addressed. This study responds to that gap by systematically incorporating multiple stakeholder perspectives.

IV. METHODOLOGY

➤ *Research Design*

The study adopted a qualitative design using semi-structured interviews, conducted as the qualitative phase of a broader sequential explanatory mixed-methods research programme. This paper reports the standalone qualitative findings and their independent theoretical and practical contribution, following established guidance on the value of qualitative inquiry for capturing situated meaning and process in organisational and development research (Creswell, 2014).

➤ *Participants and Sampling*

Eighteen semi-structured interviews were conducted with a purposively selected sample spanning five stakeholder groups: smallholder farmers, agricultural extension officers, FinTech executives, financial regulators, and representatives of traditional financial institutions, across Nigeria's North Central region. Purposive sampling was used to identify participants with direct, practical engagement in FinTech adoption or rural financial service delivery. Sample size was guided by the principle of theoretical saturation, whereby data collection continued until no substantively new themes emerged from additional interviews, consistent with established qualitative research standards (Hennink, 2018).

➤ *Data Collection Procedure*

Interviews followed a semi-structured protocol developed through literature review and expert panel refinement, and piloted with stakeholders not included in the final sample. The interview guide moved from opening contextual questions through core thematic areas, including the current state of financial inclusion among smallholder farmers, technological innovations and implementation challenges, the regulatory environment, social and cultural

factors influencing adoption, and future prospects and opportunities.

➤ Data Analysis Technique

Data were analysed using thematic analysis, generating an inductively derived coding structure subsequently organised into five overarching themes. This was complemented by a systematic stakeholder perspective analysis, in which coded data were disaggregated by participant group to identify convergent and divergent viewpoints across the five stakeholder categories. Trustworthiness was established following Lincoln and Guba's (1985) criteria: credibility through prolonged engagement and member checking with six participants;

transferability through thick description of the North Central Nigerian context; dependability through systematic documentation of analytical decisions and peer debriefing; and confirmability through reflexive memoing and triangulation across data sources.

V. FINDINGS

The thematic analysis identified five interrelated themes, illustrated in the aggregate data structure presented in Figure 1, which maps the first-order codes generated from interview transcripts through second-order themes to the overarching aggregate dimension of the Rural FinTech Adoption Ecosystem.

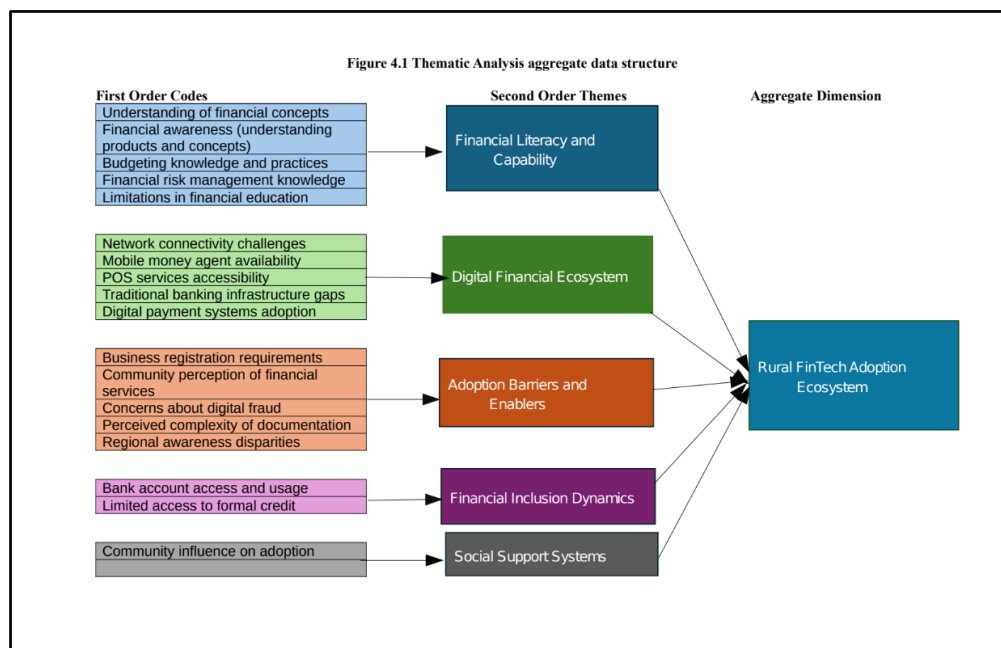


Fig 1 Thematic Analysis Aggregate Data Structure

➤ Theme 1: Financial Literacy as a Foundational Capability

Participants displayed uneven financial literacy, with reasonable grasp of basic savings and budgeting concepts but limited understanding of interest, risk diversification, and complex financial products. Farmers described tracking income and expenses through informal means such as notebooks, while extension officers and FinTech executives independently emphasised that farmers' unfamiliarity with formal financial education left many core FinTech concepts feeling unfamiliar or intimidating. This theme reinforces prior evidence linking financial literacy to both adoption readiness and effective service utilisation (Lusardi & Mitchell, 2011).

➤ Theme 2: The Digital Financial Ecosystem

Network connectivity emerged as the single most frequently cited enabler or constraint on FinTech use, with participants describing accessibility as fundamentally contingent on network stability. Mobile money agent presence varied considerably across villages, directly shaping the convenience of deposits and withdrawals, while POS terminal operators frequently cited connectivity interruptions

as a persistent operational challenge. Traditional financial institutions acknowledged that the cost of establishing physical branches in rural communities had left service gaps that FinTech providers were increasingly filling. This theme is consistent with Rogers' (1962) diffusion principles regarding the centrality of supportive infrastructure ecosystems (Rahman & Singh, 2023).

➤ Theme 3: Adoption Barriers and Enablers

Structural, perceptual, and behavioural barriers intersected in shaping adoption decisions. Business registration requirements created administrative friction for farmers, while community perceptions and early adopters' experiences strongly shaped subsequent uptake. Fraud concerns and cautious trust in mobile wallets were commonly reported, tempering usage intensity even among adopters. Documentation complexity was repeatedly cited as a deterrent relative to traditional banking, with simplified FinTech onboarding processes cited as a comparative advantage. Regional disparities in awareness were evident, with proximity to urban centres and targeted information campaigns associated with higher adoption rates, consistent

with prior evidence on multidimensional rural technology adoption barriers (Ahmed, 2024; Das, 2024).

➤ *Theme 4: Uneven Financial Inclusion Dynamics*

Financial inclusion outcomes reflected both progress and persistent limitations. Bank account ownership had improved but often remained narrowly transactional, with many accounts used primarily to receive and immediately withdraw government payments rather than to save or build credit history. Formal credit access remained constrained by collateral requirements, pushing farmers toward informal community savings groups for input financing. These insights highlight the ongoing need to integrate FinTech adoption with targeted financial education and policy support to achieve deeper, rather than merely nominal, financial inclusion, corroborating similar findings elsewhere (Zulfiqar et al., 2023).

➤ *Theme 5: Social Support Systems*

Community leadership and peer influence emerged as critical, and in some cases decisive, determinants of adoption. Farmers described following the example of trusted community leaders who had adopted mobile banking, while widespread visible use of POS services in local markets reinforced adoption through social proof. These findings underscore the deep embeddedness of financial behaviours within social networks and highlight the strategic value of leveraging community structures and social proof mechanisms to accelerate FinTech adoption in rural contexts (Spivak et al., 2024; Khan et al., 2024).

➤ *Stakeholder Perspective Analysis*

Disaggregating findings by stakeholder group revealed both convergence and divergence. Farmers consistently emphasised practical, ground-level barriers, infrastructure limitations, affordability, and trust, alongside the importance of peer demonstration. Extension officers highlighted the need for integrated agricultural-financial education programming, drawing on their experience translating technical concepts into farmer-accessible guidance. FinTech executives demonstrated sophisticated awareness of market constraints while identifying opportunities for product adaptation suited to rural realities. Regulators emphasised the tension between consumer protection and innovation facilitation, calling for adaptive frameworks responsive to diverse rural contexts. Financial institution representatives, meanwhile, framed FinTech less as a competitive threat than as a potential partnership opportunity for extending rural reach. This multi-stakeholder convergence around infrastructure and trust, alongside divergence on regulatory and business-model solutions, underscores that successful adoption requires coordinated action across stakeholder groups rather than isolated interventions.

VI. DISCUSSION

These qualitative findings substantially enrich and contextualise quantitative evidence on FinTech adoption among smallholder farmers by illuminating the relational and behavioural mechanisms underlying statistical relationships. The prominence of network connectivity across nearly all

interviews corroborates quantitative findings that digital infrastructure functions as a foundational determinant of adoption, while providing texture on precisely how connectivity gaps manifest in farmers' daily transactional experiences.

The prominence of the social support systems theme extends Rogers' (2003) Diffusion of Innovation theory by demonstrating that, in this context, opinion leaders and peer networks function not merely as persuasive communication channels but as trust-building and risk-reducing mechanisms, addressing fraud concerns that might otherwise inhibit adoption even where infrastructure and literacy are adequate. This suggests that community-based, socially embedded intervention strategies may be as important as infrastructure and literacy investment in accelerating adoption.

The divergence in stakeholder perspectives on regulatory and business-model solutions also carries important implications: interventions designed without input from the full range of ecosystem actors, farmers, extension officers, industry, regulators, and financial institutions, risk overlooking implementation barriers visible only from particular vantage points. This reinforces the case for coordinated, multi-stakeholder programme design in rural financial inclusion initiatives.

VII. THEORETICAL CONTRIBUTIONS

This study makes three principal contributions to the literature. First, it extends Rogers' (2003) Diffusion of Innovation theory by demonstrating that, within resource-constrained rural social systems, opinion leaders and peer networks function as trust-building and risk-mitigation mechanisms as much as persuasive communication channels, a nuance not fully captured in the theory's original formulation.

Second, the study contributes a systematic multi-stakeholder perspective, spanning farmers, extension officers, industry, regulators, and financial institutions, to a literature that has often examined FinTech adoption from a single vantage point, typically that of the end user. This comparative approach surfaces both convergence and divergence across the ecosystem that single-stakeholder studies cannot detect.

Third, by illuminating the social and relational mechanisms, trust, peer demonstration, and community leadership, that underlie statistical adoption patterns, the study offers a qualitative complement to quantitative technology-adoption models, addressing calls in the literature for mixed-methods approaches capable of capturing both the magnitude and the meaning of adoption dynamics (Creswell, 2014).

VIII. PRACTICAL IMPLICATIONS

- Build trust deliberately: FinTech providers should invest visibly in fraud prevention, transparent complaint

resolution, and user education to address the trust concerns repeatedly raised across all farmer interviews.

- Simplify onboarding without compromising protection: Regulators and providers should collaborate on documentation and registration processes that are simple enough for rural users while maintaining adequate consumer protection.
- Mobilise community leaders as adoption champions: Programme designers should formally engage trusted community leaders and early adopters as adoption facilitators, given the strong evidence of peer-driven social proof.
- Coordinate across the ecosystem: Given the divergence in stakeholder perspectives, financial inclusion initiatives should be designed through structured multi-stakeholder engagement rather than siloed, single-actor programming.
- Move beyond transactional inclusion: Programming should explicitly target deeper financial inclusion, savings behaviour and credit access, rather than treating account ownership alone as a success metric.

IX. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, the qualitative design, while offering depth and contextual richness, does not permit statistical generalisation to the broader population of smallholder farmers or ecosystem stakeholders; findings should be interpreted as analytically, rather than statistically, generalisable. Second, purposive sampling, while appropriate for the study's exploratory objectives, may not capture the full diversity of farmer experiences across North Central Nigeria; future research could extend the sample to additional states or agro-ecological zones. Third, the cross-sectional nature of the interviews captures perspectives at a single point in time; longitudinal qualitative research could examine how trust, adoption behaviour, and stakeholder relationships evolve over time. Future research could also explore whether the themes identified here, particularly the role of community leadership and trust, operate similarly in other Sub-Saharan African agricultural contexts, and could examine gendered dimensions of adoption barriers in greater depth, given descriptive evidence of gender disparities in the broader research programme's sample.

X. CONCLUSION

This study offers rich, multi-stakeholder qualitative evidence on the socio-technical and relational mechanisms shaping FinTech adoption and financial inclusion among smallholder farmers in North Central Nigeria. Five interconnected themes, financial literacy, the digital financial ecosystem, adoption barriers and enablers, uneven inclusion dynamics, and social support systems, illustrate that successful adoption depends on the simultaneous alignment of infrastructure, capability, trust, and community reinforcement, rather than any single factor in isolation.

The accompanying stakeholder perspective analysis further demonstrates that effective intervention design requires coordination across farmers, extension services,

industry, regulators, and financial institutions. These findings complement quantitative evidence on the infrastructure–adoption–inclusion pathway by illuminating the lived, relational processes through which that pathway is actually navigated, offering a more complete evidence base for designing rural financial-inclusion interventions in Nigeria and comparable Sub-Saharan African contexts.

REFERENCES

- [1]. Ahmed, A. (2024). Impact of financial technology on micro small and medium enterprises (MSMEs): Evidence from Adamawa State, Nigeria. *Journal of Accounting and Financial Management*.
- [2]. Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Sage Publications.
- [3]. Das, S. (2024). Financial literacy and education in enhancing financial inclusion and poverty alleviation. In S. Das (Ed.), *Financial inclusion and poverty alleviation* (pp. 159–178). Springer. https://doi.org/10.1007/978-3-031-67523-2_8
- [4]. Hennink, M. (2018). *Applied thematic analysis*. Sage Publications.
- [5]. Khan, F. U., Nouman, M., Negrut, L., Abban, J., Cismas, L. M., & Siddiqi, M. F. (2024). Constraints to agricultural finance in underdeveloped and developing countries: A systematic literature review. *International Journal of Agricultural Sustainability*, 22(1). <https://doi.org/10.1080/14735903.2024.2329388>
- [6]. Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- [7]. Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: An overview. *Journal of Pension Economics and Finance*, 10(4), 497–508. <https://doi.org/10.1017/S1474747211000448>
- [8]. Rahman, S., & Singh, A. (2023). Digital financial inclusion in rural India: Infrastructural barriers and implementation challenges. *Journal of Rural Studies*, 97, 214–227.
- [9]. Rayhan, M. J., Rahman, S. M. M., Mamun, A. A., Saif, A. N. M., Islam, K. M. A., Alom, M. M., & Hafiz, N. (2024). FinTech solutions for sustainable agricultural value chains: A perspective from smallholder farmers. *Business Strategy and Development*, 7(2). <https://doi.org/10.1002/bsd2.358>
- [10]. Rogers, E. M. (1962). *Diffusion of innovations* (1st ed.). Free Press.
- [11]. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- [12]. Spivak, I., Mihus, I., & Greben, S. (2024). Financial literacy and government policies: An international study. *Financial and Credit Activity: Problems of Theory and Practice*, 2(18). <https://doi.org/10.36690/2674>
- [13]. Zulfikar, M., Zhang, R., Khan, N., & Nadeem, M. (2023). Financial literacy and subjective well-being: The mediating role of financial self-efficacy and financial behavior. *Journal of Behavioral and Experimental Finance*, 40, 100865.