Role of Mobile Banking in Financial Inclusion: Evidence from Agro Traders of India

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Abstract

Financial inclusion remains a critical driver of economic development in emerging economies, with mobile banking emerging as a potential solution to overcome the limitations of traditional brick-and-mortar banking infrastructure. This review article synthesizes available evidence on the role of mobile banking in advancing financial inclusion among agricultural traders in India. The analysis identifies a significant gap in the literature: while substantial evidence exists regarding mobile banking adoption among farmers, and considerable industry developments are occurring in agricultural fintech, only one peer-reviewed study provides direct empirical evidence specifically focused on agro traders. This article critically examines that foundational study, contextualizes it within the broader ecosystem of digital agricultural finance, and proposes a comprehensive research agenda. The review finds that perceived usefulness, ease of use, and trust significantly influence agro traders' mobile banking adoption, while social influence plays no significant role—a finding that distinguishes traders from general rural populations. The article concludes that targeted research on this economically crucial but academically neglected segment is urgently needed.

Keywords: *mobile banking, financial inclusion, agro traders, agricultural value chains, India, digital finance, technology adoption*

1. Introduction

India's agriculture sector employs over 50% of the workforce and contributes approximately 18% to the national GDP, yet it remains characterized by persistent financial exclusion (citation:3). While considerable policy attention and academic research have focused on

smallholder farmers' access to credit, a critical gap exists in understanding the financial inclusion challenges faced by agricultural traders—the intermediaries who aggregate, store, and market produce across India's vast commodity value chains. Agricultural traders operate at the intersection of formal and informal economies. They manage significant working capital requirements across crop cycles, yet frequently lack access to structured finance due to insufficient formal collateral, limited credit histories, and the cash-intensive nature of mandi (wholesale market) transactions (citation:2; citation:6). Industry estimates indicate that over 60% of India's smallholder farmers lack formal credit access, with post-harvest finance for traders facing even greater scarcity despite demand exceeding ₹1.4 lakh crore (citation:6).

Mobile banking has been proposed as a cost-effective mechanism to extend financial services to underserved populations, circumventing the expensive branch-based banking model. However, the specific factors influencing mobile banking adoption among agro traders, and the demonstrable impacts on their financial inclusion, remain underexamined. This review article addresses three questions: (1) What empirical evidence exists regarding mobile banking adoption by Indian agro traders? (2) What mechanisms link mobile banking to financial inclusion outcomes for this segment? (3) What gaps must be addressed to inform policy and practice?

2. Methodology

This review employed a systematic search strategy across academic databases (Google Scholar, Scopus, Web of Science) and industry sources using combinations of terms including "mobile banking," "financial inclusion," "agri traders," "India," "mandi," "agricultural value chains," and "digital finance." The search was conducted in February 2026, covering publications from 2020–2026. Inclusion criteria required explicit focus on Indian agricultural traders or direct relevance to understanding their financial inclusion through mobile/digital channels. Both peer-reviewed empirical studies and high-quality industry/grey literature were considered, with appropriate weighting of evidence quality.

3. The State of Evidence: A Critical Assessment

3.1 The Foundational Study

The sole peer-reviewed empirical study directly addressing this review's focus is Tikku and Singh's "Role of mobile banking in

financial inclusion: evidence from agri traders of India," published in the International Journal of Electronic Finance in 2023 (citation:5). This study examined 230 agro traders in Indian wholesale commodity markets using structured questionnaires, confirmatory factor analysis, and structural equation modelling.

Key Findings: Perceived usefulness, ease of use, and trust have significant positive impacts on behavioural intention toward mobile banking adoption

Social influence shows no significant impact on behavioural intentions—a notable departure from general technology adoption literature

The study positions mobile banking adoption as a pathway toward cashless economy transformation and grassroots financial inclusion.

Methodological Considerations: The study provides robust quantitative evidence from a reasonable sample, employing appropriate statistical techniques. However, the research is now three years old, predating significant developments in India's digital public infrastructure including the Account Aggregator framework's expansion and ONDC's agricultural integration. The geographic scope and absence of longitudinal data limit conclusions about causal impacts on actual financial inclusion outcomes versus adoption intentions.

Critical Gap: This single study, while valuable, cannot sustain a comprehensive evidence base. No other peer-reviewed research specifically examining agro traders' mobile banking adoption was identified, representing a profound scholarly neglect of this economically significant population.

3.2 Contextual Evidence from Adjacent Populations

Substantially more evidence exists regarding mobile banking adoption among Indian farmers. SBI's digital agriculture initiatives reached over 2.7 million farmers through Kisan Credit Card digital renewal and YONO Krishi platforms (citation:1). While farmers and traders face distinct financial contexts—traders manage working capital and inventory rather than production cycles—this evidence suggests institutional appetite for digital agricultural finance.

Research on digital payment adoption among rural micro-entrepreneurs more broadly indicates that UPI has achieved remarkable penetration, processing over 19.47 billion transactions monthly by July 2025 (citation:7). However, extrapolating from

general rural populations to specialized agro trader's risks ignoring the unique characteristics of wholesale commodity markets, including high-value time-sensitive transactions, complex counterparty relationships, and limited digital infrastructure in many mandis.

3.3 Industry Evidence and Grey Literature

Multiple industry sources document initiatives that, while not producing peer-reviewed evidence, indicate mechanisms through which mobile banking may influence agro traders' financial inclusion. The Arya.ag-South Indian Bank partnership employs warehouse receipt financing where stored grain becomes a digital asset enabling collateralized lending (citation:2; citation:6). This directly addresses the collateral constraint identified as a barrier for traders. The model reports zero NPAs and has facilitated over USD 1.54 billion in credit, reaching 800,000 farmers and 1,600 FPOs—with explicit mention of agri traders as beneficiaries.

Similarly, GraamPay's Village-Level Entrepreneur model promotes digital payments among rural merchants and traders (citation:8), while broader digital public infrastructure developments including ONDC's onboarding of 9,000 FPOs and the Account Aggregator framework's facilitation of ₹1.6 lakh crore in loans demonstrate ecosystem-level transformation (citation:7).

However, industry sources lack the methodological rigor, transparent data, and independent verification characteristic of peer-reviewed research. They document platform outputs rather than trader-level adoption determinants or welfare impacts.

4. Mechanisms Linking Mobile Banking to Financial Inclusion for Agro Traders

Synthesizing the available evidence, four interconnected mechanisms emerge through which mobile banking can advance financial inclusion for agro traders:

4.1 Digital Footprint Creation

Traditional credit assessment fails traders with limited formal documentation. Mobile banking transactions—payments received, bills paid, inventory financed—generate auditable digital records. The Account Aggregator framework enables consent-based sharing of this data across financial institutions (citation:7). As noted in fintech analyses, a farmer saving ₹50 monthly in digital gold generates a transaction history enabling credit assessment (citation:3). For traders,

daily UPI collections, digital invoice settlements, and mobile-based warehouse receipt financing create substantially richer data trails.

4.2 Collateral Substitution Through Digital Assets

The warehouse receipt financing model demonstrates that stored commodities, when digitally tracked and verified, can substitute for traditional collateral (citation:2; citation:6). This shifts risk assessment from borrower creditworthiness to commodity value and quality. Mobile platforms enable traders to monitor stored grain digitally, access financing against receipts, and execute sales at optimal times—all while building credit histories.

4.3 Transaction Cost Reduction

Cash-dependent mandi transactions impose handling costs, security risks, and settlement delays. Mobile payments reduce these frictions while creating transparent price discovery. For traders operating on thin margins across large volumes, even modest efficiency gains affect profitability and working capital velocity.

4.4 Value Chain Integration

Mobile banking platforms increasingly function not as standalone payment tools but as integrated ecosystems. YONO Krishi combines credit access with weather data, market prices, and input sourcing (citation:1). ONDC integration enables FPOs and traders to access national buyer networks (citation:7). This convergence of finance, information, and commerce may prove more transformative than payments alone.

5. Challenges and Barriers

Despite these mechanisms, significant barriers constrain mobile banking adoption and its financial inclusion impacts:

Digital Literacy: While improving, digital capability varies substantially across age groups and regions. The Village-Level Entrepreneur model acknowledges that assisted digital access remains necessary (citation:8).

Infrastructure Constraints: Last-mile broadband connectivity and device affordability remain burdensome, particularly in smaller mandis (citation:7).

Regulatory Uncertainty: GST compliance concerns deter some rural merchants from fully embracing digital commerce (citation:7).

Trust Deficits: Tikku and Singh's finding that trust significantly influences adoption intentions (citation:5) underscores that security concerns and past experiences with digital systems shape behaviour.

Segment Heterogeneity: Agro traders are not monolithic. Wholesale mandi traders, itinerant collectors, commission agents, and FPO marketing personnel face different working capital cycles, technology access, and institutional relationships. The existing evidence does not adequately capture this diversity.

6. Research Agenda: Urgent Priorities

The stark imbalance between the policy importance of this topic and the available evidence demands a coordinated research agenda:

6.1 Empirical Priorities

Quantitative Research: Replication and extension of Tikku and Singh's study across diverse geographies, mandi sizes, and trader types. Longitudinal designs measuring actual adoption behaviour rather than intentions. Quasi-experimental studies examining impacts of mobile banking access on credit access, working capital, profitability, and resilience.

Qualitative Research: Ethnographic studies of mandi digitalization, examining how traders incorporate mobile banking into existing practices, negotiate trust in digital transactions, and navigate the transition from cash. Research on the role of social networks, given the counterintuitive finding that social influence does not significantly affect adoption (citation:5).

Impact Assessment: Rigorous evaluation of specific interventions—warehouse receipt financing, UPI mandi adoption, ONDC trader onboarding—on trader-level financial inclusion metrics.

6.2 Thematic Priorities

Gender Dimension: Women's participation in agricultural trading, while substantial informally, remains underrecognized and understudied. Research must examine gendered patterns of mobile banking access, adoption constraints, and financial inclusion outcomes.

Policy- Practice Gap: Research on how digital financial infrastructure translates into trader-level outcomes, and which policy interventions (subsidies, literacy programs, infrastructure investment) demonstrate highest returns.

Comparative Research: Cross-state and cross-country comparisons situating Indian traders' experiences within broader South Asian and global agricultural value chain finance contexts.

7. Conclusion

This review reveals a paradoxical situation. India has witnessed remarkable expansion of digital public infrastructure and private fintech innovation in agricultural finance, with documented reach to millions of farmers and substantial credit facilitation. Yet the specific population of agro traders—the commercial linchpin connecting farm production to consumer markets—remains nearly invisible in the scholarly literature on mobile banking and financial inclusion.

The available evidence, anchored by one rigorous empirical study, suggests that mobile banking adoption among traders is driven by perceived usefulness, ease of use, and trust, with social influence playing no significant role. Industry initiatives demonstrate viable mechanisms for addressing traders' collateral constraints through digitally-enabled warehouse receipt financing and value chain integration. However, these threads have not been woven into coherent evidence base capable of guiding policy or practice.

This research deficit is not merely academic. As India pursues its vision of a digitally empowered agricultural economy, interventions designed without trader-specific evidence risk misalignment with the actual adoption determinants, constraints, and priorities of this critical population. The financial inclusion of agro traders—and by extension, the efficiency and equity of India's agricultural markets—depends on closing this evidence gap with urgency and rigor.

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