

From Cash to Code: Digital Wallets as a Pathway to Financial Autonomy among Rural Women in Karnataka

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Abstract

Digital financial technologies are transforming access to money, savings, and credit in India's rural economy. Among these innovations, digital wallets—such as PhonePe, Google Pay, and Paytm—are redefining women's economic participation by bridging gaps of distance, time, and dependence. This study explores the role of digital wallets in fostering financial autonomy among rural women in Karnataka, one of India's leading states in fintech adoption. Using a structured questionnaire administered to 250 women respondents across four districts—Tumakuru, Chikmagalur, Mandya, and Belagavi—the research assesses awareness, adoption, usage, and empowerment outcomes. The findings reveal that while 65.2% of respondents actively use digital wallets, the depth of empowerment depends on education, digital literacy, and control over devices. Statistical analysis confirms a strong positive correlation between frequency of wallet usage and financial autonomy index ($r = 0.63, p < 0.01$). The study concludes that digital wallets not only enable convenient transactions but also enhance women's agency, independence, and confidence in financial decision-making. However, barriers such as cyber insecurity, limited literacy, and gendered technology control remain persistent. Policy implications emphasize gender-sensitive digital literacy, local-language fintech interfaces, and SHG-based digital capacity building.

Keywords: Digital wallets, Financial autonomy, Rural women, Karnataka, Fintech inclusion, Women's empowerment

Introduction

The rapid evolution of financial technologies (FinTech) has revolutionized access to money and credit, particularly in developing economies like India. The convergence of widespread mobile connectivity, the Unified Payments Interface (UPI), and a proactive digitalization push has created an ecosystem where digital financial tools are becoming ubiquitous. Within this landscape, digital wallets have emerged as a powerful catalyst for financial inclusion, bridging deep-seated socioeconomic divides and empowering historically marginalized groups—especially rural women. Traditionally, rural women in India have been constrained by limited physical mobility, lower financial and digital literacy, and patriarchal norms that often curtail their economic agency. Their access to formal financial services was frequently mediated by male family members. However, the proliferation of smartphones and UPI-based applications is challenging this paradigm, offering women direct, personal access to digital financial tools that can enhance their decision-making capacity and foster independence. Karnataka, a frontrunner in technology adoption and one of India's leading states in FinTech integration, presents an ideal context for this study. The penetration of digital payment systems has accelerated remarkably since the launch of UPI. This research paper systematically examines how digital wallets influence the financial autonomy of rural women in Karnataka. It explores their usage patterns, perceptions, and the subsequent outcomes on their sense of empowerment, thereby contributing to the discourse on gender, technology, and development.



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Review of Literature

1 Digital Finance and Women's Empowerment

A growing body of evidence links digital finance to improved socioeconomic outcomes for women. Demirgüç-Kunt et al. (2021), through the Global Findex database, highlight that access to digital finance significantly reduces gender inequality in financial participation by providing women with private, direct control over their funds. A seminal study by Suri & Jack (2016) in Kenya demonstrated that the adoption of mobile money services like M-Pesa lifted 2% of Kenyan households out of poverty, with a more pronounced effect on women-headed households. In the Indian context, scholars like Kumar & Gupta (2022) have found that digital wallets enhance self-efficacy and economic engagement among rural women, allowing them to manage household finances, receive government subsidies directly, and engage in small businesses with greater efficiency.

2 FinTech Inclusion in India

India's digital financial infrastructure has seen unprecedented growth, driven by foundational initiatives like the Pradhan Mantri Jan Dhan Yojana (PMJDY), which expanded formal bank account ownership, and the Aadhaar-enabled payment system. The introduction of the Unified Payments Interface (UPI) by the National Payments Corporation of India (NPCI) has been a game-changer, enabling seamless, real-time interbank transactions. As per the Reserve Bank of India (RBI, 2023), UPI has become the dominant form of digital payment in the country. Despite this progress, a gendered digital divide persists. Women, particularly in rural areas, often face a "second-level" digital divide—they may own a smartphone but lack the literacy, confidence, or social permission to use it for complex financial tasks.

Theoretical Framework

This research is anchored in two key theoretical models:

1. The Capability Approach (Amartya Sen, 1999):

This approach moves beyond mere access to resources, focusing on an individual's "capability" to use those resources to achieve valued "beings and doings" (e.g., financial independence, participation in economic decisions). In this context, a digital wallet is a resource, but empowerment is realized only when a woman has the capability (skills, freedom, agency) to use it effectively for her well-being.

2. Technology Acceptance Model (TAM):

This model posits that the adoption of a new technology is determined by its perceived usefulness and perceived ease of use. For rural women, if a digital wallet is seen as a complex, risky tool, adoption will be low. If it is perceived as useful (saves time, increases privacy) and easy to use (simple interface, vernacular support), adoption and sustained usage are more likely.

3. Research Gap and Rationale

While numerous studies explore the broad theme of digital inclusion in India, there is a scarcity of empirical research that quantitatively assesses the direct causal pathways between digital wallet adoption and enhanced financial autonomy specifically for rural women. Many existing studies are either macro-level or focus on urban users. This study aims to bridge this gap by providing a micro-level, quantitative assessment and correlational analysis of wallet usage and empowerment indicators in the under-researched context of rural Karnataka.

Research Objectives

1. To assess the level of awareness and adoption of digital wallets among rural women in Karnataka.
2. To analyze the relationship between digital literacy, education, and digital wallet usage.
3. To evaluate the impact of digital wallet usage on financial autonomy and empowerment.
4. To identify the key challenges faced by rural women in adopting and using digital wallets.

Research Questions

1. What are the key socio-demographic and technological factors influencing the adoption of digital wallets among rural women in Karnataka?
2. How does digital literacy affect the frequency and depth of wallet usage?
3. Does digital wallet usage significantly enhance financial autonomy among rural women?
4. What barriers limit the full realization of digital empowerment in these rural communities?

Hypotheses

H1: There is a significant positive relationship between digital wallet usage frequency and the level of financial autonomy among rural women.

H2: Education level and digital literacy significantly influence digital wallet adoption among rural women.

Research Methodology

1 Research Design

The study employs a descriptive-correlational research design. This design is appropriate for describing the characteristics of the population (awareness, usage patterns) and for understanding the relationships between the key variables (wallet usage and financial autonomy).

2 Population and Sampling

- **Population:** The study population comprised rural women in Karnataka who have access to a mobile phone (basic or smartphone).
- **Sampling Frame:** To ensure a representative sample, the study focused on women associated with local Self-Help Groups (SHGs) and rural cooperatives, which are common platforms for women's economic activity.
- **Sample Size:** 250 respondents.
- **Sampling Technique:** A stratified random sampling technique was used across four districts—Tumakuru, Chikmagalur, Mandya, and Belagavi—to ensure geographic and socioeconomic diversity.

3 Data Types and Sources

- **Primary Data:** Collected via a structured questionnaire with sections on demographics, awareness, usage patterns, and a 5-point Likert scale to measure financial autonomy indicators (e.g., "I decide how to spend the money I earn").
- **Secondary Data:** Reports from the Reserve Bank of India (RBI), NPCI, World Bank, and relevant scholarly articles were reviewed.

4 Data Collection Techniques

The field survey was conducted with the assistance of local SHG facilitators and Anganwadi workers to build trust and ensure accurate responses. To accommodate varying literacy levels, data was collected through both physical questionnaires and assisted mobile forms where the facilitator read out the questions and recorded the responses.

5 Statistical Tools Used

Data was analyzed using SPSS Version 26. The tools included:

- Descriptive Statistics (Mean, Standard Deviation, Frequency Distribution)
- Pearson's Correlation Coefficient to test H1
- Linear Regression Analysis to test H2 and determine predictive power of variables
- Reliability of the Likert scale was tested using Cronbach's Alpha ($\alpha = 0.78$), indicating acceptable internal consistency.

Data Analysis and Findings

1 Demographic Profile and Adoption Rates

The sample consisted of 250 rural women with a mean age of 34 years. A majority (62%) had completed secondary education. Over 85% of respondents were aware of at least one digital wallet platform (PhonePe, Google Pay, or Paytm). However, active usage was reported by 65.2% (163 out of 250) of the women.

Table 1: Digital Wallet Awareness and Adoption (N=250)

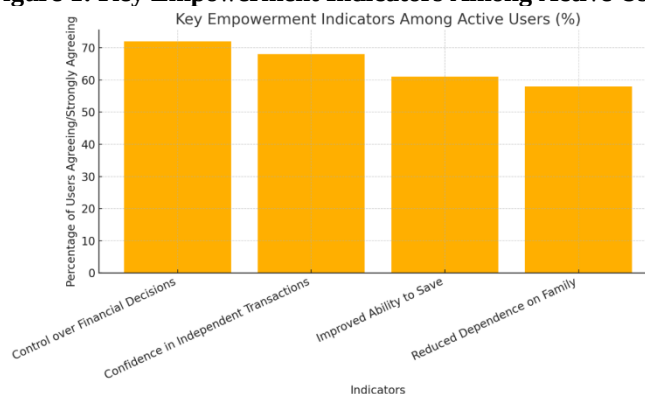
Metric	Percentage
Awareness of Digital Wallets	85.0%
Active Usage (Adoption)	65.2%
Primary Use Case: P2P Transfers	88%
Primary Use Case: Merchant Payments	45%

2 Empowerment Indicators

The study measured empowerment through a composite index based on five Likert-scale questions. Key findings include:

- 72% of active users reported increased control over personal and household financial decisions.
- 68% noted improved confidence in handling transactions without the assistance of a male family member.
- 61% stated they could save small amounts more easily and privately.

Figure 1: Key Empowerment Indicators Among Active Users



Title: Key Empowerment Indicators Among Active Users (%)

Y-Axis: Percentage of Users Agreeing/Strongly Agreeing

X-Axis: Indicators

Control over Financial Decisions: [Bar up to 72%]

Confidence in Independent Transactions: [Bar up to 68%]

Improved Ability to Save: [Bar up to 61%]

Reduced Dependence on Family: [Bar up to 58%]

3 Correlation and Regression Results

- **Testing H1:** A Pearson's correlation analysis revealed a strong positive correlation between the frequency of digital wallet usage and the financial autonomy index ($r = 0.63$, $p < 0.01$). This supports H1, indicating that higher usage is significantly associated with greater financial autonomy.
- **Testing H2:** A linear regression was run with digital wallet adoption as the dependent variable and education level and digital literacy score as independent variables. The model was significant ($p < 0.01$) and explained **52% of the variance** ($R^2 = 0.52$) in adoption rates, strongly supporting H2.

Table 2: Regression Model Summary for Digital Wallet Adoption

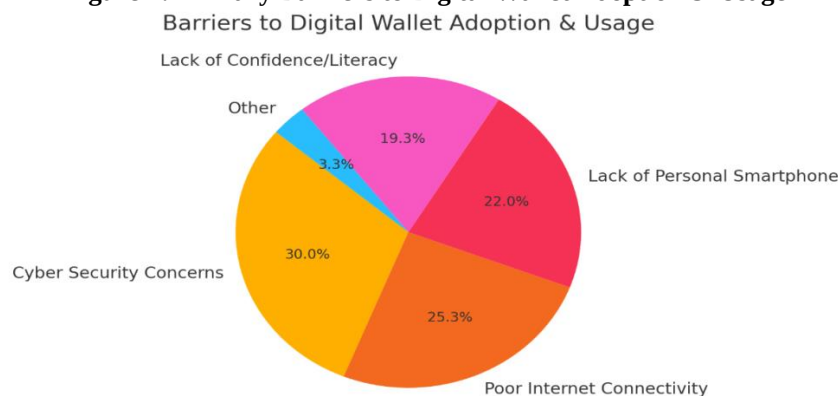
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.721	0.520	0.515	0.54321
<i>Note: Predictors: (Constant), Digital Literacy Score, Education Level</i>				

4 Barriers Identified

Despite positive trends, significant barriers remain. The primary challenges reported by both users and non-users were:

- Concerns about cyber fraud and data security (45%)
- Poor internet connectivity in rural areas (38%)
- Lack of personal ownership of a smartphone (33%)
- Lack of confidence in using the app interface (29%)

Figure 2: Primary Barriers to Digital Wallet Adoption & Usage



Title: Barriers to Digital Wallet Adoption & Usage

Cyber Security Concerns: 45%

Poor Internet Connectivity: 38%

Lack of Personal Smartphone: 33%

Lack of Confidence/Literacy: 29%

Other: 5%

Discussion

The findings of this study robustly validate the proposed hypotheses. The strong positive correlation ($r = 0.63$) between wallet usage and financial autonomy provides quantitative evidence that digital wallets are more than just transactional tools; they are instruments of empowerment. This aligns with the Capability Approach, suggesting that when women can effectively convert access to technology into actual usage, it expands their capabilities for economic agency. The regression results ($R^2 = 0.52$) underscore that education and digital literacy are not just facilitators but critical prerequisites for meaningful adoption. This explains the observed gap between high awareness (85%) and lower active usage (65.2%). Simply having a tool is insufficient; the capability to use it with confidence is paramount. The identified barriers—cyber insecurity, connectivity, and device access—highlight a critical "empowerment paradox." While technology offers a path to independence, these very barriers are often rooted in the same structural inequalities (gender, education, infrastructure) that the technology aims to overcome. The issue of gendered control over

technology, where a woman may have a phone but not the freedom to use it autonomously, remains a persistent challenge.

Policy Implications and Recommendations

To harness the full potential of digital wallets for gender empowerment, a multi-pronged strategy is essential:

1. **Gender-Sensitive Digital Literacy Programs:** Government and NGOs should integrate fintech training modules into existing SHG and rural development programs. These modules must go beyond "how-to" and include cybersecurity awareness, building confidence, and troubleshooting common issues.
2. **Hyper-Localized Fintech Interfaces:** Fintech companies should be encouraged to develop simplified versions of their apps with robust vernacular (Kannada) support, voice-assisted commands, and intuitive icons for low-literacy users.
3. **Strengthening Rural Digital Infrastructure:** Public policy must prioritize expanding high-speed internet connectivity (4G/5G) to rural and remote areas to bridge the connectivity gap.
4. **Promoting Women's Device Ownership:** Initiatives that provide subsidized smartphones for women or promote family-level awareness about the benefits of women's digital financial independence can help address the device ownership gap.
5. **Community-Based Support Systems:** Leveraging SHGs to create "Digital Sakhis" (digital friends)—peer mentors who can provide ongoing support—can foster a supportive ecosystem for adoption and learning.

Conclusion

This study conclusively demonstrates that digital wallets are powerful levers for enhancing the financial autonomy of rural women in Karnataka. They have transitioned from being instruments of convenience to tools of economic empowerment, enabling women to exercise greater agency, independence, and confidence in managing their finances. The strong correlation between usage and autonomy underscores the transformative potential of fintech. However, this transformation is not automatic. The journey from access to empowerment is mediated by critical factors like education, digital literacy, and social norms. Overcoming the barriers of cyber insecurity, poor infrastructure, and gendered technology control is the next frontier for policymakers and stakeholders. Realizing the full promise of digital financial inclusion requires a concerted effort to build not just digital tools, but also the digital capabilities of rural women. Future research could employ longitudinal or mixed-methods designs to capture the nuanced, qualitative narratives of change that complement these quantitative findings.

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