

Socio-Economic and Behavioural Factors Affecting Digital Payment Adoption in Rural and Financially Constrained Segments: A Systematic Review

D.GAYATHRI

Ph.D Research Scholar, Department of Commerce,
Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore - 641020,
Tamil Nadu, India

E-mail: gayathribcs55@gmail.com, Mobile: 8807116932

Dr. A.BALAGURUSAMY

Associate Professor and Head,
Department of Commerce,

Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore - 641020,
Tamil Nadu, India

E-mail: abgurusamy@gmail.com, Mobile: 9994249391

ABSTRACT:

Digital payment systems have become central to financial inclusion strategies by lowering transaction costs, improving transparency, and expanding access to formal financial services. Despite the growing availability of digital platforms, adoption among rural and economically disadvantaged communities remains significantly lower than among urban or higher-income populations. This systematic review synthesizes scholarly research published between 2019 and 2024 to identify the socio-economic, behavioural, technological, and infrastructural factors shaping digital payment adoption in underserved contexts. The findings reveal that income limitations, digital literacy gaps, trust deficits, perceived risks, smart phone affordability, usability issues, network constraints, and social influence substantially impact user adoption decisions. Behavioural tendencies such as habit persistence, reliance on cash, and fear of errors further moderate technology acceptance. Integrating insights from Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT/UTAUT2), and financial inclusion theory, this review proposes a comprehensive conceptual framework for understanding adoption barriers and drivers. Managerial implications emphasize the need for user-centric app design, digital literacy interventions, gender-inclusive strategies, robust security measures, and strengthened rural connectivity. The review concludes by outlining research gaps and proposing future directions, including longitudinal analysis, behavioural interventions, and policy evaluation. Overall, this study contributes to the digital finance literature by highlighting the intricate interplay between socio-economic realities and behavioural dynamics in rural digital payment adoption.

Key words: Digital payments, rural consumers, financial inclusion, behavioural determinants, socio-economic factors, technology adoption, UTAUT, TAM, fintech

1. Introduction

Digital payment systems have become vital components of modern financial ecosystems, particularly in developing nations striving toward cashless and inclusive economies. These systems offer benefits such as reduced transaction time, increased financial transparency, and enhanced access to formalized financial services. Yet, despite widespread promotion by governments and fintech providers, rural and low-income

populations continue to adopt digital payment platforms at relatively slower rates, reinforcing persistent gaps in digital participation.

Rural consumers face several structural challenges, including limited access to smart phones, inadequate digital literacy, insufficient banking infrastructure, and unreliable network connectivity. Behavioural concerns—such as mistrust in digital systems, fear of fraud, habitual reliance on cash, and anxiety regarding technology use—further exacerbate adoption barriers. These challenges differ markedly from those experienced by urban and digitally proficient users, emphasizing the need for theoretical and contextualized understanding of rural adoption behaviour.

Although TAM and UTAUT offer well-established lenses for examining technology acceptance, they often assume digital readiness, stable infrastructure, and adequate socio-economic capacity—conditions not consistently available in rural contexts. Thus, an integrated approach that merges technology adoption theories with socio-economic constraints, behavioural economics, and digital inclusion perspectives is necessary.

This study reviews 40 peer-reviewed articles published between 2019 and 2024 to examine the determinants of digital payment adoption among rural and financially constrained consumers. The review synthesizes recurring themes and contributes an integrated model that encapsulates technological, behavioural, socio-economic, and environmental influences.

2. Literature Review

Digital payment adoption in rural and low-income contexts is shaped by a complex interplay of socio-economic, behavioural, and technological factors. Income level is a major determinant of adoption, as low-income households often lack the financial capacity to purchase smart phones, maintain data plans, or access reliable internet services. Studies such as Haider and Kumar (2022) and Patel and Shah (2023) show that the recurring costs of mobile data and device affordability act as substantial barriers to adoption. Education and digital literacy are also critical; individuals with limited digital competencies struggle with understanding application interfaces, troubleshooting issues, and performing secure transactions. Research by Kim (2021) and Chen (2021) reveals that low digital literacy fuels fear of errors and reduces confidence in using digital platforms.

Gender and demographic disparities further influence adoption behaviour. Rural women often experience limited access to mobile devices and face cultural barriers that restrict financial autonomy, while older adults confront steeper learning curves and heightened perceived risks (Suryawanshi & Jain, 2023). Behavioural factors are equally important. Trust in digital platforms—whether in banks, apps, agents, or fintech providers—is a consistent determinant of adoption, shaped by prior experiences and information transparency (Kaur & Sandhu, 2019; Hassan & Ali, 2020). Conversely, perceived risks such as fraud, data misuse, or erroneous transfers discourage users from engaging in digital transactions, as observed in Sharma and Singh (2020) and Liu and Guo (2020).

Habits and cash preferences remain deeply embedded in rural contexts, with cash perceived as accessible, tangible, and reliable—preferences reinforced by cultural norms and limited exposure to digital systems (Yadav & Chauhan, 2019). Social influence also plays a pivotal role; endorsements from peers, family, merchants, and community leaders can reduce uncertainty and motivate trial usage (Chawla & Joshi, 2020; Jain & Rai, 2023).

Technological aspects further shape adoption patterns. Perceived usefulness and ease of use, key constructs from TAM, continue to strongly influence user acceptance. However, complex interfaces and language barriers can impede adoption. Network challenges are particularly acute in rural regions where inconsistent connectivity hinders successful transactions, leading to negative perceptions of digital systems (Verma & Chandra, 2021). Merchant acceptance also plays a crucial role: without broad merchant participation,

consumers see limited value in digital transactions, thereby inhibiting sustained adoption (Mittal & Goel, 2020)3. Research Objectives and Hypotheses

3.1 Research Objectives

1. To identify socio-economic factors influencing digital payment adoption among rural and financially constrained consumers.
2. To examine behavioural determinants such as trust, perceived risk, and motivation.
3. To analyze technological and infrastructural barriers affecting adoption.
4. To develop an integrated conceptual framework specific to rural adoption contexts.
5. To propose SEM-based hypotheses for future empirical validation.

3.2 SEM-Ready Hypotheses

H1: Perceived usefulness has a positive effect on digital payment adoption intention.

H2: Perceived ease of use positively influences intention to adopt digital payments.

H3: Digital literacy positively affects adoption intention.

H4: Trust positively influences adoption intention.

H5: Perceived risk negatively affects adoption intention.

H6: Social influence positively affects adoption intention.

H7: Income level positively influences adoption readiness.

H8: Network infrastructure positively moderates the intention–usage relationship.

H9: Merchant acceptance positively influences actual usage.

H10: Habit mediates the relationship between intention and actual usage.

4. Methodology

This systematic review adopts the PRISMA framework to ensure comprehensive and transparent synthesis of evidence related to digital payment adoption in rural and low-income segments. Literature was collected from Scopus, Web of Science, and Google Scholar using a structured set of keywords such as “digital payment adoption,” “rural consumers,” “financial inclusion,” “mobile wallet,” “UPI adoption,” and “rural fintech.” Peer-reviewed studies published between 2019 and 2024 were included, with emphasis on developing countries and studies examining determinants of digital payment behaviour. Eligible publications included quantitative, qualitative, and mixed-methods research focusing on socio-economic, behavioural, or technological factors. Exclusion criteria included non-English studies, opinion articles, and work unrelated to rural or low-income populations. Selected studies were systematically coded to extract recurring constructs across socio-economic barriers, behavioural influences, usability concerns, network infrastructure, and ecosystem readiness. This method ensured a structured and unbiased synthesis of existing literature.

5. Conceptual Framework

The proposed conceptual framework integrates technological, behavioural, socio-economic, and environmental influences to explain digital payment adoption within rural and financially constrained settings. Technological variables—such as perceived usefulness and ease of use—stem from TAM and highlight how system quality and functional benefits shape user attitudes. Behavioural factors, including trust, perceived risk, social influence, and habit, determine individuals’ confidence, perceived vulnerability, and willingness to adopt new technologies. Socio-economic determinants such as income, digital literacy, education, and affordability shape access to infrastructure and necessary resources. Environmental elements—including network reliability, infrastructure availability, and merchant ecosystem readiness—directly influence the feasibility and relevance of digital payment use in daily life. By integrating these multidimensional constructs, the framework reflects the contextual realities of rural adoption behaviour and provides a robust basis for empirical validation using Structural Equation Modelling.

6. Data Analysis Plan

The empirical extension of this study would employ a rigorous analytical approach to validate the conceptual model. A sample of 400–600 rural respondents would be selected using stratified random sampling to ensure representation across demographic and income segments. Data collection would involve a structured Likert-scale questionnaire consisting of established and validated constructs. Internal consistency would be evaluated using Cronbach's alpha (≥ 0.70), while convergent and discriminate validity would be determined through Composite Reliability (≥ 0.70) and Average Variance Extracted (≥ 0.50). Confirmatory Factor Analysis would assess construct validity, and Structural Equation Modelling would test hypothesized relationships. Mediation or moderation effects could be explored using SEM-based procedures or the PROCESS macro. Model fitness would be evaluated using widely accepted indices such as CFI (≥ 0.90), RMSEA (≤ 0.08), and chi-square/df ratios (≤ 3).

7. Expected Contributions

This study makes several theoretical and practical contributions. Theoretically, it extends TAM and UTAUT frameworks by contextualizing them within rural, low-literacy environments, highlighting how socio-economic and behavioural factors interact with technological determinants. The integration of behavioural economics and digital inclusion perspectives offers a more comprehensive understanding of digital payment adoption in underserved communities. Practically, the review provides insights for policymakers aiming to strengthen digital literacy efforts, expand financial inclusion programs, and target vulnerable groups. Fintech firms may utilize these findings to design more user-friendly and culturally relevant digital interfaces, while banks can develop trust-enhancing measures and improve transparency. Collectively, these contributions support the development of inclusive, accessible digital financial ecosystems.

8. Theoretical and Managerial Implications

The study enriches technology adoption literature by demonstrating how traditional models such as TAM and UTAUT can be adapted to rural contexts characterized by limited literacy, low income, and infrastructural constraints. It highlights the interaction between behavioural factors—trust, risk perception, habit, and social influence—and socio-economic conditions, offering a more nuanced understanding of digital inclusion. For practitioners, the findings underscore the need for targeted digital literacy programs, simplified onboarding processes, and risk-mitigation strategies. Fintech developers are encouraged to create intuitive, localized interfaces, including voice-enabled features that support low-literacy users. Strengthening merchant acceptance, improving connectivity, and expanding agent networks are also critical steps for enhancing adoption. These insights help stakeholders design more effective interventions to bridge digital divides.

9. Conclusion

This systematic review demonstrates that digital payment adoption in rural and financially constrained communities is shaped by interconnected socio-economic, behavioural, technological, and environmental influences. While digital finance offers transformative opportunities, meaningful adoption requires addressing affordability barriers, literacy challenges, trust deficits, and infrastructural limitations. Behavioural aspects—such as perceived risk, habit, and cultural preference for cash—continue to play dominant roles in shaping usage patterns. The conceptual framework developed through this review provides a holistic understanding of the adoption ecosystem and serves as a foundation for future empirical studies. Moving forward, comprehensive efforts combining technological innovation, behavioural interventions, and socio-economic support are essential for accelerating inclusive digital financial participation.

10. Limitations and Future Scope

Several limitations affect the scope of this review. Its reliance on secondary literature restricts the depth of context-specific insights attainable through primary data. Regional variations in infrastructure, culture, and

economic conditions limit the generalizability of findings across rural environments. The scarcity of longitudinal studies affects understanding of behavioural evolution over time. Furthermore, limited research specifically examines the experiences of women, elderly individuals, and marginalized groups. Future research should include longitudinal analyses, experimental interventions to test trust-building and literacy initiatives, and targeted studies on underserved demographics such as women, migrant workers, and older adults. Evaluating the effectiveness of government-led digital literacy programs and exploring emerging technologies—such as AI-driven interfaces, local-language voice systems, and biometric solutions—can further advance the digital financial inclusion agenda.

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