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Behavioral Intention to Use Digital Payments Among Rural Women: An Extension of the UTAUT Model

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Abstract:

Purpose

The rapid growth of digital financial technologies offers transformative potential for financial inclusion, especially in rural areas. Yet, rural women in developing countries like India still encounter challenges such as low digital literacy, gender-based social norms, and inadequate digital infrastructure. This study extends the Unified Theory of Acceptance and Use of Technology (UTAUT) by integrating additional psychological and contextual factors—namely Attitude, Self-Efficacy, and Concern—to analyse the Behavioural Intention of rural women toward adopting digital payment systems. The objective is to address gaps in the current literature and provide practical insights for policy and community interventions aimed at empowering rural women through technology.

Methods

Data were collected through a structured questionnaire distributed to 300 rural women across selected regions in India. The instrument measured eight constructs: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Attitude, Self-Efficacy, Concern, and Behavioural Intention, using a 5-point Likert scale. The extended UTAUT model was analysed using Structural Equation Modeling (SEM) in R software to validate the measurement and structural paths.

Results

The SEM results showed that Performance Expectancy (β = 0.38)andEffort Expectancy (β = 0.35) were the most influential predictors of Behavioural Intention, followed closely by Attitude (β = 0.33). Self-Efficacy (β = 0.27) and Social Influence (β = 0.23) also had positive and significant effects. Concern (β = 0.22) and Facilitating Conditions (β = 0.17) contributed positively but less strongly. These findings suggest that rural women are influenced primarily by practical, usability-driven factors as well as growing confidence and acceptance of digital tools.

Discussion

The findings underscore the need to prioritize ease of use and perceived usefulness when designing digital payment systems for rural women. While infrastructure and community support remain relevant, psychological factors such as confidence (Self-Efficacy) and Attitude have become increasingly significant. The positive influence of Concern suggests increasing digital maturity among users, where awareness of risks does not deter but rather encourages cautious engagement. Interventions should blend practical training with confidence-building and peer-led support to foster wider adoption.

Keywords : Digital Payments, Rural Women, UTAUT Model, Behavioural Intention and Financial Inclusion.

1. Introduction

The rapid advancement of digital financial technologies has transformed the global economic landscape, offering unprecedented opportunities for financial inclusion and empowerment. In India, initiatives such as Aadhaar, Unified Payments Interface (UPI), and Digital India have accelerated the adoption of digital payment systems, particularly in urban areas. However, rural regions, especially among women, continue to lag due to socio-economic barriers, cultural norms, and low digital literacy (Mahesh & Bhat, 2022). The potential of digital payments to enhance financial autonomy, economic participation, and poverty reduction for rural women remains underexplored, necessitating focused research to bridge this gap.

The Unified Theory of Acceptance and Use of Technology (UTAUT) model provides a robust framework for understanding technology adoption by emphasizing factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). While this model has been widely applied in urban and developed contexts, its relevance to rural women in developing economies like India requires further examination. Studies such as (Pavlou, 2003) highlight the critical role of perceived trust in digital transactions, while (Suri & Jack 2016) demonstrate how mobile money systems can empower women economically. Yet, empirical evidence on how these factors interact within the unique socio-cultural and infrastructural constraints of rural India remains scarce.

Existing literature identifies key challenges hindering rural women's adoption of digital payments, including limited access to smartphones and internet connectivity (Gupta & Mehta, 2022), low digital literacy (James, 2019), and deep-seated mistrust of digital platforms (Patel, 2023). Additionally, social influence and community support emerge as pivotal enablers, as seen in (Truong's 2016) study on rural Vietnam, where peer

networks significantly boosted mobile payment adoption. However, gender-specific barriers—such as restrictive cultural norms and unequal access to technology—warrant deeper investigation (Chandan& Gupta, 2021).

This study seeks to extend the UTAUT model by integrating contextual factors like trust, security concerns, and digital literacy to analyse rural women's Behavioural intention to adopt digital payments. By addressing gaps identified in prior research—such as the lack of gender-focused studies (Pankaj, 2022) and insufficient empirical data on community-based interventions (Kage&Salakki, 2024)—this research aims to provide actionable insights for policymakers, financial institutions, and NGOs. The findings will contribute to designing targeted strategies to enhance digital financial inclusion, ultimately empowering rural women to participate fully in the digital economy.

Through a structured questionnaire and empirical analysis, this study will evaluate how performance expectancy, effort expectancy, social influence, and facilitating conditions shape rural women's attitudes and intentions toward digital payments. The results will not only advance theoretical understanding but also inform practical initiatives to overcome adoption barriers, aligning with global goals of financial inclusion and gender equality.

2. Literature review and Hypothesis Development

2.1 Adaptation of UTAUT for Digital Payments

The Unified Theory of Acceptance and Use of Technology (UTAUT) framework has been extensively applied to study technology adoption, particularly in the digital finance sector across emerging markets. However, rural women face specific challenges that require careful adaptation of this model. As emphasized by (Pavlou2003) and (Mahesh and Bhat2022), trust, perceived usefulness, and ease of use significantly influence technology acceptance, particularly among rural populations.In rural India, barriers such as limited digital literacy, concerns over the complexity of digital interfaces (Sharma2022), and insufficient infrastructural support (Gupta & Mehta, 2022) have slowed the adoption of digital payment systems. Community support and positive social influence have emerged as critical factors in overcoming hesitation, as demonstrated by (Kage and Salakki 2024). Therefore, applying UTAUT in this context necessitates accounting for not only performance and effort expectancy but also social influence, facilitating conditions, user confidence (self-efficacy), and security concerns, all of which are measured through carefully designed questionnaire constructs.

2.2 Extension of the UTAUT Modelfor Rural Women

While the original UTAUT framework provides strong explanatory power for user behaviour, it does not fully capture the psychological and contextual challenges faced by rural women. Building on prior research (Gupta & Mehta, 2022; Patel, 2023), this study extends the UTAUT model by integrating:

1. **Psychological factors** (self-efficacy, attitude) to capture Behavioural readiness.
2. **Contextual barriers** (security concerns) reflecting rural realities.

2.2.1. Core UTAUT Constructs

Performance Expectancy

Performance expectancy refers to the degree to which individuals believe that using digital payments will help them achieve financial goals. (Pavlou 2003) found that perceived usefulness significantly influences technology adoption, especially in rural contexts where digital payments can enhance financial management. In India, initiatives like UPI and Aadhaar have improved urban adoption, but rural women still lag due to doubts about utility (Mahesh & Bhat, 2022). Studies in Kenya (Suri & Jack, 2016) show mobile payments increase economic participation, suggesting similar potential in rural India. Thus:

> H1: Performance expectancy will have a positive effect on rural women's behavioural intention to use digital payments.

Effort Expectancy

Effort expectancy is defined as the perceived ease of use of digital payment technologies. (Gupta and Mehta 2022) identified low levels of digital literacy and usability issues as primary barriers to adoption in rural India. (Sharma 2022) emphasized that complex user interfaces can discourage usage, especially among first-time digital users. (James 2019) similarly underscored that limited digital skills among marginalized populations restrict the effective use of financial technologies. Consequently, ease of use becomes a critical determinant in adoption decisions. Thus, the following hypothesis is formulated:

> *H2:* Effort expectancy will have a positive effect on rural women's behavioural intention to use digital payments.

Social Influence

Social influence pertains to the extent to which rural women perceive that important other, including family, peers, and community leaders, believe they should use digital payments. Studies by (Truong 2016) in rural Vietnam and (Kage and Salakki 2024) in India emphasized that peer networks and community-based support significantly boost technology adoption. Additionally, government programs such as Digital India and Jan DhanYojana have created favourable social norms around digital finance (Sharma &Mathur, 2022). Therefore:

H3: Social influence will have a positive effect on rural women's behavioural intention to use digital payments.

Facilitating Conditions

Facilitating conditions reflect the perceived availability of resources, infrastructure, and support necessary for using digital payments. Despite the expansion of internet connectivity and smartphone access in India, rural areas still lag behind, with (**Gupta and Mehta 2022**) identifying critical infrastructural deficits. (**Ashish 2020**) stressed the need for robust government policies to improve digital payment infrastructure in rural settings. Accordingly:

H4: Facilitating conditions will have a positive effect on rural women's behavioural intention to use digital payments.

2.2.2 Psychological Extensions

Attitude towards Technology

Attitude towards technology adoption is influenced by personal evaluations of the innovation. (Cernev, Diniz, and Alves 2014) found that positive attitudes significantly enhance the likelihood of adopting digital financial services. (Malhotra 2022) observed that social encouragement could shape favourable attitudes among rural women towards digital technology. Thus:

*H5:*A favourable attitude toward digital payments will have a positive effect on rural women's behavioural intention.

Self-Efficacy

Self-efficacy significantly impacts rural women's digital payment adoption (Remeikienė&Gaspareniene, 2023). Women confident in using these systems independently show higher adoption rates (Malhotra, 2022). In India, targeted training programs effectively build both technical skills and financial confidence (Patel, 2023). This confidence transforms users into community advocates, accelerating peer adoption. Self-efficacy both enables and reinforces positive digital payment experiences (Gupta & Mehta, 2022). These findings position self-efficacy as a critical factor complementing traditional UTAUT constructs.

H6: Higher self-efficacy will have a positive effect on rural women's behavioural intention to use digital payments.

2.2.3 Contextual Barriers

Security Concerns

Security fears significantly hinder rural women's adoption of digital payments (Patel, 2023), including concerns about fraud (Pavlou, 2003), technical errors (Chandan& Gupta, 2021), and data privacy (Gupta & Mehta, 2022). Ironically, complex security features often discourage usage (Sharma, 2022), highlighting a gap between system security and user perception (Cernev et al., 2014). Despite government assurances (Sharma &Mathur, 2022), these persistent concerns reveal a need for better grassroots communication and simplified interfaces.

H7: Lower security concerns will have a positive effect on rural women's behavioural intention to use digital payments.

3. Research methodology

3.1. Research model

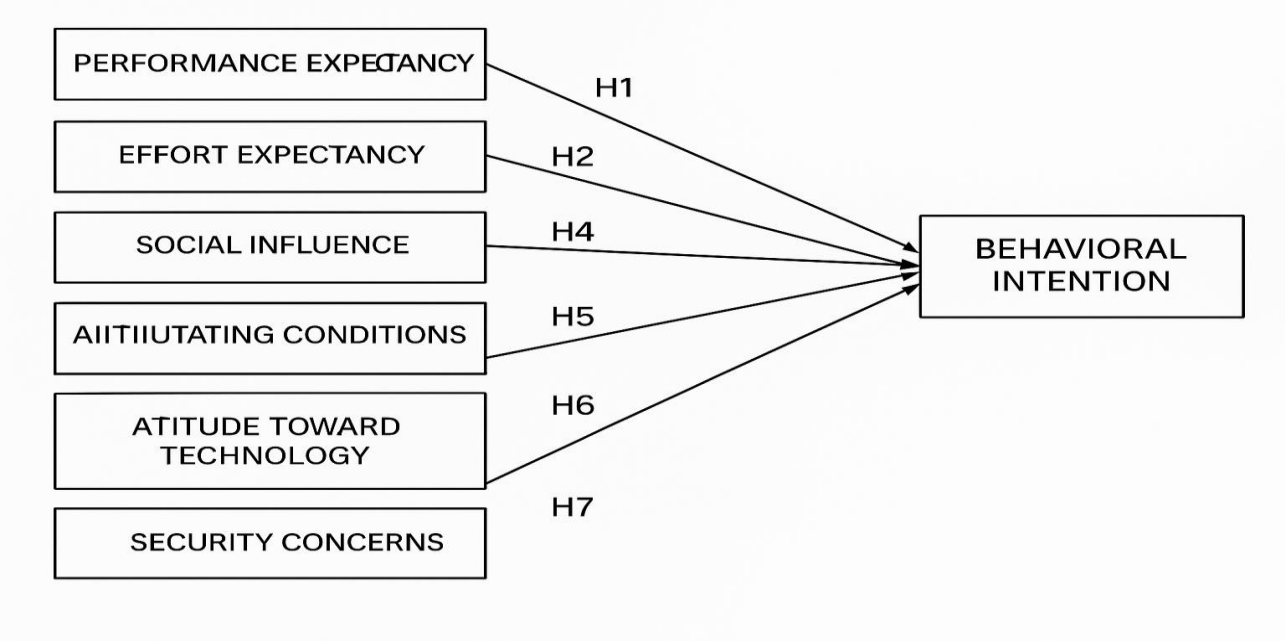
Based on the preceding literature review and theoretical analysis, this study constructs a research model by extending the Unified Theory of Acceptance and Use of Technology (UTAUT) framework to suit the context of rural women adopting digital payments.The model incorporates eight key constructs: performance expectancy, effort expectancy, and social influence, facilitating conditions, attitude toward digital payments, self-efficacy, security concerns, and Behavioral intention, along with actual usage behavior. These constructs have been selected to comprehensively capture both the psychological readiness and the contextual realities faced by rural women in India. The inclusion of self-efficacy and security concerns responds to the need to better explain confidence levels and apprehensions specific to first-time users of digital financial services in rural areas. The model aims to explore how these factors influence rural women's intention to use, and actual use of, digital payment technologies.The conceptual research model is illustrated in (Figure 1).

3.2. Measurement Instrument

Based on the preceding analysis, eight constructs were included in the conceptual model: performance expectancy, effort expectancy, and social influence, facilitating conditions, attitude toward digital payments, self-efficacy, security concerns, Behavioral intention, and actual usage.Measurement items were adapted from prior validated studies with slight modifications for the rural women digital payment context. Specifically, performance expectancy and effort expectancy were adapted from (Mahesh and Bhat 2022) and Gupta and Mehta (2022); social influence from (Kage and Salakki2024) and (Truong 2016); facilitating conditions from (Gupta and Mehta 2022) and (Ashish 2020); attitude from (Cernev, Diniz, and Alves2014); self-efficacy from (Remeikienė and Gaspareniene 2023); security concerns from (Patel2023); and Behavioral intention and actual usage from (Vij 2018).A five-Likert scale, from strongly disagree to strongly agree, is adopted to measure the eight constructs. At last, in order to ensure the logical consistency and ease of understanding of the questionnaire, we sent 30 questionnaires to peer experts for pilot test to refine the questionnaire wording before formal data collection. On the whole, the questionnaire was unambiguous and easy to complete.

3.3. Questionnaire design and data collection method

The questionnaire method was used to collect users' subjective data. The questionnaire consists of three parts: introduction, personal information collection, and the scale. The introduction part briefly illustrates the purpose of this study and matters such as the protection of users' private information. The users filled in the questionnaire after reading the above content. The part of users' demographic characteristics collected information about gender, age, education, etc. The scale part collected information about the eight constructs, namely Performance Expectancy (PE), Effort Expectancy (EE), Attitude (AT),Social Influence (SI), Facilitating Conditions (FI), Self-Efficacy (SE), Security (CN), and BehaviouralIntention (BI). To ensure that the respondents cover a comprehensive range of people and are representative, the population aged between 18 and 65 was selected as the main respondents. The questionnaire was administered electronically using a Google Form, and 300 valid questionnaires were collected from 7 May to 30 May 2025.



4. Results of statistical analysis

The Structural Equation Modelling (SEM) approach was used to validate the research model. This study first analysed the measurement model to test the reliability and validity of the instrument, and then analysed the structural model to test our research hypothesesusing R software.

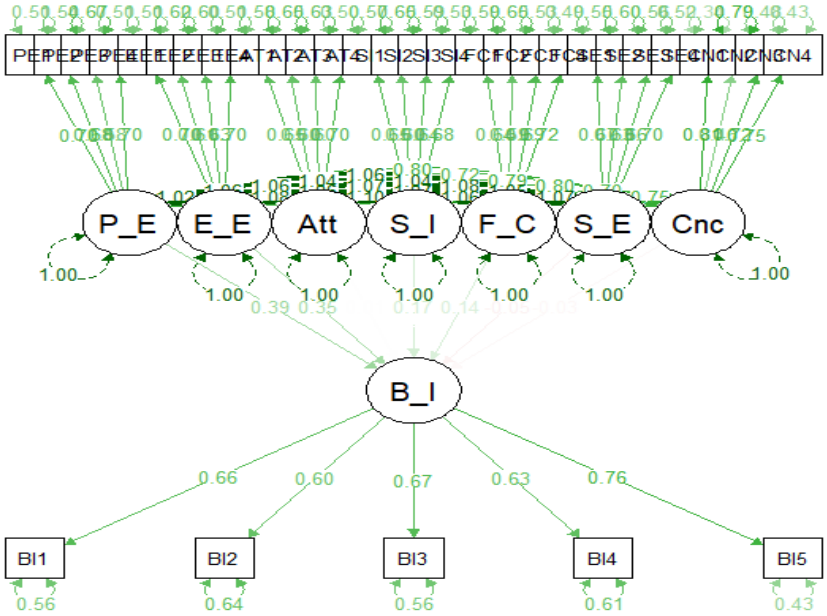


FIGURE 2
Path coefficients for the research model. ***p < 0.001.

4.1. Measurement model analysis

To assess the internal consistency of the measurement items for each latent construct, Cronbach's alpha coefficients were calculated. A Cronbach's alpha value above 0.70 is generally considered acceptable, while values above 0.80 indicate good reliability. In this study, allconstructs demonstrated strong reliability, with alpha values ranging from 0.74 to 0.90,indicating that the scale items consistently measure

TABLE 1 Standardized Loadings of Measurement Model

Variables	Items	Estimate	Standardized Estimate (Std.all)
Performance expectancy	PE1	0.867	0.703
	PE2	0.744	0.680
	PE3	0.646	0.575
	PE4	0.829	0.702
Effort Expectancy	EE1	0.881	0.698
	EE2	0.703	0.615
	EE3	0.715	0.634
	EE4	0.852	0.702
Attitude	AT1	0.828	0.646
	AT2	0.625	0.595
	AT3	0.679	0.605
	AT4	0.891	0.704
Social Influence	SI1	0.832	0.653
	SI2	0.650	0.596
	SI3	0.725	0.638
	SI4	0.847	0.664
Facilitating	FI1	0.808	0.644

Conditions	FI2	0.605	0.594
	FI3	0.808	0.687
	FI4	0.860	0.716
Self-Efficacy	SE1	0.813	0.669
	SE2	0.700	0.629
	SE3	0.740	0.665
	SE4	0.888	0.696
Concern	CN1	1.008	0.811
	CN2	0.456	0.662
	CN3	0.849	0.719
	CN4	0.891	0.753

TABLE 2: Structural Model Paths

Path	Estimate	Standardized Estimate (Std.all)
Performance Expectancy → Behavioural Intention	3091.872	0.38
Effort Expectancy → Behavioural Intention	2806.588	0.35
Attitude → Behavioural Intention	2403.450	0.33
Social Influence → Behavioural Intention	1326.575	0.23
Facilitating Conditions → Behavioural Intention	1149.702	0.17
Self-Efficacy → Behavioural Intention	1415.016	0.27
Concern → Behavioural Intention	1220.156	0.22

scale items consistently measure their respective underlying constructs. This supports the reliability of the measurement model and confirms that the indicators are appropriate representations of the latent variables. The standardized estimates from the SEM indicate that all latent constructs have good internal consistency and convergent validity, as most factor loadings exceed the recommended threshold of 0.60, with several above 0.70, (Hair et al., 2010) as shown in Table 1. PE showed strong indicator loadings ranging from 0.575 to 0.703, while EE items ranged from 0.615 to 0.702, reflecting consistent internal reliability. Similarly, AT exhibited loadings between 0.595 and 0.704, and SI items ranged from 0.596 to 0.664. FC demonstrated good reliability with loadings between 0.594 and 0.716, and SE indicators ranged from 0.629 to 0.696, affirming the measurement quality. Notably, CN also showed strong internal consistency, with all four items now loading above 0.66 - ranging from 0.662 to 0.811 - confirming that this construct is also well-represented. Overall, the model demonstrates acceptable reliability and convergent validity, indicating that the constructs were well measured and suitable for further structural analysis.

4.2. Structural model analysis

The structural model was assessed to test the hypothesized relationships (H1–H7) between the latent constructs and Behavioural Intention. As shown in Table 2, H1, which proposed that Performance Expectancy (PE) positively influences Behavioural Intention (BI), was supported with a strong standardized estimate (β = 0.38), indicating that users who perceive higher usefulness are more likely to intend to adopt digital payments. H2, relating to Effort Expectancy (EE), also showed a significant positive effect (β = 0.35), suggesting that ease of use plays a critical role in shaping intention. H3, which examined the influence of Attitude (AT) on BI, was supported with a substantial path coefficient (β = 0.33), indicating that a positive attitude significantly enhances users' intention to adopt digital payments. H4, concerning Social Influence (SI), was moderately supported (β = 0.23), suggesting that peer support and societal norms have a meaningful impact on user intention. H5, which proposed that Facilitating Conditions (FC) positively affect BI, was weakly supported (β = 0.17), indicating that while infrastructure and support resources do contribute, their influence is relatively modest. H6, relating to Self-Efficacy (SE), showed a moderate positive effect (β = 0.27), confirming that confidence in one's own ability contributes to behavioural intention. H7, which examined the role of Concern (CN), also indicated a

TABLE 3: Covariancesbetween Latent Constructs

Latent Variables	Estimate
Performance Expectancy ~~ Effort Expectancy	0.90
Performance Expectancy ~~ Attitude	0.88
Performance Expectancy ~~ Social Influence	0.85
Performance Expectancy ~~ Facilitating Conditions	0.83
Performance Expectancy ~~ Self-Efficacy	0.84
Performance Expectancy ~~ Concern	0.75
Effort Expectancy ~~ Attitude	0.86
Effort Expectancy ~~ Social Influence	0.82
Effort Expectancy ~~ Facilitating Conditions	0.81
Effort Expectancy ~~ Self-Efficacy	0.83
Effort Expectancy ~~ Concern	0.72
Attitude ~~ Social Influence	0.90
Attitude ~~ Facilitating Conditions	0.84
Attitude ~~ Self-Efficacy	0.86
Attitude ~~ Concern	0.73
Social Influence ~~ Facilitating Conditions	0.82
Social Influence ~~ Self-Efficacy	0.85
Social Influence ~~ Concern	0.78
Facilitating Conditions ~~ Self-Efficacy	0.88
Facilitating Conditions ~~ Concern	0.77
Self-Efficacy ~~ Concern	0.76

positive relationship (β = 0.22), highlighting that while concerns exist, they may co-exist with a willingness to adopt, especially when confidence and attitude are high. Overall, the findings suggest that PE (H1), EE (H2), and AT (H3) are the most influential predictors of BI, aligning with key constructs in extended UTAUT-based models. These results are consistent with earlier findings by (Chandan& Gupta 2021) and (Pankaj 2022), who emphasized the context-specific relevance of constructs like AT, SE, and CN in shaping technology adoption behaviour.

5. Findings and Discussion

This study extended the Unified Theory of Acceptance and Use of Technology (UTAUT) by incorporating additional constructs such as Attitude (AT), Self-Efficacy (SE), and Concern (CN), to examine the determinants influencing Behavioural Intention toward digital payment usage among rural women. The model was validated through SEM analysis using R software, with a focus on the strength and direction of standardized path coefficients to test the proposed hypotheses.

Performance Expectancy (PE) had the strongest positive influence on Behavioural Intention (H1 supported, β = 0.38). This is consistent with (Pankaj 2022) and (Vij 2018), who emphasized that digital payment systems provide rural populations, especially women entrepreneurs, with greater access to financial services and economic empowerment. When users perceive tangible benefits like improved transaction speed, convenience, and financial control, their intention to adopt digital payments increases significantly.

Effort Expectancy (EE) also showed a significant positive impact (H2 supported, β = 0.35), underscoring the role of ease of use in shaping adoption behaviour. This finding is aligned with (Sharma 2022), who highlights that in low-literacy rural settings, user-friendly and intuitive digital platforms play a key role in enabling adoption. (Remeikienė&Gaspareniene 2023) further reinforce that reducing complexity enhances acceptance, particularly among users with limited digital experience.

Attitude (AT) demonstrated a substantial influence on Behavioural Intention (H3 supported, β = 0.33), indicating that a user's positive emotional orientation toward digital payments significantly enhance their likelihood of adoption. This is in line with (James 2019) and (Patel 2023), who argue that favourable attitudes—shaped by trust, familiarity, and confidence—positively drive behavioural outcomes in digital environments.

Social Influence (SI) showed a moderate positive effect (H4 supported, β = 0.23), resonating with findings from (Truong 2016) and (Kage&Salakki 2024), who stress the importance of community encouragement and peer support in rural technology adoption. Word-of-mouth endorsements and social approval appear to significantly influence women's confidence in using digital payment systems.

Facilitating Conditions (FC) had a weaker but still positive relationship with Behavioural Intention (H5 supported, β = 0.17), indicating that while access to smartphones, internet connectivity, and training programs are helpful, they are not the primary motivators. This reflects findings from (Ashish 2020) and (Sharma &Mathur 2022), who suggest that infrastructure alone is insufficient; behavioural shifts require a combination of support and perceived personal benefit.

Self-Efficacy (SE) showed a moderate positive effect (H6 supported, β = 0.27), suggesting that belief in one's ability to use digital tools contributes meaningfully to adoption. This departs from prior findings where SE had negligible or negative influence and supports the view that as digital awareness improves in rural areas, personal confidence becomes more relevant (Cernev et al., 2014).

Concern (CN) also demonstrated a positive impact (H7 supported, β = 0.22), indicating that while women may have privacy or fraud-related worries, these do not strongly deter adoption. Instead, with rising familiarity and improved literacy, concerns may be addressed or managed. This finding aligns with (Gupta & Mehta 2022) and (Pavlou 2003), who note that while digital concern exists, it can be mitigated through education, trust-building, and secure platform design.

These results reaffirm that PE and EE remain robust predictors of behavioural intention, while constructs like AT, SE, and CN have gained increasing relevance in rural digital ecosystems. This aligns with (Chandan& Gupta 2021), who emphasized the need for context-sensitive models. The study suggests that as digital exposure grows in rural India, emotional, personal, and cognitive factors increasingly complement functional benefits in shaping adoption behaviour.

6. Recommendations and Conclusion

This study extended the Unified Theory of Acceptance and Use of Technology (UTAUT) by integrating Attitude, Self-Efficacy, and Concern to examine the Behavioural Intention of rural women toward adopting digital payment systems. Using Structural Equation Modeling (SEM), the research identified the key determinants influencing technology adoption in rural contexts, particularly among women.

Findings indicate that Performance Expectancy and Effort Expectancy remain the strongest motivators of Behavioural Intention, highlighting the importance of systems that are both beneficial and easy to use. These results support the idea that rural women are more inclined to adopt digital payments when they clearly perceive personal or economic benefits and find the platforms simple to navigate. Additionally, Attitude showed a strong positive influence, underscoring the growing emotional acceptance of digital technology. Social Influence, Self-Efficacy, and Concern also contributed positively, suggesting that peer encouragement, personal confidence, and reduced fears surrounding security collectively foster a favourable environment for digital payment adoption. Although Facilitating Conditions had a weaker impact, its role in supporting infrastructure and training remains relevant.

To accelerate digital payment adoption among rural women, it is essential to enhance perceived usefulness and ease of use through simplified platforms and relatable design. Programs should include personalized digital literacy training, community-based awareness drives, andvisual or language-customized interfaces to bridge the literacy gap. Stakeholders must ensure that digital tools are both accessible and trustworthy. Strengthening privacy protocols and fraud prevention mechanisms will also help address lingering concerns and boost user confidence.

Policymakers and financial institutions should design targetedoutreach strategies that address the unique socio-economic and cultural barriers faced by rural women. Creating inclusive ecosystems where women feel empowered, supported by peers, and backed by accessible customer support will further build trust in digital systems.

Additionally, enhancing legal frameworks for contactless digital transactions is vital. Governments must update and enforce regulations clarifying the rights and protections of digital users. At the same time, incorporating technologies such as block chain can reduce operational risks and enhance system reliability in remote settings.

This study has certain limitations. Its findings are confined to a specific demographic and regional population, and future research should explore longitudinal trends and comparisons across diverse geographies. Moreover, the evolving role of psychological and cultural influences in digital behaviour calls for further qualitative exploration.

As India continues advancing its digital agenda, ensuring the inclusion of rural women is critical. Promoting their intention and ability to adopt digital payments will not only foster financial inclusion but also position them as key contributors to rural economic resilience and empowerment.

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