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Investigation on the factors influencing the continuation intention to use digital wallet in the rural parts of India using extended UTAUT2

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Abstract

Purpose – This study aims to identify the significant factors that influence the continuation intention (CI) to use a digital wallet in the regions with low technology infrastructure and among the consumers possessing low levels of digital and financial literacy.

Design/methodology/approach – Data for the study were collected from the rural parts of South India with 295 digital wallet users. Co-variance-based structural equation modelling (SEM) (CB-SEM) using maximum likelihood estimation method and Bayesian SEM (BSEM) approaches were executed to test the influence of independent variables on the dependent variable and to ensure the validation of the proposed hypothetical model.

Findings – The results showed that trust, incentives, technology satisfaction (TS), facilitating condition, performance expectancy, effort expectancy, habit and hedonic motivation significantly influenced the CI to use a digital wallet. In addition, incentives positively impact habit for the CI to use a digital wallet.

Research limitations/implications – The present study is based on the samples from the regions with low technology infrastructure and among the consumers possessing low levels of digital and financial literacy in the rural parts of South India, which limits the generalisation of results.

Practical implications – The results provide impetus to the government, digital wallet marketers and users regarding how the CI to use a digital wallet can be encouraged among the low-adoption regions.

Originality/value – This study remains unique as the assessment of CI to use a digital wallet was conducted in low-adoption regions (rural parts of India) in extending Unified theory of acceptance and use of technology 2 with TS. A comparison of results arrived from CB-SEM with those of the BSEM ensures that the validation of the hypothetical model is found to be another major methodological contribution towards the consumer behaviour literature.

Keywords Trust, Incentives, Technology satisfaction, Rural India, Digital wallet, Continuation intention

Paper type Research paper

1. Introduction

Digital wallets are the latest invention of finance technology and remain an innovative mode to make safe payments through a mobile. Therefore, the global digital wallet users are expected to exceed 5.2 billion by 2026, with a compound annual growth rate (CAGR) of 11.79% (Statista, 2023). India consists of approximately 217 million digital wallet users in 2023, with a projected CAGR of 23.9%; correspondingly the payments are expected to grow by 22% between 2023 and 2027 (GlobalData, 2023). A considerable portion of the users are from urban areas compared with rural areas, and we expect to witness a considerable growth due to financial inclusion schemes of the government and expansion of mobile and Internet access (MeitY, 2024). As per 2011 census, approximately 55.15% of rural households in South India

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have access to banking services (Indiastat, 2023). India relies heavily on mobile app technologies to reach the unbanked population, women and rural folks (Shanmugavel *et al.*, 2024). This is one of the major reasons to undertake research on the continuation intention (CI) to use digital wallets in the rural parts of India. In the meantime, India encounters serious issues on online transactions, with the increasing cybercrimes year after year (The Hindu, 2024). Prior studies argue that predicting the factors that lead to economic prosperity is not easy and remains vital to identify the measures (Nguyen *et al.*, 2019). Therefore, assessing the factors that drive the CI to use payment apps remains imperative, particularly among the rural inhabitants, as they possess low levels of financial and digital literacy. Accordingly, the CI to use digital wallets was considered compared with satisfaction as it remains a determinant to CI (Bhattacherjee, 2001). In addition, customers' CI to use new technologies like digital wallets essentially motivates others to experiment its use by the passage of time.

Extant studies examined the adoption of mobile payments differently across different countries and regions (Flavián *et al.*, 2020). However, little evidence on mobile payment adoption suggested focussing on developing countries as mobile payment apps are the panacea for financially excluded communities (Sinha *et al.*, 2024). Furthermore, several studies conducted in India relating to mobile payments are based on the data collected from the urban population (Pal *et al.*, 2021) though rural population amounts to 65% of the total Indian population. Although India's economic growth lies in empowering rural India through technology adoption, it remains under-researched; therefore, Schuetz and Venkatesh (2020) suggested considering rural India to enable the rural population to participate in global financial trade and labour markets. Similarly, Thach *et al.* (2021) asserted to predict and test the causality between variables to assess the future state of the world. In the meantime, Singh and Malik (2019) argued that most of the rural youth population are inclined and intend to find ways to go cashless. Furthermore, several scholars have suggested undertaking research on the continued use of digital payment technologies in developing countries (e.g. Humbani and Wiese, 2019). Sun *et al.* (2016) appreciated the contributions of technology adoption and continued use and argued that consumers may not be rational, thereby resulting in technological dissonance. Similarly based on the business perspective, examining the customers' intention to continue to use a new technology is important because irregular and ineffective long-term use results in corporate failure (Bhattacherjee, 2001). Therefore, Thong *et al.* (2006) argued that until establishing the continued usage of mobile payments, one cannot construe its adoption as a success. Therefore, this research intends to assess the role of crucial factors that drive the CI to use digital wallets. CI to use remains a crucial factor that facilitates sustainable business. There are various precursors that combine to yield the CI to use. Technology satisfaction (TS), trust and incentives along with the other constructs of robust theoretical lenses can better predict the CI to use digital wallets. Earlier studies have underscored the significance of TS in Information science (IS)-related studies (e.g. Daud Norzaidi and Intan Salwani, 2009; See-To *et al.*, 2012). However, limited studies have explored the role of TS in the mobile payment context (Shanmugavel *et al.*, 2024; Shrier *et al.*, 2016), more specifically among the regions with varied levels of digital literacy and technology infrastructure. Several prior studies have investigated the significance of incentives on the uptake of new technologies (e.g. Shanmugavel and Micheal, 2022; Zhao *et al.*, 2019). Similarly, prior studies have also examined the significance of trust on the satisfaction of technologies (e.g. Alalwan *et al.*, 2017). However, the roles of TS, incentives and trust were understudied to predict the CI to use digital wallets in regions with low technology infrastructure and among the individuals possessing low levels of digital and financial literacy.

Based on the gap identified, the present study proposed a hypothetical model that incorporates TS, incentives and trust with the constructs of Unified theory of acceptance and use of technology 2 (UTAUT2) to predict the CI to use digital wallets. Accordingly, the current research intends to find answers to the following research questions.

RQ1. What are the major factors that influence the CI to use digital wallets?

RQ2. What is the significance of TS, trust and incentives in the CI to use digital wallets?

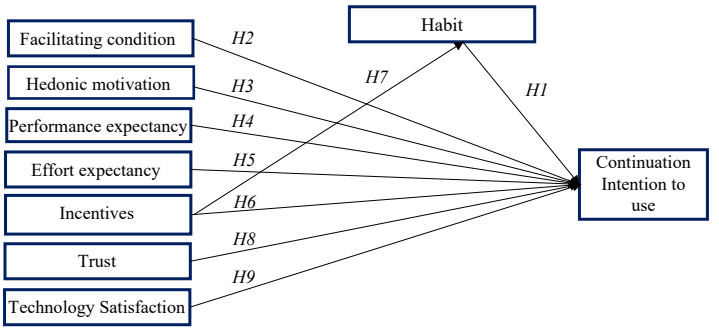
Using the data collected from the rural parts of India, this research can significantly contribute to the consumer behaviour literature and the sustainability of digital wallets. First, the incorporation of variables such as TS, incentives and trust with the UTAUT2 builds a framework that impacts the CI to use digital wallets. Second, the study aims to empirically validate the extended UTAUT2 model in relation to the CI to use digital wallets. Third, a comparison of the results of co-variance structural equation modelling (SEM) (CB-SEM) with Bayesian SEM (BSEM) strongly validates the strength of the proposed hypothetical model to predict the CI to use digital wallets is another major methodological contribution to the consumer behaviour literature. Fourth, from a practical perspective, the study may facilitate the service providers to augment the required resources that enable TS and other factors to establish CI to use digital wallet. The rest of the paper is organised as follows: first, the theoretical framework and development of hypotheses is presented, followed by the hypothetical model. Then, the research methodology is outlined. The results of the research are presented, continued with the discussion of results. The next section deals with theoretical contributions and managerial implications, further presents the limitations, and future research directions. Finally, the research conclusion is presented.

2. Theoretical framework and development of hypotheses

2.1 Extended UTAUT2 model

Among the several theoretical models proposed to investigate the adoption of new technologies, UTAUT remained as a powerful theoretical lens to predict technology acceptance because of its uniqueness in combining eight models that individually predict the adoption of technology (Santosa *et al.*, 2021). Rahi *et al.* (2019) posit that the constructs such as performance expectancy (PE), effort expectancy (EE) and facilitating conditions from the UTAUT model help in understanding the user behaviour of digital wallets. The extended UTAUT2 suggests its effectiveness in addressing the diverse needs of rural and urban users, making it highly relevant for studying digital wallets in the regions with varying levels of digital literacy and infrastructure. The UTAUT model proposed by Venkatesh *et al.* (2003) with four constructs is used to predict technology adoption by employees (Stofega and Llamas, 2009). Therefore, hedonic motivation (HM), price value and habit were added along with PE, EE, social influence and FC (Venkatesh *et al.*, 2012) to predict the technology adoption of consumers. Similarly, the Expectation–Confirmation Model (ECM) is another significant theoretical lens that could predict user engagement and CI with different constructs; however, Venkatesh *et al.* (2011) argued that ECM may not fully capture the broader range of factors influencing sustained engagement, especially in dynamic technology contexts like digital wallets and 5G adoption. Therefore, several studies adopted UTAUT2 to predict the consumers' behavioural intention and have also extended with additional constructs to predict the continued use intention (e.g. Alalwan, 2020). In view of this literature on the CI to use new technologies, the present research extended UTAUT2 with TS, trust and incentives, as shown in Figure 1.

The extended UTAUT2 with constructs like trust was incorporated when mobile banking was in the early stage of implementation in Jordan (Alalwan *et al.*, 2017). Trust is essential in financial transactions and highly relevant to digital wallet use as security concerns may affect adoption. Zhou (2011a, b) supports the inclusion of trust as a key factor, arguing that it plays a critical role in digital payment acceptance. Trust is particularly important in India due to the increasing cybercrimes as individuals lost ₹2,054.6 crore in 2024 against the ₹421.4 crore in 2023 (The Hindu, 2024). This necessitated the need to examine the significance of trust in the CI to use digital wallets. This gives a cue to the present research to adopt the extended UTAUT2 theoretical lens as the rural population of India is new to the use of digital wallets. Similarly, the flexibility to exclude and incorporate new constructs encouraged adding TS,



Source(s): Adapted from Venkatesh *et al.* (2012)

Figure 1. Proposed research model

incentives and trust as TS (Daud Norzaidi and Intan Salwani, 2009), trust (Alalwan *et al.*, 2017) and incentives (Malik *et al.*, 2019) are the three variables that were used in developing countries to predict the adoption of new technologies. Furthermore, the current research excluded social influence and price value based on the extant literature. Social influence refers to the degree to which individuals perceive that important others believe they should use a particular technology (Venkatesh *et al.*, 2003). The exclusion of social influence is based on the empirical evidence of Alalwan *et al.* (2017) and Malik *et al.* (2019). Although social influence can play a significant role in the initial adoption of technology, its relevance may diminish as users form personal habits and develop individual motivations. In addition, the empirical evidence of Venkatesh *et al.* (2012) suggests that personal constructs like habit and trust outweigh social influence in driving continuance intention over time. Price value is the products' value for money (Venkatesh *et al.*, 2012). The price value is replaced with incentives as consumers receive incentives to use digital wallets. This is based on the empirical evidence of Ain *et al.* (2016) that price value was replaced with learning value to investigate the acceptance of technology in the learning management system. Furthermore, based on the insignificant results attached to social influence and price value in mobile banking technology among the Lebanese and British consumers by Merhi *et al.* (2019), these two factors were excluded from UTAUT2 for this research.

Regarding the technology use, recent studies recognised the imperativeness of TS and suggested producing TS that ultimately results in user satisfaction (Djelassi *et al.*, 2018). In that aspect, we believe that TS can evolve as a crucial antecedent to the CI to use digital wallets. For instance, prior studies recognised the use of TS as an important antecedent to students' performance and observed TS as a crucial predictor to the continued Internet usage (Daud Norzaidi and Intan Salwani, 2009). More specifically, See-To *et al.* (2012) argued digital satisfaction as the key variable to the continued usage of digital technologies. Similarly, Alalwan (2020) demonstrated e-satisfaction as one of the significant predictors to the continued intention to use mobile food-ordering apps. Though satisfaction is a key variable to the CI to use new technologies in rural parts of India, focusing on CI provides a more comprehensive understanding of long-term digital wallet usage than satisfaction. Satisfaction is an essential factor in initial acceptance. However, it often falls short in capturing the full range of determinants for ongoing engagement (Bhattacherjee, 2001). CI encompasses factors such as perceived usefulness, making it a stronger predictor of digital wallet retention, especially as digital wallet usage matures across different demographics (Limayem and Cheung, 2008). This approach is especially pertinent in rural India where inadequate infrastructure facilities and varying levels of financial literacy often affect long-term engagement. By focusing on CI, researchers can better assess how factors like utility,

integration into daily activities and social approval influence sustained usage (Kim and Malhotra, 2005; Venkatesh *et al.*, 2003). Per se, TS is an umbrella term because technology includes smartphones, software, eBooks, digital music, metaverse, mobile apps, blockchain and others. TS may arise from the technology use that can be based on the convenience, reliability, responsiveness and spontaneity of the service. Individual technology adoption is verily influenced by intrinsic motivation. Accordingly, several studies adopted HM on technology-related studies. HM remains a crucial antecedent to variables like use behaviour, habit, price value, trust, subjective norm, perceived advantages and perceived risk (Tamilmani *et al.*, 2019). Similarly, trust can be a significant predictor to the CI to use digital wallet because Alalwan *et al.* (2017) empirically evidenced trust on the adoption of mobile banking technology, and incentives have been discussed as a significant predictor to the adoption of wallet apps (Malik *et al.*, 2019). Therefore, to predict the CI to use digital wallets, TS, trust and incentives were added to the UTAUT2 model.

2.2 Overview of digital wallet adoption

The uptake of mobile payments in view of the increasing use of smartphone culture remains the current research interest among the marketing scholars (Humbani and Wiese, 2019). Amongst them, digital wallet gained more traction because of its safety features and use options (Fanuel and Fajar, 2021). In rural parts of India, the digital payment landscape has expanded significantly, with Unified Payments Interface playing a pivotal role in this shift. As of 2023, transactions through digital wallets accounted for a remarkable 75% of total retail digital payments in India, with expectations to cover almost 90% by 2027, showing a massive uptick in both digital wallet adoption and engagement (PwC, 2023). The volume of mobile wallet transactions was about four billion in the financial year 2021, a significant increase from 32.7 million in 2013 (Statista, 2023). A digital wallet is otherwise termed as eWallet which is an Internet-based application that holds safely the money transferred from the bank account for payments through near-field communication and quick response (QR) code technology. The rural pockets of India use digital wallets like Google Pay, Paytm, PhonePe, PayZapp, MobiKwik and Pockets.

In view of the growing importance of digital wallets and the need to enable the ubiquitous use of digital wallets, several studies were conducted. A prior study identified individual and technological factors to have an influence in the adoption of digital wallets and suggested devising suitable business strategies that encourage wider acceptance of digital wallets (Fanuel and Fajar, 2021). Earlier, Dahlberg *et al.* (2015) categorised the contributors to mobile payment as strategy and ecosystems, technology and technological environment, and adoption. However, the factors that most frequently contribute to mobile payments are individual and technological factors. Customers' attitude was identified as an individual-related factor that decreases anxiety to enhance eWallet adoption. Similarly, intrinsic motivation is one of the crucial individual factors that lead to the adoption of eWallet (Rosli *et al.*, 2023). However, with respect to mobile payments, several studies signified the importance of technology-related aspects like innovativeness, convenience and compatibility (e.g. Fanuel and Fajar, 2021). In understanding the significance of both individual and technological factors in technology acceptance among new users, Alalwan *et al.* (2017) integrated both technological and individual factors to assess the use of mobile banking technology. The other factors that contribute towards digital wallets as identified by Bagla and Sancheti (2018) were the wide acceptability, user-friendliness, instant money transfer, minimum risk and zero transaction fee.

In addition, irrespective of the advancements in technological usage, several studies examined the apprehensions against digital wallets and investigated risk and trust aspects and suggested to wane off the apprehensions to encourage mobile payments (e.g. Bagla and Sancheti, 2018). The overlapping features of Internet banking adoption and digital wallets such as online accessibility and financial transactions make the UTAUT E-service quality framework adaptable for understanding adoption behaviours of digital wallets, especially in contexts where financial inclusion and user trust are pivotal (Rahi and Abd. Ghani, 2019).

Alalwan *et al.* (2017) extended UTAUT2 with trust to predict the adoption intention of mobile banking. Furthermore, Malik *et al.* (2019) identified PE, ease of use, social influence, enjoyment, incentives, aesthetics and trust in the adoption of wallet apps. The present study was conducted in the rural pockets of India where consumers may abandon new technologies after initial use (Schuetz and Venkatesh, 2020); therefore, TS, incentives and trust have been added to the UTAUT2 theoretical framework to predict the CI to use digital wallets. In addition, to the best of our knowledge, TS, trust and incentives were understudied in the regions with low technology infrastructure and among the individuals possessing low levels of digital and financial literacy.

2.3 Habit

Habit is derived from the consistent engagement of individuals with technology. More engagement and high satisfaction in the use of technology form the habit to technology use. Therefore, in line with Alalwan *et al.* (2017), the present research construed habit as an individual's tendency to act instinctively as a consequence of prior experiences. Prior studies examined the significance of habit in the intention to adopt new technologies (e.g. Meet *et al.*, 2022); similarly the habit to use digital payment systems positively leads to satisfaction among the baby boomers, which finally results in CI (Santosa *et al.*, 2021). Based on the arguments of Liébana-Cabanillas *et al.* (2021), as the penetration rate of mobile payments in India is high and digital payment has drastically increased after demonetisation and COVID-19 pandemic (Sam *et al.*, 2023), we argue that individuals develop habit to use digital wallets. Accordingly, the following hypothesis is suggested:

H1. Habit has a positive influence on the CI to use digital wallets.

2.4 Facilitating conditions

FC is the provision that institutional and technological infrastructure comforts technology adoption (Venkatesh, 2022). The positive influence of FC on the adoption of technologies has been supported by several studies (e.g. Meet *et al.*, 2022). More specifically with respect to the adoption of cryptocurrency in India, FC depicted a significant influence (Kala and Chaubey, 2023). In a similar way, digital wallets are operated through smart phones that require Internet and app facilities provided by the government, Internet service providers and digital wallet marketers. Therefore, we suggest that FCs may motivate individuals to continue using digital wallets. Therefore, the following hypothesis is proposed:

H2. FC has a positive impact on the CI to use digital wallets.

2.5 Hedonic motivation

HM is an intrinsic motivation that can be attributed as a pleasure derived from using a technology and is considered as a crucial antecedent to the use of a new technology (Venkatesh *et al.*, 2012). Individuals, irrespective of their age, gender and other factors, use smart phones, the apps embedded in the smartphones and the apps downloaded through Play Store in the smartphones for entertainment and derive joy or pleasure (Shanmugavel, 2023). In understanding the significance of HM to the adoption of new technologies, several studies were conducted; Siyal *et al.* (2021) tested the impact of HM on the continued use of mobile taxi booking apps. Accordingly, we suggest that HM can lead to the CI to use digital wallets. Therefore, we proposed the following hypothesis:

H3. HM has a positive impact on the CI to use digital wallets.

2.6 Performance expectancy

PE is a belief in using a new technology to perform different activities in a more convenient and productive manner (Venkatesh, 2022). Broadly speaking, PE remains a significant attribute that individuals expect in technology use. Therefore, several scholars studied PE in the context

of technology acceptance (e.g. Kilani *et al.*, 2023). Generally, individuals feel happy and motivated to use a new technology if it is useful for their routine activities. PE, in the context of digital wallets, can be a convenient way to pay in-store, online and in-app by using phones to pay instead of using cash or plastic credit or debit cards, saves time and exerts less effort. Sleiman *et al.* (2022) empirically provided evidence of the role of PE on the CI to use in Sudan. Therefore, we add that PE may influence the CI to use digital wallets in the rural pockets of India. Accordingly, the following hypothesis is proposed:

H4. PE has a positive influence on the CI to use digital wallets.

2.7 Effort expectancy

EE is characterised as the ease to use a technology (Venkatesh, 2022). Several scholars empirically proved the significance of EE in studies involving technology adoption and use (e.g. Alalwan, 2020) because individuals prefer a new technology in the light of the easiness experienced. Significantly, after the introduction of digital payment options, several studies have validated the impact of EE on the CI to use mobile payment options (e.g. Raman and Aashish, 2021). Accordingly, we discuss that individuals, irrespective of their knowledge on new technologies, may not encounter difficulties to download the digital wallet app, install and connect the app with bank account though they are from the rural pockets of India. Similarly, with respect to the use of digital wallets, individuals may not experience difficulties in transferring money through scanning a QR code or to a mobile number. In light of this argument, we advance that EE can positively influence the CI to use digital wallets. Therefore, the following hypothesis is proposed:

H5. EE has a positive influence on the CI to use digital wallets.

2.8 Incentives

Incentives are the monetary and non-monetary benefits that individuals receive for technology use. Incentives were posited and confirmed empirically as a new variable to the adoption of mobile wallets as perceived benefits (Madan and Yadav, 2016). Furthermore, the authors argued that incentives are the strong predictors that enable the adoption of mobile wallets. Accordingly, we argue that incentives are required to attract individuals to adopt a new technology and continue giving incentives in different forms to retain the consumers. Indian consumers may react to the incentives offered by the digital wallet marketers and government. The incentives to adopt and continue adopting digital wallets are in the form of offers, promotion code, loyalty points, price discounts or even vouchers and coupons. With respective to the loyalty points evinced by the digital wallet marketers, we suggest that incentives drive digital wallet use. Empirical research conducted by Malik *et al.* (2019) in the context of adopting wallet apps suggested that incentives influence consumers' attitude. In light of this argument, we develop that incentives can influence the CI to use digital wallets. Therefore, the following hypothesis is proposed:

H6. Incentives have a positive influence on the CI to use digital wallets.

Incentives, if small, can bring a desired effect in the short term only, but at the same time, it can also produce a counterproductive effect. Inter alia, incentives help individuals to change their lifestyle. Therefore, scholars stated that once if an individual experiences the positive aspects of the changed lifestyle, this motivates them to continue even without any extrinsic motivation (Gneezy *et al.*, 2011). Furthermore, Gravert and Collentine (2021) empirically showed that incentives positively impacted habit with respect to the use of public transport. With respect to the use of technology, incentives might lead the formation habit (Kilani *et al.*, 2023). In the same vein, we argue that incentives can positively impact the habit of using digital wallets. Therefore, we proposed the following hypothesis:

H7. Incentives positively impacts habit to use digital wallets.

2.9 Trust

Trust is the accrued confidence and integrity experienced over the consistent use of a new technology (Lakshmanan *et al.*, 2024). In line with this, trust on mobile payment can be operationalised as individuals' belief and faith that ushers the dependency on mobile payments. The use of mobile apps, particularly the digital wallet app, requires trust to use and continue to use digital wallets. IS literature shows that several authors have investigated the influence of trust in diverse technology-related contexts. A significant relationship was construed between trust and continuance usage intention of e-wallet among the Jordan consumers (Kilani *et al.*, 2023). Therefore, trust is a major factor in the adoption of digital technologies and financial transactions. Studies on financial technologies suggest that consumers are more likely to adopt digital wallets when they have adequate awareness and confidence in security (Kala and Chaubey, 2023). Based on this discussion, the following hypothesis is proposed:

H8. Trust positively influences the CI to use digital wallets.

2.10 Technology satisfaction

Initial use of any technology stems from its newness, interest to use the technology and the risk-taking ability of the individuals. However, the CI to use technology can be based on the satisfaction derived from the use of technology. Based on the IS literature, this research argues TS as a new construct that are rarely used in technology adoption (Shanmugavel *et al.*, 2024). TS can be attributed as the fulfilment that individuals experience over the use of technologies in performing the tasks. Therefore, TS is considered as a significant factor that must be investigated when individuals adopt a new technology (Daud Norzaidi and Intan Salwani, 2009). The authors construed a relationship between TS, Internet usage, student performance and technology resistance. They further argued that TS drives repeated use. In line with this, Chih-Hung Wang (2012) empirically tested the significant impact of self-service TS on the continued intention to use in a retail setting. Likewise, Al-Sharafi *et al.* (2022) provided further evidence regarding the impact of users' satisfaction on the sustainable use of mobile payment contactless technologies. A prior study condensed innovativeness, security and comfort as technology-related factors that positively impact satisfaction to the CI towards self-service technology (Chen *et al.*, 2009). Therefore, the following hypothesis is advanced:

H9. Technology satisfaction positively impacts the CI to use.

3. Research methodology

3.1 Research design and sampling procedure

A cross-sectional design was employed to investigate the proposed hypothetical model. The study used non-probability sampling (convenience sampling) procedure to identify the qualified respondents. To identify the respondents, the retailers who accept digital payment through "QR code" were contacted and discussed about the use of digital wallets. Based on the interest shown by them to assist in undertaking this research, the retailers were informed about the purpose of conducting the research and requested to facilitate in contacting the customers who regularly use digital wallets for payments. Thus, the qualified samples were considered for the study. As the study lacks sampling frame that consists of the digital wallet users, convenience sampling procedure was adopted. This approach is especially useful in emerging markets, where accessing a fully representative sample can be challenging, and it offers insights from users who may already be familiar with digital wallets, thereby helping to identify preliminary patterns and potential barriers.

Due to the distinct socio-economic characteristics and ongoing digital transformation efforts, the rural areas in South India like Virudhunagar and Ramanathapuram in Tamil Nadu, Chittoor and Anantapur in Andhra Pradesh, Chamarajanagar and Raichur in Karnataka and Wayanad in Kerala were selected for the study. These regions have benefited from government initiatives like BharatNet, which delivers high-speed broadband connectivity to village panchayats. Tamil Nadu, for example, has planned broadband access for 12,524 village panchayats under BharatNet-II, targeting services such as e-governance and education (Universal Service Obligation Fund, 2023; Tamil Nadu IT Department, 2023). Furthermore, Karnataka and Andhra Pradesh have demonstrated significant progress in digital financial inclusion through initiatives like the Pradhan Mantri Jan Dhan Yojana, which has seen substantial adoption in rural and semi-urban areas. The Digital India initiative has further strengthened digital infrastructure in these states, providing the necessary ecosystem for digital wallet adoption studies. These advancements make these regions exemplary for studying the adoption of digital payment solutions. Furthermore, the study adopted pen and paper survey. Pen and paper survey remains a dominant technique to collect data from the rural parts of India because digital devices and individual standalone personal computer with stable broadband connection are not yet common. In addition, Lakshmanan *et al.* (2024) suggested that contacting the respondents directly for data collection evinces the exact expressions. Although digital wallet satisfaction and continuance intention are examined, traditional formats often yield higher engagement in areas with low digital literacy, particularly in rural areas (Campbell *et al.*, 2014). The respondents in such regions often demonstrate higher response rates and engagement with traditional paper-based surveys, making it an effective approach for capturing data on this demographic's attitudes towards digital technology. Moreover, using a pen-and-paper format can mitigate potential biases that arise from exclusively digital sampling, ensuring a more representative sample that includes those who may not frequently engage with digital devices. A total of 400 surveys were distributed; however, 295 surveys were considered for the analysis as 41 surveys were incomplete, 50 were inconsistent and 14 were removed because of multivariate outliers. Furthermore, to confirm the sample sufficiency, we used G*Power software (version 3.1.9.7) to determine the sample size, as suggested by Faul *et al.* (2009) for social and behavioural studies by adopting *F*-tests with a medium effect size $f^2 = 0.15$, error probability $\alpha = 0.05$ and power = 0.95 for the predictors. Accordingly, 160 was the minimum sample size required; however, the study uses 295 samples, which was more than that required.

3.2 Measures

The study instrument consists of nine constructs measured through 35 items. The items were adopted from previous studies measured using the Likert's seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). To ensure a good fit to the study, the required scale measurement items were reworded without semantic differences. The instrument consists of questions to collect the demographic details of the sample and the details of their usage of digital wallets. Appendix presents the scale items with their sources.

3.3 Analysis of data

We used Microsoft Excel, SPSS 23.0 and AMOS 23.0 for data analysis. The two-step SEM was employed to investigate the hypothetical model as it remains a comprehensive means for assessing, developing and modifying theoretical models (Anderson and Gerbing, 1988). Through the maximum likelihood estimation method, the measurement and structural model was assessed, as recommended by MacCallum and Austin (2000). In addition, the BSEM was adopted as several researchers suggested its application in overcoming the inherent limitations of the frequentist approach (e.g. Briggs, 2023; Thach *et al.*, 2022). More specifically, researchers use BSEM because of its accuracy in predicting the parameter estimates (Kalia, 2024a; Kanapathy *et al.*, 2014; Rahman *et al.*, 2024), and the non-informative inverse gamma

(0.01, 0.01) prior for variance components was used, as recommended by Thach (2023) and Rahman *et al.* (2024). Accordingly, the BSEM was employed using the Markov Chain Monte Carlo method as suggested and adopted by Ong *et al.* (2018) and Kalia (2024b), respectively.

4. Results

4.1 Respondents' demographics

The socio-demographic details and digital wallet use are shown in Table 1. The study consists of 70.2% of male and 29.8% of female respondents, and 29.80% of the respondents' age falls between 31 and 40 years. The increased number of male participants using digital wallets in India is attributed to broader smartphone ownership among men, exposure to technology, greater financial decision-making roles, higher levels of digital literacy than woman in rural areas and their involvement in digital payment transactions (Cnaan *et al.*, 2023). The study holds that 26.8% of the respondents' monthly income is between ₹51,000 and 75,000. It is signified further that 30.5% of respondents have less than one year of experience with the use of digital wallets. The respondents use digital wallets like Paytm, Google Pay, PhonePe, PayZapp, MobiKwik and Pockets.

4.2 Assessment of measurement model

In the two-stage SEM, initially confirmatory factor analysis was executed to examine the validity and consistency measures. Descriptive statistics of the scale items and factor loadings are depicted in Table 2. With the item loadings being above 0.716 and the average variance extracted (AVE) above 0.670, the study demonstrates good content and convergent validity (Hair *et al.*, 2010). The values of the maximum shared variance and average shared variance lesser than the AVE confirm the discriminant validity (Hair *et al.*, 2010). The correlation matrix presented in Table 3 ensures discriminant validity as the diagonal values that represent the square root of AVEs are greater than the corresponding intercorrelations (Fornell and Larcker, 1981). The composite reliability values greater than 0.863 are good (Hair *et al.*, 2010).

Table 1. Socio-demographic characteristics of the respondents ($N = 295$)

Socio-demographic variables		Frequency	Percentage (%)
Gender	Male	207	70.20
	Female	88	29.80
Age, years	Less than 20	38	12.90
	21–30	76	25.80
	31–40	88	29.80
	41–50	65	22.00
	Above 50	28	9.50
Educational qualification	Diploma	56	19.00
	Graduate	89	30.20
	Postgraduate	75	25.40
	Others	75	25.40
Monthly income level (₹)	<25,000	23	07.80
	26,000–50,000	41	13.90
	51,000–75,000	79	26.80
	76,000–100,000	75	25.40
	>100,000	77	26.10
Experience in the use of digital wallets	<1 year	90	30.50
	1–2 years	73	24.70
	2–3 years	74	25.10
	>3 years	58	19.70

Source(s): Authors' own work

Table 2. Results of the measurement model

Construct	Items	Mean (SD)	Loadings	AVE, MSV and ASV	Composite reliability
Habit	HAB1	4.8 (1.33)	0.836***	0.633, 0.335 and 0.222	0.873
	HAB2	4.8 (1.33)	0.840***		
	HAB3	4.7 (1.37)	0.716***		
	HAB4	4.7 (1.35)	0.783***		
Facilitating condition	FC1	5.1 (1.48)	0.938***	0.810, 0.228 and 0.139	0.944
	FC2	5.0 (1.48)	0.981***		
	FC3	5.0 (1.43)	0.835***		
	FC4	4.9 (1.46)	0.838***		
Hedonic motivation	HM1	3.8 (1.60)	0.894***	0.746, 0.498 and 0.300	0.898
	HM2	4.2 (1.52)	0.881***		
	HM3	3.8 (1.65)	0.814***		
Performance expectancy	PE1	4.8 (1.68)	0.716***	0.612, 0.486 and 0.309	0.863
	PE2	4.3 (1.39)	0.815***		
	PE3	4.1 (1.31)	0.785***		
	PE4	4.4 (1.35)	0.810***		
Effort expectancy	EE1	4.6 (1.47)	0.829***	0.712, 0.362 and 0.285	0.908
	EE2	5.0 (1.47)	0.844***		
	EE3	4.5 (1.51)	0.855***		
	EE4	4.6 (1.45)	0.848***		
Incentive	INC1	4.4 (1.34)	0.906***	0.842, 0.393 and 0.256	0.941
	INC2	4.4 (1.32)	0.954***		
	INC3	4.4 (1.38)	0.891***		
Trust	TRT1	4.5 (1.51)	0.808***	0.670, 0.379 and 0.253	0.910
	TRT2	4.6 (1.45)	0.834***		
	TRT3	4.4 (1.56)	0.801***		
	TRT4	4.3 (1.34)	0.840***		
	TRT5	4.4 (1.44)	0.809***		
Technology satisfaction	TS1	4.3 (1.51)	0.830***	0.671, 0.486 and 0.286	0.911
	TS2	4.8 (1.70)	0.793***		
	TS3	4.2 (1.57)	0.757***		
	TS4	4.5 (1.48)	0.907***		
	TS5	4.8 (1.62)	0.802***		
Continuation intention	CI1	4.8 (1.57)	0.922***	0.773, 0.498 and 0.322	0.910
	CI2	3.0 (1.63)	0.946***		
	CI3	4.1 (1.78)	0.758***		

Note(s): *** indicates significance at 99% confidence level
Source(s): Authors' own work

The Cronbach's alpha value ranges between 0.856 and 0.945 and confirms the suggestions of Nunnally and Bernstein (1994) to ensure internal consistency. Furthermore, as suggested by Hair *et al.* (2010), we used goodness of fit indices to assess the unidimensionality and minimise the measurement bias. The corresponding fit indices are chi-square minimum/degree of freedom = 1.645 (862/524), goodness of fit index = 0.857, adjusted goodness of fit index = 0.828, normed fit index = 904, comparative fit index = 0.960 and root mean square error of approximation = 0.047, which are within the recommended level (Hair *et al.*, 2006).

4.3 Common method bias (CMB)

The selection of respondents for the study was based on the suggestions of retailers, and the data were self-reported. Hence, as argued by Podsakoff *et al.* (2003), there is a possibility of common method bias (CMB) arising from consistency motif, social desirability and leniency biases. Therefore, we executed the common latent factor (CLF) approach suggested by

Table 3. Intercorrelation and $\sqrt{AVE}$ values

Constructs	α	PE	HM	CI	EE	FC	INC	HAB	TRT	TS
PE	0.856	*0.782*								
HM	0.898	0.645	*0.864*							
CI	0.900	0.605	0.706	*0.879*						
EE	0.908	0.602	0.493	0.561	*0.844*					
FC	0.945	0.300	0.286	0.416	0.456	*0.900*				
INC	0.940	0.478	0.627	0.589	0.510	0.368	*0.917*			
HAB	0.872	0.483	0.391	0.497	0.579	0.442	0.427	*0.795*		
TRT	0.909	0.535	0.481	0.538	0.556	0.364	0.479	0.502	*0.819*	
TS	0.907	0.697	0.616	0.580	0.498	0.309	0.519	0.422	0.545	*0.819*

Note(s): The diagonal values represent the $\sqrt{AVE}$
α = Cronbach's alpha; HAB = habit; HM = hedonic motivation; CI = continuation intention; PE = performance expectancy; TS = technology satisfaction; EE = effort expectancy; FC = facilitating condition; INC = incentives; TRT = trust
Source(s): Authors' own work

Podsakoff *et al.* (2003) as several scholars argued the inaccurate and unreliable results of Harman's one-factor test (e.g. Chang *et al.*, 2010). Based on this approach, the standardised regression weights of the non-CLF model were compared with the CLF model. The difference between the two is well below 0.05 for all the items and confirms the study is free from CMB.

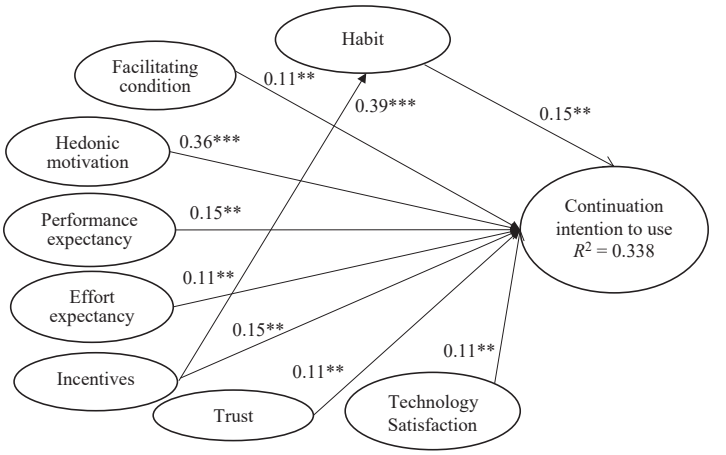
4.4 Structural model results

In the second stage of the two-stage SEM, the proposed hypotheses were tested and are presented in Table 4. The results showed that CI to use digital wallets is significantly influenced by habit ($\beta = 0.1151$; $p = 0.036$), FC ($\beta = 0.112$; $p = 0.024$), HM ($\beta = 0.364$; $p = 0.000$), PE ($\beta = 0.115$; $p = 0.007$), EE ($\beta = 0.113$; $p = 0.029$), incentives ($\beta = 0.156$; $p = 0.007$), trust ($\beta = 0.113$; $p = 0.035$) and TS ($\beta = 0.115$; $p = 0.029$), and additionally, the study shows a significant impact between incentives and habit ($\beta = 0.397$, $p = 0.000$). In addition, the R^2 value for the dependent variable was estimated. The present research model accounts for 33% of the total variance of CI to use digital wallets, which is above the recommended cut-off criterion of 10% suggested by Falk and Miller (1992). In addition, the results of the hypothesis testing are presented in Figure 2.

Table 4. Results of the structural model

Hypothesis		Estimate	S.E.	C.R	*p*-values	Decision
H1	HAB → CI	0.151	0.072	2.097	0.036	Supported
H2	FC → CI	0.112	0.050	2.255	0.024	Supported
H3	HM → CI	0.364	0.051	7.139	0.000	Supported
H4	PE → CI	0.155	0.058	2.686	0.007	Supported
H5	EE → CI	0.113	0.052	2.186	0.029	Supported
H6	INC → CI	0.156	0.058	2.698	0.007	Supported
H7	INC → HAB	0.397	0.054	7.336	0.000	Supported
H8	TRT → CI	0.113	0.054	2.104	0.035	Supported
H9	TS → CI	0.115	0.053	2.178	0.029	Supported

Note(s): HAB = habit; HM = hedonic motivation; CI = continuation intention; PE = performance expectancy; TS = technology satisfaction; EE = effort expectancy; FC = facilitating condition; INC = incentives; TRT = trust; S.E. = standard error
Source(s): Authors' own work



Note(s): ***$p < 0.001$; **$p < 0.05$
Source(s): Authors' own work

Figure 2. Empirical model

4.5 Results of Bayesian SEM

With reference to the methodology suggested by Ong *et al.* (2018), we executed the BSEM approach as it gains significant momentum against the maximum likelihood estimation method used to assess the latent measurement model. BSEM is a well-suited approach that can predict accurately though the sample size is small (Rahman *et al.*, 2024) and is also one of the flexible approaches to data analysis. However, it ensures providing accurate estimates using randomised posterior distributions for the model parameters (Kalia, 2024a). We employed BSEM using SPSS AMOS after executing the CB-SEM using maximum likelihood estimation approach. Using the Markov Chain Monte Carlo method through SPSS and AMOS, the posterior distributions were generated. The study generated approximately 76,500 samples to achieve the statistical convergence of 1.0001 potential scale reduction value with the exclusion of 500 burn-in samples and confirms the recommendations of Arbuckle (2009). Furthermore, the model could successfully capture the underlying data patterns as the posterior predictive value was 0.50. Furthermore, the study ensured the positive direct effect of latent constructs as the values of credible intervals are positive, which was confirmed at 95% certainty. The results of BSEM approach are presented in Table 5.

The autocorrelation curves and trace plots for the respective pairs of independent and dependent variables are presented in Figure 3. The autocorrelation curve shows the asymptotic decline, and the trace plot determines the stability of posterior mean values that were revealed as an outcome of the Markov Chain Monte Carlo sampling. The asymptotic decline reaches 0 at lag 10 and confirms the recommendations of Ong *et al.* (2018). Accordingly, the asymptotic decline evidenced in this study signified that the results were consistent and convergence was successfully achieved. In addition, the trace plots as seen in Figure 3 signify the sensitivity analysis using non-informative inverse gamma.

After the execution of CB-SEM and BSEM approaches for assessing the relationship between variables, individually we compared the results as presented in Table 6. In both the approaches, the study evidences the positive relationship between variables. In addition, the study confirms HM as the most influential predictor to CI. Furthermore, the subtle differences in the estimates between the two approaches are not a major concern and both the approaches confirm the strong relationships between the factors.

Table 5. Results of BSEM

Relationship	Estimates	S.D.	95% lower bound	95% upper bound	Min	Max
HAB → CI	0.154	0.087	0.015	0.328	0.192	0.535
FC → CI	0.114	0.059	0.013	0.231	0.126	0.360
HM → CI	0.367	0.070	0.233	0.508	0.080	0.679
PE → CI	0.159	0.090	0.017	0.339	0.242	0.561
EE → CI	0.114	0.073	0.029	0.257	0.190	0.442
INC → CI	0.158	0.071	0.019	0.298	0.130	0.473
INC → HAB	0.395	0.055	0.291	0.505	0.181	0.695
TRT → CI	0.115	0.075	0.031	0.266	0.220	0.424
TS → CI	0.117	0.080	0.040	0.277	0.216	0.471

Note(s): HAB = habit; HM = hedonic motivation; CI = continuation intention; PE = performance expectancy; TS = technology satisfaction; EE = effort expectancy; FC = facilitating condition; INC = incentives; TRT = trust; S.D. = standard deviation
Source(s): Authors' own work

5. Discussions

Though previous studies adopted several theoretical models that encompass the individual, social, technological and other factors that contribute to the adoption of mobile payment options, Steinbart *et al.* (2016) argued that new technologies may be abandoned when consumers feel inconvenient. Therefore, in consonance with the suggestion of Daud Norzaidi and Intan Salwani (2009), this study attempts to fill this existing gap by introducing TS as well as incentives and trust as suggested by Malik *et al.* (2019) with the UTAUT2 model as these additional variables significantly contribute to the CI to use new technologies.

TS emerged as one of the significant predictors to the CI to use digital wallets in the Indian rural context. Thus, it confirms the findings of the past studies of Chen *et al.* (2009) and Chih-Hung Wang (2012). Furthermore, it can be derived that when customers experience a greater level of TS, the CI to use digital wallets can be high. This means that Indian rural customers are pleased with the digital wallet technology and intend to keep using this technology for quick and safe payments. Thus, this study extends the literature which gives a new perspective to the academicians and practitioners. This demonstrates the importance of intangible technological benefits of digital wallets from the rural Indian consumers' perspective and indicates that rural consumers who use digital wallets possess sufficient knowledge to install and use because they perceived that the adoption of digital wallets is easy. Furthermore, the rural consumers are pleased with the unique features of digital wallets like multiple payment options and integration with other financial services that are perceived as safe, simple and convenient for cashless shopping. Incentives are found to be the other major influential factor to the CI to use digital wallets in the rural parts of South India. Therefore, this finding corroborates with the study results of Zhao *et al.* (2019) and confirmed incentives as a crucial driver for the CI to use. Thus, it is perceived that the incentives offered by the digital wallet marketers increase the propensity of rural consumers to continue using digital wallet because of the incentives like cash backs, discount coupons/codes, promotional offers or loyalty points and others. Furthermore, the study reveals that offering incentives develop the habit to use digital wallets among the rural consumers in India and supports the argument of Gneezy *et al.* (2011) that incentives foster habit. The rural Indian consumers make frequent transactions as they are habituated to buy goods in small quantities for everyday use; therefore, the study perceives that frequency of using digital wallets can be augmented by providing incentives consistently. Thus, this study elicits that the rural consumers intend to receive continuous incentives to get adapted to a new technology for payments. In addition, the study identified habit as one of the crucial factors to the CI to use digital wallets and confirm the findings of Alalwan *et al.* (2017). This signifies that the frequent purchase attitude of rural consumers for day-to-day

consumption formed the habit to use digital wallets that ultimately contributes to the CI. The study further identified trust as a key measure to the CI to use digital wallets and signifies that Indian rural consumers have developed trust towards digital wallets. Thus, it confirms the findings of the earlier study conducted by Malik *et al.* (2019) and Alalwan *et al.* (2017). The higher the trust on the digital wallets, the greater will be the frequency of digital wallet use. This clearly signifies that trust motivates the rural consumers to adopt digital wallets for payments and confirms the positive attitude towards digital wallet technology.

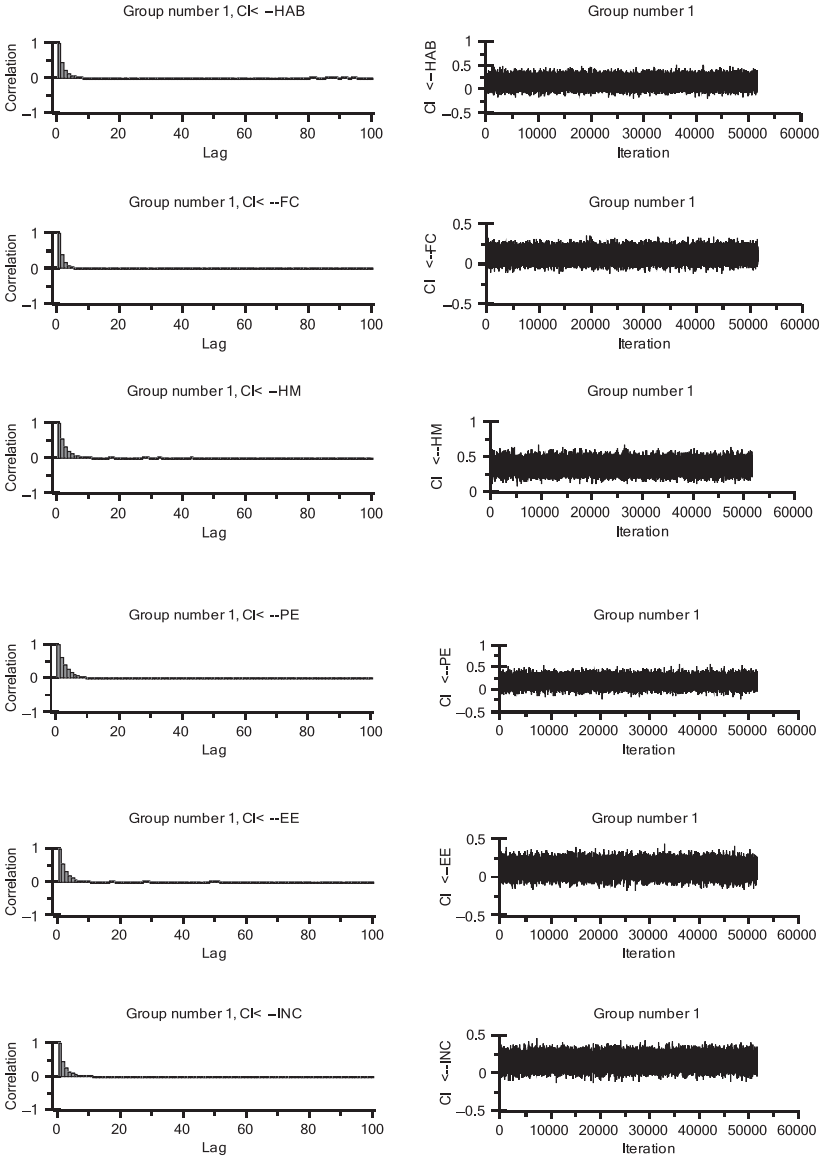
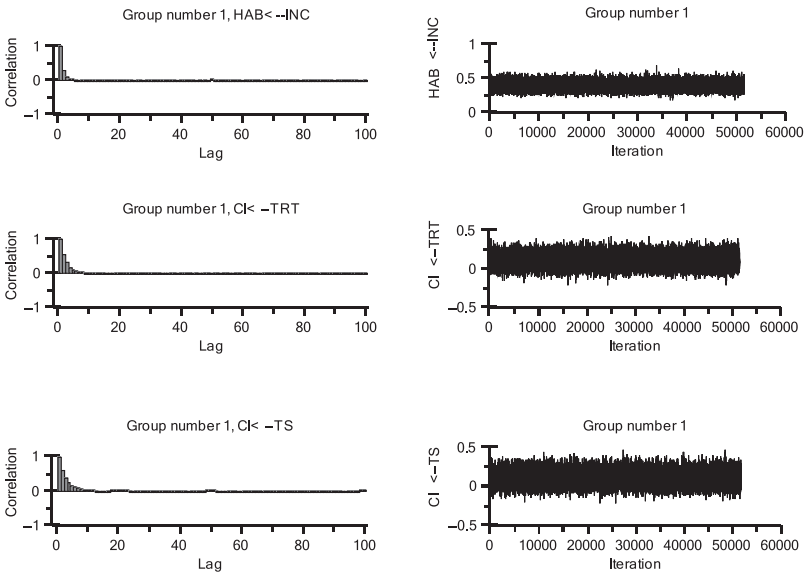


Figure 3. Autocorrelation and trace plots for Markov Chain Monte Carlo convergence



Source(s): Authors' own work

Figure 3. (*continued*)

Table 6. Comparison of estimated parameters between CB-SEM and BSEM

Predictors	CB-SEM Estimates	BSEM Estimates
HAB	0.151	0.154
FC	0.112	0.114
HM	0.364	0.367
PE	0.155	0.159
EE	0.113	0.114
INC	0.156	0.158
TRT	0.113	0.115
TS	0.115	0.117

Note(s): HAB = habit; HM = hedonic motivation; CI = continuation intention; PE = performance expectancy; TS = technology satisfaction; EE = effort expectancy; FC = facilitating condition; INC = incentives; TRT = trust; CB-SEM = co-variance-based structural equation modelling; BSEM = Bayesian structural equation modelling
Source(s): Authors' own work

Next, HM is identified as a strong predictor to the CI to use digital wallets with the use of both CB-SEM and BSEM approaches. This indicates that Indian rural consumers are pleased with the use of digital wallets for payment options and intend to use further because of the comfort and pleasure derived. Thus, this study supports the findings of Van Der Heijden (2004) that hedonic benefits experienced by the consumers play a significant role in new technology adoption and use. However, it contradicts the study results of Kilani *et al.* (2023) that HM cannot influence the continuance use intention of e-wallet in Jordan. Therefore, this finding gives a cue to the marketers to add special features that satiate the hedonic needs of rural

consumers. The influence of EE on the CI to use digital wallets was found to be positively significant. This signifies that Indian rural consumers do not feel difficult to use digital wallets; therefore, it resulted in the CI to use. The findings are consistent with Alalwan *et al.* (2017) who signified that EE leads to behavioural intention to adopt mobile banking. Based on the statistical evidence, PE was identified as one of the crucial factors to the CI to use digital wallets and is consistent with the previous findings of Alalwan (2020) who noted that PE drives the continued intention to mobile food-ordering apps. This evidences that Indian rural consumers experience both cognitive and functional benefits of digital wallets as it enables the consumers to have convenient and flexible cashless shopping options compared with the other modes of payment. In addition, this research found facilitating conditions as one of the crucial factors to the CI to use digital wallets. This signifies that consumers show greater concern towards the infrastructural facilities like Internet access using 5G technology and acceptance of digital wallet payments as this facility is not common as in the urban areas and still low in very small villages. The result of facilitating conditions is in consonance with the study results of Zhou *et al.* (2010) and contradicts the study results of Kilani *et al.* (2023). This shows that the FCs to use digital wallets in the shops located in rural areas are satisfactory.

6. Study implications

6.1 Theoretical implications

This study makes notable contributions towards a finer academic understanding of the CI to use digital wallets and expands the current knowledge of understanding the CI to use digital wallets pertaining to the rural pockets of India which are considered as one of the developing economies.

The other theoretical contribution of this study is the addition of TS, incentives and trust with UTAUT2 to predict the CI to use digital wallets as Indian rural consumers and places are sufficed with varied levels of digital literacy and the technology infrastructure. The study makes empirical evidence and theorised that the TS, incentives and trust significantly influence the CI to use digital wallets along with the constructs of UTAUT2. The study further makes a significant theoretical contribution that incentives remain a significant driver to foster the habit to use digital wallets in the rural pockets of India. This, in turn, gives new dimensions to the use of TS, incentives and trust to predict the CI to use new technologies as adoption and use of new technologies in rural parts of India and in other developing economies to foster economic development (Schuetz and Venkatesh, 2020). Contribution of FC towards the CI to use digital wallets stands unique as a prior study could not derive a significant relationship with the continuance use intention and use behaviour in a developing economy like Jordan (Kilani *et al.*, 2023). Moreover, digital wallet users in rural India exhibit HM that leads to the CI to use digital wallets though they possess varied levels of digital literacy, which remains to be another significant contribution.

Moreover, the study contributes to the expanding body of empirical research on mobile payments, particularly the use of digital wallets in rural India, where not much has been done despite an individual's desire to go cashless.

6.2 Managerial implications

In view of the statistical results that supported the proposed hypothesis, this research validates the crucial role of TS, incentives, trust, PE, EE, FC, HM and habit towards the CI to use digital wallets. Therefore, the endeavours of digital wallet marketers to attract new users and retain the existing customers should focus on all the aspects relating to these factors. In addition, both developing and developed economies can focus on these factors to ensure the CI to use digital wallets.

It is evident from this research that HM and incentives are imperative to the CI to use digital wallets in the rural parts of India. HM plays a vital role in using digital wallets as it befits the

hedonic needs of the customers and is regarded as a significant factor to the CI to use digital wallets. Therefore, the digital wallet marketers can provide self-fulfilling values through digital wallets to prolong the use of digital wallets by means of offering hedonic content. In addition, incentives influence both the CI to use digital wallets and habit. Therefore, the service providers can enhance the attraction and retention of rural customers by offering sweepstakes and cash discounts as incentives lead to habit and CI to use digital wallets. Furthermore, the service providers can send personalised popup messages about the type of incentives and the loyalty points that in turn motivate the rural customers to use digital wallets for future transactions.

TS emerged as another significant factor to the CI to use digital wallets; therefore, to consistently ensure TS, the service providers should ensure a fail-safe procedure for payments and must augment the attributes of digital wallets such as easy, safe and secured payment features, relative convenience, relative advantage compatibility, system quality, service quality like spontaneity of the service outcome and information quality of the digital wallet. Furthermore, after every instant payment and money transfer, short surveys can be conducted and users are requested to provide feedback to identify the technology-related issues in every transaction which further leads to TS. In addition, the digital wallet service providers can collaborate with mobile instrument manufacturers to enhance mass adoption as individuals need not download and install apps which simplify the process to adopt and augment the continuous use of digital wallets.

Based on the statistical evidence, trust was also emerged as one of the significant contributors to the CI to use digital wallets. However, the customers in rural parts of India have concern towards the trust aspects of using digital wallets. This can be ensured through "one-time password" for individual payments, and the digital wallet app can send messages to change the password after a certain period. At the same time, the users are concerned about the strength of Internet connection; therefore, the study suggests enhancing Internet services to reduce the interruptions encountered during payments. Though the noted mobile Internet service providers in the rural parts of India are BSNL, Reliance Jio, Airtel and Vodafone, consumers were not pleased while payments are made through digital wallets in the rural areas. However, the same consumers were pleased with the mobile payment options when doing digital wallet payments in the urban parts of India. Therefore, these service providers can augment the signal strength; for example, 5G network connectivity has been launched by Reliance Jio and Airtel in 50 major cities in India. Furthermore, the current research suggests providing 5G network services to the rural pockets of India to enhance mobile payments that please the digital wallet users. On the other hand, government and digital wallet marketers can further enhance the ubiquity of digital payment facilities than the traditional payments in the rural pockets of India. This can be made through educating the consumers about the unique features of digital wallets through the existing users and rural extension programmes initiated by the mutual efforts of government and digital wallet companies that substantially makes the rural population technologically literate and allay the fears and apprehensions of using the digital wallet technology for payments.

The results of this study further provided clues for the digital wallet companies about the influence of trust. Therefore, the digital wallet marketers should ensure the trust of using digital wallets as a safe and secured medium for digital payments to the rural consumers. Furthermore, the digital wallet marketers need to ensure the security and privacy of information provided to the digital wallets for connecting with bank accounts. The other major concern of the users of digital wallet in the rural parts of India is the reluctance of merchants to accept digital wallet payments despite the acceptance because of their low level of education and their habitual behaviour to feel happy in seeing the quantum of currencies earned at the end of the day. Therefore, the merchants located in rural parts of India should be educated about the use of digital wallet technology through hands-on training by the digital wallet marketers, and the merchants can be motivated by means of exhibiting the bumper advertisement of theirs to the users who make digital wallet payments with them. This motivates the merchants to accept

digital wallet payments without any reluctance as advertisement of theirs are made at free of cost. More specifically, the rural customers and merchants have the habit of using community radio and cable television for entertainment and news; therefore, marketing communication can be made through community radio and cable television. Kiosk setups is another major channel through which rural consumers can be contacted and interacted to use and consistently use by evincing the benefits of digital wallet transactions. In addition, the loyalty reward points earned in the use of digital wallets for every transaction should be intimated at frequent intervals through popup messages, which in turn may motivate the customers to use digital wallets repeatedly to redeem the points. The digital wallet marketers can collaborate with the e-commerce shopping platforms and offer special discounts to augment the customers to use digital wallets; for example, Amazon and HDFC credit card (Kumar and Ayodeji, 2021). To further augment the increase in use of digital wallets, location-based offers can be offered by detecting the nearby promotions of merchants accepting wallet transactions. As Indian consumers are conversant with the use of a toll-free number for registering complaints and rectification of errors, the digital wallet marketers can provide a toll-free number to ensure customer support services during technological glitches. In view of the managerial implications of the present study, the government can enable digital economy, consumers can simplify the payment options, digital wallet industry can sustain their growth and m-commerce industry can be enhanced through mobile payments.

6.3 Limitations and directions for future research

Despite its contributions to the mobile payment literature and digital wallets in particular, few limitations of this study can lead to future research directions.

As the present study executed a cross-sectional design, longitudinal studies can be conducted in future to identify the changes among the customers with the use of digital wallets at different points of time to provide more actionable findings. As the survey was conducted in the rural parts of India, the conclusions may not be simply generalised because of several location-based extraneous influences. Therefore, validation of the existing model in different contexts and economies can be undertaken. Furthermore, new constructs related to the personality traits and culture can also be extended to the existing model for future studies. A comparative study is suggested between the rural and urban parts of India as several scholars believe that different demographics can play a crucial role in how consumers pay (e.g. Shree *et al.*, 2021). This study is the first to propose TS as a crucial factor that influences the CI to use digital wallets. Though TS can influence the CI to use adopt digital wallet technology, the role of TS needs further investigation to gain more authenticity. Furthermore, it remains imperative to understand the merchants' interest and CI to use digital wallet technology for receiving payments as in rural places they feel difficult to bear the operating charges of using the technology.

7. Conclusion

Prompted by the need to achieve digital economy, this research examined the factors that lead to the CI to use digital wallets from the regions with low technology infrastructure and among the individuals possessing low levels of digital and financial literacy as several studies were conducted in urban places. The study used the extended UTAUT2 model by incorporating trust, incentives and TS. Data for the study were collected from the rural parts of south India with 295 digital wallet users. Based on the analysis, TS, incentives and trust influenced the CI to use digital wallets along with the constructs of UTAUT2 such as HM, FC, EE, PE and habit. Among the other predictors to the CI to use digital wallets, HM was found to be a strong predictor based on the approaches of both CB-SEM and BSEM. A comparison of results arrived from CB-SEM with BSEM ensures the validation of the hypothetical model is the major methodological contribution towards consumer behaviour literature. Based on the assessment, the digital wallet marketers, government and merchants are suggested to befit the

needs of the customers in terms of enhancing TS, trust and incentives. Furthermore, the promotional programs that motivate and satiate the hedonic needs of the consumers possessing low levels of digital and financial literacy remain significant to ensure the CI to use digital wallets in the rural parts of India. Thus, the CI to use digital wallets in rural parts of India bridges the gap with the urban counterparts to ensure holistic digital economy.

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Appendix

Table A1. Measures and sources

Performance expectancy (Venkatesh *et al.*, 2012)
I find digital wallets as a useful instrument in my everyday life
Using digital wallets enhances the accomplishment of pertinent tasks
Digital wallets help me to complete the pertinent tasks as quick as possible
Use of digital wallets increases the productivity
Effort expectancy (Venkatesh *et al.*, 2012)
I feel easy to learn using digital wallets
I have a very good acquaintance with digital wallets
I feel that digital wallets are easy to use
One self can become skilful in using digital wallets
Facilitating condition (Venkatesh *et al.*, 2012)
I have the essential resources to use digital wallets
The technologies embedded in digital wallets are compatible with other technologies that I use
I need not seek help from others when using digital wallets
I have sufficient knowledge to use digital wallets
Hedonic motivation (Venkatesh *et al.*, 2012)
It is fun for me to use digital wallets
I enjoy using digital wallets
It is entertaining to use digital wallets
Habit (Venkatesh *et al.*, 2012)
The use of digital wallets has become a habit for me
I am addicted to use digital wallets
I cannot restrain using digital wallets
It becomes quite natural for me to use digital wallets
Technology satisfaction (Daud Norzaidi and Intan Salwani, 2009)
The Technology used in digital wallets facilitate complacent transactions
The Technology embedded in digital wallets results in high satisfaction
I am pleased with the use of Technology used in digital wallet
I am contented with the Technology used in digital wallets
I am delighted with the Technology used in digital wallets
Continuing intention to use (Venkatesh *et al.*, 2012)
I intend to continue using digital wallets in the future
I will always try to use digital wallets in my everyday life
I plan to continue using digital wallets frequently
Incentive (Malik *et al.*, 2019)
I use digital wallets as it provides me various discounts
I use digital wallets as I get cash back every time, I transact by using it
I prefer digital wallets than others as I get more promotional offers
Trust (Alalwan *et al.*, 2017)
I feel safe in providing personal information in the use of digital wallets
I am not worried to use digital wallets as I know my transactions are secured
I am not worried to use digital wallets as I know my transactions are safe
I feel secured even if sensitive information is sent across this digital wallet.
Digital wallets will not reveal any of my information to the third party

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