Factors influencing intention to continue use of e-wallet: mediating role of perceived usefulness

Ajay Kumar
Department of Management, Sharda School of Business Studies, Sharda University, Greater Noida, India

Piali Haldar
Department of Management, School of Management and Commerce, Brainware University, Kolkata, India, and

Sharad Chaturvedi
Department of Management, Jaipuria Institute of Management – Indore Campus, Indore, India

Received 19 December 2023
Revised 15 February 2024
28 April 2024
28 May 2024
21 June 2024
Accepted 29 June 2024

Abstract

Purpose – The extensive use of digital payment methods has made financial ecosystems more open and effective. As technology develops, the future of commerce is significantly shaped by digital payments and e-wallets. This study aimed to examine the influencing factors on the intention to continue the use (ICU) of e-wallets.

Design/methodology/approach – A sample of 246 respondents was employed in the data analysis using Smart-PLS 4. Data were collected from e-wallet users using convenience sampling from India. An online survey was conducted for data collection.

Findings – This study found that consumers' intention to continue use of e-wallets is positively influenced by perceived usefulness, perceived ease of use and rewards. Also, perceived usefulness (PU) shows a significant partial mediating role between perceived ease of use (PEOU), rewards (RW) and ICU. However, it shows a fully mediating role between perceived enjoyment (PEJ) and intention to continue use (ICU).

Originality/value – E-wallet providers should emphasize on providing easy-to-use e-wallet applications but with rewards. This study added knowledge to the existing literature focusing on the influence of perceived ease of use and rewards on intention to continue the use of e-wallets through perceived usefulness, which was not previously tested empirically.

Keywords Rewards, Perceived usefulness, E-wallet, Intention to continue use

Paper type Research paper

Vilakshan – XIMB Journal of Management
Vol. 22 No. 1, 2025
pp. 45-61
Emerald Publishing Limited
e-ISSN: 2633-9439
p-ISSN: 0973-1954
DOI 10.1108/XJM-12-2023-0243

1. Introduction

An electronic wallet, also known as an e-wallet, is a type of electronic card used for online transactions. With the exponential growth of computers and smartphone users worldwide, (https://economictimes.indiatimes.com/definition/e-wallets) mobile payments by using electronic wallets (e-wallets) are becoming popular and reliable digital payment methods in both developing and developed countries (Abdul-Halim *et al.*, 2022). Many countries have adopted electronic wallets as a payment option because of their advantageous attributes such as convenience, time and cost savings (Abbasi *et al.*, 2022; Hasan and Gupta, 2020). In addition to the simplicity and flexibility, e-wallets are more beneficial compared to other electronic payment systems (Kow *et al.*, 2017). It gives the liberty to perform transactions anytime and anywhere (Qasim and Abu-Shanab, 2016) therefore attracting people to install e-wallet apps. Apart from bank-backed e-wallets, telecom, Fin-tech and other nonbanking companies are offering e-wallets in the Indian market.

The market of e-wallets is lucrative for various reasons including moderate regulations, India's aims to be a digital economy and a cashless society, high mobile and internet penetration, etc. But, despite significant government initiatives, e-wallet penetration in India is low compared to other Asian countries. In 2020, the electronic wallet market in India was INR 36.5tn, equal to US$4.9tn and estimated to be tripled by 2024 (Krishnakumar, 2022). India has a large, untapped market that is still available to service providers and app developers. There are 217 million mobile wallet users in India and is expected to reach 434 million in 2025 (Tech Sci Research, July 2023). According to previous studies, demonetization, the COVID-19 pandemic and the availability of cheap internet and smartphones in developing countries such as India have created numerous opportunities for e-wallet service providers. Considering the current status and future potential, it makes sense to determine the factors that influence consumers' intention to continue the use of electronic wallets in India.

In addition to the growing demand for e-wallets in India, several other factors need to be explored which may offer sophisticated insights into the unique challenges and opportunities in the adoption and use of e-wallets. Considering the heterogeneous demographic profiles, various degrees of technological penetration and cultural preferences that define India's socioeconomic landscape, a better understanding of the factors influencing consumer behaviour toward electronic wallets is imperative. Electronic wallets are a vital instrument for financial inclusion in developing countries, where a large percentage of the population may not have access to or be limited by traditional banking infrastructure. To ensure that these digital payment systems are effective in reaching underserved groups and closing the gap between banked and unbanked groups, it is crucial to understand what drives users to keep using them.

Prior research in the domain of e-wallets has indeed shed light on various aspects of user behaviour, adoption factors and technological advancements. Technology acceptance model (TAM), diffusion of innovation (DOI) and UTAUT have been used to investigate the intention and adoption of technology (Kiwanuka, 2015; Khan and Woosley, 2011) in the e-wallet context. However, several gaps persist within this literature. Limited research on users' intention to continue using (ICU) e-wallets is conducted (Lim *et al.*, 2022; Shetu *et al.*, 2022; George and Sunny, 2022; Puriwat and Tripopsakul, 2021) especially in the Indian context. While studies have extensively examined factors like perceived ease of use and perceived usefulness, there remains a dearth of empirical investigations into the role of perceived enjoyment and rewards in influencing e-wallet adoption. Furthermore, existing research often lacks a comprehensive understanding of how motivation intersects with factors of technology adoption/intention to use. Due to the variation in users' intrinsic and extrinsic motivation to use an e-wallet, it can be argued that their behaviour toward mobile payment is different. Hence, the question arises as to what influences e-wallet users' intention to continue using it. This study aims to address these identified gaps by investigating the relationships between intrinsic (perceived enjoyment), extrinsic motivation (rewards) and technology factors (PEOU, PU) of e-wallet

intentions to use. This study bridges the gap between motivation factors, technology factors and intention to continue the use of e-wallets.

Further, from the said theories and models, perceived usefulness (PU) and perceived ease of use (PEOU) are two key components of technology acceptance adopted to understand the continued use of e-wallets. In this study, perceived enjoyment (PEJ) and rewards (RW) as intrinsic and extrinsic motivations respectively, are identified through a critical literature review. Users enjoy and feel happy, when they adopt an e-wallet for financial transactions (Saadon and Long, 2020; Salam and Taufik, 2020; Latupeirissa *et al.*, 2020; Esawe, 2022; Olivia and Marchyta, 2022) and rewards positively influence behavioral intention to adopt new technology (Saprikis *et al.*, 2018; Mittal and Kumar, 2018; Prabhakaran and Vasantha, 2020). Hence, this study aims to examine the influence of PEOU, PU, PEJ and RW on users' intention to continue the use of e-wallets. Also, the mediator role of perceived usefulness is examined.

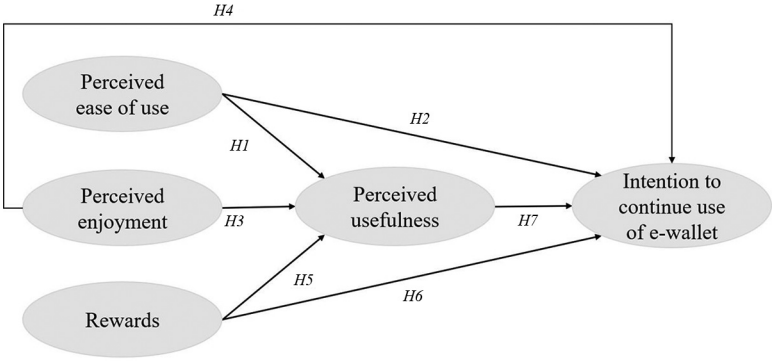
2. Conceptual framework

2.1 Technological acceptance model

The Technology Acceptance Model (TAM) provides a frame of reference to understand consumer technology acceptance (Davis, 1989). The TAM model proposes that PU and PEOU are two leading factors that affect consumers' attitudes toward technology and verify their intention to use or adopt new technology. To improve its explanatory power in e-wallet context, TAM has been extended with other models such as Theory of Reason Action (Rahmayanti *et al.*, 2021), Theory of Planned Behavior (Aisyah and Sesunan, 2023; Tian *et al.*, 2023; Astari *et al.*, 2022), Health Belief Model (Hiew *et al.*, 2022), Diffusion of Innovation (Gunawan *et al.*, 2020; Puspitasari *et al.*, 2021). This indicates TAM has a critical role in understanding e-wallet adoption and continued usage intention in different contexts. Further, PEOU positively impacts satisfaction, and continuance intention on e-wallets (Puspitasari *et al.*, 2021) and PU found a strong predictor of intention to continue the use of e-wallets (Tian *et al.*, 2023). Hence, in this study, TAM is extended with two motivation factors i.e. PEJ and RW to understand consumer intention to continue the use of e-wallets. The proposed Model is given in Figure 1.

2.2 Perceived ease of use, perceived usefulness and intention to continue use

People continue to use of any new technology if they find it useful. So, in the current study, PEOU is important to convince an individual to use new technologies. PEOU is defined as the



Source: Developed by author

Figure 1.
Proposed research model

degree to which the potential user expects the targeted product to be effortless (Liao *et al.*, 2009). The product features such as product design, features and attributes make the product easy to use for an individual. If the levels of gratification fulfil users' needs, they tend to continue using of the product. On the other hand, if the user finds the product difficult to use, they restrain or stop using the product. The insights of users contribute positive or negative feelings about the product, which in turn affect users' intention to continue use (Daragmeh *et al.*, 2021; Malik and Annuar, 2021). Intention to continue use refers to "an individual's intention to use or reuse a particular system continuously" (Bhattacherjee, 2001). Further, PEOU has been claimed to be a decisive factor of perceived usefulness in online businesses, which plays a significant part in user willingness to continuous usage of e-wallets (Abdul-Halim *et al.*, 2022; Singh and Sharma, 2022; Daragmeh *et al.*, 2021). PU is a measure of an individual's belief that a specific system would improve their ability to complete a task (Davis, 1989, p. 320). While understanding mobile payment adoption, the relationship between perceived ease of use and perceived usefulness (Abdul-Halim *et al.*, 2022) and perceived usefulness and intention to use (Koenig-Lewis *et al.*, 2015) is found significant. Thus, the paper proposes the following hypotheses:

H1. Perceived ease of use significantly influences perceived usefulness of e-wallet.

H2. Perceived ease of use significantly influences intention to continue the use e-wallet.

H3. Perceived usefulness mediates between relationship of perceived ease of use and intention to continue the use of e-wallet.

2.3 Perceived enjoyment, perceived usefulness and intention to continue use

Perceived enjoyment refers to the extent to which the action is perceived to be fun or entertaining (Lee, 2010). It includes pleasure, fun, enjoyment or entertainment (Chen *et al.*, 2016). PEJ is used in the extended TAM model, where PEJ affect PU (Alalwan *et al.*, 2018; To and Trinh, 2021) and intention to use (Alfany *et al.*, 2019; Sigar, 2016) respectively. People found e-wallet usage enjoyable because it requires less time to accomplish the money transfer (Chen *et al.*, 2018). In addition to this, PEJ is found to be significant as a factor in the extended UTAUT model (Alotaibi *et al.*, 2019; Chao, 2019; Fagan, 2019). Thus, in the present study, perceived enjoyment focuses on individuals' hedonic motivation; one will continue to use e-wallets if he/she finds it exciting or likeable. Based on prior research, this study has adopted PEJ as an inhibitor affecting PU and ICU e-wallet respectively. Besides studying the direct relationship between PEJ, PU and ICU, the study is also interested to find out the mediating effect of PU in the relationship between PEJ and ICU e-wallets. Therefore. in reference to previous relationship, this study proposed the following hypothesis:

H4. Perceived enjoyment significantly influences perceived usefulness of e-wallet.

H5. Perceived enjoyment significantly influences intention to continue use e-wallet.

H6. Perceived usefulness mediates the relationship of perceived enjoyment and intention to continue use of e-wallet.

2.4 Rewards, perceived usefulness and intention to continue use

Rewards in marketing are the monetary incentives, free gifts, coupons, reward points and cash back. Aydin and Burnaz (2016) concluded that rewards have a significant role in increasing the intention to use mobile wallets. Consumers pay attention to e-wallets, if they receive special offers and discounts by using it (Tavilla, 2012). In the context of e-wallets, previous studies conducted by Aydin and Burnaz (2016), Kim and Han (2014) and Varnali

et al. (2012) support the argument that an individual puts effort into receiving the awards. Thus, in the current study rewards are denoted by the offers that one expects from their selected behaviors. Roumani *et al.* (2015) identified that rewards have a positive relation with usefulness towards adoption of new technology. It was noted that Gen Z's preference for rewards that are managed outside is a major factor in their use of e-wallets (Howard *et al.*, 2021). Financial rewards influence intention to continue use of app (Huang *et al.*, 2024). Thus, this study proposed the following relationship:

H7. Rewards significantly influences perceived usefulness of e-wallet.

H8. Rewards significantly influences intention to continue using e-wallet.

H9. Perceived usefulness mediates the relationship of rewards and intention to continue use of e-wallet.

2.5 Perceived usefulness and intention to continue to use of e-wallet

Prior researchs established that PU has significant impact on intentions to continue use of new technology. PU refers perception of usefulness of a new technology which influences one to continue to use a product on receiving desired outcome from the product (Ventre and Kolbe, 2020). The past studies indicate that behavioral ICU refers to a subjective likelihood of continue to use new technology for a specific purpose (Tang *et al.*, 2014; Chang *et al.*, 2015). If the users do not find the technology applicable to address the purpose, they will discard the product. Thus, PU has significant effect on consumers' intention to continue use of e-wallet (Kumar and Gupta, 2021; Mun *et al.*, 2017), and a significant predictor (Shaw and Sergueeva, 2019; Foroughi *et al.*, 2019). Therefore, the following hypothesis is proposed:

H10. Perceived usefulness positively influence intention to continue use of e-wallet.

3. Research methodology

3.1 Data collection and sampling design

Data were collected from e-wallet users using convenience sampling from the Indian market. Previous research on e-wallet have used convenience sampling (Ariffin *et al.*, 2021; Senali *et al.*, 2022). A filter question was used to understand whether the respondent was using e-wallets. The questionnaire was completed by the respondent currently using an e-wallet service. Each district in India was the subject of this study. The Google Form link was sent to the respondents through e-mail, Facebook and WhatsApp. This study employed an online survey approach because it is considered the most feasible and efficient way to collect necessary data (Sekaran and Bougie, 2016). Previous studies in the same context have also used the online survey method for data collection (Lee *et al.*, 2022; Abdul-Halim *et al.*, 2022).

3.2 Survey instrument

A self-administered questionnaire was developed using Google Forms in two sections. In Section A, all variables were measured, whereas in Section B, the questionnaire was drafted to gather demographic data. The questionnaire contains items related to the five constructs of the proposed research model (see Appendix). Items related to PEJ were adopted from Natarajan *et al.* (2018) and Lee *et al.* (2022), PEOU from Venkatesh and Davis (2000) and Abdul-Halim *et al.* (2022), PU from Venkatesh and Davis (2000) and Abdul-Halim *et al.* (2022) and RW from Aydin and Burnaz (2016) and Saprikis *et al.* (2018) and ICU from Alraimi *et al.* (2015) and Abdul-Halim *et al.* (2022). Subsequently, a pilot study with 50

respondents were conducted, after which minor changes were incorporated as per the Indian context in the questionnaire. In addition, a screening question "Have you installed an e-wallet?" was added to ensure that the respondents were actual users of the e-wallet. All items in Section A were measured on a five-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"). The survey was conducted between January and March, 2022. The demographic characteristics of the respondents and their e-wallet use behavior are reported in Tables 1 and 2, respectively.

4. Results

4.1 Respondents' characteristics

Online questionnaire responses from 246 respondents in the final sample were successfully analyzed. According to the profiles of the respondents, there are more men (61.8%) than women (38.2%) in the majority. Thirty-six percent of the responders are under 25 years old. 26–35 years old (29.3.7%), 36–45 years old (23.2%) and 46–55 years old and above (11.4%) come next. The majority of respondents (13.6%), owned businesses (13.4%), worked for the government (13.8%) and were employed in the private sector (27.6%). 51.2% of respondents had a graduate degree, followed by those with a postgraduate degree (27.6%), others (11.8%) and schooling (9.3%). When it comes to monthly income, the majority of respondents (37.1%) had a family income between $25,001 and $50,000, while 32.9% had a

Particulars	Frequency	%
Gender		
Male	152	61.8
Female	94	38.2
Age		
Upto 25	89	36.2
26–35	72	29.3
36–45	57	23.2
46–55	28	11.4
Education		
Schooling	23	9.3
Graduate	126	51.2
Post graduate	68	27.6
Others	29	11.8
Occupation		
Students	79	32.1
Private employees	68	27.6
Government employee	34	13.8
Own business	33	13.4
Others	32	13.0
Family income (Indian rupees)		
Upto INR25,000	81	32.9
INR25,001–50,000	93	37.8
INR50,001–75,000I	44	17.9
INR75,001–1,00,00	15	6.1
Above INR1,00,000	13	5.3

Table 1.
Respondents' profile

Source: Created by authors

Variable	Frequency	%
Using e-wallet		
Last 6 months	39	15.9
Last 1 year	61	24.8
Last 2 year	59	24.0
More than 3 years	87	35.4
Frequently using app		
Sometimes	59	24.0
Half the time	32	13.0
Most of the time	108	43.9
Always	47	19.1
Purpose using		
Shopping	42	17.1
Top-up (prepaid electric, etc.)	14	5.7
Own bills payment	31	12.6
Business/commercial transactions	14	5.7
All of the above	145	58.9

Source: Created by authors

Table 2. Awareness and usage of e-wallets

family income of up to $25,000. This suggests that the majority of respondents belonged to the middle class. In the meantime, the family income of 6.1% and 5.3% of respondents was INR 50,001–75,000 and INR 1, 00,000 and higher.

4.2 Measurement model

It appears that the analysis conducted confirmed the construct structured through a confirmatory factor analysis using Smart-PLS 4.0. The model fit was evaluated using various measures, such as Cronbach's alpha, composite reliability (CR), average variance extracted and the Fornell–Larcker criterion of discriminant validity. The construct reliability was found to be acceptable with an Alpha and CR value greater than 0.7 (Nunnally, 1978; Hair *et al.*, 2019), while the AVE value for all constructs was more than 0.5. Furthermore, discriminant validity was established using the square root of AVE and correlation (see Table 3).

The discriminant validity is assessed based on HTMT ratio and Fornell–Larcker criterion From Tables 4 and 5, the diagnosis value of all constructs is less than 0.90 and the AVE of each construct is higher than the correlation of the construct, which indicates the successful establishment of both convergent and discriminant validity of the measurement model. Henceforth, the results show that the measurement model is appropriate for producing a structural model.

4.3 Common method bias

Harman's one-factor test is performed as advised by Podsakoff *et al.* (2012). All factors account for 33.231% of the total variation, which is considerably below the 50% threshold set by the one-factor test (Podsakoff *et al.*, 2012). Therefore, in the analysis influence of common method variance is not a significant concern. This test verified that our investigation's CMV presence was not a significant problem (Bozionelos and Simmering, 2022).

Construct		Cronbach's alpha	Composite reliability (rho_a)	AVE
Perceived enjoyment (PEJ)		0.782	0.783	0.697
PEJ1	0.857			
PEJ2	0.810			
PEJ3	0.837			
Perceived ease of use (PEOU)		0.831	0.847	0.592
PEOU1	0.803			
PEOU2	0.719			
PEOU3	0.728			
PEOU4	0.826			
PEOU5	0.767			
Perceived usefulness (PU)		0.874	0.875	0.570
PU1	0.795			
PU2	0.746			
PU3	0.732			
PU4	0.805			
PU5	0.797			
PU6	0.696			
PU8	0.705			
Rewards (RW)		0.787	0.800	0.606
RW1	0.782			
RW2	0.769			
RW3	0.752			
RW4	0.810			
Intention to continue use (ICU)		0.817	0.818	0.732
ICU1	0.857			
ICU2	0.862			
ICU3	0.847			

Source: Created by authors

Table 3. Constructs' reliability and validity

Factors	ICU	PEJ	PEOU	PU	RW
ICU	*0.855*				
PEJ	0.458	*0.835*			
PEOU	0.598	0.391	*0.770*		
PU	0.662	0.522	0.534	*0.755*	
RW	0.517	0.341	0.316	0.383	*0.779*

Note: The italic values indicate the square root of AVE
Source: Created by authors based Smart PLS-SEM output

Table 4. Discriminant validity (based on Fornell–Larcker criterion)

4.4 Structural model

It appears that after evaluating the measurement model, the structural model was tested and 5,000 resample were bootstrapped to determine the statistical significance of path coefficients and *t*-values. The study measured the variance inflated factor (VIF) and found that the VIF of all constructs was less than 3.3, which is acceptable according to Hair *et al.* (2019). All hypotheses were then examined, and the results indicate that all hypotheses *H1*, *H2*, *H3*, *H4*, *H5* and *H6* were accepted (see, Figure 2). PEOU has a positive significance

influence on PU(*H1*) ($\beta = 0.356$; $t = 6.399$), and ICU (*H2*)($\beta = 0.291$, $t = 5.004$), PEJ has a positive significance influence on PU(*H3*) ($\beta = 0.328$, $t = 5.008$), RW has a positive significance influence on PU(*H5*) ($\beta = 0.158$, $t = 3.130$), and ICU(*H6*) ($\beta = 0.261$, $t = 5.952$), PU has a positive significance influence ICU(*H7*) ($\beta = 0.376$, $t = 6.680$) at $p < 0.01$ level. The hypothesis related to PEJ effect on ICU is insignificant. The corresponding path coefficients, *t*-values and *p*-values are reported in Table 6.

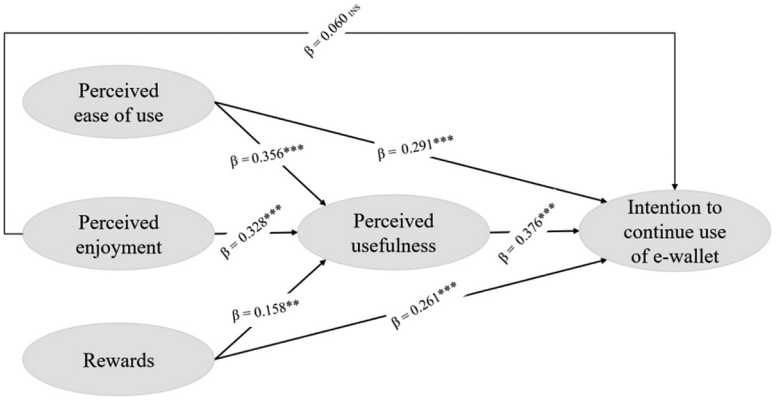
Also, total variance in model-I, explained by PEOU, PEJ and RW in PU is 0.422 and in model-II, PEOU, PEJ, RW and PU explain 58.50% of variance in ICU. R^2 is a statistical measure that shows how well the model coincides with the observed data. Based on the values provided, it seems that the model has a moderately robust explanatory power (R^2 values of 0.422 and 0.585). It is crucial to keep in mind that how these values are interpreted relies on the particular research context as well as the study's specific research question being addressed.

To test the mediating role of perceived usefulness (PU), an indirect effect was observed in the data analysis. Result shows that PU plays a significant mediating role between PEJ, PEOU, RW and ICU (see Table 7). For the relationship between PEOU, RW and ICU, it has shown a partial mediating role. However, it shows a fully mediating role between PEJ and ICU. Overall, the results suggest that PEU, PEJ and RW are important determinants of PU

Factors	ICU	PEJ	PEOU	PU	RW
ICU					
PEJ	0.573				
PEOU	0.704	0.479			
PU	0.777	0.631	0.596		
RW	0.626	0.427	0.376	0.441	

Source: Created by authors based on Smart PLS-SEM output

Table 5.
Heterotrait-monotrait ratio (HTMT) – Matrix



Notes: *Indicates significant at $p < 0.05$; **indicates significant 0.01; ***indicates significant $p < 0.001$; NS-insignificant relationship
Source: Developed by author

Figure 2.
Structural model

Hypothesis	Path	Path coefficient	t-statistics	*p*-values
H1	PEOU → PU	0.356***	6.399	0.000
H2	PEOU → ICU	0.291***	5.004	0.000
H4	PEJ → PU	0.328***	5.008	0.000
H5	PEJ → ICU	0.060^{INS}	0.995	0.160
H7	RW → PU	0.158**	3.130	0.001
H8	RW → ICU	0.261***	4.952	0.000
H10	PU → ICU	0.376***	6.680	0.000

Table 6. Results of hypotheses

Notes: *Indicates significant at $p < 0.05$; **indicates significant 0.01; ***indicates significant $p < 0.001$; INS = insignificant relationship
Source: Created by authors based on Smart PLS-SEM output

Hypothesis	Path	Path coefficient	t-statistics	*p*-values
H3	PEJ → PU → ICU	0.123***	3.925	0.000
H6	PEOU → PU → ICU	0.134***	4.738	0.000
H9	RW → PU → ICU	0.060**	2.794	0.003

Table 7. Mediating results (indirect effect)

Notes: *Indicates significant at $p < 0.05$; **indicates significant 0.01; ***indicates significant $p < 0.001$; NS-insignificant relationship
Source: Created by authors based on Smart PLS-SEM output

and ICU e-wallets. The findings may have implications for the design and marketing of e-wallets to enhance user acceptance and adoption.

5. Discussion and implications

The present study provides vital evidence and information to e-wallet service providers, digital marketers, retailers and other stakeholders of the e-wallet ecosystem. In the era of tech-enabled payment mechanisms, digital wallet has a distinct role. They are quick and offer a wide range of benefits to their users. But e-wallet providers must remember that e-wallet is not the only way for quick transfer. Cards and unified payment interface (UPI) enabled QR codes are emerging as a competitor for e-wallets. Therefore, to ensure the continued use of e-wallets user perception needs to be addressed. This study found that consumers' intention to continue using e-wallets was positively influenced by PU, PEOU, PEJ and RW. And can be considered as key determinants to examine the continued use of e-wallets. PEOU has a significant influence on users' intention to continue use of e-wallets, which supports the findings of a previous study (Daragmeh *et al.*, 2022). If users find e-wallets easy to use, they are more likely to continue using them in the future. Consumer intention to continue the use of e-wallets is largely based on the perception of reduced effort, improved efficiency and positive user experience. E-wallet categorically helps to increase user efficiency in completing transactions; also, it does not require additional effort. Therefore, it offers a favorable user experience which leads to the likelihood of continuing the use of e-wallet.

Perceived enjoyment (PE) is another construct in the model examined to determine an individual's intention to continue use of e-wallets. Results concluded that perceived enjoyment does not have any significant contribution in determining user intention to continue use of e-wallets, though it is significant in determining perceived usefulness.

Furthermore, the reason might be that users emphasized more practical benefits, such as convenience and efficiency, overlooking enjoyment. This is why the direction relation was weakened in this study. However, it showed a positive relationship through perceived usefulness. This may contribute to developing a user's positive perception of an e-wallet's usefulness. These results contradict the findings of previous studies where perceived enjoyment came out as a significant determinant in the use of new technology (Salam and Taufik, 2020; Latupeirissa *et al.*, 2020; Esawe, 2022; Olivia and Marchyta, 2022). E-wallet transactions are usually considered quick. Also, due to the large number of social media and gaming applications consumers might not seeking enjoyment features in e-wallets. In general, e-wallet users are primarily motivated by its utilitarian attribute rather than the hedonic aspect.

Rewards showed a significant relationship to the continued use of e-wallets. This is in accordance with the findings of previous studies (Lim and Shim, 2016; Saprikis *et al.*, 2018; Mittal and Kumar, 2018; Prabhakaran and Vasantha, 2020). Rewards are commonly offered by most of the e-wallets active in the Indian market. However, every time reward is not in the form of cash back but this is a commonly accepted reward among all e-wallet users. Other forms of reward are discounts and coupons on products and services, membership offers for other applications, etc. Wallet providers may strategize the rewards and cash back in such a way that it can be of mutual benefit to both the user and provider. While analyzing transaction data most frequent purchases can be identified. Collaboration with these brands may offer discounts for the user as well as marketing space for the brands.

In this study perceived usefulness proposed a positive relationship between perceived usefulness and intention to use e-wallets is consistent with the results of previous studies on e-wallets (Kumar and Gupta, 2021; Shaw and Sergueeva, 2019; Foroughi *et al.*, 2019; Mun *et al.*, 2017) which proved that perceived usefulness is a significant predictor of the intention to use e-wallet.

6. Conclusion

This study empirically tested the influence of PEOU (perceived ease of use) and rewards on intention to continue the use of e-wallets through perceived usefulness. Therefore, concludes that perceived ease of use, rewards and enjoyment are the key criteria to be addressed while offering a digital wallet to users. The study fills the existing research gap on how extrinsic motivation (i.e. rewards), along with TAM components leads to the intention to continue use of e-wallets. Moreover, PU played a significant mediating role between PEJ, PEOU, RW and ICU. In this study perceived usefulness showed a partial mediating role between PEOU, RW and ICU. However, it shows a fully mediating role between PEJ and ICU.

More specifically the study offers novel insights into the holistic drivers of e-wallet adoption, beyond traditional factors like PEOU and PU. Second, extending TAM with rewards influence across socio-demographic variables including age, income and education, the study enriches understanding of different user segments within the e-wallet ecosystem. Third, the findings of this research are anticipated to inform practitioners and policymakers about strategies to enhance e-wallet adoption rates, thereby fostering financial inclusion and digitalization efforts. Overall, the study's multifaceted approach and focus on unexplored dimensions of e-wallet adoption make it a valuable addition to the existing literature, with implications extending beyond academia to industry and policy domains.

7. Limitations and future research

The study's limitations offer opportunities for further research and enhancement of the continuous intention of e-wallet. Due to its limitation to the customer in India, this study's

findings cannot be generalized to a broader population. Future research can be conducted on various cultural and geographic backgrounds. We have used TAM with two motivation factors tested. Further studies can extend TAM with Self-determination theory, gamification, perceived values model, etc. Some other variables of e-wallet users' motivation can also be used. These techniques would give a more thorough picture of e-wallet users' intentions to keep using their devices. Subsequent investigations may explore users' intentions to use e-wallet applications in different scenarios, like online shopping, receiving a salary and paying for online gaming. These additional contexts would offer a more thorough comprehension of the e-wallet app user experience and perceptions.

References

Abdul-Halim, N.A., Vafaei-Zadeh, A., Hanifah, H., Teoh, A.P. and Nawaser, K. (2022), "Understanding the determinants of e-wallet continuance usage intention in Malaysia", *Quality and Quantity*, Vol. 56 No. 5, pp. 3413-3439, doi: 10.1007/s11135-021-01276-7.

Abbasi, G.A., Sandran, T., Ganesan, Y. and Iranmanesh, M. (2022), "Go cashless! determinants of continuance intention to use e-wallet apps: a hybrid approach using PLS-SEM and fsQCA", *Technology in Society*, Vol. 68, p. 101937, doi: 10.1016/j.techsoc.2022.101937.

Aisyah, M. and Sesunan, Y. (2023), "Decision making on the use of a shariah-based e-wallet by Indonesian consumers", *International Journal of Data and Network Science*, Vol. 7 No. 4, pp. 1739-1752.

Alalwan, A.A., Baabdullah, A.M., Rana, N.P., Tamilmani, K. and Dwivedi, Y.K. (2018), "Examining adoption of mobile internet in Saudi Arabia: extending TAM with perceived enjoyment, innovativeness and trust", *Technology in Society*, Vol. 55, pp. 100-110, doi: 10.1016/j.techsoc.2018.06.007.

Alfany, Z., Saufi, A. and Mulyono, L.E.H. (2019), "The impact of social influence, self-efficacy, perceived enjoyment, and individual mobility on attitude toward use and intention to the use mobile payment of OVO", *Global Journal of Management and Business Research: E Marketing*, Vol. 19 No. 7, pp. 1-8.

Alotaibi, F.D., Siraj, S. and Ismail, W. (2019), "Factors influencing acceptance to use m-learning in learning Arabic language for non-native speakers in Saudi universities", *Opcion*, Vol. 35, pp. 152-171, Special Issue 20.

Alraimi, K.M., Zo, H. and Ciganek, A.P. (2015), "Understanding the MOOCs continuance: the role of openness and reputation", *Computers and Education*, Vol. 80, pp. 28-38, doi: 10.1016/j.compedu.2014.08.006.

Ariffin, S.K., Abd Rahman, M.F.R., Muhammad, A.M. and Zhang, Q. (2021), "Understanding the consumer's intention to use the e-wallet services", *Spanish Journal of Marketing – ESIC*, Vol. 25 No. 3, pp. 446-461, doi: 10.1108/SJME-07-2021-0138.

Astari, A., Yasa, N., Sukaatmadja, I. and Giantari, I.G.A.K. (2022), "Integration of technology acceptance model (TAM) and theory of planned behavior (TPB): An e-wallet behavior with fear of COVID-19 as a moderator variable", *International Journal of Data and Network Science*, Vol. 6 No. 4, pp. 1427-1436.

Aydin, G. and Burnaz, S. (2016), "Adoption of mobile payment systems: a study on mobile wallets", *Journal of Business Economics and Finance*, Vol. 5 No. 1, pp. 73-92, doi: 10.1016/j.latcb.2021.100042.

Bhattacherjee, A. (2001), "Understanding information systems continuance: an expectation-confirmation model", *MIS Quarterly*, Vol. 25 No. 3, pp. 351-370.

Bozionelos, N. and Simmering, M.J. (2022), "Methodological threat or myth? Evaluating the current state of evidence on common method variance in human resource management research", *Human Resource Management Journal*, Vol. 32 No. 1, pp. 194-215.

Chang, C.-C., Hung, S.-W., Cheng, M.-J. and Wu, C.-Y. (2015), "Exploring the intention to continue using social networking sites: the case of Facebook", *Technological Forecasting and Social Change*, Vol. 95, pp. 48-56, doi: 10.1016/j.techfore.2014.03.012.

Chao, C.M. (2019), "Factors determining the behavioral intention to use mobile learning: an application and extension of the UTAUT model", *Frontiers in Psychology*, Vol. 10, pp. 1-14

Chen, A., Lu, Y. and Wang, B. (2016), "Enhancing perceived enjoyment in social games through social and gaming factors", *Information Technology and People*, Vol. 29 No. 1, pp. 99-119, doi: 10.1108/ITP-07-2014-0156.

Chen, Y.M.Y., Hsu, T.T.H. and Lu, Y.Y.J. (2018), "Impact of flow on mobile shopping intention", *Journal of Retailing and Consumer Services*, Vol. 41, pp. 281-287.

Daragmeh, A., Sági, J. and Zéman, Z. (2021), "Continuous intention to use e-wallet in the context of the COVID-19 pandemic: integrating the health belief model (HBM) and technology continuous theory (TCT)", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 7 No. 2, p. 132, doi: 10.3390/joitmc7020132.

Daragmeh, A., Saleem, A., Bárczi, J. and Sági, J. (2022), "Drivers of post-adoption of e-wallet among academics in Palestine: an extension of the expectation confirmation model", *Frontiers in Psychology*, Vol. 13, p. 984931.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, pp. 319-340.

Esawe, A.T. (2022), "Understanding mobile e-wallet consumers' intentions and user behavior", *Spanish Journal of Marketing – ESIC*, Vol. 26 No. 3, pp. 363-384, doi: 10.1108/SJME-05-2022-0105.

Fagan, M.H. (2019), "Factors influencing student acceptance of mobile learning in higher education", *Computers in the Schools*, Vol. 36 No. 2, pp. 105-121.

Foroughi, B., Iranmanesh, M. and Hyun, S.S. (2019), "Understanding the determinants of mobile banking continuance usage intention", *Journal of Enterprise Information Management*, Vol. 32 No. 6, pp. 1015-1033, doi: 10.1108/JEIM-10-2018-0237.

George, A. and Sunny, P. (2022), "Why do people continue using mobile wallets? An empirical analysis amid COVID-19 pandemic", *Journal of Financial Services Marketing*, p. 15, doi: 10.1057/s41264-022-00174-9.

Gunawan, H., Sek, Y.W. and Raja, R. (2020), "A model of the e-wallet adoption in small and medium enterprises (SME) Indonesia", *Journal of Theoretical and Applied Information Technology*, Vol. 98 No. 20, pp. 3100-3111.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24.

Hasan, A. and Gupta, S.K. (2020), "Exploring tourists' behavioural intentions towards use of select mobile wallets for digital payments", *Paradigm*, Vol. 24 No. 2, pp. 177-194.

Hiew, S., Nguemeni, C. and Zeller, D. (2022), "Efficacy of transcranial direct current stimulation in people with multiple sclerosis: a review", *European Journal of Neurology*, Vol. 29, No. 2, pp. 648-664.

Howard, J.L., Bureau, J., Guay, F., Chong, J.X.Y. and Ryan, R.M. (2021), "Student theory", *Perspective on Psychology Science*, Vol. 16, pp. 1300-1323, doi: 10.1177/1745691620966789.

Huang, J., Chen, J. and Zhou, L. (2024), "Motivation crowding effects on the intention for continued use of gamified fitness apps: a mixed-methods approach", *Frontiers in Psychology*, Vol. 14, p. 1286463, doi: 10.3389/fpsyg.2023.1286463.

Khan, A. and Woosley, J.M. (2011), "Comparison of contemporary technology acceptance models and evaluation of the best fit for health industry organizations", *IJCSET*, Vol. 1 No. 11, pp. 709-717.

Kim, Y. and Han, J. (2014), "Why smartphone advertising attracts customers: a model of web advertising, flow, and personalization", *Computers in Human Behavior*, Vol. 33, pp. 256-269.

Kiwanuka, A. (2015), "Acceptance process: the missing link between UTAUT and diffusion of innovation theory", *American Journal of Information Systems*, Vol. 3 No. 2, pp. 40-44.

Koenig-Lewis, N., Marquet, M., Palmer, A. and Zhao, A.L. (2015), "Enjoyment and social influence: predicting mobile payment adoption", *The Service Industries Journal*, Vol. 35 No. 10, doi: 10.1080/02642069.2015.1043278.

Kow, Y.M., Gui, X. and Cheng, W. (2017), "Special digital monies: the design of Alipay and WeChat wallet for mobile payment practices in China", Human-Computer Interaction–INTERACT 2017: 16th IFIP TC 13 International Conference, Mumbai, India, September 25-29, 2017, Proceedings, Part IV 16, Springer International Publishing, pp. 136-155.

Krishnakumar, P. (2022), "Digital wallets: the genesis, current usage, and future use healthcare payments in India", available at: https://fintechforhealth.sg/digital-wallets-the-genesis-current-usage-and-future-use-healthcare-payments-in-india/ (accessed 15 January, 2023).

Kumar, S. and Gupta, A. (2021), "Factors affecting adoption of M-wallets: moderating role of financial incentives", *Ramanujan International Journal of Business and Research*, Vol. 6 No. 1, pp. 132-114, doi: 10.51245/rijbr.v6i1.2021.431.

Latupeirissa, J.J.P., Gorda, A.A.N.O.S. and Subanda, IN. (2020), "Antecedents of intention to use e-wallet: the development of acceptance model with PLS-SEM approach", *Journal of Advanced Research in Dynamical and Control Systems*, Vol. 12 No. SP7, pp. 1416-1429.

Lee, M.C. (2010), "Explaining and predicting users' continuance intention toward e-learning: an extension of the expectation–confirmation model", *Computers and Education*, Vol. 54 No. 2, pp. 506-516.

Lee, Y.Y., Gan, C.L. and Liew, T.W. (2022), "Do E-wallets trigger impulse purchases? An analysis of Malaysian Gen-Y and Gen-Z consumers", *Journal of Marketing Analytics*, Vol. 11 No. 2, pp. 1-18.

Liao, C., Palvia, P. and Chen, J.L. (2009), "Information technology adoption behavior life cycle: toward a technology continuance theory (TCT)", *International Journal of Information Management*, Vol. 29 No. 4, pp. 309-320.

Lim, X.J., Ngew, P., Cheah, J.H., Cham, T.H. and Liu, Y. (2022), "Go digital: can the money-gift function promote the use of e-wallet apps", *Internet Research*, Vol. 32 No. 6, pp. 1806-1831, doi: 10.1108/INTR-06-2021-0406.

Lim, S. and Shim, H. (2016), "Who multitasks on smartphones? Smartphone multitaskers' motivations and personality traits", *Cyberpsychology, Behavior, and Social Networking*, Vol. 19 No. 3, pp. 223-227.

Malik, A.N.A. and Annuar, S.N.S. (2021), "The effect of perceived usefulness, perceived ease of use, reward, and perceived risk toward e-wallet usage intention", Eurasian Business and Economics Perspectives: Proceedings of the 30th Eurasia Business and Economics Society Conference, Springer International Publishing, pp. 115-130.

Mittal, S. and Kumar, V. (2018), "Adoption of mobile wallets in India: an analysis, IUP", *Journal of Information Technology*, Vol. 14 No. 1, pp. 42-57.

Mun, Y.P., Khalid, H. and Nadarajah, D. (2017), "Millennials' perception on mobile payment services in Malaysia", *Procedia Computer Science*, Vol. 124, pp. 397-404.

Natarajan, T., Balasubramanian, S.A. and Kasilingam, D.L. (2018), "The moderating role of device type and age of users on the intention to use mobile shopping applications", *Technology in Society*, Vol. 53, pp. 79-90.

Nunnally, J.C. (1978), "An overview of psychological measurement", *Clinical Diagnosis of Mental Disorders: A Handbook*, pp. 97-146.

Olivia, M. and Marchyta, N.K. (2022), "The influence of perceived ease of use and perceived usefulness on E-wallet continuance intention: intervening role of customer satisfaction", *Journal Teknik Industri*, Vol. 24 No. 1, doi: 10.9744/jti.24.1.13-22.

Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P. (2012), "Sources of method bias in social science research and recommendations on how to control it. Annu", *Annual Review of Psychology*, Vol. 63 No. 1, pp. 539-569.

Prabhakaran, S. and Vasantha, S. (2020), "Effect of social influence on intention to use mobile wallet with the mediating effect of promotional benefits", *Journal of Xi'an University of Architecture and Technology*, Vol. 12 No. 2, pp. 3003-3019.

Puriwat, W. and Tripopsakul, S. (2021), "Explaining an adoption and continuance intention to use contactless payment technologies: during the COVID-19 pandemic", *Emerging Science Journal*, Vol. 5 No. 1, pp. 85-95.

Puspitasari, I., Wiambodo, A.N.R. and Soeparman, P. (2021), "February. The impact of expectation confirmation, technology compatibility, and customer's acceptance on e-wallet continuance intention", *AIP Conference Proceedings*, Vol. 2329, No. 1, AIP Publishing.

Qasim, H. and Abu-Shanab, E. (2016), "Drivers of mobile payment acceptance: the impact of network externalities", *Information Systems Frontiers*, Vol. 18 No. 5, pp. 1021-1034.

Rahmayanti, P., Widagda, I., Yasa, N., Giantari, I.G.A.K., Martaleni, M., Sakti, D., Suwitho, S. and Anggreni, P. (2021), "Integration of technology acceptance model and theory of reasoned action in pre-dicting e-wallet continuous usage intentions", *International Journal of Data and Network Science*, Vol. 5 No. 4, pp. 649-658, doi: 10.5267/j.ijdns.2021.8.002.

Roumani, Y., Nwankpa, J.K. and Roumani, Y.F. (2015), "The impact of incentives on the intention to try a new technology", *Technology Analysis and Strategic Management*, Vol. 27 No. 2, pp. 126-141.

Saadon, M.S.I.B. and Long, C.S. (2020), "E-wallet acceptance among undergraduates in Malaysia", *TEST Engineering and Management*, Vol. 83, pp. 12990-12998.

Salam, K.N. and Taufik, M.I. (2020), "The effect of perceived enjoyment on the decision of digital payment utilization in millennial generation", *Hasanuddin Economics and Business Review*, Vol. 4 No. 2, pp. 50-52, doi: 10.26487/hebr.v4i2.2442.

Saprikis, V., Markos, A., Zarmpou, T. and Vlachopoulou, M. (2018), "Mobile shopping consumers' behavior: an exploratory study and review", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 13 No. 1, pp. 71-90, doi: 10.4067/S0718-18762018000100105.

Sekaran, U. and Bougie, R. (2016), *Research Methods for Business: A Skill Building Approach*, John Wiley & Sons.

Senali, M.G., Iranmanesh, M., Ismail, F.N., Rahim, N.F.A., Khoshkam, M. and Mirzaei, M. (2022), "Determinants of intention to use e-Wallet: personal innovativeness and propensity to trust as moderators", *International Journal of Human–Computer Interaction*, Vol. 39 No. 12, doi: 10.1080/10447318.2022.2076309.

Shetu, S.N., Islam, M.M. and Promi, S.I. (2022), "An empirical investigation of the continued usage intention of digital wallets: the moderating role of perceived technological innovativeness", *Future Business Journal*, Vol. 8 No. 1, p. 43, doi: 10.1186/s43093-022-00158-0.

Shaw, N. and Sergueeva, K. (2019), "The non-monetary benefits of mobile commerce: extending UTAUT2 with perceived value", *International Journal of Information Management*, Vol. 45, pp. 44-55.

Sigar, J.F. (2016), "The influence of perceived usefulness, perceived ease of use and perceived enjoyment to intention to use electronic money in Manado", *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, Vol. 4 No. 2.

Singh, A.K. and Sharma, P. (2022), "A study of Indian gen X and millennials consumers' intention to use FinTech payment services during COVID-19 pandemic", *Journal of Modelling in Management*, doi: 10.1108/JM2-02-2022-0059.

Tang, J.-E., Tang, T.-I. and Chiang, C.H. (2014), "Blog learning: effects of users' usefulness and efficiency towards continuance intention", *Behaviour and Information Technology*, Vol. 33 No. 1, pp. 36-50, doi: 10.1080/0144929X.2012.687772.

Tavilla, E. (2012), "Opportunities and challenges to broad acceptance of mobile payments in the United States", Federal Reserve Bank of Boston, available at: www._bostonfed.org/-/media/Documents/PaymentStrategies/opportunities-and-challanges-to-broadacceptance-of-mobile-payments.pdf/ (accessed 6 September 2020).

Tian, Y., Chan, T.J., Suki, N.M. and Kasim, M.A. (2023), "Moderating role of perceived trust and perceived service quality on consumers' use behavior of Alipay e-wallet system: the perspectives of technology acceptance model and theory of planned behavior", *Human Behavior and Emerging Technologies*, Vol. 2023, doi: 10.1155/2023/5276406.

To, A.T. and Trinh, T.H.M. (2021), "Understanding behavioral intention to use mobile wallets in Vietnam: extending the TAM model with trust and enjoyment", *Cogent Business and Management*, Vol. 8 No. 1, pp. 1-14, doi: 10.1080/23311975.2021.1891661.

Varnali, K., Yilmaz, C. and Toker, A. (2012), "Predictors of attitudinal and behavioral outcomes in mobile advertising: a field experiment", *Electronic Commerce Research and Applications*, Vol. 11 No. 6, pp. 570-581, doi: 10.1016/j.elerap.2012.08.002.

Venkatesh, V. and Davis, F.D. (2000), "Theoretical extension of the technology acceptance model: four longitudinal field studies", *Management Science*, Vol. 46 No. 2, pp. 186-204, doi: 10.1287/mnsc.46.2.186.11926.

Ventre, I. and Kolbe, D. (2020), "The impact of perceived usefulness of online reviews, trust and perceived risk on online purchase intention in emerging markets: a Mexican perspective", *Journal of International Consumer Marketing*, Vol. 32 No. 4, pp. 287-299.

Further reading

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace", *Journal of Applied Social Psychology*, Vol. 22 No. 14, pp. 1111-1132.

Economictimes (2024), "What is E-wallets? Definition of E-wallets, E-wallets Meaning – The economic times (indiatimes.com)", available at: https://economictimes.indiatimes.com/definition/e-wallets_dated_08

Lee, C.K., Lee, Y.K., Bernhard, B.J. and Yoon, Y.S. (2006), "Segmenting casino gamblers by motivation: a cluster analysis of Korean gamblers", *Tourism Management*, Vol. 27 No. 5, pp. 856-866.

Research Tech Research (2023), available at: www.techsciresearch.com/report/india-mobile-wallet-market/3796.html#:~:text=There%20are%20217%20million%20mobile,to%20reach%2030%25%20in%202025 (accessed 12 February 2024).

Soe, M.H. (2022), "Do they really intend to adopt e-wallet? Prevalence estimates for government support and perceived susceptibility", *Asian Journal of Business Research*, Vol. 12 No. 1, pp. 77-98.

Appendix. List of items

Perceived enjoyment (Natarajan *et al.* 2018).

- PEJ1: I find using e-wallet to be enjoyable.
- PEJ2: The actual process of using e-wallet is pleasant.
- PEJ3: I have fun while using e-wallet.

Perceived ease of use (Venkatesh and Davis, 2000; Abdul-Halim *et al.*, 2022).

- PEU1: Learning to operate e-wallet easily is for me.
- PEU2: I find e-wallet easy to use.
- PEU3: Interaction with e-wallet does not require a lot of mental effort.
- PEU4: My interaction with e-wallet is clear and under standable.
- PEU5: I find it easy to use e-wallet to do what I want.

Perceived usefulness (Venkatesh and Davis, 2000; Abdul-Halim *et al.*, 2022).

- PU1: E-wallet enables me to accomplish payments/transactions more quickly.
- PU2: E-wallet enables me to accomplish payments/transactions more easily.
- PU3: E-wallet increases my productivity.
- PU4: E-wallet increases my efficiency/transaction payment speed.
- PU5: E-wallet very useful for transferring money.
- PU6: E-wallet improves my performance.
- PU7: Overall, I find e-wallet useful.

Reward (Aydin and Burnaz, 2016; Saprikis *et al.*, 2018).

- RW1: I think that special offers/rewards provided by e-wallet are important to me.
- RW2: I think that the availability to e-coupons' redemption by e-wallet is important to me.
- RW3: I would like to gain benefit from any promotions offered by the e-wallet.
- RW4: I would like to continue to use e-wallet as long as promotions are being offered.

Intention to continue use e-wallet (Alraimi *et al.*, 2015; Abdul-Halim *et al.*, 2022).

- ICU1: I intend to continue using e-wallet in the future.
- ICU2: I will strongly recommend e-wallet for others to use it.
- ICU3: I will keep using e-wallet as regularly as I do now.

Corresponding author

Ajay Kumar can be contacted at: ajayschlr@gmail.com