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An empirical investigation on acceptance of e-wallets in the fintech era in Jordan: Extending UTAUT2 model with perceived trust

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A B S T R A C T

The increasing popularity of smartphones has led to the rise of e-wallets, which allow users to store their payment information on their devices and complete financial transactions conveniently and securely. This research extended the unified theory of acceptance and use of technology (UTAUT2) model to investigate the main factors influencing users' intention to accept e-wallets in Jordan, where little research focused on such apps. Using a quantitative method, a sample of 181 users was utilized, and an instrument of 32 items was used. Findings revealed that price value, hedonic motivations, social influence, performance expectancy and perceived trust are major predictors of users' intention to use e-wallets apps. In contrast, facilitating conditions and effort expectancy are not significant toward the adoption process. Finally, conclusions and future work are presented in the last section of the study.

1. Introduction

The integration of technology in the financial sector has led to a major shift in the way financial services are delivered and consumed. FinTech companies have introduced new products and services that are more accessible, convenient, and affordable for customers, challenging the traditional financial institutions (Lee & Shin, 2018). These advancements have also increased competition, leading to better customer experience and more choice in financial products and services (Keiningham et al., 2020). As a result, customers now have higher expectations for their financial service providers, making it necessary for traditional institutions to embrace technology and innovation to stay relevant and competitive in the market (St-Onge et al., 2022). The integration of smartphone technologies and different payment methods has resulted in the rise of e-wallets, which allow customers to store and manage their payment information on their mobile devices (Alam et al., 2021; Alkailani & Nusairat, 2022). This has led to a significant increase in cashless payment transactions, as customers can now make payments quickly and easily using their mobile devices (Yang et al., 2021; Zalloum et al., 2019). E-wallets have also increased security and reduced the risk of fraud, as customers can store their payment information securely on their mobile devices,

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instead of carrying physical cash or credit cards (Shahrom et al., 2022; Hammouri et al., 2016). The growing adoption of e-wallets worldwide has also had a positive impact on businesses, as it has simplified their payment processes and allowed them to reach a wider customer base (Foster et al., 2022). Additionally, the COVID-19 pandemic has accelerated the shift towards contactless payments as a safer alternative to cash transactions (Shishah, & Alhelaly, 2021; Almajali & Hammouri, 2021). However, this empirical study focuses on e-wallet applications like Amazon Pay, Google Pay, PayPal, Apple Pay, Venmo, Cash App, Zelle, AliPay, Samsung Pay, Pay TM, etc. E-wallet applications offer a wide range of benefits to their users. By allowing users to add multiple payment options, including debit and credit cards, to the e-wallet application, they offer a convenient and centralized way to manage all their financial transactions. Another advantage of e-wallets is that they support both online and offline transactions, making it possible for users to make payments in a variety of scenarios, whether it's for a small purchase at a vending machine or a larger transaction at an online store (Abdul-Halim et al., 2022; Anggraeni et al., 2023; Sujana et al., 2022; Razali et al., 2021). Despite the many benefits offered by e-wallet applications, their acceptance and adoption rates have been slow in some regions for many reasons including the lack of awareness where in some regions, people may not be aware of the existence or capabilities of e-wallet applications (Panhwer et al., 2020). This can limit their adoption and usage. The second reason is the technical challenges, where some individuals may not have access to the technology or infrastructure required to use e-wallet applications, such as a smartphone or internet connection (Alam et al., 2021). Third, security concerns, where some people may be hesitant to use e-wallet applications due to concerns about the security of their financial information (Ibrahim et al., 2021). Finally, habitual resistance, where some people, the habit of using traditional payment methods, such as cash or credit cards, can be difficult to break (Sivathanu, 2019). As such, it's important to conduct further research for understanding and addressing the factors that influence the adoption and acceptance of e-wallet applications. This can help in developing strategies to overcome the challenges and increase their usage.

In Jordan, and up to the knowledge of authors, few studies were reported or published which investigate the main factors influencing users' attitudes toward using e-wallet applications (Lutfi et al., 2021; Al-Okaily et al., 2023). This research is filling a gap in the literature and improves our understanding of how users perceive such applications. In addition, this study identified a set of variables that define the attitudes toward using e-wallet applications. This study extended the UTAUT2 model with perceived trust to explore the users' intentions toward using e-wallet applications in Jordan.

2. Literature Review

2.1 E-wallet in Jordan

The adoption and usage of e-wallet applications in Jordan is growing, but it is still at an early stage compared to other countries (Abushamleh et al., 2021). There are a few e-wallet providers operating in Jordan, including local providers such as Zain Cash, Orange Money, Uwallet, Dinarak and regional providers like PayFort. One of the main factors contributing to the growth of e-wallet usage in Jordan is the increasing popularity of online shopping (Al-Okaily et al., 2023). With e-commerce transactions growing in the region, more and more consumers are looking for convenient and secure ways to make payments online, and e-wallets provide a convenient solution (Tripathi & Dave, 2022). Another factor driving the adoption of e-wallets in Jordan is the increase in smartphone penetration and internet connectivity (Abushamleh et al., 2021). With more people having access to smartphones and the Internet, the use of e-wallet applications has become more widespread (Alam et al., 2021). However, there are still some challenges to the adoption of e-wallets in Jordan, including security concerns and the habit of using traditional payment methods. Nevertheless, as technology improves and awareness of e-wallets grows, it is expected that their usage will continue to increase in the country (Hanandeh et al., 2023).

3. Theoretical Background

The UTAUT2 model was used in this paper to investigate the acceptance of e-wallets applications in Jordan (Al-Okaily et al., 2023). UTAUT2 is an extension of the UTAUT model and integrates constructs from eight major theories and models of technology acceptance, including TRA, TPB, SCT, TAM, IDT, MPCU, MM, and C-TAM-TPB (Lim et al., 2019; Rabaa'I et al., 2021; Al-Okaily et al., 2019; Majali et al., 2022; Hammouri et al., 2021b). The UTAUT model identifies four factors that affect the intention to use a technology and actual usage behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions (Ghalandari, 2012). The relationships between these factors, intention, and behavior are moderated by gender, age, experience, and voluntariness of use (Jaradat & Al Rababaa, 2013; Al-Gasawneh et al., 2022). Venkatesh et al. (2012) extended the UTAUT model by adding three new factors based on their study in Hong Kong: hedonic motivation, price value, and habit. The resulting UTAUT2 model has a total of seven factors that determine behavioral intention and technology use, including the original factors of performance expectancy, effort expectancy, social influence, and facilitating conditions. The UTAUT2 model also considers gender, age, and experience as moderators. Venkatesh et al. (2012) suggested that the model needs further development and validation, particularly in different contexts such as new cultures and technologies. This study extends the UTAUT2 model by adding one factor that is assumed to predict the intention of Jordanians to use e-wallet applications. The immediate predictors of intention in this study include performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value, which were adopted from the UTAUT2 model. Additionally, the study integrates trust as an external factor in the same theoretical model to broaden the theoretical perspective of the UTAUT2 model, an approach that is supported by Venkatesh et al. (2012). The model is illustrated in Fig. 1.

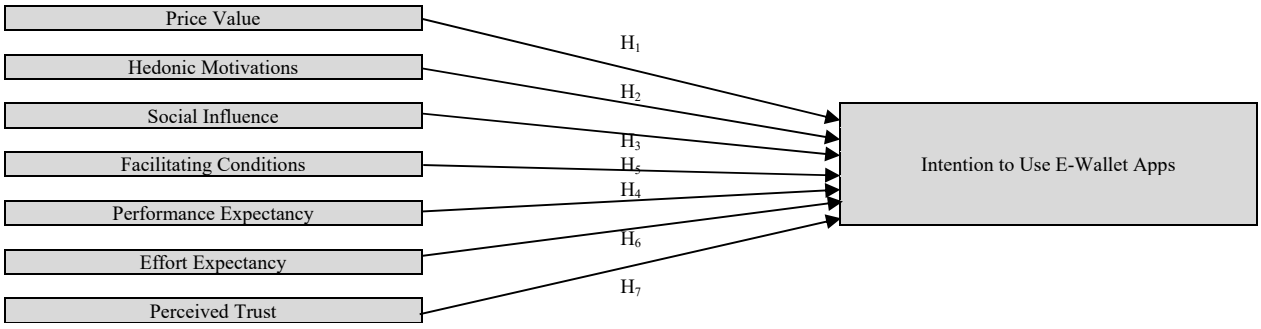

Fig. 1. The proposed method

Several previous studies have confirmed the significance of conducting additional research on the effect of perceived trust on intentions to use mobile payment systems and recommended the study of trust in future research in mobile payment systems and the UTAUT model (Senali et al., 2022; Abd Malik & Syed Annuar, 2019; Taufan & Yuwono, 2019). The present study recognizes the need to study trust by linking it with the intention to use e-wallet applications, which is a novel approach in the existing literature.

3.1 Price Value

Price value refers to the perceived value that consumers place on the monetary cost of using the technology (Lapierre, 2000). Specifically, it is the cognitive trade-off that consumers make between the perceived benefits of using the e-wallet applications and the financial cost of using it (Mehrolia et al., 2021). Several empirical studies in this area have shown that price value is a significant predictor of the intention to use mobile payment systems (Al-Okaily et al., 2020; Qasim & Abu-Shanab, 2016; Chresentia & Suharto, 2020). When the perceived benefits of using the mobile payment system outweigh the monetary cost, consumers are more likely to intend to use it. Thus:

H_1: *Price value will have a significant positive impact on users' intentions to use e-wallet apps.*

3.2 Hedonic Motivations

Hedonic motivations refer to the non-functional and emotional benefits that consumers can derive from using a product or service (Akram et al., 2021). In the context of e-wallet apps, hedonic motivations can play an important role in consumers' adoption and continued use of these apps (Soodan & Rana, 2020; Mohd Thas Thaker et al., 2022). One key hedonic motivation for using mobile payment systems is the convenience factor (Gupta & Arora, 2020). Consumers may enjoy the convenience of being able to make payments quickly and easily through their mobile devices, without the need for cash or physical cards (Alzoubi et al., 2022). Additionally, mobile payment systems can offer a more enjoyable and engaging user experience, with features such as reward programs, gamification, and social sharing (Yathiraju & Dash, 2023). Moreover, several empirical studies confirmed that hedonic motivation was one of the main predictors influencing users to adopt e-wallet apps (Hamzah et al., 2023; Widodo et al., 2019; Chresentia & Suharto, 2020). Therefore:

H_2: *Hedonic motivations will have a significant positive impact on users' intentions to use e-wallet apps.*

3.3 Social Influence

Social influence refers to the impact of social factors on an individual's behavior (Talukder & Quazi, 2011; Hammouri et al., 2021c). Also, social influence refers to an individual's perception of the social pressure to use or not use the e-wallet apps (Teo et al., 2020; Ahmad et al., 2022). For example, if an individual perceives that their friends and family think it is important to use e-wallet apps, they may be more likely to adopt such apps. On the other hand, if an individual perceives that their peers does not use e-wallet apps they may be less likely to adopt the payment apps. Moreover, social influence is a key factor in the acceptance and use of mobile payment systems (Al-Okaily et al., 2019). Several empirical studies in the area of e-wallet apps have found social influence a major driver of the intention to use such apps (Abbasi et al., 2022; Abdullah et al., 2020; Phuong et al., 2020; Hammouri et al., 2021a). Thus:

H_3: *Social influence will have a significant positive impact on users' intentions to use e-wallet apps.*

3.4 Facilitating Conditions

Facilitating conditions refer to the extent to which an individual believes that he/she has the necessary resources and support to use a technology (Parhamnia, 2022; Hammouri et al., 2022). In the context of e-wallet apps, facilitating conditions may include factors such as access to necessary technology, availability of technical support, ease of use of the app, and sufficient knowledge and skills to operate the app (Daragmeh et al., 2022; Yang et al., 2021). Several empirical studies have shown that

facilitating conditions have a significant impact on the adoption and use of e-wallet apps (Tusyanah et al., 2021; Widodo et al., 2019; Shane et al., 2022). Therefore:

H_4: *Facilitating conditions will have a significant positive impact on users' intentions to use e-wallet apps.*

3.5 Performance Expectancy

Performance expectancy is defined as the degree to which an individual believes that using a technology will help them to attain better performance in a specific task or achieve certain outcomes (Zahid et al., 2022). In the context of e-wallet apps, performance expectancy refers to the perceived usefulness of the app in facilitating transactions and providing a convenient and efficient payment method (Tusyanah et al., 2021). Several studies have found a positive relationship between performance expectancy and the intention to use e-wallet apps (Bakria et al., 2023; Rahi et al., 2019; Tusyanah et al., 2021). In this study, it is expected that if the user perceives that e-wallet apps are useful in facilitating transactions and providing a convenient payment method then they are more likely to have a higher intention to use them. Therefore, the following hypothesis is formulated:

H_5: *Performance expectancy will have a significant positive impact on users' intentions to use e-wallet apps.*

3.6 Effort Expectancy

Effort expectancy is a concept that refers to the perceived ease of use of a particular technology or system (Rezvani et al., 2022; Rabaai et al., 2022). In the area of e-wallet apps, effort expectancy is a crucial factor in determining the adoption and usage of these apps by consumers (Abbasi et al., 2022). However, e-wallet apps are designed to provide a convenient and secure way for consumers to make payments using their mobile devices (Hassan & Shukur, 2022). However, if the app is perceived as difficult to use or requires too much effort to complete a transaction, consumers may be hesitant to adopt the technology. Moreover, many studies showed that effort expectancy has a direct influence on behavioral intention to accept e-wallet apps usage (Rahi et al., 2019; Tusyanah et al., 2021; Effendy et al., 2021). Thus:

H_6: *Effort expectancy will have a significant positive impact on users' intentions to use e-wallet apps.*

3.7 Perceived Trust

Trust is a key factor in the area of technology acceptance and refers to the belief that a technology or system is reliable, secure, and capable of fulfilling its intended purpose (Abbas et al., 2023; Nusairat et al., 2021). In the context of e-wallet apps, perceived trust refers to the extent to which users believe that the app is trustworthy and reliable (Dewi et al., 2021; Hammouri & Abu-Shanab, 2017). This perception is based on various factors, including the app's security, privacy, and reputation (Senali et al., 2022). Several previous studies in the area of e-wallet apps have found trust has significant and positive influence on behavioral intention to use e-wallet apps (Rantung et al., 2020, Taufan, A., & Yuwono, 2019, Hidayat et al., 2021; Tian et al., 2023). Therefore, this leads to the following hypothesis:

H_7: *Perceived trust will have a significant positive impact on users' intentions to use e-wallet apps.*

4. Methodology

The aim of this study is to examine the intention of users to use E-wallets in Jordan. The research utilized the quantitative method, which involves the use of numerical data to measure attitudes and behaviors of individuals and propose predictive models. This approach is appropriate for this study as it allows for the quantification of data and the use of statistical analysis to examine the relationships between variables. The researcher utilized questionnaires to explore the intention to use e-wallet apps among users in Jordan.

4.1 Research Instrument

The study proposes a model that consists of seven constructs that may affect the intention to use e-wallets, and the data collection tool will be a questionnaire written in Arabic language. The decision to use Arabic language in the questionnaire is appropriate given that the respondents are Arab and Arabic is the native language of Jordanian users. This will ensure that the respondents can easily understand the questions and provide accurate responses. The questionnaire consists of three sections, with the first section serving as an introduction to the study to ensure that the respondents have a clear understanding of the research goals and objectives. The second section collects demographic information, such as gender, age, and education. The last part of the survey included the items used for measuring the eighth constructs proposed in the research model. The data was collected using online approach to easily reach the respondents with five Likert scale measurements. Moreover, the measurements used in the questionnaire for every variable involved in this study were checked of their content after adapting them from the previous literature.

4.2 Sample and Sampling Process

Sampling is defined as a procedure of selecting the target sample of a particular study from the respective population. The sampling technique used in this study is judgment sampling, which involves selecting participants based on the researcher's judgment of who is most appropriate for the study. The targeted population for this study consists of all online users who can interact with e-wallet apps. A total of 205 questionnaires were distributed, and 181 usable questionnaires were returned. The responses were then entered into the Statistical Package for Social Sciences (SPSS) for analysis. Table 1 depicts the demographics of the sample where the majority of samples were males (63.5%) and 28.2% of them were aged between 26-33; most of them had a bachelor's degree (65.8%).

Table 1
Demographic Profile of the Study Sample

Measure	Category	Count	Percent%
Age	18 - 25	33	18.2
	26 – 33	36	19.9
	34 – 41	51	28.2
	42 – 49	34	18.8
	Above 49	27	14.9
Education	Secondary	19	10.5
	Bachelor	119	65.8
	Master	17	9.3
	PhD	26	14.4
Gender	Male	115	63.5
	Female	66	36.5

5. Data Analysis and Results

To understand the level of perceptions related to price value, hedonic motivations, social influence, facilitating conditions, performance expectancy, effort expectancy, perceived trust, and behavioral intention to use e-wallet apps, we estimated the means and standard deviations of each item and the total variable. Table 2 shows the means and standard deviations of all items used for all eight factors. The values adhered to the central tendency theory and concentrated within the high level (from 3.81 - 4.05). Most of the means showed high perceptions. The standard deviation values show a low dispersion in the data according to common social sciences studies and for a 5-point Likert scale. It is a good indicator that our subjects are conscious of the benefits of e-wallet apps.

Table 2
Mean and Standard Deviation of the Study's Factors

Variable	Item Code	Mean	SD
Price Value (Raza et al., 2019)	PV1	4.01	0.801
	PV2	4.04	0.711
	PV3	3.89	0.618
	PV4	4.02	0.639
Hedonic Motivations (Khatimah et al., 2019)	HM1	4.05	0.744
	HM2	3.93	0.715
	HM3	3.91	0.631
	HM4	3.98	0.635
Social Influence (Khatimah et al., 2019)	SI1	4.01	0.641
	SI2	3.51	0.589
	SI3	3.97	0.715
	SI4	3.81	0.723
	SI5	4.03	0.655
Facilitating Conditions (Purwanto & Loisa, 2020)	FD1	3.96	0.612
	FD2	3.97	0.597
	FD3	3.87	0.635
Performance Expectancy (Rahi et al., 2019)	PE1	4.00	0.601
	PE2	4.02	0.576
	PE3	3.85	0.595
	PE4	4.01	0.647
	PE5	3.97	0.597
Effort Expectancy (Rahi et al., 2019)	EE1	3.91	0.720
	EE2	4.05	0.581
	EE3	3.88	0.593
	EE4	3.96	0.702
Perceived Trust (Ivanova & Kim**,** 2022)	PT1	3.93	0.614
	PT2	3.83	0.712
	PT3	4.02	0.666
	PT4	3.87	0.701
Intention to Use (Tusyanah et al., 2021)	ITU1	3.99	0.615
	ITU2	3.80	0.633
	ITU3	3.91	0.623

5.1 Reliability Test

Cronbach's alpha was used to measure the reliability of an instrument, and the results of the reliability test are presented in Table 3. The values of Cronbach's alpha ranged from 0.79 to 0.89, which indicates that the instrument has a moderate to high level of internal consistency. The recommended value of Cronbach's alpha varies depending on the context, but Hair et al. (2006) suggests that a value above 0.80 is desirable, while a value above 0.60 is the lowest acceptable threshold. Therefore, based on these guidelines, the results of the reliability test are generally acceptable.

Table 3
Reliability Test

Variable	No. of Items	Cronbach's Alpha
Price Value	4	0.83
Hedonic Motivations	4	0.79
Social Influence	5	0.85
Facilitating Conditions	3	0.81
Performance Expectancy	5	0.89
Effort Expectancy	4	0.82
Perceived Trust	4	0.79
Intention to Use	3	0.87

5.2 Multiple Regression Analysis

Pearson's correlations test was utilized to check the one-to-one relationships between the variables, and the results indicated significant correlations for all relationships ($P < 0.01$). The strength of the correlations ranged from 0.258 to 0.441, indicating strong positive relationships between the variables. Such results support divergent validity, indicating that there is no evidence of multicollinearity between the independent variables. Table 4 provides a correlation matrix for all relationships, which can be used to examine the strength and direction of the relationships between each pair of variables.

Table 4
Pearson's bivariate correlations matrix

Construct	PV	HM	SI	FC	PE	EE	PT	ITU
PV	1							
HM	0.320**	1						
SI	0.288**	0.216**	1					
FC	0.313**	0.372**	0.288**	1				
PE	0.309**	0.284**	0.317**	0.378**	1			
EE	0.269**	0.253**	0.441**	0.393**	0.302**	1		
PT	0.403**	0.441**	0.435**	0.297**	0.311**	0.277**	1	
ITU	0.419**	0.382**	0.425**	0.296**	0.391**	0.387**	0.413**	1

A multiple regression analysis was used to examine the proposed hypotheses and answer the research question. Multiple regression analysis is a statistical method that examines the relationship between a dependent variable and multiple independent variables. In this case, the dependent variable is intention to use, and the independent variables (price value, hedonic motivations, social influence, facilitating conditions, performance expectancy, effort expectancy, and perceived trust). The results of the multiple regression analysis indicated that the research model explained 51.2% of the variance in intention to use. This means that almost half of the variability in intention to use can be explained by the independent variables included in the model. This is a moderately high percentage of explained variance, which suggests that the model is fit and powerful in explaining the relationship between the independent variables and intention to use.

Table 5
Results of Multiple Regressions Analysis (Coefficients)

Construct	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Supported
	B	Std. Error	Beta			
(Constant)	0.311	0.206		0.171	0.251	
Price Value	0.209	0.071	0.201	3.101	0.000	Yes
Hedonic Motivations	0.341	0.066	0.175	2.077	0.001	Yes
Social Influence	0.298	0.077	0.225	3.498	0.000	Yes
Facilitating Conditions	0.172	0.081	0.186	3.246	0.124	No
Performance Expectancy	0.283	0.061	0.211	2.697	0.000	Yes
Effort Expectancy	0.201	0.059	0.147	2.179	0.114	No
Perceived Trust	0.257	0.056	0.196	3.217	0.002	Yes

♦ Dependent Variable: Intention to Use

Table 5 depicts the coefficient table results of the multiple regression analysis. The findings present that behavioral intention to use e-wallet apps is significantly and positively affected by price value, hedonic motivations, social influence, performance

expectancy and perceived trust (H1, H2, H3, H5, H7 were supported). The variable with the highest beta value is social influence, with a beta value of 0.225, indicating a relatively strong positive relationship with the intention to use e-wallets. On the contrary, the findings show that there is an insignificant relationship between facilitating condition and effort expectancy on behavioral intention to use e-wallet apps. Therefore, H4 and H6 were not supported. However, price value, hedonic motivations, social influence, performance expectancy and perceived trust were found to have a significant influence on the Jordanian users' intentions to use e-wallet apps. This finding concurs with the work conducted by Oliveira et al., (2016) and Talukder et al., (2019). Regarding the relationship between perceived trust with the behavioral intention to use e-wallet apps. Results show that there is a significant relationship between perceived trust on Jordanian users' intentions to use e-wallet apps. This result is consistent with previous studies conducted by Taufan & Yuwono (2019), Hidayat et al., (2021) and Tian et al., (2023) which reported that increased perceived trust leads users to adopt and continuous usage of e-wallet apps. In addition, this study suggests that hedonic motivations would have a significant influence on the users' intentions to use e-wallet apps. This result conforms to findings conducted by (Al-Okaily et al., 2020; Chresentia & Suharto, 2020). Such findings suggest that users who perceive the e-wallet app as enjoyable and exciting are more likely to use it.

Finally, regarding the role of facilitating conditions, the result demonstrated that there is no significant relationship between facilitating conditions and behavioral intention to use e-wallet. This indicates that the availability of resources and Internet accessibility may not be crucial factors in the acceptance of the system in Jordan. Such finding is in line with previous empirical studies (Tusyanah et al., 2021; Widodo et al., 2019; Shane et al., 2022).

6. Conclusion

The objective of this study is to determine factors that influence e-wallets usage in the Jordanian context. However, price value, hedonic motivations, social influence, performance, and perceived trust were found to be significant factors affecting the intention to use e-wallets among Jordanian users, while effort expectancy and facilitating conditions were found to be less relevant. Such findings can have important theoretical implications by contributing to the understanding of the factors that influence the adoption and usage of e-wallets in Jordan and other similar contexts. The practical implications of this study may include the development of targeted marketing and education campaigns that emphasize the affordability and convenience of e-wallets to increase their adoption and usage among Jordanian users. Efforts to enhance the perceived trust of e-wallets using secure and reliable payment systems may also be beneficial in increasing their adoption and usage. Methodological implications may include the use of the UTAUT2 model as a framework for future research on e-wallet acceptance and adoption in Jordan and other similar contexts. Overall, this study's findings may have important implications for policymakers, e-wallet providers, and other stakeholders looking to promote the adoption and usage of e-wallets in Jordan.

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