

Understanding mobile e-wallet consumers' intentions and user behavior

Mobile e-wallet
consumers'
intentions

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Received 17 May 2022
Accepted 27 September 2022

Abstract

Purpose – This study aims to investigate the factors that influence behavioral intention (BI) and usage of e-wallets by extending the unified theory of acceptance and use of technology (UTAUT) with constructs, namely, mobile self-efficacy, perceived enjoyment and satisfaction.

Design/methodology/approach – This quantitative study used partial least squares structural equation modeling on a sample of 576 mobile e-wallet users surveyed online.

Findings – The key findings indicate that the model can explain 58.8% of the variance in behavioral intention and 53.8% in usage. Moreover, mobile self-efficacy has a significant influence on perceived enjoyment. Perceived enjoyment significantly affects satisfaction, effort expectancy and performance expectancy. Furthermore, effort expectancy significantly influences customer satisfaction in contrast to performance expectancy. In addition, although performance expectancy, social influence and satisfaction significantly impact consumers' behavioral intention, effort expectancy and facilitating conditions condition have an insignificant influence on consumers' behavioral intention. E-wallet stakeholders can use the findings of this study to make strategic decisions regarding the e-wallet ecosystem.

Originality/value – Although previous studies have independently addressed the impact of mobile self-efficacy, perceived enjoyment and satisfaction on consumers' behavioral intention and usage behavior, the expanded framework with the possible relationships proposed in this study has never been adequately studied in previous research in the context of e-wallets in developing countries based on an empirical analysis. This study represents one of the first attempts to improve the UTAUT by empirically analyzing these relationships.

Keywords UTAUT, E-wallet, E-wallet usage, Mobile self-efficacy, Perceived enjoyment, Satisfaction, Behavioral intention to use

Paper type Research paper

Comprendiendo las intenciones de los consumidores de monederos electrónicos móviles y su comportamiento

Resumen

Propósito – Este estudio tiene como objetivo investigar los factores que influyen en la intención de comportamiento y el uso de los monederos electrónicos mediante la ampliación de la teoría unificada de

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Statements on conflict of interest: The authors declare no potential conflicts of interest concerning this article's research, authorship, or publication.

Data accessibility: The data sets supporting this study's findings are available upon reasonable request from the corresponding author.



aceptación y uso de la tecnología (UTAUT) con los constructos de autoeficacia móvil, disfrute percibido y satisfacción.

Metodología – Este estudio cuantitativo utilizó un modelo de ecuaciones estructurales de mínimos cuadrados parciales (PLS-SEM) sobre una muestra de 576 usuarios de monederos electrónicos móviles encuestados en línea.

Resultados – Los principales resultados indican que el modelo puede explicar el 58,8% de la varianza en la intención de comportamiento y el 53,8% en el uso. Además, la autoeficacia en el uso del móvil influye significativamente en el disfrute percibido. El disfrute percibido afecta significativamente a la satisfacción, la expectativa de esfuerzo y la expectativa de rendimiento. Además, la expectativa de esfuerzo influye significativamente en la satisfacción del cliente, en contraste con la expectativa de rendimiento. Además, aunque la expectativa de rendimiento, la influencia social y la satisfacción influyen significativamente en la intención de comportamiento de los consumidores, la expectativa de esfuerzo y la condición de condiciones facilitadoras tienen una influencia insignificante en la intención de comportamiento de los consumidores. Las partes interesadas en los monederos electrónicos pueden utilizar las conclusiones de este estudio para tomar decisiones estratégicas en relación con el ecosistema de los monederos electrónicos.

Originalidad – Aunque estudios anteriores han abordado de forma independiente el impacto de la autoeficacia móvil, el disfrute percibido y la satisfacción en la intención de comportamiento y la conducta de uso de los consumidores, el marco ampliado con las posibles relaciones propuestas en este estudio nunca se ha estudiado adecuadamente en investigaciones anteriores en el contexto de los monederos electrónicos en los países en desarrollo sobre la base de un análisis empírico. Este estudio representa uno de los primeros intentos de mejorar el UTAUT analizando empíricamente estas relaciones.

Palabras clave UTAUT, Monedero electrónico, Uso de monedero electrónico, Autoeficacia móvil, Disfrute percibido, Satisfacción, Intención de uso conductual

Tipo de artículo Trabajo de investigación

探索电子钱包消费者的使用意图以及行为

摘要

目的 – 本研究旨在通过扩展统一的技术接受和使用理论 (UTAUT), 研究影响电子钱包行为意图和使用的因素, 包括移动自我效能、感知乐趣和满意度等建构。

方法 – 这项定量研究采用偏最小二乘法结构方程模型 (PLS-SEM), 对576名移动电子钱包用户进行了在线调查。

研究结果 – 主要研究结果表明, 该模型可以解释58.8%的行为意图和53.8%的使用差异。此外, 移动自我效能感对感知到的享受有显著影响。感知到的享受显著影响满意度、努力期望和绩效期望。此外, 与绩效期望相比, 努力期望对顾客满意度有显著影响。此外, 尽管绩效期望、社会影响和满意度对消费者的行为意图有显著影响, 但努力期望和便利条件对消费者的行为意图没有显著影响。电子钱包的利益相关者可以利用本研究的结果来做出有关电子钱包生态系统的战略决策。

原创性 – 尽管之前的研究已经独立地探讨了移动自我效能、感知享受和满意度对消费者行为意图和使用行为的影响, 但本研究提出的具有可能关系的扩展框架在之前的研究中从未基于实证分析对发展中国家的电子钱包进行充分研究。本研究是通过实证分析这些关系来改进UTAUT的首次尝试之一。

关键词 UTAUT, 电子钱包, 电子钱包使用, 移动自我效能, 感知享受, 满意度, 使用行为意图

文章类型 研究型论文

1. Introduction

Digital transformation, financial inclusion, Fintech and e-wallets have risen with tremendous developments in information and communications technology and reliance on smartphones to access the internet. [Esawe and Elwkeel's \(2020\)](#) findings demonstrate that digital transformation is a dynamic phenomenon that evolves to create new forms and activities. Moreover, Fintech is rapidly gaining traction in both developed and developing countries and has long played an essential role in the financial services industry by bridging the gap between technological and financial components and removing restrictions that traditional payment activities cannot overcome ([Esawe, 2022a](#)).

Technology is changing rapidly, resulting in the popularity of new payment technologies replacing traditional methods and attracting increasing attention (Flavian *et al.*, 2020). Furthermore, in recent years, examining user behavior and identifying characteristics that favor and limit e-wallet usage have become a significant study priority among various experts (Appendix). However, Flavian *et al.* (2020) argued that many drastic and rapid changes in habits are compelling researchers to conduct in-depth research on technology-based payment methods. For example, changes in consumer behavior caused by the COVID-19 pandemic have led to the adoption technology-based (contactless) payment methods to maintain social distance (Esawe, 2022b). On the other hand, many factors influence users' intent to use specific payment methods, which is one of the primary reasons m-payment adoption varies by country (Flavian *et al.*, 2020). In addition, these factors would differ based on the context (Esawe, 2022a). Furthermore, according to Teng and Khong (2021), many studies focus on the intention to use m-payment services, neglect actual consumer usage and combine users and nonusers in data analysis. Therefore, for e-wallets to flourish, the government, services providers and stakeholders must address critical issues, such as defining the key factors influencing the adoption of e-wallets. The primary research problem addressed in this study is comprehending the shallow rate of e-wallet adoption among users (OBG, 2021). As a result, this study investigates the factors influencing consumers' behavioral intention (BI) and adoption of e-wallets.

According to Teng and Khong (2021), there are many models used by previous studies, the most famous of which are technology acceptance model (TAM) (Abbasi *et al.*, 2022; Trajuddin *et al.*, 2021) and unified theory of acceptance and use of technology (UTAUT; Moorthy *et al.*, 2021). Moreover, prior studies have integrated TAM and UTAUT (Yang *et al.*, 2021).

Despite the popularity of the TAM model, it has faced many criticisms (Qasem, 2019), including that TAM focuses on the technology itself while ignoring important psychological, contextual and process-based variables that can influence technology acceptance. TAM presumes that individuals are rational and can form intentions to use technology (Lew *et al.*, 2020; Matemba and Li, 2018). Therefore, in this study, we used UTAUT.

Although the UTAUT model has been widely applied and tested for a variety of themes (Teng and Khong, 2021), such as m-wallet (Chawla and Joshi, 2019), E-wallet (Moorthy *et al.*, 2021) and m-payment (Esawe, 2022a; Ramli and Hamzah, 2021), many scholars have recommended adding external factors to sequel the original UTAUT model.

Furthermore, Flavian *et al.* (2020) explained that literature in the vein of adoption and continued use of technology do not accurately capture the more rational factors of adoption, mainly because the consumer does not always make this decision relying on grounded and well-founded beliefs. Moreover, they stressed the importance of incorporating psychological research into information systems studies. Thus, incorporating mobile self-efficacy and perceived enjoyment can alleviate the shortcomings identified in earlier literature.

For example, Alfany *et al.* (2019), Moorthy *et al.* (2021), Phuong *et al.* (2020), Syifa and Tohang (2020) posited that satisfaction is critical for explaining consumer adoption. In addition, according to the initial theory of reasoned action, an individual's beliefs about the results of a given behavior are formed first (i.e. perceived enjoyment). These beliefs influence an individual's attitude toward the results of the behavior (satisfaction); the more substantial the beliefs, the more favorable the attitude (LaCaille, 2020).

Some studies, including Chen *et al.* (2018) and Lew *et al.* (2020), have found that investigating the impact of perceived enjoyment allows us to understand better how much perceived enjoyment drives hedonic systems usage, as well as how the impact of perceived enjoyment differs from emotion-related concepts (such as satisfaction). However, few studies

have been conducted to determine whether perceived enjoyment significantly influences satisfaction in the context of e-wallets. In addition, previous studies have shown that perceived enjoyment significantly influences perceived ease of use and usefulness (To and Trinh, 2021; Winarno *et al.*, 2021) and behavioral intention (Lew *et al.*, 2020). Moreover, in a learning context, few studies (Alotaibi *et al.*, 2019; Chao, 2019; Fagan, 2019) have supported that perceived enjoyment significantly influences performance expectancy and effort expectancy. Therefore, theoretical foundations have been established, but according to our literature review, this influence has not been previously studied in studies related to e-wallets.

Moreover, as an e-wallet needs to complete a specific set or series of tasks using mobile devices, consumers' mobile self-efficacy could be a significant factor to study (Mushi, 2020). In the existing literature (Chao, 2019), users with greater mobile self-efficacy are more likely to feel more positive emotions and are more willing to use technology. According to Dang *et al.* (2016), the mobile self-efficacy of the users significantly influences perceived enjoyment. Therefore, we can argue that the perceived enjoyment of higher mobile self-efficacy consumers increases if they can perceive the e-wallet as more useful and valuable. Taken together, we can propose that the more the e-wallet system can achieve the tasks effectively, the more likely it is that the users' perceived enjoyment will increase, and therefore, their satisfaction will increase, which will increase their behavioral intention.

However, in a world where technologies are shifting faster, users' perceptions influence whether they adopt them. As a result, the particular result of adoption is more uncertain (Flavian *et al.*, 2020). On the other hand, the existing research provides limited empirical insight into the optimum amount of these types of connections. The current study tackles this gap by attempting to improve knowledge of complicated interactions. The following research questions were developed to achieve the study's objectives:

RQ1. What factors influence consumers' behavioral intention and usage of e-wallets?

RQ2. Do mobile self-efficacy, perceived enjoyment and satisfaction impact the UTAUT model regarding the e-wallet?

This study adds to the existing literature by trying to identify satisfaction and perceived enjoyment as antecedents of behavioral intention and adoption of e-wallets; extending theoretical comprehension of behavioral intention and adoption through consumers concerning e-wallets; offering empirical evidence of the impact of external factors on effort expectancy and performance expectancy, which leads to usage-related satisfaction and behavioral intention; and providing a reference for e-wallet stakeholders to decide future development directions and approaches related to the implementation of e-wallets.

The remainder of this paper is organized as follows. Section 2 reviews the literature and suggests a research framework and the formulation of the hypotheses. Following this is Section 3, which outlines the research methodology. Section 4 presents the data analysis and findings. Section 5 concludes the paper with a discussion of the results. We then discuss the implications for academics and practitioners, the study's limitations and the scope for further research.

2. Literature review and hypotheses development

2.1 Literature review

2.1.1 Electronic wallets e-wallets. An e-wallet is defined as "a mobile device-based platform that facilitates cashless payments of a sales transaction—either in proximity or remotely, between consumers and merchants or service providers." (Ramli and Hamzah, 2021) An

e-wallet is a virtual wallet that allows customers to preload a set amount to their accounts registered with the e-wallet's service providers and spend it online and offline to pay for goods and services (Phuong *et al.*, 2020). Furthermore, e-wallet users can pay for the same receipt independently because they have the option to split expenses (Syifa and Tohang, 2020).

Scholars have paid the most attention to e-wallet adoption for several reasons, such as the e-wallet being one of the most recognizable Fintech inventions (Chawla and Joshi, 2019), with significant growth among users. On the one hand, introducing new Fintech solutions disrupts the traditional cash-based payment model (Abdullah *et al.*, 2020) and capitalizes on the attractive patterns arising: consumers' reliance on smartphones to access the internet. On the other hand, Fintech solutions will consolidate an entirely new business model (Syifa and Tohang, 2020). Further, they will aid in striking the informal sector and accomplishing financial inclusion objectives while fostering economic growth (Esawe, 2022a) and affecting social dimensions, thereby increasing social equity. Also, mobile technology is integrating more unbanked consumers into the financial sector (Esawe, 2022b).

2.1.2 Unified theory of acceptance and use of technology (UTAUT). The UTAUT model was created after empirically examining the eight theories. After rigorous testing, the eight models were combined and developed into a new model, UTAUT. The model contributed to a 70% improvement in predicting efficiency in the behavioral intention to use the technology (Venkatesh *et al.*, 2003). According to Ramli and Hamzah (2021), numerous researchers use several theories to develop their study framework related to e-wallets, and UTAUT is among the most often used by previous studies.

The original UTAUT model has four moderating factors. However, to keep this study as concise as possible and in line with prior studies (Gupta *et al.*, 2019), only the primary hypotheses were explored, and the effects of the moderators were not the focus of this study. In the following section, the four exogenous constructs of the UTAUT model (their definitions, root constructs and the source model) will be described in more detail.

2.1.3 Self-efficacy theory. According to the self-efficacy theory, people who believe in their capability will perform well, and the best predictors of an individual's behavior are their capability self-appraisals (Bandura, 1977, 1982). Furthermore, people's self-assessments of their operational capabilities serve as a set of key transcription factors of their emotional reactions. According to Lew *et al.* (2020), as the self-efficacy theory is concerned with individual beliefs, it may supplement models primarily concerned with technological factors. Therefore, this study used the self-efficacy theory as an underpinning to integrate mobile self-efficacy.

2.1.4 Flow theory. As cited in Chen *et al.* (2018, p. 282), "the main idea of flow is enjoyment." In a flow experience, through modifying the process of interaction, a sense of immersion or telepresence is created, and flow can be formed when there is a balance between skill and challenge levels, while in an imbalance situation, a person may perceive either tedium or anxiety (Csikszentmihalyi, 1975). In this rationale, prior studies have linked mobile self-efficacy and perceived enjoyment (Chao, 2019). Perceived enjoyment is crucial in mobile services (Chen *et al.*, 2018; Lew *et al.*, 2020). Therefore, this study used the flow theory as underpinning to integrate perceived enjoyment. In line with Lew *et al.* (2020) work, we adopted perceived enjoyment to measure the flow level of e-wallet customers.

2.2 Hypotheses development

2.2.1 Mobile self-efficacy (MSE). MSE is "a degree to which an individual believes that he or she can perform a specific task/job using the mobile." (Mushi, 2020, p. 108). MSE refers to an individual's appraisal of their ability to use his/her skills to carry out a particular task well.

E-wallet applications require knowledge in addition to just using smartphones. E-wallet users, for example, will struggle with some of the functionalities of e-wallet if they cannot perform a specific task using the mobile. Furthermore, higher levels of MSE may increase enjoyment and decrease user difficulty.

Moreover, MSE has been shown to affect perceived enjoyment and is considered an antecedent to perceived enjoyment. Previous studies have confirmed that MSE directly influences perceived enjoyment (Chao, 2019; Dang *et al.*, 2016). The above discussion demonstrates the importance of determining mobile self-efficacy's role. Therefore, the following hypothesis is proposed:

H1. Mobile self-efficacy has a positive influence on perceived enjoyment of e-wallets.

2.2.2 Perceived enjoyment (P-Enj). One of the fundamental reasons driving technology adoption and use is P-Enj, also known as hedonic motivation (Venkatesh *et al.*, 2012). P-Enj is "the degree to which the activity of utilizing a computer is regarded as enjoyable in and of itself" (Davis *et al.*, 1992, p. 1113). In the TAM model, P-Enj can be considered one of the most important external factors that determine people's PU (Alalwan *et al.*, 2018; To and Trinh, 2021), PEOU (To and Trinh, 2021; Winarno *et al.*, 2021) and intention to use (Alfany *et al.*, 2019; Sigar, 2016). Furthermore, P-Enj influences satisfaction (Chao, 2019). E-wallet usage can be the leading cause of customer enjoyment because it requires less time to accomplish the transaction (Chen *et al.*, 2018). However, few studies have determined whether P-Enj is a significant external element of the UTAUT model (Alotaibi *et al.*, 2019; Chao, 2019; Fagan, 2019). Moreover, to our knowledge, no prior studies on e-wallets have studied the effects of P-Enj on performance expectancy and effort expectancy. Consequently, the following hypotheses were proposed:

H2. Perceived enjoyment has a positive influence on (*H2a*) performance expectancy; (*H2b*) effort expectancy; (*H2c*) consumer satisfaction.

2.2.3 Performance expectancy (PE). PE is "The degree to which an individual believes the system helps improve job performance." (Venkatesh *et al.*, 2003, p. 447). PE is how consumers believed that using an e-wallet would provide better convenience, be more effective and beneficial for a transaction and be completed more quickly. Concerning previous academic literature, PE significantly influences satisfaction (Elok *et al.*, 2021; Lee *et al.*, 2021; Syifa and Tohang, 2020).

Performance expectancy, with effort expectancy, social influence and facilitating conditions, is one of the antecedents of behavioral intention in the UTAUT model. The positive influence of PE on the adoption intention of e-wallets has been supported by previous studies (Abdullah *et al.*, 2020; Chawla and Joshi, 2019; Widodo *et al.*, 2019; Yang *et al.*, 2021). Consequently, the following hypotheses were proposed:

H3. Performance expectancy has a positive influence on (*H3a*) the consumer's satisfaction; (*H3b*) the consumer's intention to use an e-wallet.

2.2.4 Effort expectancy (EE). EE is "The degree of ease associated with the use of the system." (Venkatesh *et al.*, 2003, p. 450). In which EE is how customers believed that learning the e-wallet would be simple, that they would be skilled at using the e-wallet, and that their interaction and navigation with the e-wallet would be simple and obvious. On the one hand, EE significantly influences satisfaction (Elok *et al.*, 2021; Lee *et al.*, 2021; Syifa and Tohang, 2020). However, Syifa and Tohang's (2020) finding shows an insignificant effect of EE on satisfaction.

On the other hand, some studies have regarded EE as an essential construct influencing the user's behavior or intention to adopt an e-wallet (Abdullah *et al.*, 2020; Chawla and Joshi, 2019; Widodo *et al.*, 2019; Yang *et al.*, 2021). Consequently, the following hypotheses were proposed:

- H4. Effort expectancy has a positive influence on (H4a) the consumer's satisfaction; (H4b) the consumer's intention to use an e-wallet.

2.2.5 Satisfaction. Satisfaction is "the overall opinion and experience that a user feels while using a technological service." (Liébana-Cabanillas *et al.*, 2021, p.139). Previous studies have shown that satisfaction significantly affects the user's intention (Alfany *et al.*, 2019; Lee *et al.*, 2021; Phuong *et al.*, 2020). Consequently, the following hypothesis was proposed:

- H5. Consumer satisfaction has a positive influence on his/her intention to use an e-wallet.

2.2.6 Social influence. SI is "The degree to which an individual perceives that important other believe he or she should use the new system." (Venkatesh *et al.*, 2003, p. 451). SI is consumers' perceptions of critical people's recommendations and support that will impact their decision to use the e-wallet. Moreover, how the government has encouraged the use of e-wallets. Also, how the current media trend will impact their decision, prior studies concluded that SI influences behavioral intention to use (Yang *et al.*, 2021). Therefore, the following is proposed:

- H6. Social influence has a positive influence on the consumer's intention to use an e-wallet.

2.2.7 Facilitating conditions (FC). FC is "The degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system." (Venkatesh *et al.*, 2003, p. 453). FC represents the consumers' perceptions of the e-wallet's compatibility with other technologies they are using and their availability of the resources and knowledge required to utilize it.

FC influences usage behavior rather than the user's behavioral intention (Venkatesh *et al.*, 2003). In various studies, FC influences users' behavioral intention (Abdullah *et al.*, 2020; Chawla and Joshi, 2019; Esawe, 2022a; Widodo *et al.*, 2019). Consequently, this study hypothesized that FC could significantly influence consumers' intentions and use behavior of e-wallets. Therefore, the following hypotheses were proposed:

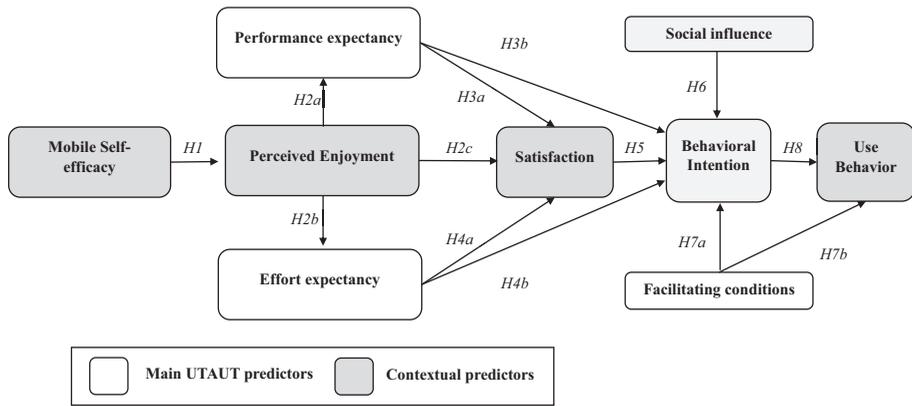
- H7. Facilitating conditions have a positive influence on (H7a) the consumer's intention to use an e-wallet; (H7b) the usage behavior of the e-wallet.

2.2.8 Behavioral intention (BI) and user behavior (UB). BI is "The degree to which a person has formulated conscious plans regarding whether to perform a specified future behavior." (Chai and Dibb, 2014, p. 3). There is a strong relationship between BI and UB (Esawe *et al.*, 2022; Orús *et al.*, 2021). Intentions reflect users' willingness to engage in specific behaviors (Flavián *et al.*, 2019). According to the UTAUT model, BI positively affects users' UB. Moreover, users' BI has also been a common factor in determining users' UB of an e-wallet (Yang *et al.*, 2021). Consequently, the following hypothesis was proposed:

- H8. Consumer's behavioral intention has a positive influence on his/her usage behavior of e-wallets.

Figure 1 illustrates the expected correlations between these constructs.

Figure 1.
Conceptualized
extended UTAUT
model



3. Method

3.1 Sample participants and procedures

In its quest for financial inclusion, the Egyptian Government is trying to build a supportive environment for the prosperity of e-wallets by implementing initiatives that encourage or allow the use of e-wallets more efficiently (such as Meeza); this includes creating financial awareness campaigns and reaching out to individuals via social media and educate them about e-wallets. In addition to encouraging consumers to subscribe to the e-wallet without registration or account opening fees. According to Egypt's National Telecommunication Regulatory Authority (NTRA) report, the distribution of e-wallets for mobile phones in Egypt across firms is as follows: Vodafone had 65%, Orange 20%, Etisalat 11% and We 4% (NTRA, 2021).

In Egypt, e-wallet platforms are becoming popular NTRA's report revealed an increase in numerous indicators of e-wallet usage in 2021 compared with 2020. For instance, electronic transactions via wallets increased by 175% and transfers from one e-wallet to another increased by 300% (NTRA, 2021). Even though this is the bright side, however, according to the Oxford business group, the informal sector accounts for almost half of economic activity and cash transactions account for 55% of internet sales, which indicates that the potential of an e-wallet is not always fully realized (OBG, 2021). In addition, with 70% of Egyptians being unbanked (OBG, 2021), Egypt has the highest number of unbanked individuals and has enormous potential for merchandizing with multichannel payment systems (Esawe, 2022a, 2022b), which combines two facts: the adoption and use of e-wallets are still at an early stage, and the size of the untapped market is postulated to be of more benefit to e-wallet stakeholders.

The sample was drawn from an online survey conducted in Egypt in June 2021. The study was conducted for approximately two weeks. The online survey was constructed using Google Forms and shared on social media platforms such as Facebook and Twitter. Consumers with a mobile device who can link an e-wallet to mobile payment services and use it are the target group of this study. Convenience sampling was used to collect the data, as it is not possible to have a sampling frame for all the e-wallet users.

We gathered 598 responses. Prior to actual cleaning and data screening, 22 responses were eliminated. Thus, the total number of usable responses was 576. Of those who participated, 48.3% were male and 51.7% were female. The most common age group among the respondents was under 20 years (85.4%).

Regarding educational attainment, 85.8% did not have a university degree, which is consistent with most of the sample being under 20. A total of 94% respondents owned a smartphone with internet access. A total of 91.0% of participants were aware of what an e-wallet was (Table 1).

3.2 Measures

All the statements used to assess the nine constructs of the research framework were adapted from previous studies to maintain content validity. Each item was scored on a five-point Likert scale, with one indicating “strongly disagree,” and five indicating “strongly agree.” The questionnaire was structured into three parts: the first part dealt with a nominal scale to identify respondents’ demographic information; the second part collected information about consumers’ previous knowledge and usage of e-wallets; the third part included UTAUT constructs, mobile self-efficacy, perceived enjoyment and satisfaction.

Two professional and four academic experts evaluated the questionnaire to ensure that items were appropriate to the context of the e-wallet. Furthermore, the scales were translated using the back-translation method Behr (2017) to ensure that the English and Arabic versions did not contradict one another. In addition, the survey was pilot tested. A total of 60 questionnaires were distributed to assess the reliability and validity of the instrument. Internal consistency reliabilities (based on Cronbach’s alphas) ranged from 0.731 to 0.866 (Abbasi et al., 2022). According to Nawi et al. (2020), in the pilot study, reliability results equal to or greater than 0.60 are acceptable. Furthermore, Hair et al. (2019b) and Hair et al. (2019a) assume similar thresholds, as they highlight that the recommended values for Cronbach’s alpha are acceptable if they range between 0.70 and 0.90.

Confirmatory factor analysis (CFA) was conducted to identify the factors of the model. All measures of CFA such as the root mean square error of approximation, the normed fit index, the non normed fit index, the comparative fit index and the incremental fit index were appropriate as per the standard norms (Table 2).

3.3 Methodology

The partial least squares structural equation modeling (PLS-SEM) technique was employed, and a two-stage approach was adopted (Hair et al., 2019b) to analyze the obtained data using Smart-PLS 2.0, Excel sheets and SPSS V23.

Variable	Cases (%)	Variable	Cases (%)
<i>Gender</i>		<i>Have a smartphone with an internet</i>	
Male	278 (48.3)	Yes	538 (93.4)
Female	298 (51.7)	No	38 (6.6)
<i>Age</i>		<i>Know e-wallet</i>	
Less than 20	492 (85.4)	Yes	524 (91)
21–30	19 (3.3)	No	52 (9)
31–40	46 (8)	<i>E-wallet usage</i>	
more than 41	19 (3.3)	Yes	433 (75.2)
<i>Education level</i>		No	143 (24.8)
Bachelor	49 (8.5)	<i>E-wallet usage frequency</i>	
Diploma	4 (0.7)	Never	143 (24.8)
Master	3 (0.5)	Once a month	259 (45)
PhD	26 (4.5)	Once in two weeks	79 (13.7)
Other	494 (85.8)	Once or more a week	60 (10.4)
		Once or more in a day	35 (6.1)

Table 1. Demographics of the participants (N = 576)

Recently PLS-SEM has flourished among social scientists (Hair *et al.*, 2019b), and many scholars have used it in multidiscipline, e.g., hospitality and tourism (Flavián *et al.*, 2019), educational studies (Esawe *et al.*, 2022). Moreover, it is now being used for quantitative study in Fintech (Abbasi *et al.*, 2022; Esawe, 2022a) due to its ability to test complex models and reflective measurement (Henseler, 2018) and neither normally distributional assumptions nor requires large samples, as PLS-SEM incorporates both explanation and prediction (Hair *et al.*, 2017).

PLS-SEM is a two-stage approach: in the first stage, the outer model (measurement model) measures the reliability and validity, whereas, in the second stage, the inner model (structural model) tests the strength of the relationship between the constructs (Hair *et al.*, 2019b, 2019a).

This study used Podsakoff *et al.* (2003) guidelines to reduce the risk of common method variance. The participants were informed that their responses would be treated confidentially and anonymously; there were no right or wrong answers, only positive or negative perceptions. In addition, the questionnaire was designed keeping in mind that IV and DV are furthest apart and in reverse order. Furthermore, the variance inflation factor (VIF) was used to address the potential common method bias. Table 5 shows that VIF values ranged between 1 to 2.4. according to Kock (2015), VIF values $\geq 1-5$ indicate possible collinearity issues, but these are rarely important enough to warrant attention.

4. Results

4.1 Measurement model

Hair *et al.* (2019b) stated a four-step assessment of measurement models in the first stage examining the indicator loadings. Second, internal consistency reliability was assessed by computing Cronbach's alpha and composite reliability (CR) (Fornell and Larcker, 1981). An acceptable level for factor loading, Cronbach's alpha and CR should be 0.70 or higher. Third, we computed the average variance extracted (AVE) for all items to verify the convergent validity of each construct. The acceptable levels of AVE should exceed 0.50. According to Table 3, the results of outer loadings, Cronbach's α and CR values have reached acceptable levels, internal consistency is established, and the scale has adequate construct validity. Additionally, the AVE for all latent variables exceeded good convergent validity values.

Fourth, discriminant validity was assessed by computing the correlations' heterotrait-monotrait (HTMT) ratio. Table 4 shows that the HTMT results indicate that all constructs' values were less than 0.90. Therefore, they are defined by their respective constructs without any overlap. Except, SI is highly correlated with UB. Also, perceived enjoyment and mobile self-efficacy have a high correlation among them. Although these constructs are conceptually distinct, it may be difficult to distinguish them empirically. As a result, and in line with Henseler *et al.* (2015) suggestion, a more liberal criterion for a model such as UTAUT is warranted. According to Franke (2019), HTMT confidence interval values should not include 1. Therefore, all the values are acceptable as they differ from 1.

Table 2.
Confirmatory factor
analysis

Name of category		Recommended value	CFA
Absolute fit adjustment	RMSEA	RMSEA < 0.08	0.22
	90% Confidence Interval of RMSEA		[0.217; 0.223]
Incremental fit adjustment	NFI	NFI > 0.9	0.989
	NNFI	NNFI > 0.9	0.984
	CFI	Near of 1	0.997
	IFI	Near of 1	0.997

Measurement items	Factor loadings
<i>Performance expectancy (PE)</i>	
<i>Adapted from Venkatesh et al. (2003) $\alpha = 0.829$; CR = 0.885; AVE = 0.659</i>	
Using the e-wallet would bring me greater convenience	0.821
Using the e-wallet would allow me to accomplish transactions more quickly	0.857
I think an e-wallet makes the transaction more effective	0.826
I believe an e-wallet will be useful for a transaction	0.737
<i>Effort expectancy (EE)</i>	
<i>Adapted from Venkatesh et al. (2012) $\alpha = 0.938$; CR = 0.952; AVE = 0.800</i>	
Learning how to use an e-wallet is easy	0.901
My interaction and navigation with the e-wallet are clear and understandable	0.904
Overall, I found that an e-wallet is easy to use	0.895
It is easy for me to become skillful at using the e-wallet	0.855
I would find it easy to get the e-wallet to do what I want it to do	0.916
<i>Social influence (SI)</i>	
<i>Adapted from Venkatesh et al. (2003) and Gholami et al. (2010) $\alpha = 0.885$; CR = 0.917; AVE = 0.689</i>	
The important people (family/ relatives/ friends) recommend e-wallet	0.881
The important people (family/ relatives/ friends) influenced my decision to use the e-wallet	0.839
The important people support the use of e-wallets	0.696
In general, the government has supported e-wallet usage	0.879
The current trend in mass media (TV, radio, newspaper) to use the e-wallet influenced my decision to use it	0.841
<i>Facilitating condition (FC)</i>	
<i>Adapted from Venkatesh and Xu (2012) and Yu (2012) $\alpha = 0.713$; CR = 0.822; AVE = 0.535</i>	
I have the resources necessary to use the e-wallet	0.708
I know necessary to use the e-wallet	0.768
The E-wallet is compatible with other technologies I use	0.740
I can get help from others when I have difficulties using the e-wallet	0.710
<i>Perceived enjoyment (P-Enj)</i>	
<i>Adapted from Nur and Panggabean (2021) $\alpha = 0.661$; CR = 0.815; AVE = 0.596</i>	
I find using an e-wallet enjoyable	0.811
The actual process of using the e-wallet is pleasant	0.749
I have fun using the e-wallet	0.753
<i>Satisfaction (Sat)</i>	
<i>Adapted from Chao (2019) and Lee et al. (2021) $\alpha = 0.933$; CR = 0.949; AVE = 0.789</i>	
I was very content with the e-wallet	0.921
I was very pleased with the e-wallet	0.890
I was satisfied with the e-wallet efficiency	0.854
I felt delighted with the e-wallet	0.855
Overall, I was satisfied with the e-wallet	0.919
<i>Mobile Self-efficacy (MSE)</i>	
<i>Adapted from Yu (2012) $\alpha = 0.737$; CR = 0.834; AVE = 0.557</i>	
<i>I could use an e-wallet . . .</i>	
if I had the built-in help guide for assistance	0.756
even if no one showed me how to use it	0.782
if I could call someone for help	0.715
if I had a lot of time to complete the transaction through an e-wallet	0.730

(continued)

Table 3.
Scale refinement

Measurement items	Factor loadings
<i>Behavioral Intention (BI)</i>	
<i>Adapted from Venkatesh et al. (2003) and Venkatesh et al. (2012) $\alpha = 0.760$; $CR = 0.845$; $AVE = 0.578$</i>	
Assuming I had access to the e-wallet, I intend to use it	0.762
Given that I had access to the e-wallet, I predict that I would use it	0.774
I plan to use the e-wallet in the future	0.788
I recommend e-wallets to my colleagues	0.715
<i>Use Behavior (UB)</i>	
<i>Adapted from Venkatesh et al. (2012) $\alpha = 0.706$; $CR = 0.836$; $AVE = 0.631$</i>	
UB 1- I use an e-wallet frequently	0.831
UB 2- I use many functions of e-wallets	0.711
UB 3- I depend on e-wallets	0.834

Table 3. Note: Frequency ranged from “never” to “many times per day”

	MSE	P_Enj	PE	EE	Sat	SI	FC	BI
P_Enj	0.933 [0.91;0.96]							
PE	0.834 [0.82;0.85]	0.885 [0.87;0.91]						
EE	0.234 [0.21;0.26]	0.312 [0.28;0.34]	0.157 [0.14;0.18]					
Sat	0.372 [0.35;0.40]	0.467 [0.44;0.5]	0.267 [0.25;0.3]	0.475 [0.45;0.5]				
SI	0.656 [0.63;0.68]	0.741 [0.72;0.77]	0.635 [0.61;0.66]	0.193 [0.17;0.22]	0.425 [0.4;0.45]			
FC	0.558 [0.53;0.59]	0.562 [0.53;0.6]	0.637 [0.61;0.67]	0.064 [0.07;0.1]	0.128 [0.13;0.16]	0.781 [0.76;0.81]		
BI	0.699 [0.68;0.72]	0.729 [0.7;0.76]	0.666 [0.64;0.69]	0.333 [0.3;0.36]	0.588 [0.56;0.62]	0.821 [0.8;0.84]	0.531 [0.5;0.56]	
UB	0.662 [0.63;0.69]	0.777 [0.75;0.81]	0.606 [0.57;0.64]	0.185 [0.16;0.22]	0.476 [0.45;0.51]	0.953 [0.94;0.967]	0.845 [0.82;0.87]	0.793 [0.767;0.82]

Table 4. Analysis of discriminant validity (HTMT)

Note: The numbers in parentheses represent (HTMT) confidence interval values

4.2 The structural model

In the second stage, the structural model assessment procedures include evaluating collinearity issues, the statistical significance and relevance of the path coefficient, the coefficient of determination R^2 , effect size f^2 and the blindfolding-based cross-validated redundancy measure Q^2 .

First, multicollinearity issues were assessed using a VIF. VIF values $\geq 3-5$ indicate possible collinearity issues, but they are rarely significant enough to warrant attention (Hair et al., 2019a, 2019b). The VIF results in Table 5 indicate that collinearity was not an issue.

Second, examining R^2 , Hair et al. (2019a, 2019b) highlight that R^2 values of 0.75, 0.50 and 0.25 are considered substantial, moderate and weak, respectively. R^2 values of 0.90 and higher are typically indicative of overfitting. Figure 2 illustrates that The R^2 value for UB (0.373) is considered moderate, while the R^2 value for UB (0.730) is considered substantial to measure the variance.

Third, the Q^2 values were obtained using the blindfolding technique in Smart-PLS. As a rule of thumb, all values should be more significant than zero. Moreover, Hair *et al.* (2019a, 2019b) suggest that “the Q^2 values higher than 0, 0.25, and 0.50 depict small, medium, and large predictive relevance of the PLS-path model”. Finally, the bootstrap resampling approach with 5,000 resamples was employed to establish direct pathways' relevance and estimate standard errors (Ringle *et al.*, 2005). Table 5 shows that all Q^2 values have significant predictive relevance, as they are greater than zero, confirming the model's out-of-sample predictive relevance. Moreover, all Q^2 values higher than 0.50 depict the considerable predictive accuracy of the PLS path model.

Fourth, we examined how removing a specific predictor construct influences the R^2 value of an endogenous construct to compute f^2 . Hair *et al.* (2019a, 2019b) cite Cohen's rule of thumb, f^2 values greater than 0.02, 0.15 and 0.35, representing small, medium and substantial effects, respectively. Based on the f^2 effect sizes in Table 5, mobile self-efficacy was the most critical factor and substantially affected perceived enjoyment, followed by the paths between perceived enjoyment and performance expectancy. Moreover, BI for UB and FC for UB had a medium effect size. Furthermore, neither effort expectancy in UB, performance expectancy in satisfaction, nor FC in BI had an effect size.

Figure 2 reveals the hypotheses testing results, which shows that all hypotheses were supported except *H3a*, *H5b* and *H8a*. These findings can be observed from the *t*-test value (*t*-values ≥ 1.96 ; $p < 0.001$). From Figure 2, it can also be seen that the paths with the highest Standardized Regression Weight are the hypothesized paths between mobile self-efficacy

Construct	VIF	Q^2 (1-SSE/SSO)	Predictive relevance
BI	2.4	0.578	Large
EE	1.1	0.800	Large
FC	1.0	0.535	Large
MSE	1.0	0.557	Large
P-Enj	1.8	0.596	Large
PE	1.8	0.659	Large
SI	1.0	0.689	Large
Sat	1.4	0.789	Large
UB	2.1	0.664	Large

Table 5. VIF and Stone-Geisser or Q^2

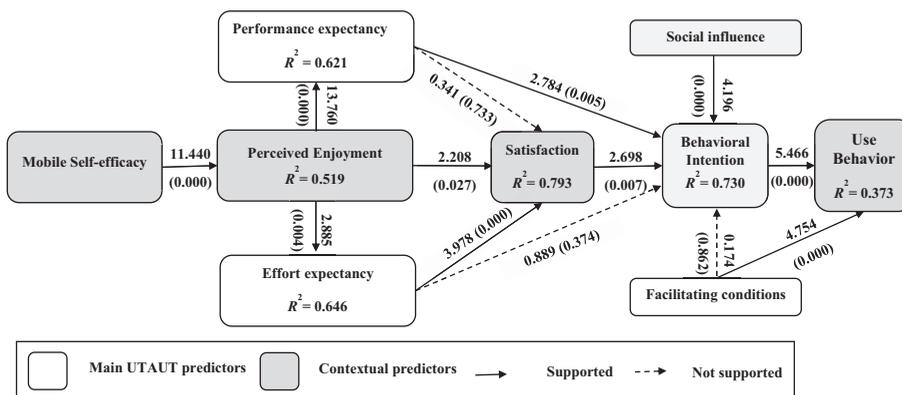


Figure 2. Results of path analysis

and perceived enjoyment (0.671), followed by the paths between perceived enjoyment and performance expectancy (0.669).

4.3 Importance–performance map analysis (IPMA)

Following Hair *et al.* (2019a, 2019b) suggestion, this study employed importance–performance map analytics (IPMA) by using BI and UB as the target variables to provide a more in-depth dimension to the analysis and identify the potential improvement areas that need more attention. In other words, applying the IPMA approach allows for a better understanding of the PLS-SEM results. Instead of just assessing the importance measure, as shown in the path coefficients, IPMA considers the average value of the constructs and their items (i.e. performance measure) (Ringle, 2016).

4.4 Importance–performance map analysis for user behavior

The results of the IPMA analysis are presented in Table 6 and depicted in the graph in Figure 3. The results indicated that behavioral intention was relevant in predicting UB, with 28.53 importance and a 56.41 performance level. Then, facilitating condition, with 16.22 importance and a 55.72 performance level, is shown in Figure 3.

4.5 Importance–performance map analysis for behavioral intention

The results of the IPMA analysis are presented in Table 6 and depicted in the graph in Figure 3. The importance and performance of all the independent variables (i.e. PE, EE, FC, SI, MSE and P-Enj) were measured. The results indicate that although effort expectancy had the most outstanding index values (performance), it was not vital in predicting behavioral intention in the model, with a total effect (importance) of 9.61. Social influence was relevant in predicting behavioral intention, with a total effect (importance) of 56.85, as denoted in the IPMA map in Figure 3.

5. Discussion and conclusions

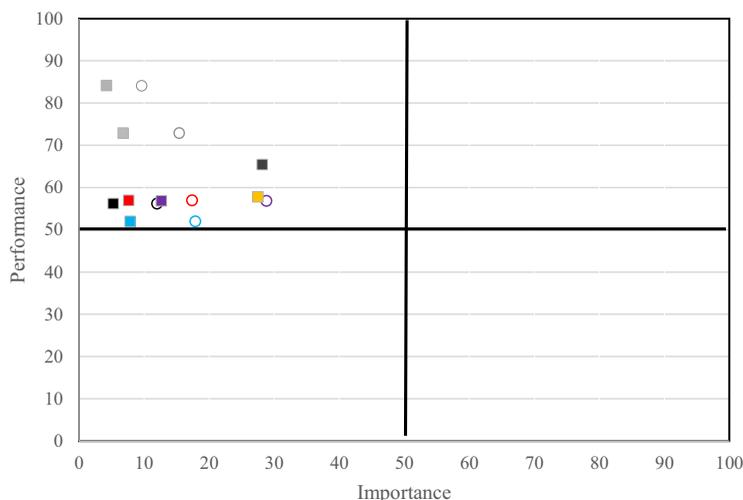
5.1 Discussion and conclusions

Overall, this study adds to the corpus of knowledge by extending UTAUT to include new relationships and improving the understanding of the factors influencing behavioral intention and e-wallet adoption among Egyptian consumers.

Mobile self-efficacy is critical in adopting e-wallets (Sigar, 2016). That is to say, without mobile self-efficacy, it would be impossible to implement innovative technologies such as e-wallets. Therefore, last year’s research primarily focused on studying the influence of mobile

Construct	UB		BI	
	Total effect (importance)	Index values (performance)	Total effect (importance)	Index values (performance)
BI	28.16	65.43		
EE	4.22	84.11	9.61	84.11
FC	27.50	57.79	–1.01	57.79
MSE	5.25	56.20	11.97	56.20
P-Enj	7.84	52.00	17.86	52.00
PE	7.61	56.97	17.36	56.97
SI	12.64	56.85	28.81	56.85
Sat	6.76	72.89	15.40	72.89

Table 6. Performance index values and total effects for UB and BI



Source: For UB and o for BI

Figure 3.
IPMA for BI and UB

self-efficacy on attitude, actual e-wallet use or BI to adopt an e-wallet. However, it is worth noting that a few scholarly attempts have already been made to evaluate the direct influence of mobile self-efficacy on perceived enjoyment. As a result, the current study studied this direct influence. The empirical evidence provided above suggests that mobile self-efficacy significantly influenced perceived enjoyment (t -values of 11.44; p -value < 0.001), which fits with findings reported by [Chao \(2019\)](#) and [Dang et al. \(2016\)](#). Consequently, e-wallet service providers should always aim to produce e-wallet applications capable of performing tasks in the shortest period to maintain consumers' positive perceived enjoyment.

According to previous studies ([Alalwan et al., 2018](#); [To and Trinh, 2021](#); [Winarno et al., 2021](#)), perceived enjoyment is a critical construct that significantly influences the e-wall PU and PEOU. The findings revealed that perceived enjoyment had a significant influence on satisfaction (t -values of 2.208; p -value < 0.05) this results supported by [Chao \(2019\)](#) and [Dang et al. \(2016\)](#), effort expectancy (t -values of 2.885; p -value < 0.05) and PE (t -values of 13.76; p -value < 0.001) this results supported by [Alotaibi et al. \(2019\)](#), [Chao \(2019\)](#) and [Fagan \(2019\)](#). As a result, perceived enjoyment can be considered a critical external construct in the UTAUT model, implying that customer enjoyment of e-wallets is predicted to grow as they become a more prevalent form of transaction. Customers not only find e-wallets easy to use but also allow customers to complete transactions more rapidly.

According to our previous results, satisfaction significantly influences consumers' behavioral intention toward using e-wallets (t -values of 2.698; p -value < 0.05). Several previous studies have concluded that if an e-wallet meets a consumer's needs, they are more likely to use it again ([Alfany et al., 2019](#); [Lee et al., 2021](#); [Phuong et al., 2020](#)). The findings of this study also confirm customers' agreement that they are content with using e-wallets and will recommend them to their colleagues.

Moreover, the findings show that effort expectancy significantly affects satisfaction with an e-wallet (t -values of 3.978; p -value < 0.001). This result is supported by the study results of [Elok et al. \(2021\)](#) and [Lee et al. \(2021\)](#) and, in contrast, with the results of [Syifa and Tohang \(2020\)](#). Contrary to the general literature, the empirical results in [Table 6](#) show that effort

expectancy had an insignificant influence on consumers' behavioral intention toward using e-wallets (t -values of 0.889; p -value > 0.05). This result is inconsistent with [Abdullah et al. \(2020\)](#) and [Widodo et al. \(2019\)](#). The insignificant influence of effort expectancy on consumers' behavioral intention in this study was presumed to be because most consumers become more accustomed to and knowledgeable about e-wallet usage because they had already been exposed to e-wallets. Furthermore, most respondents were under 20, a more flexible and adaptive age for FinTech. Consequently, consumers do not consider whether using e-wallets is complex or straightforward. This result is supported by previous studies such as [Raihan and Rachmawati \(2019\)](#) and [Syifa and Tohang \(2020\)](#). Nonetheless, we recommend that e-wallet providers strive to create user-friendly and straightforward applications to maintain positive behavioral intention among consumers.

This study's results suggest that performance expectancy had an insignificant impact on customer satisfaction with the e-wallet (t -values of 0.341; p -value < 0.05). This result contrasts with [Elok et al. \(2021\)](#), [Lee et al. \(2021\)](#) and [Syifa and Tohang \(2020\)](#). This not significant could be attributed to the fact that performance expectancy refers to the cognitive beliefs of inexperienced consumers, whereas satisfaction is based on consumers' first-hand experience with e-wallets. According to this study's findings, e-wallets are rapidly becoming an extremely effective method for customer transactions. In addition, customer satisfaction with e-wallets and their behavioral intention toward utilizing them will increase if they are educated on using the e-wallet effectively. As a result, in terms of future e-wallet usage growth, service providers are advised to establish customer communities through online forums to discuss and share their experiences. This measure could boost e-wallet diversification while increasing customer satisfaction and BIs' willingness to use e-wallets.

Furthermore, performance expectancy was found to significantly influence consumers' behavioral intention toward using e-wallets (t -values of 2.784; p -value < 0.05) because the use of e-wallets saves time and makes transactions more effective. Therefore, the current study is consistent with the findings of [Abdullah et al. \(2020\)](#), [Syifa and Tohang \(2020\)](#) and [Widodo et al. \(2019\)](#). As a result, e-wallet providers should create applications that enhance consumer performance in completing their transactions.

Moreover, the results indicate that social influence significantly influences consumers' behavioral intention toward using e-wallets (t -values of 4.196; p -value < 0.001). In other words, one of the factors driving behavioral intention to use e-wallets is the social influence of important people, such as family, relatives and friends. This result is supported by previous studies such as [Abdullah et al. \(2020\)](#) and [Raihan and Rachmawati \(2019\)](#).

In addition, facilitating conditions was found to have an insignificant influence on consumers' behavioral intention toward using e-wallets (t -values of 0.862; p -value < 0.05) and significantly influenced consumers' UB of e-wallets (t -values of 4.754; p -value < 0.001). These results align with the UTAUT model, whereas facilitating conditions are considered a direct determinant of "UB" construction rather than the "behavioral intention." ([Venkatesh et al., 2003](#)). This also corresponds to other studies, such as [Esawe \(2022a, 2022b\)](#) and [Raihan and Rachmawati \(2019\)](#) and, in contrast with the findings of [Abdullah et al. \(2020\)](#), [Chawla and Joshi \(2019\)](#) and [Widodo et al. \(2019\)](#). This contradiction implies that future research should focus on the impact of facilitating conditions on BI.

According to the results of the IPMA analysis for UB, service providers should focus on BI and facilitating conditions, as they performed poorly compared to effort expectancy and satisfaction but are the most crucial factors to UB. As a result, improvements are required to transform behavioral intention and facilitate conditions into a better state of UB for customers. In addition, IPMA analysis Results for BI suggested that social influence needs more consideration and improvement from service providers. Although it is the most

fundamental factor in determining the customers' behavioral intentions, social influence performs low compared with other less crucial factors such as effort expectancy, satisfaction and facilitating conditions.

5.2 Theoretical implications

Theoretically, this study has used multiple conceptualizing lenses by integrating three theories: self-efficacy theory, flow theory and UTAUT, to help explain how these constructs in the framework influence consumers' behavioral intention and usage of e-wallets. Although the integration of previously mentioned theories has been highlighted in the literature (Chen *et al.*, 2018; Lew *et al.*, 2020), this is one of the first studies in the context of e-wallets to integrate these theories to investigate the relations between the structures in this order, according to the researcher knowledge. Furthermore, this study found that performance expectancy, social influence, mobile self-efficacy, perceived enjoyment and satisfaction significantly influence consumers' behavioral intentions. Moreover, facilitating conditions and behavioral intention significantly positively influence the behavioral usage of e-wallet services. In addition, the findings of this study added to the literature regarding the relationships between effort expectancy, performance expectancy, mobile self-efficacy, perceived enjoyment and satisfaction to explain the potential of consumers' behavioral intention and usage of e-wallets.

5.3 Managerial implications

In terms of practical implications, this is the first study to report the factors influencing e-wallet adoption in Egypt. The findings of this study should improve decision-makers understanding of these factors' roles and could help them design successful tactics to encourage customers' behavioral intention and UB of e-wallets. Moreover, the study findings broaden e-wallet providers' understanding by incorporating these factors into upgrading their services to perform ubiquitously as consumers desire. Moreover, as developing countries shift towards financial inclusion, digital transformation will impact the future, requiring businesses and consumers to be digitally aware and knowledgeable because of the inevitability of increasing noncash transactions to purchase products and services. Esawe *et al.* (2018) assert that developing countries, particularly Egypt, would not progress unless massive innovation occurs, frequently resulting in a paradigm shift. This innovation may begin at the individual level; however, by coordinating efforts and focusing on continual development, a transformation that is not just local but also global is achievable.

5.4 Limitations and suggestions for future research

This study has some limitations. First, we did not include the four moderating factors in the original UTAUT in our model. future research could investigate the moderating effect of those four factors on consumer behavior. Second, it cannot confirm long-term causal relationships among factors because it is a cross-sectional study. Customers' perceptions of constructs might shift over time as they gain new knowledge and experiences. Therefore, future research could use a longitudinal strategy to obtain more precise results from a specific cohort. Third, because the study was conducted in the Egypt e-wallet market, the study's generalizability is limited. However, future research could replicate our framework with a larger and more geographically diverse sample. Fourth, the most common age group among the respondents was under 20 years (85.4%). Because this age group adopts technology more than other age groups, future studies should look at other age groups and the average age. Fifth, this study focuses on customers' perceptions, and future research

could investigate retailers' perceptions. Sixth, future studies may be conducted comparing consumers and retailers. Seventh, this study used a quantitative method using questionnaires to conduct the research. It is helpful for future studies to be conducted from multiple perspectives, such as using qualitative or mixed methods. Finally, moderating and mediating variables can be added to the model to evaluate the mechanisms related to the present situation.

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Study purposes	Main results
<p>The study of Abdullah et al. (2020) aims to identify the factors that influence the acceptance of e-Wallet towards establishing a cashless society in Malaysia</p>	<p>Building on the UTAUT, (PE), (SI), (FC) and Trust have a significant influence on e-wallet acceptance. The most influential aspect driving Malaysians' acceptance of e-wallets is (FC)</p>
<p>The purpose of Phuong et al. (2020) is to identify antecedents of mobile wallet continuance intention in Vietnam</p>	<p>Building on the (TAM), Mobile application quality and familiarity significantly impact PEOU and PU, while situational normalcy affects only PEOU. PEOU and PU have a significant relationship with satisfaction. Payment security and feedback mechanisms have a significant impact on client trust</p>
<p>Widodo et al. (2019) research aims to identify the factors influencing digital wallet adoption in Indonesia</p>	<p>Building on the UTAUT2, habit is the most significant element influencing the BIU digital wallet in Indonesia, followed by PE, Trust and FC. However, EE, SI, hedonic motivation and perceived risk have no significant effect on BI</p>
<p>The paper of Chawla and Joshi (2019) empirically examines the factors influencing a consumer's attitude and intention to use m-wallets in India</p>	<p>Integrating (TAM) and (UTAUT), PEOU, PU, Trust, security, FC and lifestyle compatibility influences attitude and BI. PEOU influences PU and Trust, whereas PU influences trust, attitude and BIU. Security is a crucial factor in determining trust</p>
<p>Alfany et al. (2019) study aim to determine the effect of social influence, self-efficacy, perceived enjoyment and individual mobility on attitude toward using OVO</p>	<p>Self-efficacy and individual mobility influence attitudes toward OVO but not social factors or perceived enjoyment. Furthermore, satisfaction, individual mobility and attitude influence OVO users' intentions</p>
<p>The research of Raihan and Rachmawati (2019) aims to analyze factors influencing the continuance intention of Dana adoption in Indonesia</p>	<p>Building on the UTAUT2, habit, social influence, trust and hedonic motivation influences Dana's adoption</p>
<p>The study of To and Trinh (2021) aims to discover the main factors shaping behavioral intention to use m-wallets in Vietnam</p>	<p>Building on the (TAM), PEOU, PU and enjoyment influence BI, whereas trust shows no direct effect</p>
<p>Moorthy et al. (2021) research aims to analyze factors influencing consumers' intention to adopt e-wallets in Malaysia</p>	<p>Building on the UTAUT: perceived security and incentives influence impacts BI</p>
<p>The study of Yang et al. (2021) aims to explore factors influencing the intention to use an e-wallet and the adoption of an e-wallet among adult</p>	<p>Building on the UTAUT, perceived usefulness, perceived ease of use, social influence, facilitating condition, lifestyle compatibility and perceived trust influence the intention to use an e-wallet and the adoption of an e-wallet among adults</p>

Table A1.
Summary of researchers' purposes and main results in the e-wallet theme

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