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# Determining Factors Adoption of Digital Wallets by Saudi Consumers

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**Abstract**

Mobile wallets have been in continuous demand and developed over the past few years, especially during the COVID-19 pandemic. Several studies have examined user intentions and perspectives. This study develops a conceptual model combining behavioral factors with the technology acceptance model (TAM). The goal is to identify key factors that influence user's intention to adopt mobile payments. This study uses the TAM and the unified theory of acceptance and use of technology (UTAUT) models with additional factors. The additional factors are security, trust, facilitating conditions, and lifestyle compatibility. The study analyzes the results of a survey of 394 Saudi citizens conducted via an online survey. The results indicate that user attitudes and intentions are positively influenced by all of the factors. Perceived usefulness, perceived ease of use, lifestyle compatibility, and facilitating conditions are direct predictors of user behavior in accepting mobile wallet payments. This study provides an empirical contribution to the literature on mobile payment acceptance on the effect of perceived usefulness and lifestyle compatibility. The results demonstrate that about 26% of the respondents started using mobile wallet services because of the COVID-19 pandemic.

**Keywords**: Adoption, M-wallet, M-payment, Saudi Arabia, TAM, UTAUT.

## Introduction

The need for digital and cashless payments has increased globally , . Users' behavioural intent to accept mobile payments and their acceptance of them have undergone a significant transition [3, 4]. Numerous prior research have been conducted to look at various elements that affect consumers' decisions to accept and use mobile payments. –.

Consumers want electronic payment technology that provides quick, safe, reliable services on a single platform, according to a number of research [8–10]. M-payment services are any systems that enable monetary exchanges through mobile phone networks and devices , . Numerous m-payment systems are offered, such as short message service (SMS) payments , mobile web payments , rapid response code (QR) payments , near-field communication (NFC) payments , cloud-based m-payments , and mobile wallets, sometimes referred to as m-wallets , . Installing the m-wallet on a user's mobile device allows for the storage of payment card data on the smartphone , , . For payments and transactions, the mwallet includes a number of features and services that can replace the physical or conventional wallet , , . M-wallet services, which are a form of mobile commerce, allow users to conduct a variety of transactions, including those between consumers and businesses as well as between consumers and other consumers , . The goal of the m-wallet is to make making payments quick, simple, safe, remote, effective, and transparent . In recent times,

COVID-19 transfer between persons has been stopped by using the e-payment services offered by the m-wallet rather than cash . In line with , In Saudi Arabia, the percentage of mobile internet users has been rising, and by 2025, that percentage is predicted to be over 97%. In Saudi Arabia, m-wallet services are being implemented with the goal of enhancing financial services and cutting expenses. This is consistent with Saudi Vision 2030's objectives, which include enabling digital transformation across a number of industries. The Saudi Central Bank (SAMA)1 seeks to increase financial transactions and financial services innovation.. SAMA released a license to STC Pay2 after the success of two digital financial services companies—Hala3 and Bayan Pay.4 A recent study by  provided an analysis of the Saudi Arabian financial technology (fintech) sector and argued that investment in the m-wallet research area is important. The study also added that technology providers should understand user needs and improve customer experience. Many researchers have examined the factors that contribute to the acceptance and adoption of m-payment among Saudi citizens –. This study aims to examine a variety of factors that influence user's acceptance and adoption of mwallet in the context of Saudi Arabia. From a practical point of view, identifying the factors that influence m-wallet service adoption in Saudi Arabia would support decision-makers utilizing appropriate, cost-effective strategies for increasing m-wallet usage by governing and deploying independent factors. In contrast, the existing literature on m-payment adoption highlights the significance of understanding the factors that affect behavioral intention and encourage usage of the system , , . Thus, this study provides an answer

to a specific research question: "What are the key factors affecting the adoption of m-wallet services among Saudi citizens?" This paper is organized as follows. Section 2 provides a literature review on the factors that affect user attitude and behavioral intention toward m-payment adoption and mwallet services. Section 3 proposes the conceptual framework and research hypotheses. In Section 4, the research methodology is explained. Section 5 presents the results and discussion. The final section provides a conclusion and directions for future research.

## Research Questions

The need for more study prompts the issue of identifying the characteristics that influence consumer adoption of digital device wallets in the Saudi market. To get insight into the adoption of digital device wallets in Saudi Arabia, it will be crucial to identify a good theoretical model to direct the data gathering and empirical analysis phases. The following research questions can be used to break up this research challenge.

Research questions:

1. What factors led Saudi customers to embrace digital device wallets?

2. What factors prevent Saudi customers from using digital device wallets?

3. How much variation in the uptake of digital device wallets can derived factors account for?

4. How do consumer traits like age, gender, and usage history impact the adoption of digital device wallets?

## Purpose of this study:

The purpose of this study is to identify the elements that influence Saudi consumers' adoption of digital device wallets. This target is divided into the following subgoals:

1. Determine the causes of Saudi customers' adoption of digital device wallets.
2. Identify the barriers preventing Saudi customers from adopting digital device wallets.
3. Analyze the extent to which derived factors may account for the variation in the adoption of digital device wallets.
4. Determine how customer traits like age, gender, and use history impact the adoption of digital device wallets.

**Research characteristics:**

An empirical study will be the research approach used for the project's thesis. The UTAUT2 theoretical model of technology adoption will be expanded with constructs that take into account the unique characteristics of the Saudi market for digital device wallets. A main quantitative survey will be conducted to gather data, and a particular piece of software will be utilized to evaluate the data using the PLS-SEM statistical technique. Findings: The study for this project's thesis answered all of the open-ended research questions.

1. The two key factors that increased the frequency of use of digital device wallets were performance expectations and usage habits.

2. Observed The only factor preventing more people from using digital device wallets is the risk of losing personal information or not making a payment.

3. The established model accounts for more than 70% of the difference between intended and actual usage of a digital device wallet.

4. The adoption of digital device wallets was shown to be unaffected by age, gender, and usage history.

## FRAMEWORK

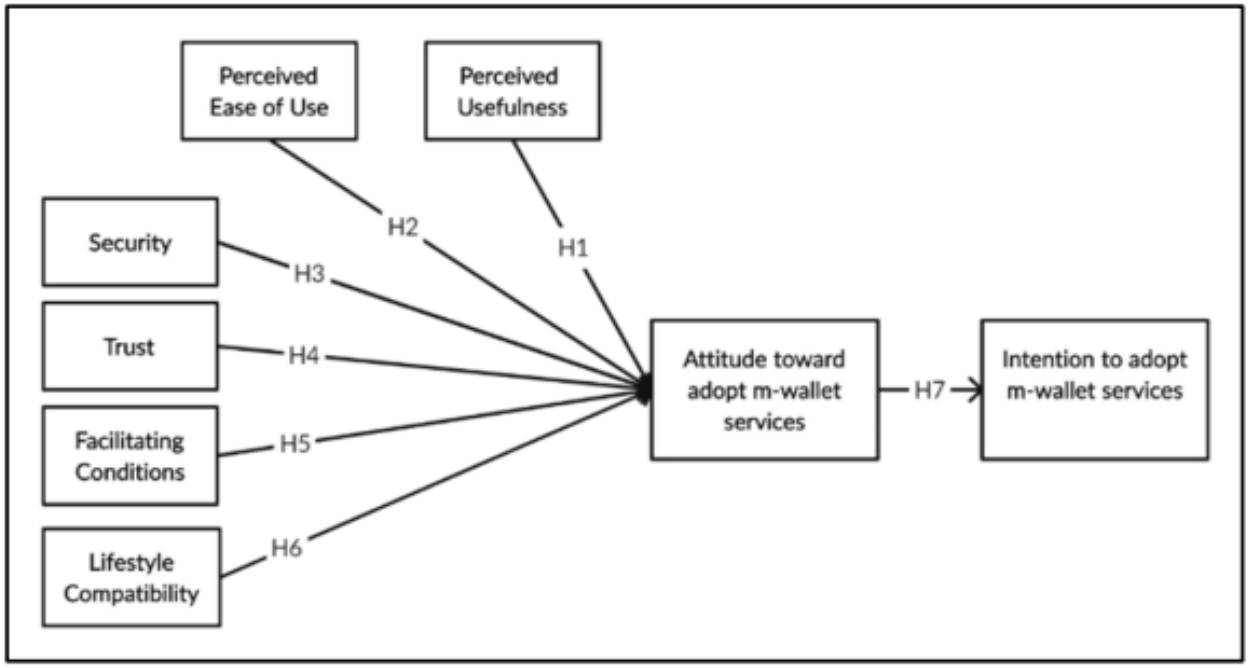


**Fig. 1.** The proposed model with the study hypotheses.

## LITERATURE REVIEW

The literature has examined and studied m-payment technologies in a number of research areas, including technological ecosystems , , service design , user experience , privacy and trust , payment transaction preferences , , technology acceptance, and intention to use m-payments , , , . By using several technology acceptance theoretical models, researchers have determined the behavioural elements that affect user acceptability to embrace m-payment technologies.

The TAM created by  and the UTAUT model created by  are two theoretical models that have been utilised by researchers to investigate user intention and acceptability towards adopting new technologies. Perceived utility (PU) and perceived ease of use (PEOU) are the two main components of the TAM model (PU). These two elements greatly affect user attitudes, which in turn affects users' behavioural intentions to adopt new technologies . The TAM model has been utilised in several studies to determine variables that may influence the adoption of m-payment and mwallet services in China , Singapore , the United States (US) , and other countries. South Africa , Indonesia , India , , Malaysia , , and Europe . Many previous studies in the m-payment adoption literature integrate additional factors into the TAM model to make it more comprehensive in examining different users' behavioral intention and usage , , , , , . Table 1 provides an overview of previous studies in the literature that extended the TAM model to examine other

key factors affecting user acceptance to adopt m-payment and mwallet services. These studies found that by extending the TAM model to include additional factors, the tracking and explaining different factors in measuring user attitude and intention to adopt new technology has been significantly improved. We can connect each research to the elements that were added to the TAM model using the information in Table 1. These research have demonstrated that the most important factors influencing a user's decision to accept and use a new technology are PU, PEOU, trust, and security [16,34–36]. There are four essential components to the UTAUT model: effort anticipation, societal pressure, performance expectations, and enabling circumstances . The UTAUT model has been used in a number of research to investigate the variables that affect the acceptance of m-payments , , , -. The trust component has been added to the UTAUT model , , and . According to the findings, the trust element has a big impact on how users feel and whether they plan to embrace new technologies.

A study by  examined two additional factors—knowledge and compatibility—as extended factors added to the UTAUT model. The aim was to explore the user's intention to use m-payment services in the US. The results demonstrated that the UTAUT model's extension considerably enhanced the measurement of a user's behavioral intention to adopt m-payments.  developed the UTAUT2 model, which expanded the original UTAUT model by integrating the two new elements of habit and hedonic incentive. The study by  employed UTAUT2 and additional perceived security to identify the elements influencing working individuals in Malaysia's

inclination to use m-payment. The study by  expanded the UTAUT2 model by include lifestyle compatibility criteria in order to investigate the factors influencing behavioural intention to use m-payment in Bangladesh.

TABLE I. SUMMARY OF VARIABLES USED TO EXTEND THE TAM MODEL BY STUDIES IN THE M-WALLET AND M-PAYMENT LITERATURE

| Variables | Country | Field | Author |
|---|---|---|---|
| Perceived usefulness, perceived ease of use, trust, environmental risks, reputation, and mobility. | Indonesia | M-payments | [36] |
| Perceived usefulness, perceived ease of use, privacy, new technology anxiety, and self-efficacy. | the US | M-payments | [5] |
| Perceived usefulness, perceived ease of use, trust, security, facilitating conditions, and lifestyle compatibility. | India | M-wallet | [16] |
| Perceived usefulness, perceived ease of use, trust, security, innovativeness, critical mass, flexibility, cost of transaction, consumer privacy and anonymity, transaction speed, and availability of alternatives. | Singapore | M-wallet | [34] |
| Perceived usefulness, perceived ease of use, perceived risk, perceived cost, perceived ubiquity, perceived compatibility, perceived personal innovativeness, and perceived social influence. | Europe | M-payments | [30] |
| Perceived usefulness, perceived ease of use, and perceived risk. | Malaysia | M-wallet | [38] |
| Perceived ease of use, trust, security, privacy concerns, and related advantages. | South Africa | M-wallet | [35] |
| Perceived usefulness, perceived ease of use, perceived risk, compatibility, perceived complementarity, and m-payment knowledge. | China | M-payments | [33] |
| Perceived usefulness, perceived compatibility, awareness, perceived cost, and perceived customer value addition. | India | M-wallet | [37] |

Several facets of mobile acceptance technology have been investigated in the context of Saudi Arabia, including mcommerce , m-services , m-government , mbanking , m-learning , and m-payment . The variables influencing the adoption of mWallet services in the Saudi Arabian context have, however, hardly been studied. In Saudi Arabia, a research by  investigated user acceptability of and concerns over mobile payment technologies.. The findings reported that the security of the transactions of m-payment and the unauthorized use of mobile devices to make payments are the most significant concerns for mobile users. In addition, a study by  used the UTAUT model to investigate 11 factors that influenced the acceptance and use of m-transactions in Saudi Arabia. The study discovered that the most significant influence factors included ease of use, usefulness, security, trust, culture, cost, government mreadiness, and social influence. A study by  adapted the ease of use from the TAM model with three additional factors—awareness, utility, and security—to explore the acceptance of m-payment among Saudi nationals. The study found that the proposed factors successfully identified mpayment acceptance and examined the gender effect, discovering that all factors showed a significant genderbased difference except for utility. The results indicated that males exhibited higher m-payment adoption than females. To sum up, in this study, we aim to contribute to the mwallet services literature by exploring the factors that influence user intention to accept and adopt m-wallet services in the context of Saudi Arabia. Based on a review of the previous works, in this paper, we propose using the

extended TAM and UTAUT models to determine the factors affecting user acceptance of m-wallet services.

## CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

The TAM and UTAUT models were merged in a prior research by in terms of two factors—facilitating circumstances and lifestyle compatibility. The study by suggested that security and trust, two additional characteristics, have a significant impact on how quickly users embrace new technologies. This study looked at the elements that affected Indian consumers' attitudes towards and intentions to use mobile wallet services. The purpose of the current study is to analyse the crucial elements influencing the uptake of m-wallet services in the Saudi Arabian environment.

Because this study is based on the work of, it integrates two elements from the UTAUT model with the TAM model. The TAM and UTAUT models were selected from among other conceptual frameworks (theoretical models), given that numerous studies have confirmed their efficacy in analysing user adoption of various technologies, such as electronic payments, digital payments, m-banking, m-internet services, mpayments, and m-wallet services .

In this study, the modified TAM and UTAUT models are used to identify the key factors influencing m-wallet services adoption intention. The eight factors

identified are as follows: PU, PEOU, security, trust, facilitating conditions, lifestyle compatibility, attitude, and intention. Therefore, this study demonstrates the relevance between these eight factors as they are argued to have a moderating role on user intention to adopt m-wallet services in Saudi Arabia. PU is defined as "the degree to which a user believes that using a particular technology would improve his or her job performance" . This factor demonstrates that the PU of new technology plays a vital role to accept and adopt a new technology. Several studies have found that PU positively influences user acceptance to adopt m-payment , , , , . This study examines the PU factor and presents the relationship between PU and user attitude toward m- wallet services. This study, therefore, proposes this hypothesis as follows:

- H1: PU has a favourable impact on users' attitudes regarding using the mWallet service. The term "user's belief about the degree of user-friendliness of a certain technology" is PEOU. Numerous research have shown that PEOU strongly affects the user's decision to accept and embrace m-payment, including,,,. These research have found that PEOU significantly and favourably affects a user's intention to utilise m-wallet services..
- H2: PEOU has a favourable impact on users' attitudes regarding using m-wallet services. The degree to which a consumer thinks using a certain online payment method will be secure is known as security (SEC). People will be concerned about their security if their mobile device is lost or stolen because the m-wallet stores important information. In some research, the

security issues surrounding m-payment as a new technology appear to be a major worry for consumers, while others did not bring this problem up. We think it's crucial to investigate security-related issues. Consequently, the following theory is put forward.:

- H3: Security has a favourable impact on users' attitudes towards using mobile money services. When one party has faith in the dependability and integrity of an exchange partner, trust (TR) is created. A new service must be used by users in comfort, safety, and with less perceptions of danger. Numerous research have found that user intention to use mobile payments is positively impacted by trust,,,,,, As a result, the following premise is proposed::
- H4: Trust has a positive effect on user attitude toward mwallet service adoption. Facilitating conditions (FC) are defined as the conditions under which an individual believes that the infrastructure is equipped for and encourages the use of new technology. A number of studies have determined that there is a positive relationship between FC and the intention to use m-payment , , . If there is a complete infrastructure for m-wallet usage, it may lead to an increase in user attitude toward mwallet service adoption. Therefore, the following hypothesis is proposed:
- H5: FC has a positive effect on user attitude toward mwallet service adoption. Lifestyle compatibility (LC) is defined as the shopping habits and daily lifestyle that impact user technology adoption. Thus, LC affects user

decisions to adopt technology. A few empirical studies have combined the effect of different attributes of LC on the intention to use mpayment services , . A study by  defined LC as "the natural alignment of lifestyle choices and values between two individuals, and extended to include a computer, mobile devices, and other stakeholders operating in the environment." The results of showed that LC plays an important and significant role in influencing user intention to adopt m-wallet. Therefore, the following hypothesis is proposed:

- H6: LC has a positive effect on user attitude toward mwallet service adoption. Attitude (ATT) and intention (IN): Attitude is defined as the positive or negative emotions and feelings of an individual about their behavior when adopting new technology . The intention is defined as an individual tending to use and embrace the latest technology . In the context of m-payment and m-wallet adoption, a significant relationship between attitude and intention has been widely confirmed , , , , , . Therefore, the final hypothesis is formed as follows:
- H7: Attitude has a positive effect on user intention to adopt m-wallet services. Figure 1 demonstrates the proposed m-wallet technology adoption model, including the main factors of the TAM and UTAUT models and additional factors concerning the relationships established by this study's hypotheses.

## RESEARCH METHODOLOGY

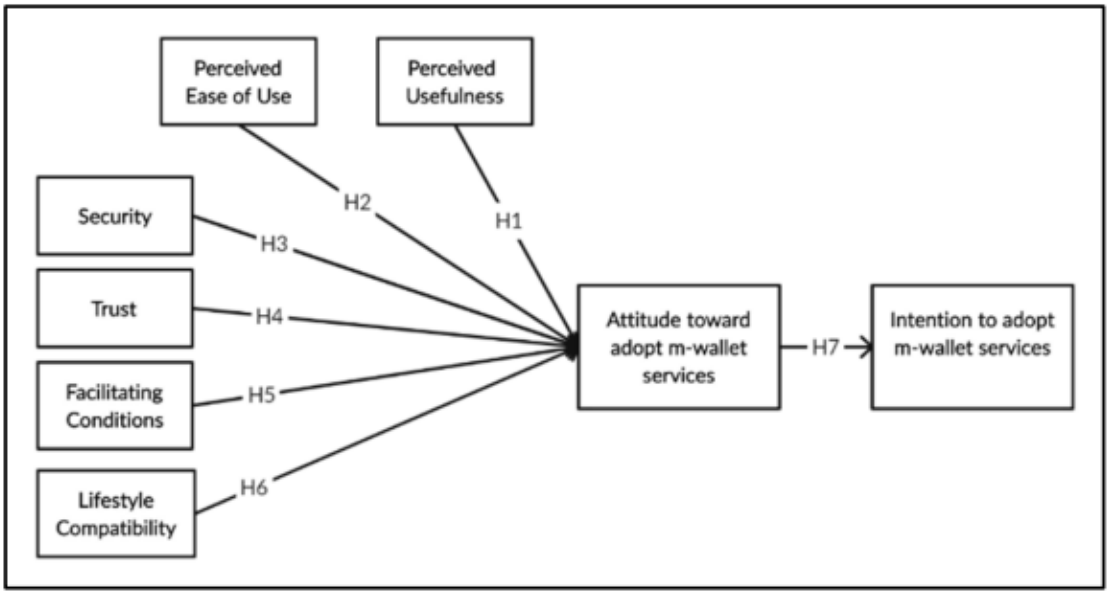


**Fig. 1.** The proposed model with the study hypotheses.

### Instrument Development

This study was conducted using a quantitative approach through the development of an online survey. The study features eight factors as follows: PEOU, PU, security, trust, FC, LC, attitude, and intention to use. The developed factors and their items were designed to measure user acceptance of m-wallet service adoption.

The factors' scales were adopted from . The factors in the survey were measured using a five-point Likert-type scale, where a value of one signifies "strongly disagree" and a value of five indicates "strongly agree." Three experts have reviewed the methodology and measurement scales in the field to ensure that the content and the structure of the questions are valid. The scale used in the questionnaire is reported in detail in the Appendix.

**Data Collection**

The online survey, which has a total of 40 questions, was distributed online. The online survey featured two sections. The first section is the respondents' demographic information while the second section includes the 40 scales of the factors. The demographic information collected included gender, age, qualification, monthly income (in Saudi Riyals (SR)), mobile device type, and when respondents started using m-wallet services if they have used it (i.e., before or after the COVID19 pandemic). To identify the usage of the m-wallet among the respondents, two questions were asked about user awareness. Some illustrations were provided referring to m-wallet apps in Saudi Arabia such as STC Pay, Apple Pay, and Mada Pay to avoid misunderstanding of the questions. All of the survey items were mandatory to avoid the problem of missing values. This study used simple random sampling, which means that respondents had an equal chance of

being selected. The online survey was distributed among Saudi Arabian citizens in different age groups between October 22 and October 31, 2020. As the respondents are native Arabic speakers, they received an Arabic copy of the survey to ensure the accuracy of the responses. The study reached 394 respondents. Table 2 shows the basic descriptive statistics of the respondents. The total number of respondents is 394; 69.8% are females. The majority of the respondents were in two age groups: 21–30 (38.6%) and 31– 40 (28.2%). In addition, the majority of the respondents are bachelor's degree holders (67.3%). Out of the respondents, 72.8% had used m-wallet services whereas 27.2% had not previously used m-wallet services. Moreover, 46.7% had used m-wallet services before the COVID-19 pandemic while 25.9% only used them after the pandemic.

TABLE II. DESCRIPTIVE STATISTICS OF THE RESPONDENTS (N = 394)

| Demographic | | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Male | 119 | 30.2 % |
| | Female | 275 | 69.8 % |
| **Age** | Under 20 | 31 | 7.9 % |
| | 21–30 | 152 | 38.6 % |
| | 31–40 | 111 | 28.2 % |
| | 41–50 | 54 | 13.7 % |
| | Above 51 | 46 | 11.7 % |
| **Qualifications** | Secondary | 56 | 14.2 % |
| | Diploma | 31 | 7.9 % |
| | Bachelor's | 265 | 67.3 % |
| | Master's | 25 | 6.3 % |
| | Doctorate | 5 | 1.3 % |
| | Other | 12 | 3.0 % |
| **Income (in SR)** | Under 5000 | 125 | 31.7 % |
| | 5001–10,000 | 72 | 18.3 % |
| | 10,001–20,000 | 112 | 28.4 % |
| | Above 20,000 | 26 | 6.6 % |
| **Mobile device type** | IOS | 339 | 86.0 % |
| | Android | 54 | 13.7 % |
| | Other | 1 | 0.3 % |

| | | | |
|---|---|---|---|
| **Do you use mobile wallet services?** | Yes | 287 | 72.8 % |
| | No | 107 | 27.2 % |
| **When did you start using mobile wallet services?** | Before COVID-19 | 184 | 46.7 % |
| | After COVID-19 | 102 | 25.9 % |
| | Not yet | 108 | 27.4 % |

**Data Analysis Procedure**

Statistical Package for the Social Sciences (SPSS) software, Version 23, was used in this study to analyze the collected data. SPSS has been frequently used for analyzing data that were collected from surveys, especially in the previous studies on the user acceptance of new technology , , , . This study applied the simple regression analysis to test the hypotheses, in which it tested the relative influence of the independent variables on the dependent variable.

**Measurement Model: Reliability and Validity**

We evaluated the validity and reliability of the study to ensure that the survey measured the factors correctly. The measurement instrument's reliability and validity were assessed using reliability and convergent validity criteria. Cronbach's alpha was utilized to measure the internal consistency of the survey instrument's reliability. Each factor was tested for reliability and content validity. The

acceptable suggested value of the Cronbach's alpha test scores should be above 0.70 , and all of the scores in this study reached approximately 0.90 (refer to Table 3). This study's factors, which were adopted from the existing literature , showed strong content validity. Table 4 exhibits the correlations between the eight factors; the discriminant results of all of the factors have a valid value.

TABLE III. RELIABILITY OF THE EIGHT FACTORS

| Factor | Cronbach's Alpha | Item |
|---|---|---|
| **PU** | 0.920 | 6 |
| **PEOU** | 0.917 | 5 |
| **SEC** | 0.884 | 5 |
| **TR** | 0.937 | 6 |
| **FC** | 0.870 | 4 |
| **LC** | 0.932 | 5 |
| **ATT** | 0.941 | 5 |
| **IN** | 0.942 | 4 |
| **General Reliability** | 0.983 | 40 |

TABLE IV. CORRELATION MATRIX OF THE EIGHT FACTORS

| Factor | PU | PEOU | SEC | TR | FC | LC | ATT | IN |
|---|---|---|---|---|---|---|---|---|
| **PU** | 1.000 | | | | | | | |
| **PEOU** | 0.792 | 1.000 | | | | | | |
| **SEC** | 0.681 | 0.734 | 1.000 | | | | | |
| **TR** | 0.697 | 0.752 | 0.824 | 1.000 | | | | |
| **FC** | 0.674 | 0.775 | 0.729 | 0.793 | 1.000 | | | |
| **LC** | 0.774 | 0.766 | 0.734 | 0.759 | 0.807 | 1.000 | | |
| **ATT** | 0.803 | 0.781 | 0.733 | 0.751 | 0.784 | 0.897 | 1.000 | |
| **IN** | 0.806 | 0.767 | 0.720 | 0.734 | 0.746 | 0.874 | 0.901 | 1.000 |

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## RESULTS AND DISCUSSION

To assess the assumptions in this study, a straightforward regression approach was used. The findings show the intensity of the relationship effects between the components, and Table 5 shows the links between the factors and their significance. First, the results demonstrate a strong and favourable effect of perceived utility (PU) on attitudes towards the use of m-wallet services. (PU→ATT: β 0.896; p □ 0.001); thus, Where PU has a direct and favourable link with attitude towards the technology, H1 is supported and verified. Similar to this, the findings of five distinct research,,,, shown that PU had a significant and favourable impact on user attitude. Additionally, PU is the primary predictor of attitude, according to several research,,. This might be an example of how consumers' attitudes and intentions to utilise m-wallet services change when they discover that the technology is beneficial, enhances their performance, and speeds up the payment process.. The findings of this study show the existence of a positive and significant relationship of PEOU with attitude to adopt m-wallet services (PEOU→ATT: β 0.839; p □ 0.001), H2, supporting the findings of,,,,,. The study by contrast discovered that PEOU had a favourable but negligible effect on attitudes regarding the use of m-wallets. claimed that people could value simplicity of use more than it. This was due to the study's unique target group, which concentrated on informed professionals and students who were unconcerned with the ease of use element. In this study, the adoption of m-wallet services is

highly influenced by end-user attitudes, especially those of tech-savvy customers. This study suggests that businesses design their services to be highly simple and practical, having a substantial impact on users. During the COVID-19 epidemic, for instance, STC Pay allowed users to send and receive money according to contact number rather than a bank account number. H3 was also established and supported by the empirical findings regarding the existence of a positive and significant relationship between security and attitude toward m-wallet services (SEC→ATT: β 0.711; p □ 0.001), like recent studies have also reported (e.g., , [16,20]). In the Saudi context, the studies by  and  supported this finding, confirming the significant impact of security on the user's intentional behavior to adopt m-payment services.

The relationship proposed in H4 is supported, that is, trust positively and significantly affects the attitude to adopt mwallet services (TR→ATT: β 0.740; p □ 0.001). Several studies have confirmed this result [16,20,23,55], while  found no significant impact and influence from the trust factor on attitude to use m-payment. This is because this study used a specific company name that has a good reputation in Indonesia, so the trust factor did not arise for the respondents since they already trusted the good reputation of the company brand. In our study, we did not specify any company, so our result is different.

As hypothesized in H5 regarding facilitating conditions, we found a positive and significant relationship with attitude to adopt m-wallet services (FC→ATT: β 0.760; p □ 0.001). Thus, H5 is confirmed. The results of previous studies by

[6,7,16] are in line with this result. If the user believes that there is a complete infrastructure equipped for m-wallet usage such as devices, costs, and necessary help, this increases the effect on attitude to adopt m-wallet services. The relationship proposed in H6 is confirmed and supported, that is, the effect of LC on attitude. A positive and significant relationship was found between the two (LC→ATT: β 0.860; p □ 0.001). The studies of [16,43] confirmed this result. LC was found to be a useful predictor of attitude to adopt m-wallet services in Saudi Arabia. During the COVID-19 pandemic, shopping habits and, most importantly, daily lifestyles, have been changed, resulting in users adopting new technology such as m-wallet services. When users feel a product is compatible with their lifestyle and can make online payments and transactions anywhere and anytime, they can adopt m-wallet services directly. Finally, attitude has a direct and positive effect on user intention to use technology, Hypothesis 7 (ATT→IN: β 0.938; p □ 0.001). Previous studies have determined that attitude has a positive and significant influence on intention to use, according to previous research performed in countries such as the US , Malaysia , Indonesia , and India , . Among the different predictors of attitude to adopt mwallet services, PU was the strongest predictor of attitude, sequentially followed by LC, PEOU, and FC. While security and trust presented as the least effective predictors compared by other factors, this finding differs from the study by , who argued that trust and security were the best predictors for digital payment, including m-wallet services. The mwallet is encrypted using different technologies such as personal identification numbers

(PINs), fingerprints, or biometrics that are highly secure even if a mobile device is lost or stolen. Users trust that m-wallet service technology provides what they promise and keeps their information encrypted. In addition, user trust in the providers is supported by several regulations on financial transactions in Saudi Arabia. To sum up, the results show that PU (H1), PEOU (H2), security (H3), trust (H4), FC (H5), and LC (H6) have a positive and significant relationship with attitude. Thus, attitude (H7) has a positive and meaningful influence on adopting m-wallet services in Saudi Arabia

TABLE V. EVALUATION OF THE CONCEPTUAL MODEL WHERE P $\leq$ 0.001

| Hypothesis | Relationship | $R^2$ | β | T | p-value | Result |
|---|---|---|---|---|---|---|
| H1 | PU → ATT | 0.645 | 0.896 | 26.706 | 0.000 | Supported |
| H2 | PEOU → ATT | 0.609 | 0.839 | 24.720 | 0.000 | Supported |
| H3 | SEC → ATT | 0.537 | 0.711 | 21.305 | 0.000 | Supported |
| H4 | TR → ATT | 0.564 | 0.740 | 22.503 | 0.000 | Supported |
| H5 | FC →ATT | 0.614 | 0.760 | 24.968 | 0.000 | Supported |
| H6 | LC →ATT | 0.805 | 0.860 | 40.221 | 0.000 | Supported |
| H7 | ATT → IN | 0.811 | 0.938 | 41.027 | 0.000 | Supported |

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**Conclusion:**

The purpose of this study was to investigate how well-liked and widely used m-wallet services are among Saudi Arabian customers. In order to create a conceptual model of technology adoption, the TAM and UTAUT models were applied. By studying the effects of several behavioural characteristics on the user's behavioural intention to embrace m-wallet services, this study added to the body of research already done on the topic of m-wallet adoption. To the best of our knowledge, we come to the conclusion that this is the first study that has identified the elements that influence end-user acceptance of mwallet services in Saudi Arabia. The findings are consistent with other research on the acceptability and deployment of mobile payment technologies [5, , , namely that PU, PEOU, security, trust, FC, and LC have a favourable and significant influence on user attitude towards the usage of m-wallet services. Therefore, in Saudi Arabia, the desire to embrace m-wallet services is significantly influenced by the attitude element. PU was discovered to be the primary indicator of user desire to utilise m-wallet services, with LC, PEOU, and FC following closely behind. Additionally, users' attitudes towards using m-wallet services are positively impacted by security and trust. It is important to note that the COVID-19 outbreak has significantly altered Saudi Arabia's use of m-wallet services. Since the start of the epidemic, almost 26% of the respondents had only recently begun utilising m-wallet services. These elements are very important to service providers and business owners., banks, and application developers because users will continuously adopt m-wallet services. Practitioners will be able to use

these findings to improve their adoption strategies and the quality of their m-wallet services. For future research, a number of factors could be considered, such as perceived risk, cost, enjoyment, and m-wallet service benefits and rewards. The moderating effects of age and gender of the user to accept and adopt mwallet services could be concentrated on in future studies. User satisfaction is an important factor to determine. Thus, future studies should emphasize satisfaction with actual usage in the Saudi Arabian context.

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