

## Consumers' Intention to Use E-Wallets During and after the Covid-19 Pandemic: Factors Influencing Adoption in Saudi Arabia


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نية المستهلكين لاستخدام المحافظ الإلكترونية أثناء وبعد جائحة كورونا كوفيد-19: العوامل المؤثرة على اعتمادها وتبنيها في المملكة العربية السعودية

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### Abstract:

The COVID-19 pandemic has caused far-reaching effects on various aspects of life, leading to shifts in individual behaviors, the adoption of novel technologies, and the emergence of new lifestyles within a virus-containment environment. As people attempt to fulfil their needs while adhering to precautionary measures against the virus, there has been a noticeable transition in consumer preferences from conventional payment methods to digital alternatives like e-wallets and digital wallets. Considering this, this study seeks to investigate the elements that impact consumer intentions to use e-wallets In Saudi Arabia, and to examine the impact of COVID-19 on the intents of consumers regarding employing electronic wallets. The research employed a survey method to collect primary data from 422 respondents, ensuring a representative sample through random selection from the target population. The investigation findings emphasis the significant impact of specific factors on consumers' intentions to use e-wallets during and after the pandemic. These factors are "Safe and Convenient," "Recommended Precautions and Restrictions," "Change of Pattern of Business and Shopping," and "Rules and Regulations." Each of these variables exhibits a favorable and statistically meaningful effect on consumer behavior, underscoring the significance of these considerations in shaping payment preferences during challenging times. However, Future research should explore long-term shifts in e-wallet adoption, considering demographic variations, technological literacy, and cultural attitudes. Examining emerging technologies like blockchain and AI could offer insights into consumer trust and digital payment evolution.

**Keywords:** COVID-19, Consumer Intentions, E-Wallets, Digital Payment, Consumer Behavior, Lifestyle Change.

### المخلص:

تسببت الجائحة الناجمة عن فيروس كورونا كوفيد-19 تأثيرات بعيدة المدى على مختلف جوانب الحياة، مما أدى إلى تحولات في سلوكيات الأفراد، واعتماد تقنيات جديدة، وظهور أساليب حياة جديدة في بيئة محددة بالقيود. حيث يحاول الناس تلبية احتياجاتهم مع الالتزام بالتدابير الاحترازية ضد الفيروس، فقد كان هناك انتقال ملحوظ في تفضيلات المستهلكين من طرق الدفع التقليدية إلى بدائل رقمية مثل المحافظ الإلكترونية والمحافظ الرقمية. نظراً لذلك، يسعى هذا المقال إلى التحقيق في العوامل التي تؤثر على نوايا المستهلكين في استخدام المحافظ الإلكترونية في المملكة العربية السعودية، خلال وبعد وباء كوفيد-19، وفحص تأثير كوفيد-19 على نوايا المستهلكين فيما يتعلق باستخدام المحافظ الإلكترونية. استخدم البحث أسلوب المسح لجمع البيانات الأولية من 422 مستجيباً، مضمناً عينة ممثلة من خلال العينة العشوائية من الجمهور المستهدف. تشدد نتائج البحث على الأثر الكبير للعوامل المحددة على نوايا المستهلكين في استخدام المحافظ الإلكترونية خلال وبعد الوباء. تظهر هذه العوامل "الآمنة والمريحة"، "الاحتياطات والقيود الموسمي بها"، "تغيير نمط الأعمال والتسوق"، و "القوانين واللوائح". كل من هذه المتغيرات تظهر تأثيراً إيجابياً وذو دلالة إحصائية على سلوك المستهلك، مؤكدة على أهمية هذه الاعتبارات في تشكيل تفضيلات الدفع خلال الأوقات الصعبة. ومع ذلك، ينبغي أن تستكشف الأبحاث المستقبلية التحولات طويلة الأمد في تبني المحافظ الإلكترونية، مع مراعاة الفروقات الديموغرافية، ومستوى الإلمام بالتكنولوجيا، والمواقف الثقافية. قد يوفر فحص التقنيات الناشئة مثل سلاسل كتل البيانات والدكاء الاصطناعي رؤى حول ثقة المستهلك وتطور أنظمة الدفع الرقمي.

**الكلمات المفتاحية:** جائحة (COVID-19)، نوايا المستهلكين، محافظ إلكترونية، الدفع الرقمي، سلوك المستهلك، تغيير نمط الحياة.

## 1. Introduction

The COVID-19 pandemic has profoundly impacted various aspects of life, leading to changes in individual behaviours, new technologies, and new ways of living in a virus-containment environment (Arrafi & Ghabban, 2021). People have started adopting alternative methods to fulfil their needs while taking precautions to stop the coronavirus from spreading (Patil & Patil, 2020). The pandemic has changed how people act and how the government enforces rules like social isolation and lockdowns. It has also caused the world economy to slow down and become less balanced (Alrashed et al., 2020; Nicola et al., 2020). The global inter connectivity of information and communication technologies and the internet has made it much easier to take precautions and protect against the COVID-19 pandemic. This has also made it possible for banking and financial services to become more digital, which is a good thing (Lew et al., 2020). Because of this, electronic wallets and other digital payment options have become more popular with customers than traditional payment methods. Making sure that innovation and growth continue in the payment sector while also keeping an eye on and judging these changes in consumer behavior is now necessary to meet customer needs. Electronic devices consist of desktop computers, laptops, tablets, and mobile phones. are now a prevalent occurrence in financial transactions. Digital wallets have eliminated the requirement for tangible wallets or cash, allowing users to keep their credit cards on them like debit or credit cards, gift cards, prepaid money cards, or mobile wallets (Jonker et al., 2022). The global health crisis has highlighted the importance and benefits of electronic wallets among consumers, as contact-based or cash payments have been identified as potential sources of infection. The World Hospital Organisation has stated who the virus is capable of survive on cash and banknotes for 2-4 days, making digital payment systems safer and faster. Consequently, e-wallets have emerged as a protective mode of payment during and after the pandemic, facilitating social distancing and contactless transactions.

As the pandemic continues for an extended period, its impact on consumer expectations and behaviour has become more noticeable. Consumers actively

try to minimise face-to-face contact whenever possible, leading to increased usage of e-wallets. Even after the pandemic, these changes in consumer behaviour are expected to persist (Puriwat & Tripopsakul, 2021). Therefore, it has become crucial for researchers to analyse the elements impacting consumer intentions to use e-wallets during and after the pandemic.

While e-wallets and digital payment systems existed before the pandemic, their popularity has significantly increased in the post-COVID-19 era. Previously, only a small portion of the population preferred digital payment methods, and that too, for limited financial transactions (Baabdullah et al., 2019; Ramadan & Aita, 2018). However, after the pandemic, people have rapidly adopted digital payment methods, including e-wallets, for almost every transaction in Saudi Arabia. E-wallets have become a necessity for daily life worldwide as people have realised their benefits of convenience, speed, safety, and ease of use. The COVID-19 crisis, with the support of government and its perceived usefulness, has encouraged consumers to use e-wallets. Therefore, this paper aims to determine the contributing elements. influencing consumer intentions to utilise electronic wallets amid the COVID-19 outbreak in Saudi Arabia and examine how COVID-19 has influenced consumer intentions Using electronic wallets in the country.

This paper addresses research gaps on e-wallets despite their growing acceptance. Many studies have analysed the rise in digital payments during the COVID-19 epidemic, but few have explored whether these behavioural trends will continue. Furthermore, demographic and socio-cultural factors including gender, employment, digital literacy, and cultural norms influence e-wallet usage in Saudi Arabia, yet previous research generally ignore them. As customer worries about cybersecurity, data privacy, and fraud become unexplored, security and trust issues also exist. Although government policies and fintech laws shape digital payment ecosystems, little is known about their impact on e-wallet use. Finally, AI, blockchain, and biometric authentication are unknown but may improve digital payment security, efficiency, and customer confidence. To fill these gaps, this paper analyses the factors affecting e-wallet uptake in Saudi Arabia,

especially during and after the COVID-19 epidemic, and offers insights into digital finance policy and technology. Hence the following research objectives are brought into the study to address the research gap of the previous studies.

The research paper has the following:

### 1.1 Research Questions

The research paper has several pertinent research questions. These questions aim to explore the dynamics of consumer behavior and the factors influencing the adoption of e-wallets during and after the COVID-19 pandemic. The potential research questions could be framed as follows:

1. What are the key factors influencing consumer intentions to adopt e-wallets in Saudi Arabia during and after the COVID-19 pandemic?
2. How has the COVID-19 pandemic influenced consumer preferences for payment methods, specifically the shift from traditional methods to e-wallets?
3. What specific factors, such as safety, convenience, and regulatory changes, significantly affect the adoption of e-wallets among consumers in Saudi Arabia?
4. What recommendations can be made to enhance the adoption of e-wallets in the post-pandemic era based on consumer intentions and influencing factors?

### 1.2 Research objectives:

The aim of this study is to explore various aspects related to consumer behavior and the adoption of e-wallets during the COVID-19 pandemic. The specific research objectives can be outlined as follows:

1. To explore the factors influencing consumer intentions to use e-wallets in Saudi Arabia during and after the COVID-19 pandemic, focusing on the shift from traditional payment methods to digital alternatives.
2. To identify and analyze the specific factors that significantly impact the adoption of e-wallets, including "Safe and Convenient," "Recommended Precautions and Restrictions," "Change of Pattern of Business and Shopping," and "Rules and Regulations."
3. To investigate demographic differences, such as gender-based variations, in the adoption and

usage patterns of e-wallets, and assess how these differences are influenced by the pandemic.

4. To evaluate the overall impact of the COVID-19 pandemic on consumer behavior, particularly in terms of changes in payment preferences and the adoption of digital financial services.
5. To offer recommendations for businesses and policymakers on strategies to enhance the adoption of e-wallets in the post-pandemic era, based on the research findings regarding consumer intentions and influencing factors.

## 2. Literature Review

During customers' actions, the Covid-19 epidemic, and the adoption of digital payments were significantly impacted. Alswaigh and aloud (2021) conducted a study in Saudi Arabia, revealing that approximately 26% of respondents adopted M-wallet services due to the pandemic. Personal safety became a significant factor in consumer behaviour, as highlighted by Daragmeh et al. (2021), who found that adopting e-wallets helped users maintain social distancing measures. George and Sunny (2021) emphasised this increased reliance on mobile wallets, while Zhao and Bacao (2021) observed that M-payment's reliability, convenience, and contactless nature contributed to its widespread adoption. Additionally, Shishah and Alhelaly (2021) explored the adoption of contactless payment technology in Saudi Arabia, where an inclination towards contactless transactions was observed due to hygiene and health safety concerns.

According to Alflayyeh et al., digital payments have been crucial to maintaining service continuity throughout the global health crisis (2020). Their research showed that Saudi Arabian shops and customers are becoming more and more accustomed to contactless transactions, especially those involving digital payment methods. Additionally, during the epidemic, Alsaggaf (2020) emphasized the value of digital solutions in sustaining services and easing the shift to cashless transactions in society. According to Hassounah et al. (2020) the research, e-wallets are a common method of payment, supporting the desire for cashless transactions. When taken as a whole, these studies highlight how important digital payments

are to maintaining service continuity and encouraging contactless transactions as a safer option during the epidemic.

According to Abu Daqar et al. (2021), digital payments have also been essential in fostering economic stability. Their analysis emphasized the role that digital payment systems, such contactless payments, play in upholding social distance policies and stabilizing the social economy. Similarly, Havrlant et al. (2020) noted that by enabling safe and effective financial transactions, digital payment systems have been crucial to rescuing the economy during the trying lockdown time. These results demonstrate how crucial digital payments are to maintaining economic stability and enabling the economy to function in these historic times.

The COVID-19 pandemic has highlighted how important it is for government policies and digital transformation to work together to navigate obstacles and advance digital solutions. Hudrea et al. (2023) clarified the difficulties Gulf nations, especially Saudi Arabia, have in building their digital infrastructure and emphasized the need of using digital solutions to maintain the availability of critical services while putting public safety first. Additionally, Alsaggaf (2020) emphasized the critical role that laws and policies play in promoting digital transformation and making it simple for Saudi Arabians to conduct digital transactions. The government's policies have facilitated the adoption of digital solutions, promoting the shift to cashless transactions, and guaranteeing the accessibility of digital services. These regulations have made it easier for innovation to flourish, encouraged the growth of digital infrastructure, and encouraged the safe and easy use of digital technologies.

The use of electronic payment systems is influenced by a number of factors that determine consumer intentions. In his analysis of the variables influencing customers' intentions to use digital payment methods and banking, Alkhowaiter (2020) identified perceived utility, security, and trust as crucial criteria influencing adoption. Comparably, Alabdan and Sulphay's (2020) investigation of Saudi Arabia's acceptance of cellphone payment methods revealed that factors like utility, ease of use, security, and awareness affect their uptake. Comprehending and tackling these variables can

aid in advancing the extensive integration of electronic payment methods and enable a smooth shift towards a cashless community.

Recent years have seen a notable rise in the use of digital wallets and mobile payments, according to Almuhammadi (2020). Without requiring real currency or credit cards, these digital payment systems give customers the ease of conducting transactions whenever and wherever they choose. In addition, the global dissemination of COVID-19 has accelerated the transition to electronic payment methods, as noted by Alessa et al. (2021). According to their research, the epidemic has affected customer choices, with many choosing digital payment methods in an effort to avoid physical touch and follow social distancing guidelines.

The COVID-19 epidemic has had a significant impact on the economy, leading to instability and changes in consumer behavior. Tanveer et al. (2020) emphasized how the global health crisis has produced economic instability and how this has changed customer behavior with relation to payment methods and purchases. The importance of digital payments in keeping businesses afloat during this crisis was emphasized by the report. In a similar vein, Revert (2024) noted alterations in consumer purchasing habits amid the epidemic, as social separation became increasingly important. In order to minimize in-person interactions, consumers have been shopping more online and relying more on digital payment methods for easy, contactless transactions.

The Covid-19 pandemic has had a discernible impact on consumer behavior and satisfaction. A study by Brandtner et al. (2021) found that waiting times, product availability, and store architecture all had an impact on how satisfied customers were throughout the epidemic. Furthermore, Carvalho et al. (2020) examined how the epidemic lockdowns affected consumer behavior and found that the limitations put in place during the lockdowns caused a drop in overall purchasing, especially in particular industries. Customers' whole purchasing experience has been impacted by these disruptions, which has decreased their level of happiness.

Consumer behavior has been greatly impacted by the COVID-19 pandemic, especially when it comes to safety and health concerns. Hesham et al.'s

(2021) study examined how the pandemic affected customers' decisions to buy, particularly when it came to healthful food. According to the survey, people are more likely to buy nutritious food in reaction to the pandemic because they are becoming more conscious of how important it is to keep a healthy diet in order to boost immunity and reduce health risks. Puttaiah and colleagues (2020) underscored the significance of contactless payment modalities, including electronic wallets, in guaranteeing security and reducing physical contact throughout the worldwide pandemic. Due to concerns about the virus spreading over surface, customers are now more likely to use contactless payment methods that do not require actual cash or card exchanges.

### Challenges and Risks

Financial transactions are more convenient and efficient with e-wallets, but cybersecurity and fraud worries rise. Cybercriminals target e-wallets because they hold sensitive financial data. Data breaches, malware, phishing attacks, and unsecured networks might risk financial losses and unauthorized access Al-Qubati & Al-Shaibany, (2024). Security is further complicated by identity theft and changing regulations. To reduce these dangers, encryption, tokenization, tighter legislation, and security framework improvements should be introduced. Safe digital payment education is also crucial to reduce vulnerabilities. Secure and sustained e-wallet use requires constant security development and user awareness as cyber threats grow.

Insecure encryption and session management allow attackers to capture transactions and acquire access David & Kathrine (2019). Cybercriminals use PINs and passwords to steal identities. Unauthorized withdrawals and data theft make e-wallet security worse. Insecure devices and networks also risk viruses and hacking Al-Qubati & Al-Shaibany (2024). To mitigate these dangers, biometric authentication and blockchain technology are being investigated, and regulatory frameworks are evolving to secure user data and enforce cybersecurity rules Hartono (2022).

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breaches, malware, phishing attacks, and unsecured networks might risk financial losses and unauthorized access (Zulaiha et al., 2024; Al-Qubati & Al-Shaibany, 2024). Security is further complicated by identity theft and changing regulations (2024). To reduce these dangers, encryption, tokenization, tighter legislation, and security framework improvements should be introduced (-, 2024; Al-Qubati & Al-Shaibany, 2024). Safe digital payment education is also crucial to reduce vulnerabilities (Al-Qubati & Al-Shaibany, 2024). Secure and sustained e-wallet use requires constant security development and user awareness as cyber threats grow. Metho-payment methods that do not require actual cash or card exchanges.

### A series of theories have been generated for this study based on the studied literature:

H1: In Saudi Arabia, consumers' intentions to use e-wallets are highly influenced by convenience and safety. Puttaiah et al. (2020) and Daragmeh's research et al. (2021) emphasize the significance of convenience and safety factors in consumer behavior. Using e-wallets gives consumers a secure, contactless payment alternative that addresses their worries over hygiene and health during and after the pandemic.

H2: The intention of Saudi Arabian customers to embrace electronic wallets is greatly influenced by precautions and limits. Studies by Hesham et al. (2021) and Alsaggaf (2020) highlight how government regulations and recommendations affect consumer behavior. Consumer preferences for payments and purchases have changed as a result of the pandemic's implementation of advised safeguards and restrictions.

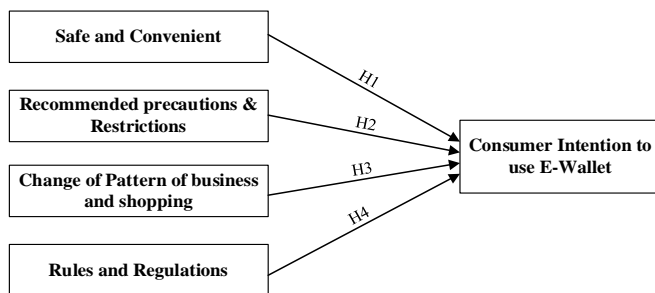
H3: User intention to use electronic wallets in Saudi Arabia is significantly impacted by changes in the pattern of business and shopping. The research conducted by Tanveer (2020) and Carvalho et al. (2020) sheds insight on the ways in which the pandemic altered consumer behavior and purchasing habits. Consumer preferences for payment methods have been altered by the move towards online shopping as well as modifications to the availability and accessibility of physical establishments.

H4: In Saudi Arabia, rules and regulations have a big influence on users' intentions to use e-wallets.

The research conducted in 2020 by Alsaggaf and Havrlant et al. emphasizes the role that rules and regulations play in promoting digital transformation and providing access to digital transactions. Consumer trust and the likelihood that they will use electronic wallets can be positively impacted by clear laws and regulations pertaining to digital payments as well as by the support and promotion of digital solutions.

Figure 1 presents the conceptual framework of the study along with the aspects that are anticipated to impact consumers' plans to use wireless wallets in Saudi Arabia. The study model is visually represented by the framework, which takes into account the hypothesized links between the discovered elements and consumer intention.

In conclusion, the COVID-19 pandemic had a significant impact on consumer behavior, the uptake of digital payments, economic stability, the role of digital transformation, and governmental regulations. It is possible to encourage the use of electronic payment systems, guarantee service continuity, advance economic stability, and address health and safety concerns by having a thorough understanding of these dynamics and the factors influencing customer intentions.



**Figure 1:** *Conceptual Framework of the Study*

### 3. Research Methodology

In light of the COVID-19 pandemic, the study employed a quantitative research methodology to examine the variables impacting Saudi Arabian consumers' aspirations to adopt e-wallets. The quantitative method allowed for collecting numerical data and applying statistical analysis to derive meaningful insights.

One way to conduct a survey was employed to collect primary data from 422 respondents. Random sampling was utilised to ensure a representative sample from the target population.

An organised questionnaire was employed in the study to collect quantitative data on consumer behaviour and e-wallet adoption. Utilising statistical methods like factor assessment and multiple regressions were used to analyse the collected data. A factor analysis was performed to determine the fundamental elements impacting consumer intentions, while multiple regression analysis assessed the relationship between these factors and consumer intentions. These statistical techniques helped quantify the power and significance showing the connections among the variables. Further, the study measured consumer attitudes and intentions towards e-wallet adoption using a standardised questionnaire with closed-ended questions and Likert scale items. The questionnaire was carefully constructed based on research and expert comments to ensure content validity. Before full-scale dissemination, a pilot study tested clarity, relevance, and dependability to make required changes. The COVID-19 pandemic questionnaire was delivered online to maximise reach and accessibility. For instrument validity and reliability, Cronbach's alpha was used to quantify internal consistency, while component analysis was used to verify concept validity.

While the present study attempts to address the scope of the study there are still some limitations that exist in the study that cannot be ignored. To clarify study limitations, numerous aspects are evaluated. The data was collected between December 2020 and February 2021, when the COVID-19 pandemic may have affected consumer behaviour. Riyadh, Jeddah, and the Eastern Province were the study's main urban regions, which may not completely represent rural consumer intents. While random sampling was employed to enhance representativeness, the voluntary nature of survey participation may have introduced self-selection bias. The findings may apply to all Saudi Arabian customers with caution due to demographic differences in digital literacy, economic situations, and access to e-wallet services. This study also focusses on consumer e-wallet intentions rather than usage hence, technological constraints, security concerns, and financial habits, intention could be good predictor of adoption but does not necessarily lead to action. The study did not examine post-adoption

behaviours, transaction frequencies, or long-term e-wallet use. The focus on intention gives useful insights into adoption motivations but does not cover the whole range of customer experiences with e-wallets.

#### 4. Examination and Commentary of the Outcomes

##### 4.1 Demographic Results

Table 1 provides an outline of the general demographic traits of the respondents in the study. The analysis considered a sample of 422 respondents, 58.3% males and 41.7% females. The findings indicate potential gender-based variations in e-wallet adoption and usage patterns. Further analysis is needed to explore differences in intentions and behaviours between genders.

**Table 1.**

*Demographic results of respondents*

Variables		Respondents	Percentage %
Gender	Male	246	58.3
	Female	176	41.7
	Total	422	100
Age	21-30 yrs.	118	28.0
	>30-40 yrs.	182	43.1
	>40 yrs.	122	28.9
	Total	422	100
Occupation	Service	94	22.3
	Business	102	24.2
	Housewife	114	27.0
	Others	112	26.5
	Total	422	100

Regarding age distribution, most respondents belonged to the >30-40 age group (43.1%), followed by the 21-30 age group (28.0%). The remaining respondents were >40 years of age (28.9%). These age groups may exhibit different levels of familiarity, comfort, and trust in using e-wallets. The findings suggest that younger age groups may be more open to adopting e-wallets, while older respondents may have different preferences or concerns about digital payment solutions.

Regarding occupation, the respondents were categorised into separate groups. Approximately 22.3% were working in services, 24.2% were business owners, 27.0% identified as housewives, and the remaining 26.5% were engaged in other

types of work. These occupational differences may influence the respondents' financial needs, lifestyles, and exposure to digital payment solutions. Therefore, there may be variations in e-wallet adoption and usage patterns based on occupation.

Based on the demographic characteristics, it is crucial to consider these factors in interpreting the findings related to consumer intentions to use e-wallets during and after the pandemic. Further analysis is needed to explore the relationships between demographic variables and consumer intentions. This analysis will provide a more comprehensive comprehension of the elements driving the adoption of e-wallets, considering gender, age, and occupation, as well as potential interactions between these factors.

##### 4.2 Factor Analysis

Table 2 displays the outcomes of two important Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) of sample adequacy are two statistical tests.

The KMO value of 0.917 indicates who the number of samples use in the context of factorization is adequate. The KMO measure assesses the degree to which the data collection's variables can be used in factor analysis. Greater KMO values that are nearer one indicate an improved fit for factor assessment. In this case, the KMO value of 0.917 suggests the fact that it occurred sample size is appropriate, indicating that the variables chosen for the analysis adequately represent the underlying factors being investigated.

**Table 2.**

*KMO and Bartlett's Test of Sphericity, and Measure of Sampling Adequacy*

KMO		0.917
Bartlett's Test of Sphericity	Approx. Chi-Square	2834.463
	df	120
	Sig.	0.000

Furthermore, the Bartlett's Test of Sphericity is significant. The Bartlett Test evaluates if the matrix of correlations among Equations are suitable for factor analysis. A significant result indicates that the variables in the dataset are not completely uncorrelated and that there is sufficient shared

variance for factor analysis. Therefore, the significant result in this test confirms that the variables selected in light of the factor assessment are suitable for further examination. The results of the KMO measure and Bartlett's Test of Sphericity suggest that data in question set used in the study is suitable for conducting. Evaluation of factors. These statistical tests ensure that the chosen variables adequately capture the underlying factors being investigated, allowing for meaningful insights to be derived from the subsequent factor evaluation.

The dataset was subjected to the analysis of principal components, resulting in the identification of four factors. Eigenvalues greater than 1 were used to determine the number of factors to retain. represent the amount of variation clarified by each principal component. In this case, the eigenvalues were examined, and it was found that the first four components had eigenvalues greater than 1, indicating their significance in explaining the difference between the initial variables.

Furthermore, Table 3 shows the variance extracted from the exploratory factor analysis. Variance extraction refers to the percentage of overall variation in the original components that is reported by each factor. It provides insights into the extent of the variation in the dataset is clarified by the identified factors. Higher variance extracted values indicate that the factors capture a larger a section of the total difference in the variables.

**Table 3.**

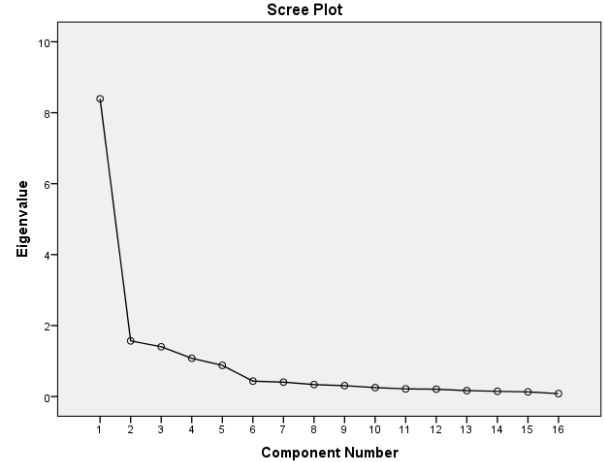
*Variance Extracted "Exploratory Factor Analysis" (EFA)*

Comp onent	Initial Eigenvalues			Totals of Squared The load values		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.394	52.463	52.463	4.907	30.669	30.669
2	1.569	9.805	62.267	2.602	16.260	46.928
3	1.404	8.772	71.040	2.539	15.870	62.798
4	1.078	6.738	77.778	2.397	14.979	77.778
5	0.878	5.490	83.268			
6	0.434	2.712	85.980			
7	0.405	2.532	88.512			
8	0.336	2.100	90.611			
9	0.305	1.908	92.519			
10	0.250	1.565	94.084			

11	0.215	1.346	95.430
12	0.206	1.287	96.717
13	0.167	1.042	97.759
14	0.147	0.917	98.676
15	0.129	0.809	99.485
16	0.082	0.515	100.000

By examining the variance extracted and the principal component analysis results, researchers can better understand the underlying structure and relationships among the variables. These findings contribute to the identification and interpretation of the elements that impact consumer plans to use using e-wallets on the internet COVID-19 pandemic.

In Figure 2, the Eigenvalues are plotted against the number of components or factors, providing a visual representation of the variance explained by each factor. The elbow point, characterised by a distinct bend or change in the slope of the Eigenvalue curve, is a valuable tool in determining the ideal quantity of factors to retain within the examination.



**Figure 2:** *Eigenvalues and Variance Explained for E-Wallet Adoption Factors*

Upon examination of Figure 2, it is evident that an elbow is observed at the 4th component. This suggests a significant transition in the variance explained by the factors. The first four components collectively account for a substantial amount of variance in the original variables, indicating their importance in capturing the underlying structure and relationships within the dataset. By retaining these four factors, the study effectively captures a



significant portion of the variability present in the data. Identifying the elbow point in Figure 2 supports this decision, providing empirical evidence that these factors hold meaningful and valuable information regarding consumer intentions to following the COVID-19 pandemic, employ electronic wallets.

#### 4.3 'Factor Constructs' and Reliability Analysis

The study investigated what influenced people to employ electronic purses across the COVID-19 epidemic, and the outcomes are summarized in Table 4. The first construct, "Safe and Convenient," stands for consumers' beliefs about the security and using electronic wallets during the global health crisis. As the statements in this construct, such as "E-wallets are preferred due to perceived usefulness, perceived security, and trust," exhibited strong factor loadings ranging from 0.782 to 0.956, demonstrating a significant link between the statements and the construct. Using Cronbach's Alpha design was 0.956, indicating strong dependability.

**Table 4.**

*Factors, Factor Loading, and Reliability*

SL. No.	Statements	Factor Loadings	Factor Reliability
<b>1. Safe and Convenient</b>			<b>0.956</b>
1.	Personal safety led to behavioural changes among people and the use of E-Wallet	0.865	
2.	E-wallets are preferred due to Perceived usefulness, perceived security, and trust	0.850	
3.	E-wallets were found to be a form of protective behaviour among consumers during the pandemic situation	0.846	
4.	Consumers conveniently use mobile wallets to meet their daily needs	0.827	
5.	E-wallets are used during the COVID-19 pandemic due to their reliability and no-contact features.	0.805	
6.	The government had conveniently and effectively disbursed funds by digital mode of transactions	0.782	
<b>2. Recommended Precautions &amp; Restrictions</b>			<b>0.923</b>
1.	I prefer to use E-wallet in order to maintain social distancing	0.816	
2.	I am using E-Wallets due to lockdown restrictions during Covid- 19	0.794	
3.	I prefer to use E-wallets for my contactless transactions as a recommended precaution during Covid-19	0.715	
<b>3. Change of Pattern of business and shopping</b>			<b>0.724</b>
1.	I switched to home delivery and digital payment mode option during the Covid-19 pandemic situation	0.814	

2.	Adopting indirect transactions has facilitated to stabilise the social economy	0.792
3.	Consumers are adopting digital payments and e-wallets for their transactions to maintain social distance	0.741
4.	Companies opted for online financing and payments to run their business smoothly	0.536
<b>4. Rules and Regulations</b>		<b>0.832</b>
1.	The government had passed guidelines to follow social distancing and encourage digital transactions	0.820
2.	Implementation of new rules and regulations leads to digital solutions for essential services	0.813
3.	Rules and regulations helped to decrease the virus spread by encouraging the active use of e-wallets	0.799

The second construct, "Recommended Precautions & Restrictions," addresses using e-wallets as a preventative strategy during and after the pandemic, considering things like social isolation and lockdown regulations. E-wallet statements, like "I prefer to use e-wallets to maintain social distancing," had factor loadings of 0.715–0.923, indicating strong internal consistency among them. This construct's overall dependability was calculated to be 0.923.

This shift in consumer and company behavior was mirrored in the third construct, "Change of Pattern of Business and Shopping," which was affected by the epidemic. Factor loadings ranged from 0.536 to 0.814 for statements in this construct, such as "I opted for home delivery as well as electronic payment mode when the COVID-19 pandemic was in effect." This construct's reliability was lower than others, but at 0.724, it was still above average.

The fourth construct, "Rules and Regulations," analysed the effect of government legislation and policies on the spread of E-wallets. Some examples of statements that fall under this construct include: "Government had passed the guidelines to follow social distancing and encourage digital transactions," which has a factor loading of 0.820 and an excellent overall reliability of 0.832.

Results and conclusions are reliable because of substantial factor loadings and adequate reliability for all constructs. E-wallets are seen as a safe and convenient method of transaction by customers during and after the pandemic, with adoption being driven by precautionary measures and government laws, as revealed by the study. In addition, the epidemic has altered business and consumer habits,

resulting in more people turning to E-wallets and other forms of electronic payment.

It is worth noting that the internal consistency of the constructs in this study is indicated by the dependability of the factors, as based on the Cronbach's Alpha—the greater Cronbach's Alpha, the more trustworthy the measurement of the construct. Table 5 shows the Reliability Statistics in which the total number of items is 16 and Cronbach's Alpha has an estimated value of 0.928.

**Table 5.**

*Measurements of Consistency*

Cronbach's Alpha	N of Items
0.928	16

#### 4.4 Factor Development and Variance Analysis

Four distinct factors emerged from the analysis in the development of elements affecting the uptake of e-wallets amid the COVID-19 outbreak. The first factor, labelled as "Safe and Convenient" (Variance = 30.669), encompasses statements such as personal safety leading to behavioral changes among people and utilizing electronic money wallets, e-wallets being preferred due to perceived usefulness, security, and trust, E-Wallets serving as a safeguard behavior among consumers Throughout the pandemic of disease, and consumers finding convenience in using mobile wallets to meet their daily needs. Additionally, e-wallets are valued for their reliability and no-contact features, while the government's efficient disbursement of funds through digital transactions plays a significant role in this factor.

The second factor, denoted as "Recommended Precautions & Restrictions" (Variance = 16.260), includes statements indicating that individuals prefer using e-wallets to maintain social distancing, as well as using e-wallets due to lockdown restrictions during COVID-19. Moreover, e-wallets are favoured for their ability to enable contactless transactions as recommended precautions during the pandemic.

The third element, "Change of Pattern of Business and Shopping" (Variance = 15.870), includes claims that, during and after the epidemic, customers shifted to digital payment methods and home delivery. Additionally, the social economy has stabilized thanks to the adoption of indirect transactions, and consumers are increasingly employing digital payments and e-wallets to preserve their social distance. To guarantee

seamless company operations, companies have also chosen to use online financing and payment systems.

Lastly, statements showing that the government's policies on social distancing and encouraging digital transactions have encouraged the adoption of e-wallets are included in the fourth category, "Rules and Regulations" (Variance = 14.979). Furthermore, the implementation of new rules and regulations has led to the development of digital solutions for essential services, and adherence to these regulations has been instrumental in controlling the virus's dissemination, encouraging the active use of e-wallets.

These factors contribute significantly to understanding the Adoption of e-wallets amid the COVID-19 outbreak providing valuable insights for policymakers, businesses, and consumers.

#### 4.5 Multiple Regression Analysis and Comparative Insights

The research used a number of regression analyses in order to assess the collective influence of four constructs - Safe and Convenient, Recommended Precautions and Restrictions, Change of Pattern of Business and Shopping, and Rules and Regulations - on the "Overall Influence of COVID-19 on Consumer Goal to Utilise e-wallet." The high R-square value of 0.820 (82% of variance explained) indicates that these constructs greatly influence consumers' plans to take up e-wallets during and after the pandemic (see Table 6).

Table 6.

*Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.907 <sup>a</sup>	0.823	0.820	0.34007

Forecasters: (Invariant), Safe and Convenient, recommended precautions and Restrictions, Change of Pattern of business and shopping, Rules, and Regulations

Similar studies have also shown the importance of these constructs in understanding consumer behaviour during and after crises and adopting digital payment methods. Zhao and Bacao (2021) found perceived convenience and security to influence mobile payment adoption during COVID-19 in China. Adhikary et al. (2021) highlighted the impact of government policies on digital payment adoption in India. Lee and Kwon

(2022) observed a shift towards contactless payments and online shopping during the pandemic in South Korea, aligning with our findings on precautionary measures. Chowdhury (2023) identified changes in consumer behaviour towards digital payments and home delivery options in Taiwan.

This research contributes valuable insights into e-wallet adoption during COVID-19, supporting and expanding upon existing literature. The high R-square value underscores the significance of these constructs in understanding consumer intentions during the pandemic.

The ANOVA results (Table 7) indicate how the independent factors affect the factor that is dependent. "Overall Influence of Covid-19 on Consumer a plan to use electronic wallets." The regression model demonstrates a highly substantial effect ( $F = 240.077$ ,  $p < 0.001$ ) of the predictors: "Safe and Convenient," "Recommended Precautions and Restrictions," "Change of Pattern of Business and Shopping," and "Rules and Regulations."

The regression model accounted for 27.765 mean squares of variance in the dependent variable, with a total sum of squares of 134.882. Additionally, the residual sum of squares was 23.824, with 206 degrees of freedom for the residuals. The overall F-test indicates a highly There exists a substantial link between the independent and dependent variables. The significance value ( $p < 0.001$ ) suggests that all four predictors considerably influence Customers' intent to utilise electronic wallets during and after the COVID-19 pandemic. These findings provide valuable insights into the factors shaping consumer behaviour towards digital payment methods after the crisis.

**Table 7.**

*Analysis of Variance (ANOVA) - Influence of Independent Variables on Consumer Intention to Use E-Wallets during Covid-19*

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	111.058	4	27.765	240.077	.000 <sup>b</sup>
Residual	23.824	206	0.116		
Total	134.882	210			

A. DV: Overall influence of COVID-19 on Consumer intention to use E-Wallet

B. Predictors: (Constant), Safe and Convenient, recommended precautions and Restrictions, Change of Pattern of business and shopping, Rules, and Regulations

The regression coefficients (Table 8) present the result of each independent factor influencing the dependent one, "Overall Influence of Covid-19 on Household E-Wallet Intentions." The results reveal that all four variables - "Safe and Convenient," "Recommended Precautions & Restrictions," "Change of Pattern of Business and Shopping," and "Rules and Regulations" - have a noteworthy influence on consumers' plans to utilise electronic wallets throughout the pandemic. The constant term has an unstandardised coefficient of 4.024, indicating the value of the dependent variable when all predictors are zero. The independent variables' standardised coefficients (Beta) illustrate their relative importance in influencing consumer intentions.

**Table 8.**

*Regression Coefficients - Influence of Separate Components on Consumer Willingness to Utilise E-Wallets during Covid-19*

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error			
(Constant)	4.024	0.023		171.869	0.000
Safe and Convenient	0.693	0.023	0.865	29.527	0.000
Recommended Precautions & Restrictions	0.136	0.023	0.170	5.813	0.000
Change of Pattern of business and shopping	0.143	0.023	0.178	6.081	0.000
Rules and Regulations	0.099	0.023	0.123	4.204	0.000

Dependent Variable: Overall influence impact of COVID-19 on consumers' desire to utilise electronic wallets

Among the independent variables, "Safe and Convenient" demonstrates the highest influence with a standardised coefficient of 0.865, followed by "Recommended Precautions & Restrictions" (Beta = 0.170), "Change of Pattern of Business and Shopping" (Beta = 0.178), and "Rules and Regulations" (Beta = 0.123). All coefficients are statistically significant with p-values  $< 0.001$ , suggesting strong relationships between the predictors and consumer intent to utilise e-wallets.

The positive coefficients imply that as the perceived safety, convenience, adherence to recommended precautions, changes in business patterns, and government regulations related to e-wallet usage increase, consumer want to use e-wallets throughout COVID-19 also increases.

## 5. Discussion

The research paper explores the factors influencing consumer intentions to adopt e-wallets in Saudi Arabia during and after the COVID-19 pandemic. The findings reveal significant insights into consumer behavior and the impact of the pandemic on payment preferences.

### Impact of COVID-19 on Consumer Behavior

The COVID-19 pandemic has dramatically altered consumer behavior, particularly in the realm of payment methods. The literature indicates that personal safety became a crucial factor in consumer decisions, with many opting for digital payment methods to minimize physical contact and adhere to social distancing guidelines (Arrafi & Ghabban, 2021). This shift is supported by the study's findings, which show that a substantial percentage of respondents adopted e-wallet services as a direct response to the pandemic. The need for safety and convenience has driven consumers towards mobile wallets, highlighting a significant change in payment preferences.

### Factors Influencing E-Wallet Adoption

Several factors have been identified as influential in the adoption of e-wallets. The literature emphasizes the importance of reliability, convenience, and user-friendliness of mobile payment systems (Lew et al., 2020). The study corroborates these findings, indicating that consumers are more likely to adopt e-wallets if they perceive them as reliable and easy to use. Additionally, the pandemic has accelerated the transition to electronic payment methods, as consumers seek to avoid cash transactions due to health concerns (Puriwat & Tripopsakul, 2021).

### Demographic Considerations

The demographic results of the study provide further insights into how different groups perceive and adopt e-wallets. Understanding these demographic traits is essential for tailoring marketing strategies and enhancing user experience. The literature suggests that demographic factors, such as age and gender, may influence the adoption rates of digital wallets,

which aligns with the study's findings on varying consumer intentions based on demographic characteristics (Jonker et al., 2022).

## Recommendations for Future Adoption

Based on the results, it is evident that enhancing consumer trust and addressing safety concerns are vital for promoting e-wallet adoption in the post-pandemic era. The literature suggests that comprehending and tackling these variables can facilitate the integration of electronic payment methods into everyday transactions. Stakeholders should focus on educating consumers about the benefits and security of e-wallets, as well as improving the overall user experience to encourage wider adoption.

## 6. Conclusion

The epidemic of COVID-19, characterized by its high fatality rate and rapid transmission, has devastated people worldwide, resulting in the loss of numerous lives. In response, the World Health Organization (WHO) has recommended preventative actions like social distance, mask-wearing, hygiene practices, and contactless payment methods to stop the virus's proliferation. These unprecedented circumstances have profoundly affected consumer behaviour, prompting a significant increase in the intention to use electronic wallets serve as a preferred way to make payments throughout the pandemic.

Consumers are aware of the advantages and security provided by e-wallets, which allow them to transact contactless and offer them control over their finances. Customers may pay with e-wallets without having to worry about becoming sick, which makes shopping safer and compliant with health and safety laws. The epidemic changed people's payment habits, as evidenced by the rise in e-wallet usage, which offers a safer and more convenient choice.

However, it's crucial to keep in mind that even while e-wallets have become widely used, some people are still unaware of this feature or are unsure of how to use it. Given the present COVID-19 pandemic, educational campaigns and awareness-raising events might be held to enlighten individuals about the advantages of utilizing e-wallets for their health and to close this gap.

The study's findings demonstrate how crucial it is for particular factors to influence customers' plans to utilize electronic wallets during and after the pandemic. "Safe and Convenient," "Advised Precautions and Restrictions," "Change of Business and Shopping Pattern," and "Rules and Regulations" are some of these variables. The significance of these elements in determining payment choices in challenging situations is highlighted by the positive and statistically significant influence that all of these factors have on customer behavior.

In conclusion, the COVID-19 pandemic has caused significant disruptions and has altered consumer behavior, particularly in relation to digital payment methods. The role of e-wallets in encouraging safer and more secure financial transactions has grown. While we traverse the uncertainties of the pandemic, it will be crucial to comprehend and address the challenges affecting E-Wallet acceptability in order to encourage broader usage and ensure clients' safety and well-being at these difficult times.

Future studies should investigate the potential of integrating cutting-edge technology with e-wallet platforms, such as blockchain and cryptocurrency. Analyzing the benefits and feasibility of these interfaces could open up new channels for secure, decentralized online transactions, increasing consumer trust, and expanding the e-wallet business. Furthermore, given the dynamic nature of both technology and consumer behavior, the financial industry will need to stay adaptable and perform ongoing research in order to meet the shifting expectations and tastes of consumers in a post-pandemic environment. By continuously researching and creating in this subject, researchers and industry stakeholders can collaborate to advance digital payment systems and their positive effects on customers' financial experiences.

### 6.1 Implication of the Study

The study on consumers' intention to use e-wallets during and after the COVID-19 pandemic in Saudi Arabia presents several important implications.

The Saudi Arabian study on e-wallet uptake during and after the COVID-19 outbreak has various consequences. The pandemic has encouraged digital payment use, with 26% of respondents utilising mobile wallets, implying a cashless

society. Government laws, safety, convenience, and health concerns influence e-wallet usage, driving businesses and policymakers to promote digital payments. Gender-based demographic differences emphasise the necessity for targeted marketing. The focus on personal safety as a driver for e-wallet adoption emphasises the need to promote digital payments as safer than cash. The study also implies that these behavioural changes may continue, forcing firms to adapt their payment methods to changing consumer preferences.

### 6.2 Limitation of the Study

Saudi Arabian e-wallet adoption research during and after the COVID-19 outbreak has some limitations. The study ignores technical literacy and cultural views in favour of safety and convenience which can open avenues for future research. The study pandemic context may further limit its post-pandemic application, but its implication has shed light on that time frame. The survey method may induce biases, and the lack of longitudinal data makes it hard to track customer intentions. Finally, cultural differences in Saudi Arabia may restrict the findings' applicability. Due to these limitations, more research is needed to examine other aspects and methods.

### 6.3 Future Avenues of Research

Future research on e-wallet adoption could explore several key areas. Longitudinal studies would help track changes in consumer behaviors over time, especially post-pandemic. Expanding demographic analysis to include diverse age groups, income levels, and educational backgrounds could provide insights for targeted marketing strategies. Further exploration of factors such as technological literacy, cultural attitudes, and trust in digital payments could deepen understanding of adoption drivers. Comparative studies across different regions could offer a broader perspective on how cultural and economic contexts influence e-wallet usage. Additionally, investigating the impact of emerging technologies like blockchain and AI on consumer perceptions and exploring consumer behavior once the pandemic's immediate effects subside could provide valuable insights for businesses and policymakers.

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