

## IDENTIFYING THE FACTORS AFFECTING THE CONSUMER BEHAVIOR IN SWITCHING TO E-WALLETS IN PAYMENT ACTIVITIES

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**Abstract:** Cryptocurrency has been growing and gradually accepted in payment transactions. Therefore, e-wallets were created to meet the payment needs of consumers. Nevertheless, the factors affecting consumer behavior in switching to using e-wallets in payment need further investigation. This study aims to determine the factors affecting the consumer behavior of switching to e-wallets in payment activities in Vietnam. A typical survey was conducted on 150 consumers in the Southeast region of Vietnam, with the quantitative approach being applied to gather, process and scrutinize data. Quantitative research tools employed include descriptive statistics, Cronbach's Alpha Analysis, exploratory factor analysis, and multivariable regression analysis with the support of SPSS 22.0. The research results show that five factors affect behavior toward switching to e-wallets in payment activities of the consumer, including (i) Consumer perception of the usefulness of switching to e-wallets, (ii) Consumer attitudes towards switching to e-wallets, (iii) Consumer perception of safety for e-wallets, (iv) Consumer perception of the ease of use of e-wallets and (v) Consumer behavior in readiness for the transition to e-wallets. Accordingly, research has suggested that payment service providers through e-wallets who want to attract consumers to use e-wallet services need to focus on the usefulness, safety, ease of use and convenience of e-wallet services. Once the issues of usefulness, safety and ease of use of e-wallet services are considered, consumers' attitudes towards e-wallets will gradually change; thereby making the consumer behavior of using e-wallets more and more popular, increasing its frequency.

**Keywords:** consumers, consumer behavior, e-wallets, payments.

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### Introduction

Industrial Revolution 4.0 has been exerting a great influence on consumer behavior in choosing forms of payment in consumption, which is reflected in the development of online payment services through digital wallets or e-wallets. Payment service providers have established forms of payment on digital platforms to meet the payment needs of consumers in the information technology environment. Along with the policy of digitization in payment activities toward non-cash consumption in Government procurement activities (Nguyen, 2021), payment service providers have quickly applied new technology to form a competitive factor among service

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providers to serve customers' service expectations as quickly as possible (Liu & Ma, 2015). In addition, the increasingly popular use of smartphones by consumers has also created favorable conditions for consumers to access payment technologies and switch behavior from traditional forms of payment (pay in cash) to online payments (using the cards or e-wallets) (Thakur & Srivastava, 2014).

According to the statistics, by the end of 2021, the number of smartphone users in Vietnam is estimated to be at 71.54 million users, and this number is expected to reach 82.15 million people by 2025 (Statista, 2021), which shows that Vietnam is one of the countries in the world with a large number of smartphone users compared to the total national population. At the same time, to use payment services on digitized applications based on technology platforms and smart mobile phones, consumers are much interested in features, such as convenience in payment, ease of use of e-wallets, security of personal information when making payments, the convenience of looking up and tracking payment activities and consumer confidence in e-wallets when transferring from traditional method to payment by e-wallets.

As the most developed region in Vietnam, the Southeast region has been selected to conduct this study, which belongs to the southern region of Vietnam. This region includes one city directly under the Central Government, that is Ho Chi Minh City, and 5 provinces, including Ba Ria - Vung Tau, Binh Duong, Binh Phuoc, Dong Nai, and Tay Ninh. According to the General Statistics of Vietnam (General Statistics Office of Vietnam, 2019), the total population of the Southeast region is 17,828,907 people (excluding the number of long-term temporary residents) on an area of 23,564.4 km<sup>2</sup>, with an average population of 706 people/km<sup>2</sup>, accounting for 18.5% of the country's population. The Southeast region is the most developed economic region in Vietnam, contributing more than two-thirds of annual budget revenue, with an urbanization rate of 62.8%, a young population, and a dynamic financial market. At the same time, attracting and supporting start-ups in the technological industry and forming supermarkets and commercial centers in the Southeast region have promoted the development of online payment services. Most enterprises, supermarkets, and trade centers have allowed consumers to conduct payments through e-wallets. However, a relatively large portion of consumers is hesitant to switch to e-wallets due to safety concerns and security when using e-wallets. Therefore, this study of identifying the factors affecting the behavior of converting to e-wallets in the payment activities of consumers in Vietnam through a case study in the Southeast region is appropriate and relevant, with practical significance.

The structure of this paper consists of five parts; the next part is the literature review and the background theories for research; the third part is the research methodology; the fourth part is the findings and discussion; the fifth part is the conclusion.

### **Literature Review**

Recent studies show that consumer behaviour is also gradually changing when payment technology is increasingly developed; consumers tend to use payment services on application platforms. Technology is increasingly used and diversified

in payment transactions, from smart payment cards to e-wallets. In this regard, the following studies can be considered literature for the present study.

Research by Shaw (2014) shows that there have issued more than 1.55 billion smart payment cards and 21.6 million vending machines worldwide. With the current trend, payment via smartphones is initiating and developing quite strongly with diverse forms of payment, with payment technology added to mobile phones, where consumers can securely store, look up all transaction information in an e-wallet, verify and confirm the exchange of financial value in exchange for goods and services (Rajan, 2011). This shows that e-wallets are gradually gaining popularity, being a kind of online payment account that allows users to make cashless payment transactions. There are popular services, such as phone top-up, paying for bills (electricity, water, internet, cable TV), purchasing goods online, going to the market online, paying online on shopping applications, etc.

Villa and Dorsey (2017) show that while 63% of GenZ millennials are concerned about their privacy and security when paying by credit or debit cards online, only 54% of them have the same privacy and security concerns when using e-wallets through payment apps on their smartphones. This shows that young people tend to trust e-wallets more than traditional payment services. Pietrzak and Takala (2021) employed the systematic literature review method to conclude that there has been no single generally accepted definition of digital trust. On the contrary, Huang et al. (2019) investigated the travel insurance model. The study shows that perceived usefulness, ease of use, trust, and product involvement have a significant positive impact on attitudes; attitudes and subjective norms significantly influence behavioral intentions.

Altounjy et al. (2020) show that perceived usefulness has a significant positive impact on mobile payment acceptance, while the perceived ease of use has no significant impact on the merchants' decision to offer this payment method. Along with this research direction, research by Nguyen and Chu (2022) confirm for retail businesses, the application of digital technology in payment will increase convenience and satisfaction for buyers, accelerate payment cash flow, and contribute to improving business performance. At the same time, research by Civelek et al. (2021) shows that cryptocurrency payment service has increased during the Covid-19 pandemic as it provides convenience, safety in payment operations due to contactless, social distancing between buyers and sellers.

In Vietnam, studies show a change in mobile payment and e-wallet activities. Bui et al. (2022) examined the prediction of customer loyalty in mobile banking; the study found a strong direct effect between service quality, perceived value, customer satisfaction, and loyalty. From there, the study recommends that financial institutions should focus on building and maintaining functional and secure mobile banking applications to enhance customer loyalty and retention. At the same time, research by Nguyen et al (2021) shows that convenience and security are two important factors affecting consumers' decision to choose a bank providing electronic payment services. In the same vein, research by Pham et al. (2019) shows

that perceived risk is negatively related to intention to use mobile banking, perceived value is positively associated with intention to use mobile banking, perceived risk is negatively related to perceived value, and perceived value has a partial mediating role to play in the relationship between perceived risk and intention to use mobile banking.

Currently, payment services via e-wallets in Vietnam are diversely developing, typically with the top 10 e-wallets, namely Momo, Zalo Pay, Viettel Pay, AirPay, Ngan Luong, Payoo, VTC Pay, Vi Viet, Vimo and Moca (Le, 2021).

### ***Theory of Consumer Behavior***

Consumer behavior is understood as the reactions that consumers show in the decision-making process to buy a certain good or service. Therefore, consumer behavior directly influences the decision to purchase or refuse to purchase goods or services of a certain business. Thus, the study of consumer behavior and the factors affecting consumer behavior helps business managers recognise and predict each customer's consumption trends specifically. On that basis, timely and effective sales policies can be made. Typically, consumer behavior is influenced by four main factors: cultural, social, personal, and psychological, specifically:

*Cultural factors:* They are the cultural features of consumers. Each culture contains specific features, which create its characteristics and the degree of integration with society for the members of that society, such as ethnicities, races, religions, beliefs, geographical regions, etc. It can be said that cultural factors are the most basic factors that determine the willingness and behavior of consumers. For example, when Vietnamese people buy goods, they are always influenced by cultural factors bearing Vietnamese national identity, affecting the value of choice for products, goods, and services. Therefore, managers need to pay attention to these factors when they design the sales strategies or advertising messages, product colors and designs, the salesperson's attitude, etc.

*Social factors:* A consumer's behavior is also influenced by social factors, such as family, social roles, and status. For example, the family side involves parents or someone receiving political and economic orientation and the meaning of personal desires, love, and virtue. Even if current consumers no longer have much of a relationship with their parents, the past influence of parents on current consumer behavior can still be significant; and in families where parents continue to live with their adult children, their influence is more decisive. Or, in the case of expensive products and services, it is often that husband and wife work together to make a joint decision. Therefore, managers need to determine which family member has a greater influence on purchasing different products and services to have the appropriate sales policies or suitable purchase advice for that member.

*Personal factors:* These are the factors belonging to consumers themselves, such as age, occupation, lifestyle, economic circumstances, etc. Personal factors greatly influence consumer behavior and consumption trends. For example, each different age group has the distinct shopping habits and needs like fashion, entertainment, and food preferences. These factors are varied by the individual age, either young,

mature, or old; or, each profession also has different shopping needs to match the profession, or a person's economic circumstances greatly influence his or her choice of products. In particular, a personal economic circumstance includes his income intended for consumption, the amounts of savings deposits and assets, the ability to borrow and attitudes toward spending and saving, etc. Therefore, the manufacturer's supply of goods and services is required to match the personal factors of the consumer.

*Psychological factors:* The psychophysiological factors of consumers are expressed through motivation, perception, knowledge, belief, and attitudes in their shopping. Take motivation as an example; a person may have many needs at any stage in their life, some of which are instinctive, arising from stressful situations about the physiology of the body such as hunger, thirst, need for entertainment, etc.; others are from the psychological origin, arising from psychological states such as the need for recognition, admiration, or respect. Therefore, the mental factor affects consumer behavior and is easily changed by changes in the environment and society.

#### ***Background Theories for Research***

*Theory of Reasoned Action:* According to the Theory of Reasoned Action (Ajzen & Fishbein, 1975), if the persons have a positive attitude towards the behavior and their significant others also expect them to perform the behavior (i.e., the subjective criterion), the result is that they have a higher level of behavioral intention (more motivation) and are more likely to act (implement the intention). This has been demonstrated in numerous studies, confirming the link between attitudes and subjective standards for behavioral intention and, subsequently, behavioral performance. However, there is still much controversy about the close relationship between behavioral intention and actual behavior, since the results of some studies show that because of limitations in the context, behavioral intention does not always lead to actual behavior. If an individual lacks behavioral control, behavioral intention is not a determining factor in behavioral performance.

*Theory of Planning Behavior:* The theory of Planning Behavior (TPB) was developed from the theory of Reasoned Action (Ajzen & Fishbein, 1975), which was created to overcome the previous theory's limitation of assuming that people's behavior is completely by control of reason. TPB is a theory that expresses the relationship between beliefs and someone's behavior, in which beliefs are divided into three categories: behavioral beliefs, normative beliefs, and self-control beliefs. This theory was initiated by Ajzen in 1991, aiming to improve the predictability of the theory of Reasoned Action by adding to the cognitive factor model of behavioral control, offering many advantages in predicting and explaining an individual's behavior in a given context. This theory is considered to be one of the most widely applied and cited theories of behavioral theory (Cooke & Sheeran, 2004).

*Theory of Acceptance and Use of Technology:* This theory was hypothesized by Davis (1989), who proposed two structures that are the main factors in creating attitudes and behaviors towards the application of information technology, namely perception of its usefulness and perception of its ease of use. This theory was quickly

researched and applied by many authors to verify the relationships in practice; typically, Vankatesh et al. (2003) evolved into an extended theory of acceptance and use of technology. Since then, there have been many studies to implement this theory in practice, such as Abdullah and Ward (2016) and Chang et al. (2017), who applied the model to the study of acceptance of online learning; or Park and Kim (2014) applied to research on mobile cloud computing services; or Rauniar et al. (2014) applied to the study of player acceptance for games on social networks, etc.

*Innovation Diffusion Theory:* This theory was first developed by Rogers (1995) and evolved into a field of study with diverse applications to the service sector. Wolfe (1994) and Nutley et al. (2002) show that many researchers have applied this theory in research on many different topics. This shows that, since Innovation Diffusion Theory was introduced, it has received a lot of attention and research with many related publications. An innovation that is accepted and applied to organizations and individuals is not an immediate action but must go through certain stages from initial understanding, understanding the innovation, forming attitudes, initial decision, execution, and finally, validation (Roger, 2010).

#### ***Research Questions***

From the literature review, background theories for research, especially the theory of consumer behavior, the study aims at answering the following research questions:

*Question 1:* How do the perceived ease of use of e-wallets in payment, readiness behavior towards switching to e-wallets, attitudes towards switching to e-wallets, perceived safety of e-wallets and perceived usefulness of switching to e-wallets affect the behavior of consumers regarding switching to e-wallets in payment activities in Vietnam?

*Question 2:* To what extent do the perceived ease of use of e-wallets in payment, readiness behavior towards switching to e-wallets, attitudes towards switching to e-wallets, perceived safety of e-wallets, perceived usefulness of switching to e-wallets affect the behavior of consumers regarding switching to e-wallets in payment activities in Vietnam?

#### **Research Methodology**

##### ***Research Procedure***

To carry out this study, we follow the research steps illustrated in the following diagram:

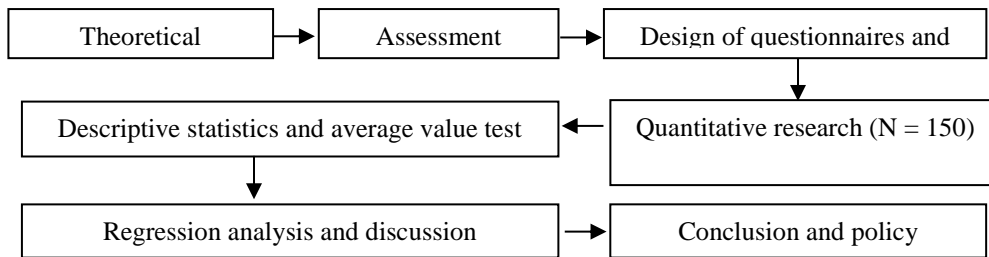


Figure 1: Research procedure

**Research Model and Hypotheses**

In this study, the authors propose a research model, which is a multivariable regression model with the dependent variable being the behavior of switching to e-wallets in payment activities and five independent variables as follows:

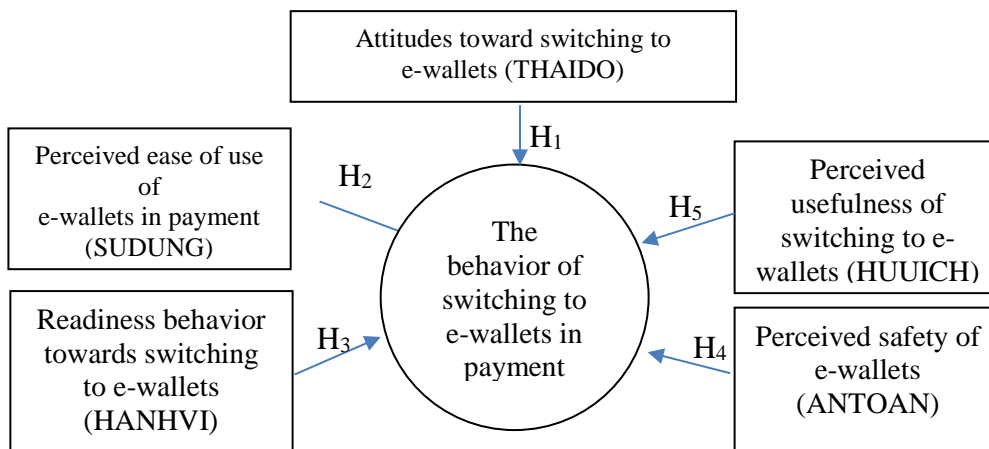


Figure 2: Overview of the research model

From the above-proposed model, the following research equation has been proposed.  

$$Y = \alpha + \beta_1 \cdot \text{THAIDO} + \beta_2 \cdot \text{SUDUNG} + \beta_3 \cdot \text{HANHVI} + \beta_4 \cdot \text{ANTOAN} + \beta_5 \cdot \text{HUUICH} + \varepsilon$$

Where:  $\alpha$ ,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$  and  $\beta_5$  are coefficients  
 $\varepsilon$ : is error

Based on the research model, the following test hypotheses have also been proposed:  
*Hypothesis H1:* Attitudes toward switching to e-wallets in payment activities directly impact the behavior of switching to e-wallets in payment activities.

*Hypothesis H2:* Perceived ease of use of e-wallets in payment activities directly impacts the behavior of switching to e-wallets in payment activities.

*Hypothesis H3:* The readiness behavior of switching to e-wallets in payment activities directly impacts the behavior of switching to e-wallets in payment activities.

*Hypothesis H4:* Perceived safety of e-wallets in payment activities directly impacts the behavior of switching to e-wallets in payment activities.

*Hypothesis H5:* Perceived usefulness of switching to e-wallets in payment activities directly impacts the behavior of switching to e-wallets in payment activities.

**Variables of the Research Model**

To serve the process of questionnaire distribution and data collection, the Likert scale (5 options) has been adopted. The rating levels, according to this scale, are as follows: 1 = ‘very low’, 2 = ‘low’, 3 = ‘medium’, 4 = ‘high’ and 5 = ‘very high’. The variables and scales are determined as follows:

**Table 1. Variables and scales used in the research model.**

Order	Factors	Observed variables	Encryption	Sources
Dependent variable				
1	The behavior of switching to e-wallets in payment activities	Switching to electronic money when processing my payments is what I would do	Y1	Lee et al. (2011); Moon & Kim (2001); Alaeddin et al. (2018); Altounjy et al. (2020) and expert consultations
		I will switch from using cash to using electronic money for payment needs	Y2	
		I feel like I am switching from using cash to electronic money to process my payments	Y3	
Independent variables				
2	Attitudes toward switching to e-wallets in payment activities	In my opinion, what is desirable is to switch from cash to electronic money	THAIDO1	Lee et al. (2011); Moon & Kim (2001); Alaeddin et al. (2018) and expert consultations
		I think it is necessary to switch from cash to electronic money	THAIDO2	
		In my opinion, switching from cash to electronic money is an economical and effective idea	THAIDO3	
		I feel satisfied when I switch from using cash to electronic money when shopping	THAIDO4	
3	Perceived ease of use of e-wallets in payment activities	I find it really easy to learn to use electronic money	SUDUNG1	Suh & Han (2002); Lee et al. (2011); Moon & Kim (2001); Alaeddin et al. (2018) and expert consultations
		I find it very easy to remember how to use electronic money	SUDUNG2	
		I find it very easy and efficient to manipulate and use electronic money	SUDUNG3	
		I find it convenient and fast to check balances and payment transactions for e-wallets	SUDUNG4	



4	Readiness behavior towards switching to e-wallets in payment activities	I am ready to switch to using e-wallets in payment activities	HANHVI1	Lee et al. (2011); Moon & Kim (2001); Bui et al. (2022) and expert consultations
		I will definitely use e-wallets for payments in the future	HANHVI2	
		I find it easy and convenient to switch to using e-wallets	HANHVI3	
5	Perceived safety of e-wallets in payment activities	I think it is safe to use e-wallets in payment activities	ANTOAN1	Nguyen & Nguyen (2018); Alaeddin et al. (2018); Nguyen (2021) and expert consultations
		I believe it is safe to use e-wallets in payment activities	ANTOAN2	
		I think that using e-wallets in payment is convenient for searching and making complaints when necessary	ANTOAN3	
		I am sure it is safer to use e-wallets in payment than cash payments	ANTOAN4	
6	Perceived usefulness of switching to e-wallets in payment activities	Using electronic money improves my work efficiency when making payments	HUUICH1	Lee et al. (2011); Moon & Kim (2001); Alaeddin et al. (2018); Altounjy et al. (2020) and expert consultations
		Using electronic money increases my productivity at work and shopping	HUUICH2	
		Using electronic money makes my payment more efficient	HUUICH3	
		I find electronic money useful	HUUICH4	
		E-wallets give me better control over payment when shopping	HUUICH5	

### **Data Collection**

To determine the factors affecting the behavior of switching to e-wallets in the payment activities of consumers in the Southeast region of Vietnam, the authors used the questionnaire survey method, direct survey by paper, or sending Google forms directly to consumers to respond to the survey. The questionnaire was designed in 2 parts – part 1 refers to general information of survey respondents, and part 2 is survey questions. The survey questions revolve around the research objectives, asking respondents to give ratings based on the Likert scale from 1 to 5. To have the official survey questionnaire, the researchers went through 3 phases. In phase 1, the initial draft questionnaire was designed based on the research overview. In phase 2, the researchers consulted with experts (30 experts, with 5 experts in each province of the region). In phase 3, the official questionnaire was designed. Based on the results in phase 2, we synthesized and gave the final complete questionnaire to send to the survey objects.

The survey objects of the study are consumers. The study selected 25 people in each province of the Southeast region according to the principle of convenient randomization. Hence, the sample of the study is  $6 \times 25 = 150$  questionnaires, which is sufficient to perform EFA and regression analysis for the study because the sample required for the study is  $23 \times 5 = 115$  samples (Hair et al., 2017).

After the required sample size for the study had been determined, the data collection was carried out through the payment activities of consumers at supermarkets and shopping centers. Consumers were observed when making payments by e-wallets, internet banking and E-mobile banking, and a direct survey was conducted on consumers. In case a consumer refused to provide the answer in paper form, he/she was asked to give his/her email address, and survey links were sent via Google Form. The data collection period for this study took place from November 2021 to January 2022.

### **Data Analysis**

From the 150 questionnaires delivered, 124 valid questionnaires were obtained, achieving a valid rate of 82.67%. Then, the surveyed data were transferred to Microsoft Excel, coding the variables for each part of the survey. Subsequently, all the data were put into the software SPSS 22.0. In the process of data processing and analysis, some analytical tests using SPSS software were conducted as follows:

*Descriptive statistics and Average value test:* Descriptive statistics was used to calculate the average value for the factors affecting the consumer behavior of switching to e-wallets in payment activities in the provinces of the Southeast region of Vietnam. The average value test evaluates the mean value of the factors compared with the mean value of 3 to see the influence of the factors.

*Cronbach's Alpha Analysis:* The purpose of Cronbach's Alpha Analysis is to test the reliability of the scale and survey data to evaluate the correlation among observed variables that are the influencing factors in the survey questionnaire to see how the observed variables are closely related in terms of measuring the influence of test factors on the consumer behavior of switching to e-wallets in payment activities. Most researchers accept a Cronbach's Alpha level of 0.8 or higher as good; between 0.7 and 0.8, as usable, and if the concepts in question are new, the coefficient should only be above 0.6. With Cronbach's Alpha level greater than or equal to 0.8, the scale is considered a good measure, the questions are designed closely, and the scales are correlated, achieving high reliability (Henseler, 2015).

*EFA exploratory factor analysis:* Researchers often care about some standards when analysing discovery factors.

*First,* KMO is a criterion used to consider the appropriateness of EFA, the KMO coefficient is  $\geq 0.5$ , and the significance level of Bartlett is  $\leq 0.05$  test then factor analysis is appropriate; because, Bartlett's Test examined the hypotheses of the correlation between zero observed variables overall, when this test is statistically significant ( $\text{Sig} \leq 0.05$ ), the observed variables are correlated overall.

*Second,* factor loading coefficient is  $> 0.45$ ; if any observed variable has a factor loading coefficient  $\leq 0.45$ , it will be disqualified.

*Third*, the scale is accepted when the total variance extracted is  $\geq 50\%$  and the eigenvalue is greater than 1.

*Fourth*, the difference in the factor loading coefficient of an observed variable among factors  $\geq 0.3$  to ensure the distinguishing value among factors is protected (Henseler, 2015). According to Fornell and Larcker (1981), factor loading is the norm to ensure the practical meaning of EFA, factor loading  $> 0.3$  is considered the minimum, factor loading  $> 0.4$  is considered important, and  $\geq 0.5$  is considered practical significance.

## Research Results

### *About the consumers in the survey*

**Table 2. Demographics of the consumers in the survey.**

Order	Criteria	Scale	Number	Percentage
1	Genders	Male	37	29.84%
		Female	87	70.16%
		Others	0	0.00%
		<b>Total</b>	<b>124</b>	<b>100.00%</b>
2	Age groups	$\leq 20$ years	4	3.23%
		21- 30 years	11	8.87%
		31 – 40 years	65	52.42%
		41 – 50 years	29	23.39%
		$> 50$ years	15	12.10%
		<b>Total</b>	<b>124</b>	<b>100.00%</b>
3	Educational levels	College, high school students	38	30.65%
		Bachelors	71	57.26%
		Masters	12	9.68%
		Doctorates	0	0.00%
		Others	3	2.42%
		<b>Total</b>	<b>124</b>	<b>100.00%</b>
4	Professions	Civil servants, public employees	49	39.52%
		Entrepreneurs, enterprise staff	52	41.94%
		Freelancers	14	11.29%
		Others	9	7.26%
		<b>Total</b>	<b>124</b>	<b>100.00%</b>
5	Using smartphones	Yes	124	100.00%
		No	0	0.00%

		<i>Total</i>	<i>124</i>	<i>100.00%</i>
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The statistical results in Table 2 show that the majority of consumers in the survey are female, aged between 31 and 50, with a bachelor's degree in education, college, or university, working mainly as entrepreneurs, enterprise staff, civil servants and public employees. All consumers in the survey use smartphones, so it is convenient for them to pay via e-wallets. This shows that the consumers in the survey are quite suitable for the purpose of the study.

***Cronbach's Alpha***

In this study, the observed variables of the independent and dependent variables were selected when the Cronbach's Alpha coefficient was from 0.6 or higher and the total correlation coefficient was greater than 0.3. The results in Table 3 show that the variables in the research model are reliable.

**Table 3. The Cronbach's Alpha coefficient of the independent variables and the dependent variable.**

Reliability Statistics	N of Items	Cronbach's Alpha
1. Attitudes towards switching to e-wallets (THAIDO)	04	0.882
2. Perceived ease of use of e-wallets (SUDUNG)	04	0.814
3. Readiness behavior towards switching to e-wallets (HANHVI)	03	0.749
4. Perceived safety of e-wallets (ANTOAN)	04	0.797
5. Perceived usefulness of switching to e-wallets (HUUICH)	05	0.929
6. The behavior of switching to e-wallets in payment activities (Y)	03	0.759

***Exploratory Factor Analysis (EFA)***

The results of the factor analysis are as follows:

**Table 4. Results of KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.730
Bartlett's Test of Sphericity	Approx. Chi-Square	1412.696
	df	190
	Sig.	0.000

According to Table 4 about KMO and Bartlett's Test, the coefficient is  $KMO = 0.730 > 0.5$ , and the Sig level of Bartlett's test is  $0.000 < 0.05$ , which means that the variables are correlated overall. So, the EFA analysis of the present study is really meaningful.

**Table 5. The results of total variation of the data.**

Total Variance Explained									
Components	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.390	21.949	21.949	4.390	21.949	21.949	3.964	19.822	19.822
2	3.703	18.513	40.463	3.703	18.513	40.463	3.016	15.082	34.904
3	2.910	14.549	55.011	2.910	14.549	55.011	2.656	13.280	48.183
4	1.804	9.020	64.032	1.804	9.020	64.032	2.511	12.553	60.736
5	1.406	7.031	71.063	1.406	7.031	71.063	2.065	10.327	71.063
6	.770	3.852	74.915						

At the same time, the analysis results show that (see Table 5), in the table of variance extracted above, according to the Eigenvalue > 1 standard, there are 5 groups of factors drawn. The total variance extracted is 71.063% (greater than the standard level > 50%), that is, 71.063% of the variation of the data is explained by 5 groups of factors. Besides, for Factor Loading in groups, according to Hair et al. (2017), to ensure the practical significance of EFA, Factor Loading > 0.3 is considered the minimum, Factor Loading > 0.4 is considered important, and Factor Loading ≥ 0.5 is considered to be of practical significance. As a result, when using Varimax rotation to obtain the best loading factor coefficient, the authors have obtained 5 groups of factors, as shown in Table 6.

**Table 6. Factor rotation matrix.**

	Component				
	1	2	3	4	5
HUUICH3	0.903				
HUUICH1	0.892				
HUUICH4	0.870				
HUUICH5	0.865				
HUUICH2	0.860				
THAIDO4		0.926			
THAIDO1		0.873			
THAIDO3		0.871			
THAIDO2		0.758			
SUDUNG4			0.837		
SUDUNG1			0.784		
SUDUNG3			0.750		
SUDUNG2			0.748		
ANTOAN1				0.769	
ANTOAN2				0.763	
ANTOAN4				0.753	
ANTOAN3				0.739	

HANHVI3					0.880
HANHVI1					0.802
HANHVI					0.711

For the behavior of converting to e-wallets in consumer payment activities in the Southeast provinces of Vietnam (Y), there are 3 observed variables. The results of factor analysis are as follows (see Table 7). According to Table 7, we have a KMO coefficient = 0.590 > 0.5, and the Sig level of Bartlett's test is 0.000 < 0.05 means that the variables correlated overall. Therefore, the EFA analysis is really meaningful.

**Table 7. Some inspection criteria of Exploratory Factor Analysis for the dependent variable.**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.590
Bartlett's Test of Sphericity	Approx. Chi-Square	136.123
	df	3
	Sig.	0.000
Total Variance Explained		68.306

At the same time, in the above variance extracted table, according to the standard of Eigenvalue > 1, there is one factor drawn. The total variance extracted is 68.306 % (greater than 50%), i.e., 68.306% of the data variance is explained by this factor. The factor matrix is drawn as follows. Thus, the results of the factor analysis show that there is one factor in the behavior of converting to e-wallets in consumer payment activities in the Southeast provinces of Vietnam (Y) (see Table 8).

**Table 8. Factor matrix.**

	Component
	1
Y3	0.915
Y1	0.890
Y2	0.647

### ***Regression Analysis***

To perform regression analysis, the mean value of the group of factors was calculated, and the researchers implemented the regression analysis. The results are as follows (see Table 9). From the regression results in Table 9, it can be seen that all independent variables affect the dependent variable Y (this is concluded through the T-test with the Sig level of the Test being less than 1%, 5%, or 10%).

**Table 9. The results of regression analysis.**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.469	0.387		-3.796	0.000		
	THAIDO	0.275	0.048	0.322	5.697	0.000	0.960	1.041
	SUDUNG	0.224	0.067	0.206	3.336	0.001	0.810	1.235
	HANHVI	0.179	0.053	0.193	3.346	0.001	0.922	1.084
	ANTOAN	0.279	0.072	0.246	3.891	0.000	0.772	1.296
	HUUICH	0.411	0.039	0.600	10.535	0.000	0.946	1.057

Note: a. Dependent Variable: Y

At the same time, the problem of multicollinearity (a serious defect of the model in the case of survey data) does not appear in the model. Specifically, the variance inflation factors VIF are less than 10 (the level that multicollinearity is serious). Besides that, the Anova test results of the suitability of the regression function through statistics  $F = 41.488$ , showing that the model is suitable (Sig level of the test is very small, Sig. = 0.000).

Thus, based on the regression results as shown in Table 8, we have a regression equation for the behavior of converting to e-wallets in consumer payment activities in the Southeast provinces of Vietnam (Y) as follows:

$$Y = -1.469 + 0.275*THAIDO + 0.224*SUDUNG + 0.179*HANHVI + 0.279*ANTOAN + 0.074*HUUICH$$

The standardized regression model is defined as follows:

$$Y = 0.322*THAIDO + 0.206*SUDUNG + 0.193*HANHVI + 0.246*ANTOAN + 0.600*HUUICH$$

According to the standardized regression model, the HUUICH factor has a strong impact on the dependent variables of the behavior of converting to e-wallets in consumer payment activities in the Southeast provinces of Vietnam (Y) (with the standardized beta coefficient of 0.600), followed by THAIDO, ANTOAN, and SUDUNG standardized beta numbers being 0.322, 0.246, and 0.206, respectively. The lowest influence on the dependent variable is the HANHVI factors (with standardized beta coefficients of only 0.193).

Thus, from the above research results, it is shown that the factors affecting the behavior of switching to e-wallets in consumer payment activities in the Southeast provinces of Vietnam come from (i) Perceived usefulness of switching to e-wallets (HUUICH), (ii) Attitudes towards switching to e-wallets (THAIDO), (iii) Perceived safety of e-wallets (ANTOAN), (iv) Perceived ease of use of e-wallets (SUDUNG) and (v) Readiness behavior of switching to e-wallets (HANHVI).

From the results of the regression analysis of the factors affecting the behavior of switching to e-wallets in the payment activities of consumers of this study, it is

revealed that the influencing factor (i) Perceived usefulness of switching to e-wallets (HUUICH) is consistent with the previous research by Moon and Kim (2001), Lee et al. (2011), Aleadin et al. (2018), etc.; (ii) Attitudes towards switching to e-wallets (THAIDO) is consistent with the previous studies of Suh and Han (2002), Lee et al. (2011), Alaeddin et al. (2018), Nguyen (2021), etc.; (iii) Perceived safety of e-wallets (ANTOAN) is consistent with the previous studies of Nguyen & Nguyen (2018), Alaeddin et al. (2018), Nguyen (2021). However, the results of this study are somewhat contrary to those of Pham et al. (2019). The factors (iv) Perceived ease of use of e-wallets (SUDUNG) and (v) Readiness behavior towards switching to e-wallets (HANHVI) are consistent with the previous studies by Moon and Kim (2001), Lee et al. (2011) and Altounjy et al. (2020).

From the results of this study, it is believed that payment service providers through e-wallets who want to attract consumers to use e-wallet services need to focus on the usefulness, safety, ease of use of the e-wallet service. When the issues of usefulness, safety, and ease of use of e-wallet services are implemented, consumers' attitudes towards e-wallets will gradually change; thereby making the behavior of consumers using e-wallets more and more popular and the frequency will be greatly increased.

### **Conclusion**

This study has identified the factors affecting the consumer behavior of switching to e-wallets in payment activities in the Southeast provinces of Vietnam, including consumer perception of the usefulness of switching to e-wallets, consumer attitudes towards switching to e-wallets, consumer perception of the safety of e-wallets, consumer perception on the ease of use of e-wallets and consumer behavior in readiness for switching to e-wallets. Accordingly, in order to attract consumers to use electronic payment applications, e-wallet service providers need to improve the application's features towards convenience, accessibility, usability and safety in payment transactions. Besides, on the consumers' side, it is also necessary for them to gradually switch from cash payment methods to online payment through payment applications of banks and e-wallets to make the payment more convenient and fast. At the same time, on the government's side, there should be policies to promote digitization in payment and commerce activities, working towards e-government in transactions concerning budget revenue, finance, banking and payment.

With the above research results, it is believed that this study has the important contributions in offering more scientific arguments to help e-payment service providers orientate themselves regarding upgrading the usability and security of e-wallet payment applications, which aims to expand the market and improve business efficiency by developing e-wallets to suit consumers' tastes. Despite the above-mentioned contributions, it seems that this study is limited in its sample size, with 150 samples of consumers concentrated in the Southeast region of Vietnam. Therefore, in the future, it is possible to further study consumer behavior by increasing the sample size or adding some other variables related to consumer behavior for e-wallets to expand the scope of research.



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## IDENTYFIKACJA CZYNNIKÓW WPLYWAJĄCYCH NA ZACHOWANIA KONSUMENTÓW PRZY PRZEJŚCIU NA E-PORTFELA W DZIAŁALNOŚCI PŁATNICZEJ

**Streszczenie:** Kryptowaluta rośnie i stopniowo jest akceptowana w transakcjach płatniczych. Dlatego e-portfele powstały z myślą o potrzebach płatniczych konsumentów. Niemniej jednak czynniki wpływające na zachowanie konsumentów przy przechodzeniu na korzystanie z e-portfeli w płatnościach wymagają dalszych badań. Niniejsze badanie ma na celu określenie czynników wpływających na zachowania konsumentów związane z przechodzeniem na e-portfele w działaniach płatniczych w Wietnamie. Typowe badanie przeprowadzono na 150 konsumentach w południowo-wschodnim regionie Wietnamu, stosując podejście ilościowe do gromadzenia, przetwarzania i analizowania danych. Zastosowane ilościowe narzędzia badawcze obejmują statystyki opisowe, analizę alfa Cronbacha, eksploracyjną analizę czynnikową i wielowymiarową analizę regresji przy wsparciu SPSS 22.0. Wyniki badań pokazują, że pięć czynników wpływa na zachowanie konsumentów wobec przejścia na e-portfele w czynnościach płatniczych, w tym (i) postrzeganie przez konsumentów użyteczności przejścia na e-portfele, (ii) postawy konsumentów wobec przejścia na e-portfele, (iii) Postrzeganie przez konsumentów bezpieczeństwa portfeli elektronicznych, (iv) Postrzeganie przez konsumentów łatwości korzystania z portfeli elektronicznych oraz (v) Zachowanie konsumentów w gotowości do przejścia na portfele elektroniczne. W związku z tym badania sugerują, że dostawcy usług płatniczych za pośrednictwem e-portfeli, którzy chcą przyciągnąć konsumentów do korzystania z usług e-portfela, muszą skupić się na użyteczności, bezpieczeństwie, łatwości użytkowania i wygodzie usług e-portfela. Po rozważeniu kwestii użyteczności, bezpieczeństwa i łatwości korzystania z usług e-portfela, stosunek konsumentów do e-portfeli będzie się stopniowo zmieniał; tym samym spopularyzując zachowania konsumentów związane z korzystaniem z e-portfeli, zwiększając jego częstotliwość.

**Słowa kluczowe:** konsumenci, zachowania konsumentów, e-portfele, płatności.

## 识别影响消费者在支付活动中切换到电子钱包行为的因素

**摘要：**加密货币在支付交易中一直在增长并逐渐被接受。因此，电子钱包应运而生，以满足消费者的支付需求。尽管如此，影响消费者转向使用电子钱包支付行为的因素仍需进一步调查。本研究旨在确定影响越南支付活动中转向电子钱包的消费者行为的因素。对越南东南部地区的 150 名消费者进行了一项典型调查，采用定量方法收集、处理和审查数据。采用的定量研究工具包括描述性统计、Cronbach 的 Alpha 分析、探索性因素分析和在 SPSS 22.0 支持下的多变量回归分析。研究结果表明，五个因素会影响消费者在支付活动中转向电子钱包的行为，包括 (i) 消费者对转向电子钱包有用性的看法，(ii) 消费者对转向电子钱包的态度，(iii) 消费者对电子钱包安全性的看法，(iv) 消费者对电子钱包易用性的看法，以及 (v) 准备向电子钱包过渡的消费者行为。因此，研究表明，通过电子钱包的支付服务提供商想要吸引消费者使用电子钱包服务，需要关注电子钱包服务的有用性、安全性、易用性和便利性。一旦考虑到电子钱包服务的实用性、安全性和易用性问题，消费者对电子钱包的态度将逐渐改变；从而使消费者使用电子钱包的行为越来越流行，增加了其使用频率

**关键词：**消费者，消费者行为，电子钱包，支付