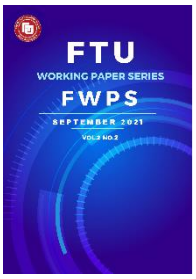

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PHÂN TÍCH HÀNH VI NGƯỜI DÙNG VỀ VIỆC SỬ DỤNG VÍ ĐIỆN TỬ TẠI HÀ NỘI

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Tóm tắt

Trong những năm gần đây, cuộc cách mạng công nghệ tài chính – fintech ở Việt Nam được thúc đẩy khá mạnh mẽ nhờ vào sự ủng hộ của chính phủ về một xã hội không dung tiền mặt, và sự phổ biến rộng rãi của điện thoại thông minh. Một trong những yếu tố quan trọng của cuộc cách mạng này là công nghệ ví điện tử. Bài nghiên cứu này được thực hiện nhằm giúp những công ty ví điện tử tìm ra được những khoảng trống giữa nhu cầu của người dung và sản phẩm của họ, từ đó tạo ra sự thay đổi cần thiết. Bài nghiên cứu thu thập ý kiến của 152 người dùng tại Hà Nội bằng phương pháp chọn mẫu thuận tiện và phương pháp chọn mẫu tích lũy nhanh. Các giả định sẽ được kiểm chứng bằng phương pháp phân tích hồi quy tuyến tính qua phần mềm SPSS. Kết quả nghiên cứu cho thấy những yếu tố ảnh hưởng đến quyết định sử dụng ví điện tử bao gồm: nhận thức về sự hữu dụng, sự dễ sử dụng, sự tin cậy, chi phí và khuyến mãi.

Từ khóa: ví điện tử, sử dụng, hành vi, ý định sử dụng

AN ANALYSIS OF USER BEHAVIORS ON THE ADOPTION OF E-WALLET IN HANOI

Abstract

The government's objective of a cashless society, combined with the country's high smartphone penetration, has ushered a fintech revolution in Vietnam. The e-wallet technology is a critical component of this transformation. The research aims to enable stakeholders in the business of e-wallet to have a comparison on their service performance versus the perception of the customers, thus implementing changes where necessary to foster the revolution. The study collected responses from 152 participants in Hanoi, using the method of convenience and snowball sampling. The hypothesis developed in the research model will be validated by conducting linear regression analysis by SPSS software. The results showed that perceived usefulness, perceived

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ease of use, perceived credibility, perceived cost, and promotion were deemed influential to the e-wallet adoption of the respondents.

Key words: e-wallet, adopt, behavior, intention to use.

1. Introduction

Although e-wallets have actually existed for over 20 years now, it's only within the last decade that they have rapidly evolved, revolutionizing the way we pay for goods and services. As revealed by a survey conduct by a market research company - Statista, in 2017 the global e-wallets market was worth USD 405 billion. The Statista data also revealed that the number of people choosing e-wallets to manage their payments is set to jump over 1.17 billion in 2020, growing by 29.6% year-on-year.

Despite the fact that cash remains king in Vietnam, the number of mobile payments reached nearly 700 million by end-August in 2020, up 980% against in the same period of 2019, quoted by Reuters. As Vietnam's economy has been growing fast and strongly recently, the demand for services is rising significantly, especially in the finance industry. Vietnam's only 2 unicorn startups also operate in the fintech industry, including tech firm VNG and VNPay, proving the promising future of a cashless economy. Thanks to the huge market potential, the competition in mobile payment market has heated up with the participation of many new organizations. Thus, customer loyalty plays a key role in the development of e-wallet payment systems for expanding their market share. This study aims to provide a holistic view of factors that can affect the behavioral intention to adopt e-wallets and recommend growth strategies for e-wallet service providers so that they better cater for the needs of users.

This study consists of 6 sections: the first section will introduce the objective of the paper. Section 2 will review previous studies on this topic and develop hypothesis of the paper. The research model, methodology and results will be detailed in section 3 and 4. The last two sections are the discussion of the findings and conclusion.

2. Literature review and hypothesis development

2.1. E-wallet

E-wallet, in other words, digital wallet, is a software-based system that stores users' payment information and passwords for various payment methods and websites (Widodo *et al.*, 2019). The Committee on Payment and Settlement Systems of the Bank for International Settlements defines an electronic purse or wallet as "a reloadable multipurpose prepaid card which may be used for small retail or other payments instead of coins".

2.2. User behavior

The term user behavior is coined by two single parts, which are "user" and "behavior". When "user" can be straightforwardly understood in a linguistic way as the person who use some products, "behavior" is a more complex term. Heider (1958), in his "naive analysis of behavior", describes that the "basic components" of a "behavior" consists of a person's trying to do something, intending to do something and having the ability to to something. Bergner (2011) also agree with this definition and related it to his model of 8 parameters of behavior. Bergner presented in this paper that the "Want" parameter is another way to represent the concept of "trying to do something" and "intending to do something" mentioned above. This proves that

intention to do something is regarded as a sub-component of "behavior" based on previous studies. This research will focus on the "intention" component of "behavior", in other words, called behavioral intention to adopt e-wallet.

Behavioral intention is understood as "a person's subjective probability that he will engage in a given behavior" (Fishbein & Azjen, 1975). Azjen went on to say that behavioral intention represents how far a person is willing to go and how much effort he plans to put into to complete a behavior in his later research on Theory of Planned Behavior in 1991.

2.3. Factors affecting user behavior on the adoption of e-wallet

This study will employ the Technology Acceptance Model to study the factors affecting the behavioral intent of adopting e-wallet in Hanoi. Technology Acceptance Model (TAM), first introduced in 1989, by Davis, was considered to be specifically designed to address the factors of users' system technology acceptance (Chau and Hu, 2002). Technology Acceptance Model was found to be easy to apply across different research settings (Lai, 2017). There are a number of studies about the intention to use e-wallet in Vietnam that is conducted by the TAM model.

The paper of Nguyen and Pham (2016) used an extended TAM model to study the factors influencing the behavioral intent of An Giang consumers. This model added another 5 variables including Perceived Credibility, Perceived Costs, Social Influence, Variety of service and Mobility to the original model. The paper showed that all factors had a positive effect on the behavior intention to adopt e-wallet, except for Social Influence and Perceived Costs. Another research from Tu (2019) adapted the whole model of Nguyen & Pham research mentioned above, but its research is different. Instead of running regression analysis, the study only used descriptive analysis to drive conclusions from questionnaire responses. This method has a limitation about the quality of the conclusion, when the conclusion is presented under the author's own way of interpreting and analyzing data. Out of seven factors from the original model, only Perceived Cost was not found influential towards intention of using mobile wallet. The extended TAM model proposed by Nguyen *et al.* (2020) with 3 additional variables including Social Impact, Perceived Reliability and Perceived Costs, found that all five factors had the effect on the intention to use Momo e-wallet of Vietnamese people, which is its research topic.

This research aims to strengthen and validate the conclusion made by a few previous studies, as well as exploring new factors that can affect the intention to use e-wallets, which is Promotion. There is only one research about this factor studying about Vietnam so far, conducted by Hoang *et al.* (2020) with the topic "The role of Promotion in Mobile Wallet Adoption – A research in Vietnam". This research acknowledged that promotion may affect intention to use mobile wallets, which makes Promotion worth including in the author's study about intention to use e-wallet with other variables, to increase the comprehensiveness of the research.

2.3.1. Perceived usefulness

Perceived usefulness refers to "the degree to which a person believes that his/her performance would become more efficient by using a particular system" (Davis 1989). It was found in previous studies that usefulness was associated with time-saving and speed by Nguyen & Pham (2016), Aydin & Burnaz (2016) and Tandon *et al.* (2017). Considering other papers

studied this variable under the term "Performance Expectancy", which is equivalent to "Perceived Usefulness", the similar conclusions are also obtained. Hoang *et al.* (2020), Phan *et al.* (2020) acknowledge that Perceived Usefulness ranked first and second respectively in terms of impact level towards intention to use e-wallets. The hypothesis for Perceived Usefulness is formulated as below:

H1: Perceived Usefulness (PU) has a positive impact on the behavioral intention to use e-wallet of Hanoi people

2.3.2. Perceived ease of use

Perceived ease of use is defined as "the degree to which a person believes that using a particular system is free of effort" (Davis, 1989). Venkatesh *et al.* (2003) regarded ease of use to the extent that people can use systems effortlessly. Similarly, Dai & Palvia via Nguyen & Pham (2014) stated that the usability and learnability of a digital solution are critical, regardless of whether the users are tech-savvy or not. In the research about Momo e-wallet adoption case in Vietnam, Nguyen *et al.* (2020) acknowledged that ease of use is the most influential factor in consumers' intention to use e-wallet. Tu (2019) and Nguyen & Pham (2016) also found the same result with Nguyen *et al.* (2020). In the context that e-wallet service providers want to acquire diverse users in different age group, different level of education and income, making the application easy to understand is crucial to attract them. The hypothesis for Perceived Credibility is formulated as below:

H2: Perceived Ease of Use (PEU) has a positive impact on the behavioral intention to use e-wallet of Hanoi people.

2.3.3. Perceived Credibility

Zhao & Kurnia (2014) described perceived credibility (or perceived trust, perceived reliability, perceived security) as "the willingness of the consumers to take a risk to fulfil their demands based on the expectation towards the service provider". Perceived Credibility was found to have positive impact on the intention to use Momo e-wallet by Nguyen *et al.* (2020). Similar conclusion was also found in the research paper of Tu (2019), Nguyen & Pham (2016), Cheah *et al.* (2011) and Zhou *et al.* (2010). Phan *et al.* (2020), on the other hand, found that the youth in Vietnam did not pay attention to security and risk. Therefore, it is presumed that building credibility of the e-wallet is crucial to influence customers' use intention according to most of research papers, but it has chances that the opposite results can still be incurred. The hypothesis for Perceived Credibility is formulated as below:

H3: Perceived Credibility (PCR) has a positive impact on the behavioral intention to use e-wallet of Hanoi people.

2.3.4. Perceived Cost

Shafinah *et al.* (2013) explained the term "Perceived Cost" as the costs that will potentially incur by consumers in the future during the process to adopt a new technology such as the costs for initial, subscription and communication stage. Perceived costs, as described by Nguyen (2013), are the costs that an individual perceives he or she must pay in order to use a technology product. It could be transaction fees, a monthly or annual price charged by the service provider, the cost of a mobile device, or the cost of a mobile data plan. While in the research of Nguyen &

Pham, the impact of costs was found to be insignificant, Kurnia & Zhao (2014) pointed out that the extra money would make the consumers reconsider whether or not to adopt the mobile payment option. Therefore, the hypothesis is formulated as below:

H4: Perceived Cost (PC) has a positive impact on the behavioral intention to use e-wallet of Hanoi people.

2.3.5. Social Influence

As mentioned above, the concept of social influence derived from the ToRA of Azjen and Fishbein (1975), it is understood as "one's perception of the social pressure to engage or not to engage in a behavior". Venkatesh *et al.* (2003) stated that social influence can have an impact on behavioral intention to adapt technology. The research of Tu (2019), Phan *et al.* (2020), Hoang *et al.* (2020) and Nguyen *et al.* (2020) all showed that social influence played an important role in determining the intention to use mobile wallet. However, there are a number of research found that Social Influence is not an influential factor on behavioral intent. The TPB in Chau and Hu (2002) noted that social norm and behavior intention to use finding was negative and did not support that social norm, which is similar to social influence, would influence behavior intention. The findings of Nguyen & Pham (2016) also rejected the hypothesis that social influence had a positive impact on behavioral intent to use mobile commerce. Therefore, the author decided to validate this controversial element once again in this paper.

H5: Social Influence (SI) has a positive impact on the behavioral intention to use e-wallet of Hanoi people

2.3.6. Promotion

Promotion is considered as a short-term marketing strategy and used to create awareness and interest in products or services. It helps the companies to attain sales and marketing goals (Dubey, 2014). Moreover, promotion could affect the consumer's mind like a benefit to him/her, then creating the changes in consumer behavior (Bin Yusuf, 2010). To encourage users to use e-wallets, sellers utilize a variety of promotion techniques such as coupons, product upgrades, price reductions, free samples, and free gifts. As emphasized by several authors, there are academic and managerial deficiencies in the profound understanding of the relationship between promotion and consumer behavior (Hoang *et al.*, 2020). That is why the construct of promotion is added to this study.

H6: Social Influence (SI) has a positive impact on the behavioral intention to use e-wallet of Hanoi people

3. Research methodology

3.1. Research model

As explained in the section 2.3, this paper utilizes the TAM model to develop the research framework since TAM model is now a well-recognized model to study about the acceptance of new technology products (Aydin & Buznar, 2016). The paper adapted the research model of Nguyen & Pham (2016), which covered a number of variables, to ensure the comprehensiveness of the research topic.

The research model comprises 6 independent variables and one dependent variable. 6 independent variables consist of Perceived Usefulness, Perceived Ease of Use, Perceived Credibility, Perceived Cost, Social Influence and Promotion. The dependent variable is the behavioral intention to use e-wallets.

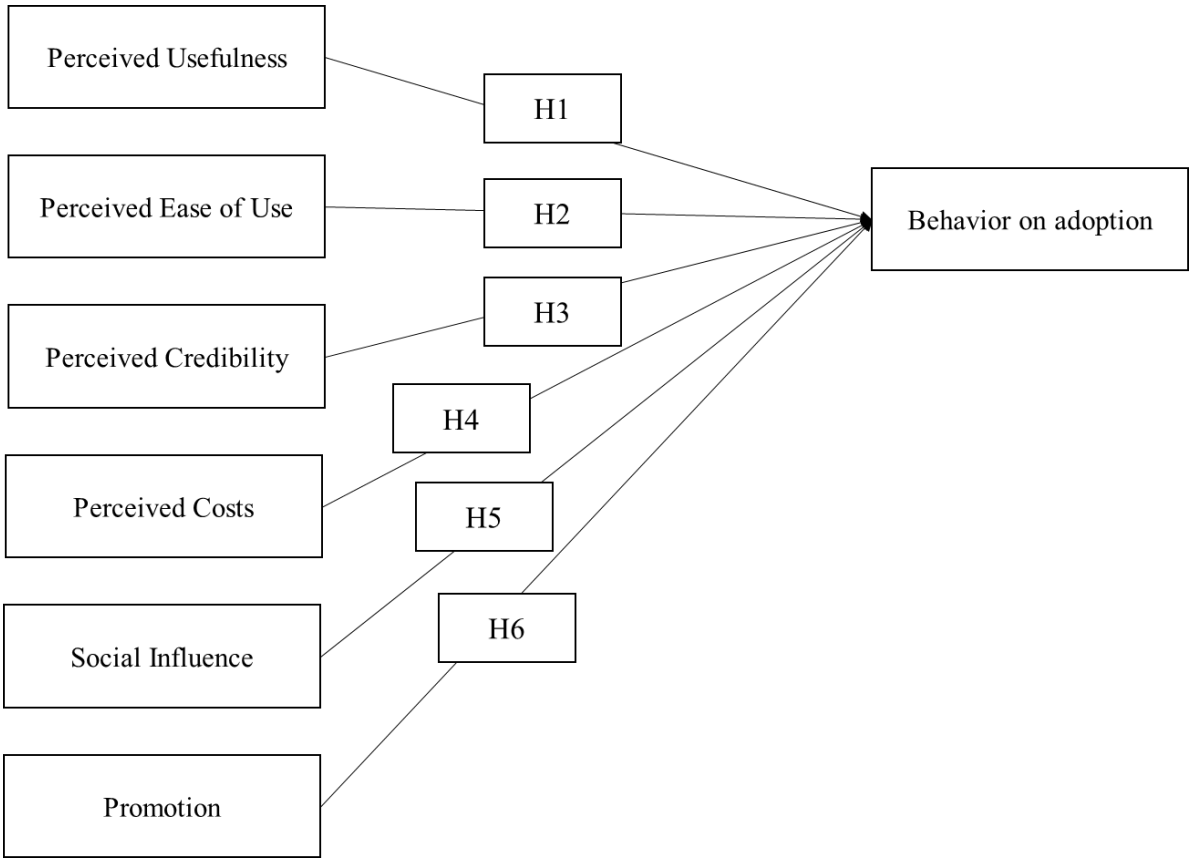

Figure *Error! No text of specified style in document.***.1**. Proposed research model

Source: Compiled by the author

3.2. Scale design

As explained in Literature review section, this research will focus on the "intention" component of user behavior on the adoption of e-wallets instead of all three components of "behavior" as Heider (1958) defined. All three components of "behavior" are defined to include a person's trying to do something, intending to do something and having the ability to to something. Therefore, the scales of the Behavior on Adoption (BA) mainly measure the intention to use e-wallet in the future.

Table Error! No text of specified style in document**.1**. Scale design

Constructs	Code	Description	Source
Perceived Usefulness (PU)	PU1	Using e-wallets helps me conduct transactions more quickly	Davis *et al.* (1989)
	PU2	Using e-wallets helps me conduct transactions easier	
	PU3	Using e-wallet helps me improve the quality	

Constructs	Code	Description	Source
		of transactions I conduct	
	PU4	Using e-wallet increases the effectiveness in conducting my transaction	
Perceived Ease of Use (PEU)	PEU1	I can quickly become proficient in using e-wallet	Davis *et al.* (1989), Venkatesh *et al.* (2003), Tu (2019)
	PEU2	I can learn to use the e-wallet easily	
	PEU3	The interface of the e-wallet is user-friendly and easy to understand	
	PEU4	The procedures of e-wallet (steps of making payment, transfer money) are simple to me	
Perceived Credibility (PCR)	PCR1	I believe that transactions are processed in a secure and trustworthy way	Nguyen & Pham (2016), Tu (2019), Author's recommendation
	PCR2	I believe the possibility of my personal information being leaked is low	
	PCR3	I believe that the possibility of e-wallets being hacked is low	
	PCR4	I believe e-wallet service providers will not share my information with other third parties	
	PCR5	I believe that my claims or complaints will be satisfactorily solved	
Perceived Cost (PC)	PC1	The cost of using the mobile Internet to use e-wallets is affordable	Nguyen & Pham (2016), Tu (2019)
	PC2	The service fee of e-wallets is affordable	
	PC3	I will use e-wallets even if its service fee increases	
Social Influence (SI)	SI1	People close to me think that I should use e-wallets	Venkatesh *et al.* (2003), Zhou *et al.* (2010), Nguyen & Pham (2016)
	SI2	People close to me can assist me with the use of e-wallets	
	SI3	The media runs advertisement affect my intention to use the mobile wallet.	
Promotion (P)	P1	Promotions help me save my money	Author's recommendation
	P2	Promotions on e-wallets are attractive to me	
	P3	I care about the value of promotion on each transaction	

Constructs	Code	Description	Source
Behavior on Adoption (BA)	BA1	In the next 6 months, I will (continue) to use e-wallets	Davis *et al.* (1989), Venkatesh *et al.* (2003), Tu (2019)
	BA2	I will use e-wallet more often in the future	
	BA3	I will introduce and encourage people around me to use e-wallet	

Source: Compiled by the author

Each statement above will be answered by the 5-point Likert scale. There are 5 options of this scale, including 1 = "Strongly Disagree", 2 = "Disagree", 3 = "Neutral", 4 = "Agree", 5 = "Strongly Agree". The respondents will be asked to rate the statements by choosing the most suitable option on this scale.

3.3. Data collection and analysis method

This paper primely utilizes primary data under the format of questionnaire responses, conducted and distributed via Google forms. The questionnaire was sent to 168 participants via social media and received 152 qualified responses. The respondents are Hanoi citizens, aging between 20 and 35 years old, which conforms with the research scope.

After being collected, the data from questionnaire responses will be cleaned and analyzed by SPSS software. To commence with, descriptive analysis will be presented for the general information part. The next part is to evaluate the reliability of the scale by using Cronbach's Alpha reliability coefficient. Afterwards, the Exploratory Factor Analysis (EFA) is conducted to discover the underlying structure of measured variables in the research model. The last step is that the regression analysis is implemented to testify the hypotheses.

4. Research results and discussion

4.1. Cronbach's Alpha reliability test

Results from reliability analysis shows that each and every of seven measures has a qualified Cronbach's Alpha, ranging from 0.797 to 0.882, and each and every of the 25 observed variables has corrected item-total correlation all higher that 0.3, at least standing at 0.590. That indicates the observed variables in each group are linked together for one factor and contribute to the reliability of the scale. PCR4 is the only observed variable deleted from the research model to improve the reliability analysis result. Hence, all observed variables proposed, except PCR4, meet the standard to be used for EFA analysis in the next step.

Table Error! No text of specified style in document.**.2.** Consolidated Cronbach's Alpha

Variables	Cronbach's Alpha
Perceived Usefulness (PU)	.846
Perceived Ease of Use (PEU)	.867
Perceived Credibility (PCR)	.845
Perceived Cost (PC)	.882

Variables	Cronbach's Alpha
Social Influence (SI)	.836
Promotion (P)	.797
Behavior on adoption (BA)	.820

Source: Complied by the author

4.2. Exploratory factor analysis

In this paper, the EFA was conducted twice. At the first attempt, one requirement regarding the difference of factor loading was not satisfied. To be more specific, with the observed variable PU4, there was two factors loaded at the same time, but the difference between the larger factor loading coefficient and the smaller one was not higher than 0.3, which was only 0.065.

On the second attempt, the KMO coefficient is 0.841 ($0.5 \leq KMO \leq 1$), indicating that factor analysis is appropriate. This KMO coefficient result of the paper satisfied the requirements, thus, the sample size is acknowledged to be sufficient for conducting factor analysis. In addition, Barlett's test is statistically significant with sig = 0.000 < 0.05, suggesting that the observed variables correlate with each other in each factor group (Hoang & Chu, 2004). All the factor loadings of observed variables are higher than 0.5. The EFA analysis method extracted six factors with the total variance reached 74.931%, showing that the six extracted factors explain 74.931% of the data variation. Total Variance Explained has a cumulative variance of factors of 74.931%, and this figure is greater than 50%, which means it is acceptable. The results of the EFA analysis yielded results consistent with the structure of the six constructs. Therefore, all constructs of this model ensure reliability and convergent validity. These constructs would be used in further analysis to test the proposed hypotheses.

Table Error! No text of specified style in document.**.3.** KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.851
Bartlett's Test of Sphericity	**Approx. Chi-Square**	1,665.118
	df	210
	Sig.	.000

Source: Compiled by the author

Table Error! No text of specified style in document.**.4.** Rotated Component Matrix[a]

	Component					
	1	**2**	**3**	**4**	**5**	**6**
PEU1	.831					
PEU4	.823					
PEU2	.813					
PEU3	.759					
PCR1		.835				

	Component					
	1	**2**	**3**	**4**	**5**	**6**
PCR3		.796				
PCR5		.772				
PCR2		.759				
PC3			.858			
PC1			.829			
PC2			.822			
SI3				.878		
SI1				.851		
SI2				.850		
PU2					.821	
PU1					.794	
PU3					.768	
P2						.819
P3						.800
P1						.784
Extraction of sums of squared loadings						
Cumulative (%): 74.931%						

Source: Complied by the author

4.3. Regression results

The correlation between each independent variable and the dependent variable is significant. The most highly correlated relationship is PU – BA with r = 0.621 at 1% significance level. Followings are those with moderate correlations, in descending order of effective level: PEU – BA with r = 0.546, PC – BA with r = 508, PCR – BA with r = 487, P – BA with r = 0.483. Independent variable SI is least correlated with the dependent variable with r = 0.196 at 5% significance level. These results qualify the use of regression in the next stages of the research.

Table Error! No text of specified style in document.**.5.** Pearson correlations among study variables

	BA	**PU**	**PEU**	**PCR**	**PC**	**SI**	**P**
BA	1						
PU	**.621****	1					
PEU	**.546****	**.426****	1				
PCR	**.487****	.387**	.346**	1			

	BA	PU	PEU	PCR	PC	SI	P
PC	**.508****	**.494****	.354**	.397**	1		
SI	.196*	0.111	0.124	0.158	0.072	1	
P	**.483****	**.426****	.341**	.270**	.359**	0.108	1

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Source: Compiled by the author

As can be seen in table 4.4, there are also significant correlations between pairs of independent variables, notably between each of [PEU, PC, P] and PU at 1% significance level. Therefore, the possibility of multicollinearity is likely, which needs to be further examined during regression, the results of which are shown in table 4.5 and 4.6.

Table Error! No text of specified style in document**..6.** Model summary ANOVA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	755[a]	.570	.552	.33931	1.914

ANOVA[a]

Model		Sum Squares	ofdf	Mean Square	F	Sig.
1	Regression	22.125	6	3.688	32.030	.000[b]
	Residual	16.694	145	.115		
	Total	38.819	151			

a. Dependent Variable: BA

b. Predictors: (Constant), P, SI, PCR, PEU, PC, PU

Source: Compiled by the author

The model summary shows R Square = 0.570 and adjusted R Square = 0.552, which reveals that 55.2% of the data fit the regression model. Six independent variables influence 55.2% of the change of the dependent variable, the remaining 44.8% are due to variables outside the model and random error.

This research was conducted with a humble sample of 152, thereby having the deducing effect on general properties of the population. The purpose of the F-test in the ANOVA table is to check whether this linear regression model is generalizable and applicable to the population. The p-value of the F-test is 0.000 < 0.05. Thus, the constructed linear regression model is suitable for the population.

Table Error! No text of specified style in document.**.7.** Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.323	.305		-1.058	.292		
	PU	.292	.066	.303	4.396	.000	.624	1.602
	PEU	.273	.071	.241	3.818	.000	.745	1.343
	PCR	.184	.066	.174	2.777	.006	.757	1.320
	PC	.122	.059	.138	2.091	.038	.679	1.473
	SI	.082	.059	.077	1.392	.166	.966	1.035
	P	.183	.068	.167	2.678	.008	.764	1.309

a. Dependent Variable: BA

Source: Compiled by the author

The results show that in the regression model, p-value coefficients of the independent variables except SI are less than 0.05, so the rest of the relationships are statistically significant. Except SI, these hypotheses all achieved statistical value at 5% significance level (p-value < 0.05). VIF coefficient is less than 2 so no multicollinearity occurs. The standardized coefficient Beta shall be used to assess the degree of impact between the independent and the dependent variables.

A structural model taken from the results in table 3 for the linear regression between PU, PEU, PCR, P, PC (statistically significant relationships) and BA is as follow:

BA = -0.323 + 0.292PU + 0.273PEU + 0.184PCR + 0.122PC + 0.183P

The results observed indicate that five factors – PU, PEU, PCR, PC, P – have significant positive impact on BA. In descending level of effect order, PU, PEU, PCR, P, and PC have a direct relationship with BA with Beta of 0.303, 0.241, 0.174, 0.167 and 0.138, respectively.

5. Discussion

Perceived usefulness is found to be the most influential factor to the behavioral intent of using e-wallet in Hanoi, with the highest standardized beta coefficient of 0.303. Nguyen & Pham (2016), Tu (2019), Nguyen *et al.* (2020), Nguyen (2013), Hoang *et al.* (2020), Phan *et al.* (2020) all generated the same conclusion about the significant positive effect of perceived usefulness on the intention to use e-wallet. It was found in previous studies that usefulness was associated with time-saving and speed by Tandon *et al.* (2017) and Aydin & Burnaz (2016).

The result also showed that perceived ease of use had the second biggest impact on the intention to use e-wallet of Hanoi users. While this finding supports prior conclusions on this

topic from Nguyen & Pham (2016), Tu (2019), Nguyen *et al.* (2020), and Hoang *et al.* (2020), it contradicts with the study of Phan *et al.* (2020). This difference can be triggered by the difference in the research scope of two studies. While the paper of Phan *et al.* (2020) focused on the young people in Vietnam, ranging from 18 to 25 years old, this paper collected insights from a broader scope with people aging 20 to 35 years old. With the younger group, they are more tech-savvy and can learn to use technology products more easily than the older group.

Perceived Credibility ranks third in terms of its impact significance toward the intention to use e-wallet. This finding is supported by some previous papers, including papers from Nguyen & Pham (2016), Tu (2019), Nguyen (2013), Nguyen *et al.* (2020). Cheah *et al.* (2011), Zhao & Kurnia (2014) also indicated that the higher risk the adoption can incur, the less likelihood people decide to use the service. Zhou *et al.* (2010), also agreed that the credibility is influential, but it is not very significant. However, research by Phan *et al.* (2020) found that security and privacy, which is similar in meaning to credibility, did not have an impact on the behavioral intent to adopt e-wallet. This can be explained based on the fact that that study explored the opinions of the youth in Vietnam, who are more open-minded towards acceptance of technological products.

Perceived cost held the last position in terms of impact significance on the behavioral intent of adopting e-wallet. With a limited number of research models adapting this factor, there are two prior studies supporting this finding, including those from Nguyen (2013) and Nguyet *et al.* (2020). Zhao & Kurnia (2014) also found that a marginal increase in service fee can negatively influence the behavioral intent of users. On the other hand, research by Nguyen & Pham (2016) suggested that perceived cost was not having an impact on behavioral intent to use e-wallet. This difference results from the fact that the previous paper studied the topic of e-commerce, which does not require users to pay additional fees to use while e-wallet still does.

Among 6 factors proposed in the research model, only the hypothesis of social influence is rejected. Social influence is found to have no impact on the behavioral intent of using e-wallet of people living in Hanoi. This finding is consistent with the result of Nguyen & Pham (2016), but contradicts with studies of Nguyen *et al.* (2020), Nguyen (2013), Phan *et al.* (2020) and Hoang *et al.* (2020). Shih and Fang (2004) also found that it was in line with the findings of Venkatesh and Davis (2000) that subjective norm was likely to have a significant influence on behavioral intention to use in a mandatory environment, whilst the effect could be insignificant in a voluntary environment. According to Davis (1989), social norms scales have poor psychometric properties and may have no effect on consumers' behavior intentions, especially when the information system application, such as an e-wallet, is fairly personal and individual usage is voluntary. Moreover, as the responses of questionnaire were mainly collected from people possessing bachelor's degrees and above, this indicates that they have enough knowledge and awareness to make their own decision without the interference from other people.

The result of promotion variable turned out to be positive with the hypothesis being accepted as the fourth factor influential to the behavioral intent of using e-wallet, which is one level higher than perceived cost. The study of Hoang *et al.* (2020) on "The role of promotion in mobile wallet adoption in Vietnam" pointed out that putting the new promotion variable to the research model of the adoption and use of technology was necessary. This research has confirmed that people care about promotion when it comes to adopting e-wallet.

6. Conclusion

The paper has achieved the objective, which is to gain understanding about the state of e-wallet in Hanoi and analyze the factors influencing the behavioral intention to use e-wallet of consumers. 152 qualified questionnaire responses show that more than 80% of people are currently using at least one e-wallet, and over 70% of respondents conduct more than 5 transactions per month, indicating that e-wallet is gradually becoming popular with consumers in their daily life. Regarding the results of linear regression analysis, perceived usefulness, perceived ease of use, perceived credibility, promotion and perceived cost are the factors having a significant positive impact on the behavior intent of using e-wallet of Hanoi citizens. Perceived usefulness and perceived ease of use are the two most influential factors, while perceived cost ranks last. Only social influence is found to have no influence on the intention to use e-wallet of Hanoi citizens, which is explained by the capability to make their own independent decisions.

The findings of this paper can be utilized as references by those in the e-wallet business who want to learn more about client expectations, such as service providers, marketing specialists, mobile network carriers, and banking institutions. Identification of the elements that influence consumers' behavioral intent to use e-wallet allows stakeholders to build suitable solutions and strategies to attract new customers and retain existing ones. Perceived usefulness and perceived ease of use can be improved by offering an ecosystem of services to the customers, as well as increasing the convenience by the collaboration between different e-wallet service providers. Also, credibility of e-wallet service also needs to be upgraded and communicated clearly to users with a view to raise their trust in applications. Regarding perceived cost and promotions, it is advisable that e-wallet providers develop a system of personalized promotion to make it relevantly attractive to users, together with loyalty programs which can offer monetary benefits for users.

Because the study was conducted in Vietnam and the respondents were selected using convenience sampling, the findings may have certain limitations and may not be universally applicable. To acquire a more comprehensive knowledge of the e-wallet adoption, future research will require a larger sample size. Other elements not covered in this paper should be investigated in future research, as well as the relationship between demographics and the factors. Furthermore, having a mix of non-users and users fill out the survey can help future research publications be more comprehensive as the opinions of these two groups can be remarkably different.

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