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THE FACTORS AFFECT ON THE SATISFACTION OF CUSTOMERS USING MOBILE BANKING: AN EMPIRICAL STUDY IN VIETNAM

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This study aims to examine the factors affect on the customer's satisfaction in using mobile banking in Vietnam. A survey of 358 individual customers in age of 18-40 years was conducted. Collected data were processed by SPSS 20.0 software with exploratory factor analysis (EFA), scale reliability testing, correlation analysis, and linear regression analysis. The results showed that trust has the strongest impact on customer's satisfaction, followed by brand equity, and system quality. Information quality and perceived financial cost have no impact on customer's satisfaction. Finally, some implications are given to increase customer satisfaction using mobile banking in Vietnam.

Keywords: Mobile banking, trust, customer satisfaction, brand equity, perceived financial cost

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1. Introduction

The financial sector has undergone significant changes over the past decade, along with changing consumer's needs and the impact of new technologies that have resulted in the emergence of new banking products and services (Malaquias & Hwang, 2019; Baptista & Oliveira, 2015). A part of these changes is using e-banking products and services for basic banking transactions (Geebren et al., 2021). As one of the newest and most innovative technologies, mobile banking is a breakthrough in the banking sector. Mobile banking allows customers to perform financial transactions through their mobile devices, smartphone or personal digital assistant (PDA) at every time and place as customer choice (Alalwan et al., 2017; Baptista & Oliveira, 2015; Zhou et al., 2010; Luarn & Lin, 2005).

Vietnam is one of the most potential growing mobile banking market in Asia, with the number of transactions via mobile banking channel increasing

by 198%, reaching 418 million with a total transaction value reached 21.92 million billion VND, an increase of 210% compared to 2018 and forecasted to grow by 400% by 2025 (SBV, 2020). The number of smartphone users in Vietnam reached 35.67 million and is predicted to reach 42.66 million by 2022 (Statista, 2019). However, only 39% of people use smartphones for e-banking transactions (Appota, 2018), which means that mobile banking has not really been developed yet. Therefore, it can be seen that the biggest challenge for this new technology is to convince users to use mobile banking as a complete alternative method to the traditional transaction ways. To persuade users to use mobile banking services, research on factors affecting customer satisfaction using mobile banking is a vital work because: "Satisfaction becomes after using in process sense, but a positive experience leads to higher satisfaction in the multiplier sense" (DeLone & McLean, 2003, p. 23). In this study, we clarify two questions:

(1) What are factors that affect the satisfaction of mobile banking users in Vietnam?

(2) How to enhance the satisfaction of mobile banking users in Vietnam?

2. Literature review

2.1. Customer satisfaction in mobile banking

Customer satisfaction is used as a general measure of effectiveness of an information system effectiveness (Geebren et al., 2021; Chatterjee et al., 2018; Tam & Oliveira, 2017; Chung & Kwon, 2009; DeLone & McLean, 2003). Users satisfaction is an important construct as it relates to other important variables such as analysis and design of information systems (Chung & Kwon, 2009), thereby helping to improve operational efficiency and the success of the system. In a web-based system, customer satisfaction depends on many factors including design, content, website interface, navigation and information structure (General & Kwon, 2009; McKinney et al., 2002). Satisfaction is an important factor in motivating customers to continue using the company's products and services (Ha Tran-Thi-Phuong et al., 2021; Zhou, 2013), increasing customer loyalty (Berraies et al., 2017), reduces price sensitivity, increases customer base, and improves business performance (Fornell, 1992).

Customer satisfaction can be understood in two aspects: Transaction-specific satisfaction; and overall satisfaction (Anderson, 2000). Satisfaction in this study is understood in the sense of accumulative satisfaction or overall satisfaction, long-term satisfaction based on the overall experience of purchasing and using services over a long period of time (Fornell, 1996). Therefore, satisfaction is a diverse construct, not only including factors of perceived quality (DeLone & McLean, 2003; Tam & Oliveira, 2017; Chatterjee et al., 2018; Berraies et al., 2017), perceived financial cost (Berraies et al., 2017), but also related to other factors of the supplier business such as: brand (Ha Tran-Thi-Phuong et al., 2021; Lei & Chu, 2015) and user trust (Geebren et al., 2021; Sharma & Sharma, 2019; Berraies et al., 2017).

2.2. The DeLone and McLean Model of Information Systems Success

The model of information systems success was first developed by DeLone and McLean (1992) (also known as the D&M model) based on Mason's model (1978; cited by Geebren et al., 2021). It's about information user's behavior and system performance. The original version of the D&M model formed the interrelationship between the six success factors of information systems: system quality, information quality, use, user satisfaction, individual impact, and organizational impact.

The updated D&M model (DeLone and McLean, 2003) adds "service quality" factor into the model with argument that: if information quality and system quality are the most important parts in order to measure the success of individual system, service quality is the most vital one for measuring the overall success of an information system. However, the service quality factor is excluded from the proposed model because this study is based on individuals who have used mobile banking. It means that mobile banking transactions are mainly takes place through mobile banking applications on customers' mobile phones. Moreover, communication with the bank is less, so mobile banking is considered as a personal system (Chung & Kwon, 2009).

2.3. Research model and hypothesis

2.3.1. Information quality and customer satisfaction

Information quality includes characteristics such as relevance, completeness, accuracy and timeliness (Sharma & Sharma, 2019; Chatterjee et al., 2018; Tam & Oliveira, 2017; Zhou, 2013). Akter et al (2013) commented that information quality is one of the main determinants affecting user attitudes towards the technology they use. Therefore, information quality can be considered as the main construct of satisfaction (Chatterjee et al., 2018). Zhou (2013) also showed that in case of not having good information quality, consumers will have to put a lot of effort into dissecting information, thereby increasing their dissatisfaction. Gao & Bai (2014) also showed that consumer satisfaction may

decrease due to not being able to meet the expectation of getting quality information from using mobile banking. Based on these discussion, the following hypothesis has been formulated:

Hypothesis 1: Information quality has a positive impact on customer's satisfaction in using mobile banking.

2.3.2. System quality and customer satisfaction

Use of mobile banking means customers do not directly contact with service provider (staff, branches/transaction offices, equipment, etc.), therefore the quality system acts as a "online store" leads to mobile banking behavior (Gao & Waechter, 2017). System quality reflects level of easy to use, response time, user interface, reliability and stability (DeLone & McLean, 2003; Tam & Oliveira, 2017; Sharma et al., 2017; Zhou, 2013). If these aspects are missing, the user may doubt the quality and ability of the service provider because of increasing difficulty for customer in using the device and may reduce user's intention to use mobile banking. Tam & Oliveira (2017) showed that better experience with the system can lead higher user satisfaction and mobile banking behaviour of customers. Based on the above arguments, it can be further assumed that a higher quality system can increase satisfaction of users. Therefore, the hypothesis is:

Hypothesis 2: System quality has a positive impact on customer's satisfaction in using mobile banking.

2.3.3. Trust and customer satisfaction

For a long time, trust has been considered a catalyst in creating business relationships in online environment, especially in the context of e-commerce (Chen, Hsiao, & Hsieh, 2019). Trust relates to one party's expectations of other's specific actions as well as the risks associated with it (McKnight et al., 2002). Similarly, in the context of mobile banking, customers expect that the bank will provide convenient and appropriate services. If mobile banking meets users' expectations, they will tend to trust mobile banking services (Malaquias & Hwang, 2016; Mehrad & Mohammadi, 2017; Alalwan et al.,

2017). Increasing trust in mobile banking will cause a higher level of customer satisfaction, thereby ensuring the success of mobile banking services (Sharma & Sharma, 2019; Chatterjee et al., 2018). Therefore:

Hypothesis 3: Trust has a positive impact on customer's satisfaction in using mobile banking.

2.3.4. Perceived financial cost and customer satisfaction

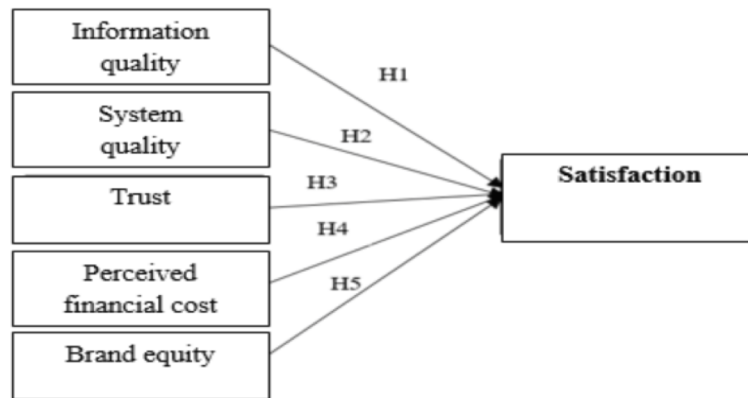
There is a general view that value has a great impact on customer satisfaction (Cronin et al., 2000). High service quality isn't sure about making high customer satisfaction. On the one hand, if the service price is considered high, it can still have a negative impact on customer satisfaction; and on the other hand, even though a service may not be of high quality, but competitive price, it can still create and increase value and customer satisfaction (Caruana et al., 2000).

In traditional banking services, price can be a factor affecting customer satisfaction (Ho Huy Tuu & Le My Linh, 2014). In mobile banking studies, perceived financial cost is viewed as users believe that using mobile banking will be financially costly and may affect their behavior towards the mobile banking (Luarn & Lin, 2005; Sindhu Singh, 2018; Ha Nam Khanh Giao & Tran Kim Chau, 2020). But there has not been any research testing the impact of this factor on customer satisfaction in using mobile banking. Therefore, we develop the following hypothesis:

Hypothesis 4: Perceived financial cost has a positive impact on customer's satisfaction in using mobile banking.

2.3.5. Brand equity and customer satisfaction

Brand equity is a widely studied topic in academia over the world. In this study, we use the method of measuring brand equity at the individual customer level, that is, based on the difference between the probability of customers choosing this product or service brand versus other products and services (Srinivasan et al., 2005; Jamshidi et al., 2018). In fact, because a strong brand conveys the quality of a



(Source: Authors)

Figure 1: The proposed research model

product or service, it can make customers able to distinguish this brand from other brands (Aaker, 2012). The empirical studies of Nam et al (2011), Lei & Chu (2015) indicated that brand equity has a positive relationship with customer satisfaction in using products/services. In the context of mobile banking, there have been a few studies proving that some aspects of the brand (brand equity, brand image, brand awareness) have an significantly positive impact on user's continuance intention (Ha Tran-Thi-Phuong et al., 2021; Jamshidi et al., 2018; CS Chen, 2013). But no studies have examined the relationship between brand equity and satisfaction of mobile banking users. Hence the following hypothesis has been formulated:

Hypothesis 4: Brand equity has a positive impact on customer's satisfaction in using mobile banking.

3. Research Methodology

3.1. Measure development

A questionnaire was developed after reviewing previous journals related to mobile banking. The proposed research model includes 05 independent variables (Information quality, System quality, Trust, Perceived financial cost, Brand equity) and 01 dependent variable (Customer satisfaction). The scales of the variable "Information Quality" (INFQ) and "System Quality" are inherited from Tam & Oliveira (2017). The variable "Trust" has 04 items from Mehrad & Mohammadi (2017) and 01 item of

Alalwan et al (2017). The variable "Perceived financial cost" uses 02 items of Luarn & Lin (2005) and 01 item of Sindhu Singh (2018). Scales of the variable "Brand Equity" inherited by Jamshidi et al (2018). The variable "Customer satisfaction" has 03 items of Sharma & Sharma (2019) and 01 item of Tam & Oliveira (2017).

The questions are closed-ended questions, using a 7-level Likert scale to facilitate data management and analysis. Respondents will choose the answer option from level 1 (strongly disagree) to level 7 (strongly agree). The questionnaire was translated into Vietnamese using the back translation technique to ensure reliability (Bulmer & Warwick, 1993).

We performed a pilot study to check the reliability of the scale with the initial intended sample size of 50 students. After collecting 47 surveys and removing 06 invalid surveys, the obtained data are processed by SPSS 20.0 through Cronbach's alpha. The results show that Cronbach's alpha of all variables is greater than 0.70, which means that all indicators are reliable to measure their constructs (Nunnally & Bernstein, 1978).

3.2. Data Collection and Data Analysis

The respondents in this study were individual customers aged of 18-40. This group of customers has the same characteristics: fondness for mobile phones, early use of technology, and high usage of technology and services on mobile platforms

Table 1: *Measurement scales*

Variables	Codes	Items	Sources
1. Information quality (INFQ)	INFQ1	Mobile banking provides useful information	Tam & Oliveira (2017)
	INFQ2	Mobile banking provides understandable information	
	INFQ3	Mobile banking provides interesting information	
	INFQ4	Mobile banking provides reliable information	
	INFQ5	Mobile banking provides complete information	
	INFQ6	Mobile banking provides up-to-date information	
2. System quality (SYSQ)	SYSQ1	It's easy to navigate mobile banking application	Tam & Oliveira (2017)
	SYSQ2	It's easy to find the information I am looking for	
	SYSQ3	Mobile banking is well structured	
	SYSQ4	Mobile banking is easy to use	
	SYSQ5	Appropriate functionality is offered on Mobile banking	
3. Trust (TR)	TR1	I think mobile banking service can be trusted	Mehrad & Mohammadi (2017); Alalwan & et al. (2017)
	TR2	Mobile banking service has been developed to assist customers	
	TR3	I think the banks are attaining their missions in the field of mobile banking	
	TR4	I would trust that secure mobile banking is offered by my bank	
	TR5	I would trust that legal and technological structures adequately protect me from problems on Mobile banking	
4. Perceived financial cost (PFC)	PFC1	I think using mobile banking will be very expensive	Luarn & Lin (2005); Sindhu Singh (2018)
	PFC2	There are many financial barriers (E.g. purchasing cost of smart phone, internet access fee) for using mobile banking	
	PFC3	It is too expensive for me to register for using mobile banking	
5. Brand equity (BE)	BE1	It makes more sense to use bank X's mobile banking compared to other banks, even if they are the same	Jamshidi et al. (2018)
	BE2	I prefer to use mobile banking of bank X even if another mobile banking has the same features.	
	BE3	If another bank brand is as good as bank X's mobile banking, I still prefer to use bank X's	
	BE4	If another bank's mobile banking is not different from bank X, using bank X's mobile banking seems be more intelligent.	
6. Satisfaction (SA)	SA1	I am satisfied that mobile banking meets my requirements	Sharma & Sharma (2019); Tam & Oliveira (2017)
	SA2	I am satisfied with mobile banking efficiency	
	SA3	I am satisfied with mobile banking effectiveness	
	SA4	Overall, I am satisfied with mobile banking	

(Source: Author's summary)

(Kumar & Lim, 2008). Therefore, this is considered as the current and potential customer group of mobile banking (Malaquias & Hwang, 2016).

In terms of sample size, we intended a sample of 500. Survey methods: direct mail to customers and internet survey. Result: In direct distribution, we initially distributed 200 questionnaires, received 135 respondents (response rate reached 67.5%), of which 23 invalid respondents because of choosing the same score in all questions and/or leaving too

many questions blank. Regarding the online survey, we collected 205 surveys via the link: <http://docs.google.com>. In addition, 41 votes were used from the pre-test. Thus, the final effective sample therefore included 358 responses

The statistics result show that most of the respondents are male (65.36%), the common age is 18-30 (accounting for 89.11%), mainly officer (50.56%) and civil servant (34.36%). In terms of income, most of the respondents have low income

Table 2: Demographic profile of the respondents

Variables	Demographic Characteristic
Age	From 18-30 years old: 89.11%; From 31-40 years old: 10.9%
Gender	Male: 65.36%; Female: 34.64%
Educational level	High school graduation: 11.73%; Bachelor degree: 81.84%; Higher education: 6.43%
Income (VND/month)	Under 10 million: 75.14%; From 11-20 million: 15.08%; From 21-30 million: 3.91%; From 31-40 million: 3.35%; Above 40 million: 2.52%
Occupation	Student: 8.38%; Officer: 53.35%; Civil servant: 31.56%; Worker: 3.35%; Housewife: 0.28%
Experience in using mobile banking	Under 01 year: 17.04%; From 1-5 years: 71.51%; Above 05 years: 11.45%
Frequency of use	Daily use: 26.26%; Weekly usage: 43.58%; Monthly usage: 28.49%; Other opinions: 1.67%

(Source: Statistics from survey results)

(under 10 million/month, accounting for 75.14%) and medium income level (from 11-20 million, accounting for 15.08%). Most of the respondents have 1-5 years of experience in using mobile banking (71.51%) and the most common level of using mobile banking is weekly use (43.58%), but also 26.26% of the respondents is high usage level of mobile banking (daily use).

After collecting and cleaning data, SPSS 20.0 software was used to process the data. First, EFA is conducted and then evaluated for reliability through the Cronbach Alpha for 06 variables in the proposed model (information quality, system quality, trust, perceived financial cost, brand equity, customer satisfaction). Finally, regression is used to test the relationship between the variables in the model. The regression equation model is:

$$Y(SA) = \beta_1 * INFQ + \beta_2 * SYSQ + \beta_3 * TR + \beta_4 * PFC + \beta_5 * BE + \varepsilon$$

In which: $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ is the overall standardized regression coefficient Y with the respective independent variables; ε is the error.

4. Results and discussions

4.1. Exploratory factor analysis (EFA)

The exploratory factor analysis (EFA) result shows that: KMO coefficient = 0.929 > 0.5, which means that the research data is consistent with EFA; significance level of the Barlett test: Sig = 0.000 shows that the observed variables are correlated to

each other (Hoang Trong & Chu Nguyen Mong Ngoc, 2008). After using the factor rotation method, all scales are satisfactory (factor loading coefficients are all > 0.5) and are extracted to 05 factors: information quality (INFQ), system quality (SYSQ), trust (TR), brand equity (BE), and perceived financial cost (PFC). The eigenvalue of 5 factors stops at 1,020 > 1, with the total variance extracted is 75,710% (>50%), showing that 5 independent variables explained 75,710% of the variation of the data (Table 3).

Exploratory factor analysis (EFA) of the dependent variable "Customer satisfaction" (SA) shows that the coefficient KMO = 0.850 > 0.5, which means that the research data is consistent with the exploratory factor analysis, Sig = 0.000 < 0.05 means that the observed variables are correlated to each other. Eigenvalue = 3.258 is suitable. Factor loading coefficients of all observed variables of the dependent variable SA are greater than 0.5 (Table 3).

4.2. Measurement reliability

The study conducted analysis the reliability coefficient Cronbach's Alpha after taking EFA analysis to eliminate inappropriate variables. The test results show that the Cronbach alpha of all 06 variables in the research model is 0.8 - 0.92. Moreover, the corrected item-total correlation is greater than 0.3, therefore, all items are ensure reliability.

Table 3: *Component matrix*

	Component					
	1	2	3	4	5	6
INFQ3	.868					
INFQ5	.831					
INFQ1	.820					
INFQ2	.783					
INFQ6	.699					
INFQ4	.654					
SYSQ1		.885				
SYSQ3		.853				
SYSQ5		.848				
SYSQ4		.807				
SYSQ2		.805				
TR4			.876			
TR5			.851			
TR2			.831			
TR3			.828			
TR1			.722			
BE3				.919		
BE2				.897		
BE1				.867		
BE4				.864		
PFC1					.954	
PFC3					.905	
PFC2					.887	
SA1						0.894
SA2						0.935
SA3						0.879
SA4						0.901
Eigenvalue	10.616	2.643	1.876	1.258	1.020	3.258
Barlett's significance = 0.000						
Dependent's KMO = 0.929; Independents' KMO = 0.850						
Total variance extracted of 5 independents = 75.710%, dependent's = 81.440%						

(Source: The results from processing by SPSS 20.0)

4.3. Correlation analysis

It can be seen in table 5: the variables in the research model are compatible with each other (the quantity system has positive signs) and have systematic significance with very low significance ($\text{sig} < 0.05$). The absolute correlation of all 06 variables (SA, INFQ, SYSQ, TR, PFC, BE) is in the range

(0.1-0.72), proving that the above variables are related. In which, variables SA and TR have the strongest relationship ($r = 0.713$) and variable SA and PFC have the weakest relationship ($r = 0.118$).

4.4. Regression analysis

We evaluate the linear model through the model's fitting coefficient (R^2). The higher R^2 , the

Table 4: Variables' Cronbach's alpha

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Cronbach alpha of INFQ = 0.897				
INFQ1	26.34	30.700	.709	.880
INFQ2	26.25	31.026	.751	.874
INFQ3	26.84	31.315	.619	.896
INFQ4	26.08	31.397	.733	.877
INFQ5	26.24	29.959	.806	.865
INFQ6	26.20	30.830	.724	.878
Cronbach alpha of SYSQ = 0.922				
SYSQ1	21.41	21.665	.777	.908
SYSQ2	21.56	21.305	.785	.906
SYSQ3	21.48	21.248	.839	.895
SYSQ4	21.24	22.329	.808	.902
SYSQ5	21.28	22.380	.779	.907
Cronbach alpha of TR = 0.906				
TR1	21.60	22.308	.758	.887
TR2	21.23	22.638	.717	.896
TR3	21.47	21.998	.758	.887
TR4	21.44	21.451	.823	.873
TR5	21.58	21.707	.767	.885
Cronbach alpha của biến PFC = 0.909				
PFC1	8.05	11.681	.844	.849
PFC2	8.01	12.392	.804	.882
PFC3	7.91	11.815	.809	.879
Cronbach alpha of BE = 0.921				
BE1	14.34	17.758	.786	.910
BE2	14.22	17.154	.874	.879
BE3	14.28	18.171	.822	.897
BE4	14.11	18.595	.796	.905
Cronbach alpha of SA = 0.924				
SAT1	16.23	14.031	.809	.906
SAT2	16.21	13.736	.878	.882
SAT3	16.24	14.437	.787	.913
SAT4	16.12	14.098	.820	.902

(Source: the results from processing by SPSS 20.0)

greater the explanatory power of the regression model and the more accurate of prediction the dependent variable. The results from Table 6 show that the value $R^2 = 0.574$ and adjusted $R^2 = 0.568$. It means that 56.8% of the variation in customer satisfaction using mobile banking is explained by the independent variables in the research model.

The results of the F-test in the ANOVA table use to check the linear regression model can be generalized and applied to the population. Table 7 shows that the statistical value $F = 94,965$ (Sig. = 0.000), which means that the multiple linear regression model fits the data set, the independent variables have a linear relationship to the dependent variable and the

Table 5: Pearson correlation coefficient matrix

		SA	INFQ	SYSQ	TR	PFC	BE
SA	Pearson Correlation	1	.558**	.639**	.713**	.118*	.571**
	Sig. (2-tailed)		.000	.000	.000	.025	.000
	N	358	358	358	358	358	358
INFQ	Pearson Correlation	.558**	1	.694**	.655**	.224**	.492**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	358	358	358	358	358	358
SYSQ	Pearson Correlation	.639**	.694**	1	.713**	.121*	.494**
	Sig. (2-tailed)	.000	.000		.000	.022	.000
	N	358	358	358	358	358	358
TR	Pearson Correlation	.713**	.655**	.713**	1	.142**	.571**
	Sig. (2-tailed)	.000	.000	.000		.007	.000
	N	358	358	358	358	358	358
PFC	Pearson Correlation	.118*	.224**	.121*	.142**	1	.247**
	Sig. (2-tailed)	.025	.000	.022	.007		.000
	N	358	358	358	358	358	358
BE	Pearson Correlation	.571**	.492**	.494**	.571**	.247**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	358	358	358	358	358	358

(Source: the results from processing by SPSS 20.0)

Table 6: Model summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	.758 ^a	.574	.568	.81150	1.800

(Source: the results from processing by SPSS 20.0)

Table 7: ANOVA Analysis Result

	Model	Sum of square	Df	Square of the average	F	Sig.
1	Regression	312.689	5	62.538	94.965	.000 ^b
	Residual	231.804	352	.659		
	Total	544.492	357			

(Source: the results from processing by SPSS 20.0)

results performed on the sample can be generalized to the population.

The results of multiple linear regression analysis showed that the Sig value of Information Quality (INFQ) and Perceived Financial Cost (PFC) > 0.05, these two variables are not significant in the research model, so hypothesis H1 and H4 are not accepted. The remaining three variables (SYSQ,

TR, BE) have Sig values ≤ 0.05, so they are significant in the model. Thus, hypothesis H2, H3, H5 are accepted (Table 8).

The regression model evaluate the impact of factors on customer satisfaction using mobile banking in Vietnam is rewritten as follows:

$$SA = 0.211 * SYSQ + 0.419 * TR + 0.217 * BE$$

Table 8: *Coefficients*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistic	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.755	.238		3.169	.002		
1 INFQ	.042	.059	.037	.715	.475	.445	2.245
SYSQ	.225	.059	.211	3.814	.000	.396	2.522
TR	.446	.059	.419	7.607	.000	.399	2.504
PFC	-.021	.027	-.029	-.785	.433	.916	1.092
BE	.192	.039	.217	4.922	.000	.624	1.602

(Source: the results from processing by SPSS 20.0)

The results of multiple linear regression model analysis show that there are 03 factors affecting the satisfaction of customers using mobile banking services in Vietnam, including: System quality (SYSQ), Trust (TR), and Brand equity (BE). In which, the factor that has the strongest impact on customer satisfaction using mobile banking services in Vietnam is Trust (TR) with the coefficient $\beta = 0.419$. Followed by Brand equity (BE) and System quality (SYSQ) with β coefficients of 0.217 and 0.211.

5. Discussion and implications

5.1. Discussion

The research results accept 03 hypotheses corresponding to 03 factors: System quality (SYSQ), Trust (TR) and Brand equity (BE) which affect satisfaction of mobile banking users in Vietnam. Two factors that are Information quality (INFQ) and Perceived financial cost (PFC) have no impact on customer satisfaction. Specifically:

“Trust” has an overwhelmingly positive impact on customer satisfaction ($\beta = 0.419$). This result is similar to the research results of Sharma & Sharma (2019), Chatterjee et al (2018). This implies that the aspects related to the reliability, safety and usefulness of mobile banking for consumers' work and life play an important role in creating their satisfaction with this type of service. Moreover, compared with

the traditional form of banking transactions, mobile banking is proving its superior strength when bringing about more added value to users with a variety of convenient and specialized services.

The results also shows a significant positive impact of “Brand equity” on customer satisfaction in using mobile banking ($\beta = 0.217$). This implies that the higher reputation of a mobile banking provider, the more customers tend to be satisfied and loyal to that bank's mobile banking service. This result also reflects a reality in Vietnam is in most of the commercial banks that customers appreciate are large banks with famous brand and these banks consider mobile banking is a strategic direction in developing the retail banking market.

The findings also reveals a vital positive impact of “System quality” on customer satisfaction ($\beta = 0.211$). This means that Vietnamese consumers appreciate about the friendliness and ease of use in terms of mobile banking applications as well as the functions and types of services provided by mobile banking that must be suitable to customer needs. The higher the customer satisfaction with the system quality of mobile banking, the greater the customer satisfaction in using this service. This result coincides with previous studies of Tam & Oliveira (2017), Sharma et al. (2017), Zhou (2013) but it is

in contrast with the research results of Sharma & Sharma (2019), Chatterjee et al (2018).

As research results, there is no relationship between the factor “Perceived financial cost” and customer satisfaction. The reason may be the low cost of mobile banking services of Vietnamese banks and be quite diverse according to service usage levels. On the other hand, the necessary devices for using mobile banking (such as smartphones) have been considered as essential devices, not just for using mobile banking. Therefore, customers hardly feel the big difference in financial costs when using mobile banking of banks. This result is in contrast with the research results of Luarn & Lin (2005), Ha Nam Khanh Giao & Tran Kim Chau (2020), Ho Huy Tuu & Le My Linh (2014).

The results also do not prove the relationship between “Information quality” and customer satisfaction in using mobile banking because customers in Vietnam do not use mobile banking applications as a tool to search and satisfy the need of information, but only to serve essential work. This result is in contrast to the previous research results of Tam & Oliveira (2017), Chatterjee et al. (2018), Akter et al (2013), Zhou (2013), Gao & Bai (2014).

5.2. Implications

Mobile banking is still a potential strong growth market in Vietnam in the coming years. Therefore, the important issue of commercial banks is to find solutions increasing customer satisfaction, promoting the customer's behavior in using mobile banking. From the results and some discussion above, we suggest some policies: Firstly, it is necessary to increase customers' trust in mobile banking. Banks need to ensure that mobile banking transactions are carried out efficiently and securely with a shorter time compared to traditional transactions (Alalwan et al., 2017). Besides core mobile banking services (QR pay, transfer, bill payment, online deposit...),

banks can diversify services on mobile banking channels to serve better service for customers. Moreover, banks need to build a mechanism (technology and legal foundation) to secure customer information and handle possible transaction problems to minimize risks for customers. Secondly, understanding brand's role in increasing customer satisfaction in order to release solutions enhancing bank's brand equity in mobile banking. Banks need to focus on increasing the quality, convenience, efficiency and safety of mobile banking transactions because quality helps increase the ability to build and differentiate brands in customers' mind (Aaker, 2012). In addition, brand communication activities are important in promote popularity and recognition of banks' brand. For example: Doing attractive videos on social networks such as YouTube and Facebook. Thirdly, banks need to enhance the system quality of mobile banking applications. The solutions are: ensuring convenient accessibility, improving the ease of use and navigation of the mobile banking application; enhance the ability to access and search information about the services provided by the bank's mobile banking application.

5.3. Limitations and future research

This study is not without its limitations, which can be classified into three areas. First, the data of this study were collected by using a cross-sectional research design, so longitudinal research is needed to do to review and improve the generality of the findings in this research model. Second, this study only focuses on young customers (aged 18-40). Although this is considered the current and potential customer base of mobile banking (Malaquias & Hwang, 2016), this customer group is not representative of the target population (Agarwal & Karahanna, 2000). Therefore, future studies could extend survey respondents to test the difference in the impact of factors on customer satisfaction among customer groups. Third, this study has not

tested the potential impact of other demographic and behavioral variables such as gender, income, occupation, user experience. Future research may aim to test the regulatory relationship of one or more variables on this current research model.

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Summary

Nghiên cứu này nhằm kiểm tra mức độ tác động của các yếu tố tác động tới sự hài lòng của khách hàng sử dụng dịch vụ mobile banking tại Việt Nam. Một cuộc khảo sát với 358 khách hàng cá nhân trong độ tuổi 18-40 đã được thực hiện. Dữ liệu thu thập được xử lý thông qua phần mềm SPSS 20.0 với các kỹ thuật phân tích nhân tố khám phá (EFA), kiểm định độ tin cậy thang đo, phân tích tương quan và

phân tích hồi quy tuyến tính. Kết quả cho thấy yếu tố Niềm tin có tác động mạnh nhất tới sự hài lòng của khách hàng, sau đó là Giá trị thương hiệu và Chất lượng hệ thống. Điểm khác biệt trong kết quả nghiên cứu này là Chất lượng thông tin và Chi phí tài chính không có tác động tới sự hài lòng của khách hàng. Cuối cùng, một số hàm ý chính sách được đưa ra nhằm giúp các ngân hàng tăng cường sự hài lòng của khách hàng sử dụng mobile banking tại Việt Nam.

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