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## Factors Affecting Decision to Use E-Banking Services: A Case Study of Vietnam Commercial Banks during COVID-19 Pandemic

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**Abstract:** The COVID-19 pandemic has dealt a heavy blow to the economy, undeniably affecting all industries. Thus, developing E-banking services is always invested by commercial banks, applying digital technology, new technology, high technology, information, telecommunications, and technical infrastructure into products to enhance customer satisfaction. Therefore, the objective of this study is to discover the main factors affecting the decision to use E-banking services of individual customers at commercial banks in Vietnam. The authors surveyed data collected from 700 individual customers who have registered to use E-banking services at commercial banks in Vietnam analyzed to provide evidence. The study's main findings are to explore six key factors affecting the decision to use E-banking services. Six factors included perceived usefulness, perceived ease of use, trust, social influence, innovation, and communication. They had a statistically significant relationship with attitude and decision to accept E-banking services. The results from structural equation modeling (SEM) using SPSS 20.0, Amos software have revealed six factors and the level of impact on the decision to use E-banking services of individual customers. From that result, the authors gave management implications to attract individual customers to use E-banking services at commercial banks in Vietnam.

**Keywords:** decision, E-banking services, commercial banks, COVID-19 pandemic.

## 影響使用電子銀行服務決定的因素：新冠肺炎大流行期間越南商業銀行的案例研究

**摘要:** 新冠肺炎大流行對經濟造成了沉重打擊，無可否認地影響了所有行業。因此，商業銀行一直投資開發電子銀行服務，將數字技術、新技術、高科技、信息、電信和技術基礎設施應用到產品中，以提高客戶滿意度。因此，本研究的目的是發現影響越南商業銀行個人客戶使用電子銀行服務決策的主要因素。作者調查了從 700 名已在越南商業銀行註冊使用電子銀行服務的個人客戶收集的數據，以提供證據。該研究的主要發現是探討影響使用電子銀行服務決策的六個關鍵因素。六個因素包括感知有用性、感知易用性、信任、社會影響、創新和溝通。他們與接受電子銀行服務的態度和決定有統計學上的顯著關係。使用 20.0 和軟件的結構方程建模 結果揭示了六個因素以及對個人客戶使用電子銀行服務決策的影響程度。根據該結果，作者給出了吸引個人客戶在越南商業銀行使用電子銀行服務的管理啟示。

**关键词：** 决策、电子银行服务、商业银行、新冠肺炎大流行。

### 1. Introduction

In Vietnam, banking services still have many different interpretations. The regulations on banking service activities are still inadequate; however, banking services are understood in a broad sense to mean all

banking activities. Banking Services provided by commercial banks to the economy are called banking services [11, 45].

Developing E-banking services is an inevitable trend in the context of international economic integration.

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Since the COVID-19 pandemic, digital payments developed, but not using cash has become a strongly promoted payment trend [19]. The strong development of information technology has had a strong impact on all fields and industries, especially the banking industry, bringing many opportunities for the banking industry to apply artificial intelligence and automation in business processes, electronic payments [41]. Electronic banking and online transactions based on information technology are an inevitable trend in the era of international economic integration economy, bringing great benefits such as market expansion, cost savings, safety, and security for customers and the bank [42]. It is important to develop E-banking services at commercial banks in Vietnam.

It is necessary to analyze the factors affecting customers' decision to use E-banking services, thereby offering solutions to develop E-banking services—electronic banking services [20, 35]. The paper relies on previous studies to survey customers who have not used E-banking services at commercial banks in Vietnam. After the survey, process and analyze data during the process. In the data analysis process, the observed variables that do not meet the requirements to delete. The researchers identified the factors affecting customers' decision to use E-banking services at commercial banks in Vietnam. The widespread COVID-19 and economic uncertainties have brought many challenges to society. In addition to the impact on people, COVID-19 has been rapidly causing disruptions in business and consumption, not only in the affected areas [44].

The banks have risks such as cyber-attacks on information security, data security, threats of the resilience of key service providers, delay in project progress, reduced ability to maintain service delivery levels, etc. Banks manage to operate their business well and have the right strategies for the leading service. In Vietnam today, there have been many banks interested in developing digital banking. This study applied the process and the actual operation of the banks, but the results are still very poor modest. Besides, commercial banks need to develop comprehensively in Vietnam in the coming time. Retail banks need to strengthen cooperation with partners, take advantage of the Industrial Revolution 4.0 [38]. Therefore, the authors assessed factors affecting the decision to use E-banking services of Vietnam commercial banks during the COVID-19 pandemic to find suitable policies to improve the quality of customer service and improve the efficiency, reputation, and sustainable development each bank.

## 2. Literature Review

### 2.1. Attitude (AT)

Attitude is a set of feelings, beliefs, and behaviors directed toward a particular object, person, thing, or

event [1, 7]. Attitudes are often the result of experience or upbringing and can strongly influence behavior. Although attitudes are often permanent, still be changed. Attitudes that arise based on an individual's views and perceptions, paying attention to the opinions or perceptions of others about these behaviors, will lead to intentions that can become behaviors [13, 39].

Attitude response to the desire to buy second-hand environmental products has become increasingly common [16]. Thus, it induces a repurchase intention among consumers. Studying the influence of technology on consumer attitudes to E-banking services shows the impact of technology on adjusting financial service consumption attitudes in response to the decision to use E-banking services [22].

### 2.2. Decision to Use E-Banking Services (DU)

According to consumer behavior, individuals' decision-making process and actual actions when evaluating, purchasing, using, or disposing goods and services [15]. The concept of consumer behavior is the actual action that consumers reveal in the process of product exchange, including investigation, purchase, and use, evaluate and dispose of products and services to satisfy their needs [24, 40].

The above two points of view have established the content of consumer behavior, including the consumer's external expression when buying products and services, and refer to the thinking and consideration process of consumers before buying products and services [30].

Consumer behavior ranges between microeconomic theories, behavioral finance theory, and marketing theory. It includes consumer financial decision-making in spending, saving, borrowing, insurance, and investment [43]. Besides, consumer financial behavior depends on decision-making, people, social environment, information sources [47]. The studies had identified two factors affecting the financial behavior of consumers, including education level and income. Thus, consumer financial behavior is the decision-making action of individuals using financial services, including savings, credit, insurance, and investment services [37]. Consumer financial behavior depends on:

(1) Consumer factors, including income, education level, and motivation to access services;

(2) Social environment factors, including social influence on consumers' decision of personal financial services;

(3) Service providers' factors include services, distribution channels, advertising, and marketing activities service [33].

Thus, the decision to accept and use E-banking services is the motivation for taking action, making decisions about whether to obtain and use or not to get banking services in the future [27].

### 2.3. Perceived Usefulness (PU)

Recognizing the usefulness of banking products and services is said to be one of the essential determinants of the acceptance, decision, and use of products and services with the application of the current information technology system to bring the highest efficiency in production and business of customers [26]. Along with the studies presented using technology acceptance model (TAM) models on the intention to accept and use new products and services, researchers have confirmed that customers will receive and use these products and services if they perceive the usefulness of the product or service [25, 17].

Research has demonstrated that perceived usefulness influences the decision to accept a product/service/technology. So, in the modern banking context, empirical evidence from the above different contexts [12]. Thus, the authors gave hypothesis H1 following:

*Hypothesis H1:* There is a positive relationship between the perceived usefulness and customers' attitude to E-banking services.

### 2.4. Perceived Ease of Use (PEOU)

Perceived ease of use is perceived ease of use of the service is the degree to which users perceive the difficulty or ease of learning to use the products and services provided by the bank. Many researchers consider perceived ease of use of products and services a fundamental determinant of consumer acceptance and use of outcomes [8, 45]. These factors tested against each other in many product acceptance studies with technology applications in the banking sector [10]. Researchers have confirmed that customers will accept and use these products/services if they perceive the usefulness of the product or service [18]. Studies have proven that perceived ease of use affects the attitude and decision to accept a product/service/technology. So, given the empirical evidence from the different contexts above. Thus, the authors gave hypothesis H2 following:

*Hypothesis H2:* There is a positive relationship between the perceived ease of use and customers' attitude to using the E-banking services.

### 2.5. Trust (TR)

Trust represents confidence in a party's promise and fulfills its obligations in an exchange relationship [35]. Trust gives customers a sense of security when the other party meets their expectations. For customers to trust to form a long-term relationship with the organization, the customer must feel secure in the transaction with the bank [9, 46]. The characteristics of banking products and services are products and services in the field of money and credit. In this field, products and services are intangible. With the development of information technology, banking products and services have been developed based on modern technology to provide customers with products to improve quality and

efficiency for customers to use services [6, 35]. Customer trust is an essential factor affecting the attitude and decision to accept a bank's product/service/technology. Thus, the authors gave hypothesis H3 following:

*Hypothesis H3:* There is a positive relationship between trust and customers' attitude to E-banking services.

### 2.6. Social Influence (SI)

Social influence is the degree to which an individual perceives essential people, other people around them, that they should use a new product/service [4]. Today's modern banking services are vibrant: the provision of transaction accounts and the implementation of payment services based on current technology, international credit payment services, etc. Users must have access to advanced technology. Learning how to use is often more complicated than traditional services, so customers are often afraid to access these modern services [2, 35]. Studies confirm that social influence impacts customer attitudes by friends and family members. Many studies show that social enjoyment is a prominent influence affecting customers' attitudes and decision to accept a bank's product/service/technology. Thus, the authors gave hypothesis H4 following:

*Hypothesis H4:* There is a positive relationship between the social influence and customers' attitude to E-banking services.

### 2.7. Innovation (IN)

Innovation is a taste for novelty and challenges in life. Consumer innovation is the propensity to purchase new and differentiated products/services in the banking sector [5, 16]. Banking services are highly diverse, rich, and constantly evolving. With the development of practical support of information technology and modern technical means, traditional banking services have formed various contemporary products such as payment services [48]. Many current banking services contain a high content of information technology. The intellectual content of the service accounts for a large proportion and plays the most crucial role in banking service activities is the human factor [14]. Many customers are always actively learning, aware of new technology, and looking for technology-related information to meet their needs to develop their current knowledge and apply this new knowledge in their lives [9, 36]. Studies also confirm that the innovation factor positively impacts consumers' attitude to accept products and services. Thus, the authors gave hypothesis H5 following:

*Hypothesis H5:* There is a positive relationship between innovation and customers' attitude to E-banking services.

### 2.8. Communication (CO)

Communication is a communication process to share knowledge, experiences, and feelings about products and services used [32]. Communication and information from the bank help customers be aware of the benefits of products and services. The perception that the application of products is easy will help increase the intention to use banking services for their activities. It is business [12, 23]. Acknowledges that communication is a necessary element of society to create understanding for customers. Through mass media and communication, individuals can exchange ideas and knowledge about the innovation of products and services, making consumers more informed to trust the service customers use [28]. Communication plays a vital role, helping customers better understand the service, capture accurate information, and influence customer attitudes [34]. Thus, the authors gave hypothesis H5 following:

*Hypothesis H6:* There is a positive relationship between communication and customers' attitude to E-banking services.

The attitude variable plays an essential role in the decision to use new technology. Attitude is the degree of an individual's positive and negative attitudes towards a particular goal or determination to perform a specific behavior [16, 29]. Accordingly, attitudes exist in thoughts, create behaviors, and can predict users' intentions. In the Technology Acceptance Model (TAM), the attitude variable is one of the model's crucial components. Many authors have concluded that attitude positively impacts the decision to use E-banking services [31]. In another study, the attitude has a positive effect on the decision to continue using E-banking services. Thus, the authors gave hypothesis H6 following:

*Hypothesis H7:* There is a positive relationship between the customers' attitude and decision using the E-banking services.

Thus, the research model of the proposed paper includes six independent variables and two dependent variables.

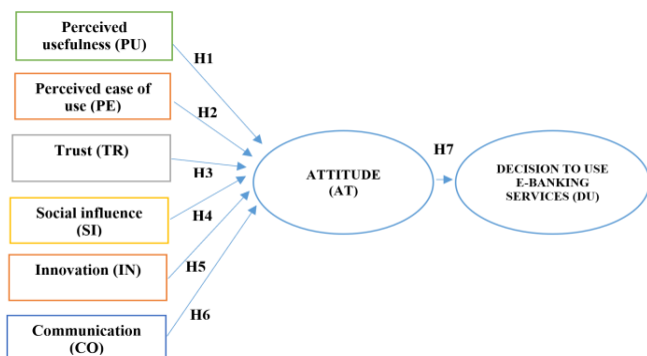


Fig. 1 A research model for factors affecting the decision to use E-banking services of Vietnam commercial banks

### 3. Methods of the Research

The research process is carried out through two steps: qualitative research and quantitative research. This study was carried out in two main steps: Step 1:

preliminary research, step 2: formal investigation. On this basis, a set of observed variables to measure latent concepts. Accordingly, the draft scale applied a theoretical overview and previous studies on factors affecting accepting and using products/services [21].

Group discussion of 11 leaders and staff working at commercial banks and interviews with three banking and finance industry experts. Due to the specific conditions of the work, the discussions and consultations of these group members applied individually. The authors conducted meetings at the interviewee's workplace. Each interview averaged 30-45 minutes with the following content: introducing the purpose and meaning of the discussion; screening for independent variables; mainly focusing on raising the scale of the independent and dependent variables to ask for additional adjustment comments. The technique used is observation and hand-to-hand discussion [21].

Formal research. For surveying the decision to accept and use E-banking services, the study uses quantitative research methods through questionnaires. After the authors collected survey information, the authors had transformed it into quantitative data for analysis. The authors surveyed 700 customers who have registered to use E-banking services at commercial banks in Vietnam. The authors provided evidence. The results from structural equation modeling (SEM) using SPSS 20.0, Amos software.

The study proposes seven hypotheses with 30 observed variables about the sample. Therefore, the minimum sample size to be achieved is  $30 * 5 = 150$  customers. For multiple regression, the minimum sample size had the formula:  $50 + 8 * m$  ( $m$  is the number of independent variables). In this study, there are five independent variables. The minimum sample size is  $50 + 8 * 6 = 98$  units. The minimum sample size required is 150 customers. In the study, the number of survey samples was 700 customers [21]. The authors had contacted the leaders of commercial banks in Vietnam to support survey implementation for customers using E-banking services when they come to the bank's transaction office. Based on the survey implementation conditions and available resources, the authors selected 700 customers to obtain a sample size larger than the minimum sample size and highly reliable research results. After receiving 700 survey questionnaires from bank branches, the authors reviewed and removed 53 survey questionnaires with incomplete information. The final results obtained were 647 questionnaires with satisfactory response information used for analysis.

Confirmatory factor analysis (CFA) helps research to verify measurement models and identify measurement models. In performing EFA factor analysis, a few inappropriate measurement criteria made the model meaningful for practical applications. In performing CFA analysis, a few wrong measurement criteria made the model meaningful for practical applications. A structural equation model (SEM) was applied to test the

hypotheses [21]. This combination will help to check and minimize possible mistakes in the research process. Research results are summarized based on model testing results. From there, conclusions and suggestions gave for further research.

### 4. Research Results

Table 1 shows that all Cronbach's alpha is higher than 7.0.

Table 1 Testing of Cronbach's alpha for factors affecting the decision to use E-banking services of Vietnam commercial banks

Code	Items	Cronbach's alpha
<b>Perceived usefulness (PU)</b>		
<b>0.877</b>		
PU1	Using banking services to increase productivity and efficiency business action	0.846
PU2	Using banking services saves more time	0.808
PU3	Using banking services makes it quick and convenient for currency and credit transactions	0.872
PU4	Using banking services is valuable and convenient for business activities	0.842
<b>Perceived ease of use (PE)</b>		
<b>0.829</b>		
PE1	Easy to learn and use banking services	0.828
PE2	Making transactions with banking services is easy to understand	0.739
PE3	Feel that banking services are flexible and easy to apply	0.802
PE4	Feel that every service the bank provides meets the needs of customers	0.762
<b>Trust (TR)</b>		
<b>0.937</b>		
TR1	When using banking services, I believe that my personal information is kept confidential	0.900
TR2	When using banking services, I believe that my transaction is secure	0.890
TR3	When using banking services, I believe the bank will not reveal my information	0.936
<b>Social influence (SI)</b>		
<b>0.962</b>		
SI1	My friends encourage me to use E-banking service	0.949
SI2	My family motivates me to use E-banking service	0.952
SI3	People I know think that I should use an E-banking service	0.958
SI4	Most of the people around me think that I should use a new and more modern banking service	0.939
<b>Innovation (IN)</b>		
<b>0.857</b>		
IN1	I often search for information about banking services	0.803
IN2	I like to go to places where I get information about new banking services	0.816
IN3	I often learn new technologies to use modern banking services	0.856
IN4	I am often interested in learning about new information and how to use the bank's new services	0.797
<b>Communication (CO)</b>		
<b>0.953</b>		
CO1	I often receive information about banking services	0.934
CO2	I often receive information about the convenience of banking services at the bank's transaction offices	0.937

CO3	The bank is always ready to provide information about banking services to customers through leaflets, news on television.	0.949
CO4	I was introduced carefully and in detail by the bank staff about the benefits of banking products and services	0.934

Table 2 shows that all Cronbach's alpha is higher than 7.0.

Table 2 Testing of Cronbach's alpha for the decision to use E-banking services of Vietnam commercial banks

Code	Items	Cronbach's alpha
<b>Attitude (AT)</b>		
<b>0.939</b>		
AT1	Using online banking is a good idea during the COVID-19 pandemic	0.916
AT2	Using online banking was a brilliant idea during the COVID-19 pandemic	0.886
AT3	Using online banking is an exciting and valuable idea during the COVID-19 pandemic	0.932
<b>The decision to use E-banking services (DU)</b>		
<b>0.885</b>		
DU1	I have decided to use the new services provided by the bank	0.863
DU2	I have decided to use banking services regularly in the future	0.818
DU3	I decided to use more banking services provided soon	0.881
DU4	I decided to increase my understanding and use of new and modern banking services	0.847

Fig. 2 showed that the assessment of the decision to use E-banking services of Vietnam commercial banks: CMIN/DF = 3.560 (< 5.0), GFI = 0.886 (> 0.800), TLI = 0.931 (> 0.900), CFI = 0.940 (> 0.9) and RMSEA = 0.063 (< 0.08).

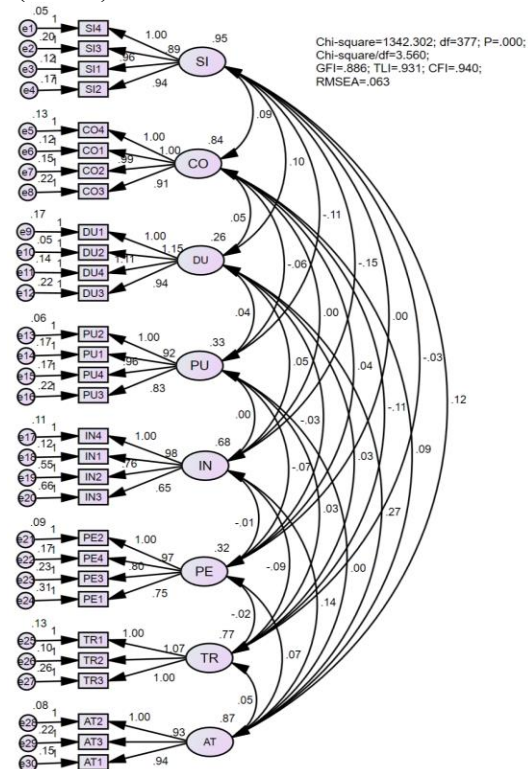


Fig. 2 Testing CFA for factors affecting the decision to use E-banking services of Vietnam commercial banks

Table 3 showed six factors affecting customers' attitude to the decision using the E-banking services with a significance level of 0.01. Besides, customers' attitudes affect decisions using Vietnam commercial banks' E-banking services with a significance level of 0.01. These results are science evident for managerial implications to attract customers to use E-banking services at commercial banks in Vietnam.

Table 3 Testing factors affecting the decision to use E-banking services of Vietnam commercial banks

Relationships	Standardized Estimate	S.E	C.R	P	Result
AT <- PU	0.121	0.083	2.91	0.004	Accepted
AT <- PE	0.136	0.085	3.08	0.002	Accepted
AT <- SI	0.207	0.039	5.05	***	Accepted
AT <- IN	0.237	0.049	5.79	***	Accepted
AT <- TR	0.103	0.040	3.32	***	Accepted
AT <- CO	0.105	0.038	2.66	0.008	Accepted
DU <- AT	0.579	0.024	14.8	***	Accepted

Figure 3 showed that the assessment the factors affecting decision to use E-banking services of Vietnam commercial banks: CMIN/DF = 3.103 (< 5.0), GFI = 0.899 (> 0.800), TLI = 0.943 (> 0.900), CFI = 0.952 (> 0.900) and RMSEA = 0.057 (< 5.0).

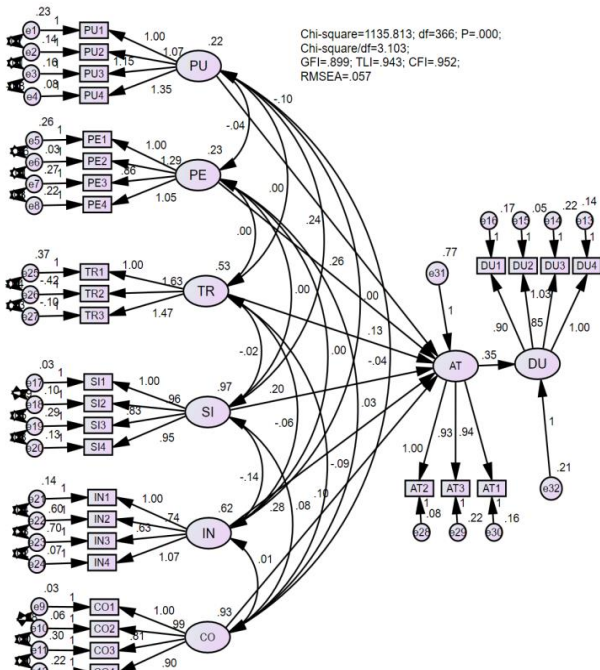


Fig. 3 Testing SEM for factors affecting the decision to use E-banking services of Vietnam commercial banks

## 5. Conclusion

### 5.1. Conclusions

The COVID-19 pandemic, which is taking place very complicatedly, affects all sectors of the economy. The vital role of E-banking services had. It is to contribute to the achievement of socio-economic development goals. Banking services are increasingly rich and diverse, with traditional services and modern services associated with high technology. Banking service providers need to understand their customers well to promote and facilitate people to accept and use E-banking services actively. In a research paper with a research sample of 700 customers, the article used SPSS 20.0 and Amos software to perform Cronbach's alpha analysis, EFA, CFA, and SEM analysis to select the scales in the research model. Proposals ensure high reliability, meet research standards, and had tested.

The structural equation model (SEM) analysis has demonstrated the following factors: Perceived usefulness, perceived ease of use, trust, social influence, innovation, and communication that have a statistically significant relationship with attitude and decision to accept E-banking services. Beta coefficients are all factors that show a positive connection with attitude and determination to use banking services statistically substantial among the studied factors. Thus, the authors accepted the hypotheses H1, H2, H3, H4, H5, H6, and H7. It has to find out that these factors positively correlate with the attitude and decision to use E-banking services in a meaningful way. These results are the same as the studies [3, 5].

Based on the results of determining the factors affecting the decision to use E-banking of individuals at commercial banks in Vietnam. The results confirmed that the independent variables that impact the attitude and determination to accept E-banking services have positive effects. Innovation (IN) in banking has the most substantial impact (0.237), followed by trust, with the lowest influence coefficient (0.103). The research results helped bank managers develop strategies to develop products and services suitable for the technological era and the complicated developments of the epidemic. Developing e-banking services is always invested by commercial banks, applying digital technology, new technology, high technology, information, telecommunications, and technical infrastructure into products to enhance customer satisfaction. Improve the quality of customer service and improve each bank's efficiency, reputation, and sustainable development. The article makes some recommendations for commercial banks to attract customers to use E-banking.

### 5.2. Managerial Implications

(1) Managerial implications improving the innovation (0.237). Commercial banks need to improve the convenience and transaction quality of E-banking services. Convenience emphasizes that customers can perform banking transactions (excluding cash withdrawals) anywhere with an internet device. Commercial banks need to improve the system's security

by continuously improving technology to limit error transactions, system risks, and network security risks. Commercial banks need to provide knowledge and information to customers to assess and be aware of the dangers of using E-banking; always advise, warn, guide customers to be aware of risks, threats, sophisticated scams of bad actors. The management agency needs to continue building and completing the legal framework for electronic payment activities to meet the requirements of new business models and products and services based on information technology beliefs. Research, review, mechanisms, and policies propose to promulgate legal regulations in line with the trend of digital banking development, creating favorable conditions for credit institutions to carry out digital transformation. It is necessary to improve the system of legal documents in the fields of digital signature authentication and regulations on electronic savings products.

(2) Managerial implications are improving the social influence (0.207). Commercial banks need to design E-banking service interfaces and operations on E-banking service provisioning platforms that must be regularly renewed and updated to ease of use, simplify, and grasp the trends and needs of customers, society. Besides, commercial banks also need to improve some procedures, design automated operations or shortcuts to help customers save transaction time; at the same time, actively research the market, identify target customers to attract customers to use E-banking services. Advertising channels through word of mouth from customers who have used E-banking services also need to be focused on by the bank. Although the level of impact is not high, to attract new customers, commercial banks need to develop a fee schedule following service quality, ensuring competitiveness in the market. Finally, commercial banks have relevant agencies such as banks, financial institutions, trade centers, e-commerce platforms, business and service establishments that need to build a network of payment acceptance points. Electronic accounting from supermarkets, hotels, restaurants to grocery stores on a nationwide scale. They are building a centralized electronic bill payment system from healthcare, education, public services to electricity, water, television, and telephone and connecting to all tax authorities in the center, national and local.

(3) Managerial implications improving the perceived ease of use (0.136). Commercial banks must research more carefully about the product they supply, take advantage of internal customer resources to test the test version before the test version and make many hypothetical situations like in the natural environment. Pre-experience with the trial versions will help commercial banks collect many opinions about the advantages and disadvantages of the services and the errors encountered during use, thereby improving them before using them. Moreover, creating many hypothetical test cases will help the bank realize the

vulnerabilities, thereby adjusting the regulations on registration and use of the service to ensure the maximum elimination of the loopholes that the object deceives. Finally, commercial banks investing in the development of payment infrastructure, the banking industry needs to continue researching and applying modern payment technologies and methods. Besides, the commercial banks should deploy payment models in rural, remote, and isolated areas to implement the National Comprehensive Financial Strategy. Banks continue promoting electronic payments in the Government sector, public services to supervise payment work to ensure safe and effective operation and strengthen the security and safety in electronic payments. Promote financial education and communication programs to improve people's knowledge, skills, and accessibility to financial products and services.

(4) Managerial implications improving the Perceived usefulness (0.121). Commercial banks need to set up more Hotlines to handle emergencies and always ensure smooth operation for customers to contact promptly because the current situation is that banks are overloaded. When the customer is in an emergency, it is necessary to get the bank immediately, such as requesting to lock the Visa, lock the E-banking service, and block the transaction. Still, if not received by the bank in time, the risk will happen to the customer. Banks can also study additional human resources or effectively allocate resources to call back when the customer calls the emergency Hotline, such as requesting lock services, resolving complaints, and tracing without paying attention. If you cannot connect with the bank staff, you need to be called back immediately for timely support.

(5) Managerial implications improving the communication (0.105). Commercial banks can add or remove traditional One Time Password (OTP) authentication methods by applying Quick Response (QR) code technology to enhance safety in E-banking transactions. Payment via QR code scanning is a technology deployed in commercial banks. Still, it has not been used as an authentication method at the last step before completing the transaction. Currently, it is common for customers to get OTP codes through SMS, through innovative OTP applications installed on smartphones, via e-token devices, or using Visa cards with handheld readers to get OTP codes. As the banks analyzed the actual situation, crooks can get the OTP code from the customer in many ways to perform the money transfer. So if they do not have to enter the OTP code, they can change it by another form such as authentication via QR code can also be a new measure for banks. Finally, commercial banks need to have the training, recruitment, and reasonable remuneration for human resources with expertise in banking technology. At the same time, it is necessary to actively develop and promote new electronic products, simplify service registration procedures, and support customer care when using E-banking.

(6) Managerial implications improved the trust (0.103). Commercial banks continue sticking to the general development strategy of the bank, combined with the internal assessment of the bank's technology situation. Thereby, the banks are forming a plan for applying digital technology in banking activities, studying the cooperation with Fin-Tech companies to build a breakthrough business model through digital technology to increase convenience and save costs.

Besides, commercial banks continue to comply with regulations and guidance of the State Bank on ensuring safety and security of online banking transactions; develop detailed scenarios, procedures, and instructions for dealing with incidents of online fraud. Recently, the State Bank of Vietnam issued Circular No. 09/2020/TT-NHNN stipulating system safety information system in banking activities to update new regulations of the Law on Cyber Information Security and guiding documents. At the same time, adjust security requirements in line with the reality of the rapid and diverse development of information technology and cyber information security in the banking industry.

Strengths had survey data-rich and highly reliable. However, the study did not include the brand image factor. Limitations: The brand image affects the decision to accept and use digital banking services on three aspects: brand awareness, bank size, and bank's reputation. Therefore, banks can implement the following solutions:

(i) Implement marketing programs to promote brand image with broad customer reach, helping to increase brand awareness/image bank;

(ii) Expansion of bank scale, with digital banking services, accessibility can extend beyond the scope of physical branches, so the scale is reflected in the branch network and reflected in capital sources, customer access, and market coverage. Banks can expand their reach to customers by establishing consulting teams in residential areas, high schools.

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