南華大學管理學院企業管理學系管理科學碩士班

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Master Thesis

應用 S-O-R 模型探討在 COVID-19 大流行情境下越南數位支付的採用因素：以技術成熟度和使用頻率為調節變數

Applying S-O-R Model to Investigate the Adoption Factors of Digital Payment in Vietnam under the COVID-19 Pandemic Context: Technology Readiness and Frequency of Use as the Moderators

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準碩士推薦函

本校企業管理學系管理科學碩士班研究生阮英善君在本系修業2年，已經完成本系碩士班規定之修業課程及論文研究之訓練。

1、在修業課程方面：阮英善君已修滿36學分，其中必修科目：管理科學 研究方法 _____ _____等科目，成績及格(請查閱碩士班歷年成績)。

2、在論文研究方面：阮英善君在學期間已完成下列論文：

(1) 碩士論文：應用 S-O-R 模型探討在 COVID-19 大流行情境下越南數位支付的採用因素：以技術成熟度和使用頻率為調節變數

(2)學術期刊 2022 International Conference on Economic Development and Business Management 2022 (ICEDBM)

本人認為阮英善君已完成南華大學企業管理學系管理科學碩士班之碩士養成教育，符合訓練水準，並具備本校碩士學位考試之申請資格，特向碩士資格審查小組推薦其初稿，名稱：應用 S-O-R 模型探討在 COVID-19 大流行情境下越 南數位支付的採用因素：以技術成熟度和使用頻率為調節變數，以參加碩士論文口試。

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中華民國111年12月10日

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Due to limited time and experience, the thesis cannot avoid shortcomings. I anticipate getting useful contributions from Professors and readers with an interest in the topic.

Nguyen Anh Thien

January 2023

論文題目：應用 S-O-R 模型探討在 COVID-19 大流行情境下越南數位支付的採用因素：以技術成熟度和使用頻率為調節變數

系所: 南華大學企業管理學系暨管理科學研究所　　碩士論文

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中文摘要

新型冠狀病毒疾病 (COVID -19) 的流行已經對一些個人和企業的生活造成重大影響。許多消費者的購買行為因為發生了變化。本研究針對 COVID-19 大流行的背景下，應用 刺激(S)-機制(O)-反應®模型和科技接受模型 (TAM)提出一整合型模型，並以外部因素即 COVID-19 大流行的感知風險、擬社會互動和社會影響對越南消費者在採用數位支付系統的影響，並檢驗技術成熟度和使用頻率的調節作用。本實證研究，以網路問卷之方式，蒐集 224 個採用數位支付的越南消費者為樣本進行這項研究，並檢驗了本研究之信度和效度。

本研究有幾項發現：首先，特別是 COVID-19 流行病的感知風險和社會影響，確實促進越南消費者採用數位支付。第二個發現為，對 COVID-19 大流行知覺風險、擬社會互動及社會影響是消費者形成使用態度的動機。此外，技術成熟度已被認可是影響消費者使用態度與感知價值之間關係的關鍵調節因素。然而，使用頻率對數字支付的採用和數字支付的粘著性並沒有顯著影響。此外，還提供了對學術界和從業者的一些啟示。

關鍵詞：COVID-19 大流行的感知風險、社會影響、技術成熟度、數位支付的採用、數位支付的粘著度

Title of Thesis: Applying S-O-R Model to Investigate the Adoption Factors of Digital Payment in Vietnam under the COVID-19 Pandemic Context: Technology Readiness and Frequency of Use as the Moderators

Department: Master Program in Management Sciences, Department of Business Administration, Nanhua University

Graduate Date: January 2023 Degree Conferred: M.B.A.

Name of student: Nguyen Anh Thien Advisor: Ying-Kai Liao, Ph.D.

ABSTRACT

As indicated by broad social disengagement and limitations, The outbreak of novel coronavirus disease (COVID -19) has had a substantial impact on the lives of several individuals and enterprises. Consequently, consumer buying behavior has been altered. This study proposed a research framework applying the S-O-R model and the TAM model under the context of the COVID-19 pandemic to investigate the external factors: the perceived risk of the COVID-19 pandemic, the para-social interaction, and the effect of social influence on the digital payment behavior of Vietnamese consumers, and to identify the moderating effects of technology readiness and frequency of use. The empirical test was adopted from the online survey, total 224 samples of consumers embracing digital payments in Vietnam were gathered for this research. The reliability and validity are also examined in this study.

Several findings were drawn from this study. First, particularly, the perceived risk of the COVID-19 epidemic and social influence as they encourage Vietnamese use of digital payments. Second finding which indicates that the components of COVID-19 pandemic risk, para-social contact, social impact as a source of attitude toward usage. Furthermore, technology readiness has been approved is a critical moderator on the

relationship between attitude toward using and perceived value of consumers. However, frequency of use did not significantly impact on the adoption of the digital payment and stickiness of the digital payment. In addition, several implications for academia and practitioners also provided.

Keywords: Perceived risk of COVID-19 Pandemic, social influence, technology readiness, adoption of digital payment, stickiness of digital payment

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE
INTRODUCTION

1.1 Research Background

Through time, by the advancement and development of technology in general, digital technology has beenbecoming one of the new service emergence , which so called as Fintech (i.e., Financial Technology), This area includes robot investment, peer-to-peer lending, crowdfunding, blockchain, digital currency, and digital payments (Goldstein et al., 2019).

Digital payments - electronic payments is a financial payment form which make transactions with digital instruments, such as mobile wallets, cryptocurrencies[1]. Digital payment procedures are extremly convenient, simply to make and provide a platform for customer and vendors to make payment proceduce flexible. It is a widely accecpted alternative to long-established way of payment (Jingar et al., 2022). With outstanding features and convenience, digital payment has been making a huge impact on the profound transformation of consumer habits in financial payment, from using an old-fashion physical form such as cash or cheques to using a new form called digital payment.(Aladwani, 2001; Al-Malkawi, Mansumitrchai, & Al-Habib, 2016; Leong, Hew, Ooi, & Wei, 2019).

The global annual cashless transactions industry is being facilitated by digital payment. Digital payments have been on the increase over the years (World Payment Report, 2014[2]) and slowly becoming a worldwide tendency of cashless transactions among individuals, businesses, and governments (Ehiogu

[1] https://en.wikipedia.org/wiki/E-commerce_payment_system

[2] http://www.worldpaymentsreport.com/download

et al., 2018) by its advantages: making payments or transactions for products/services bought online using the digital tool (Roy & Sinha, 2014).

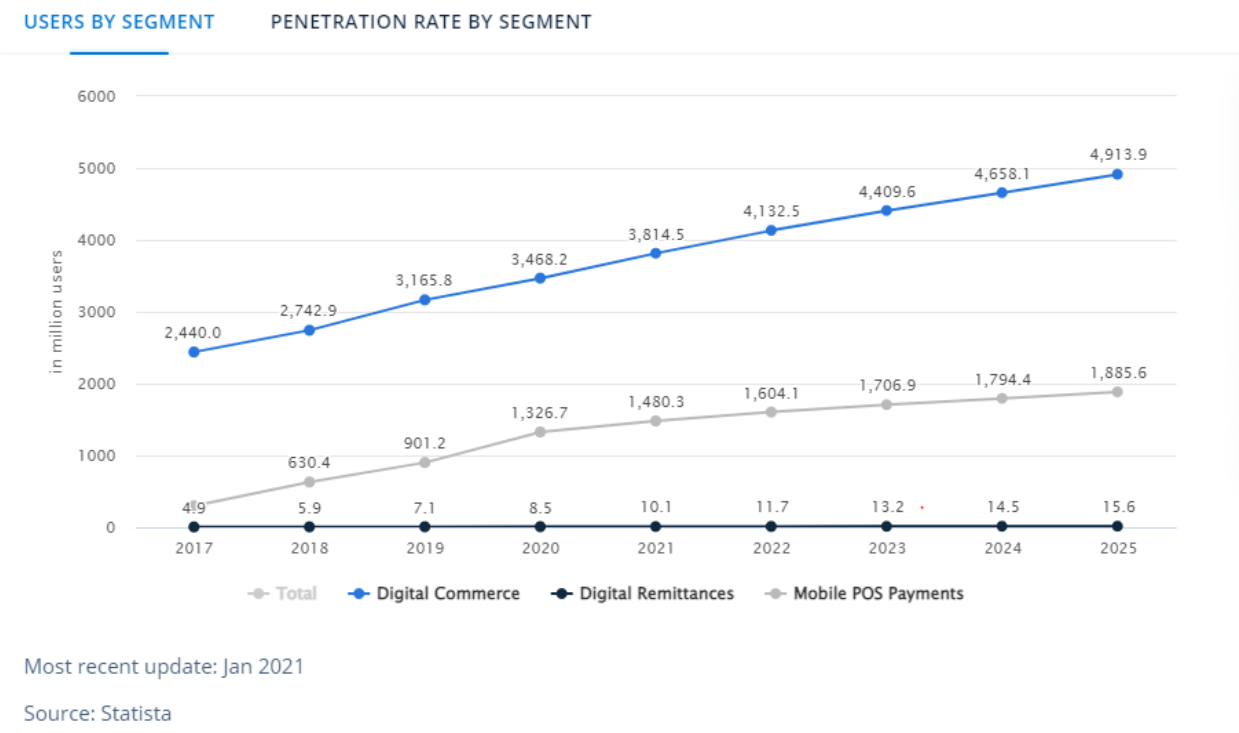

Figure 1-1 The Number of Worldwide Digital Payment Users (in million)

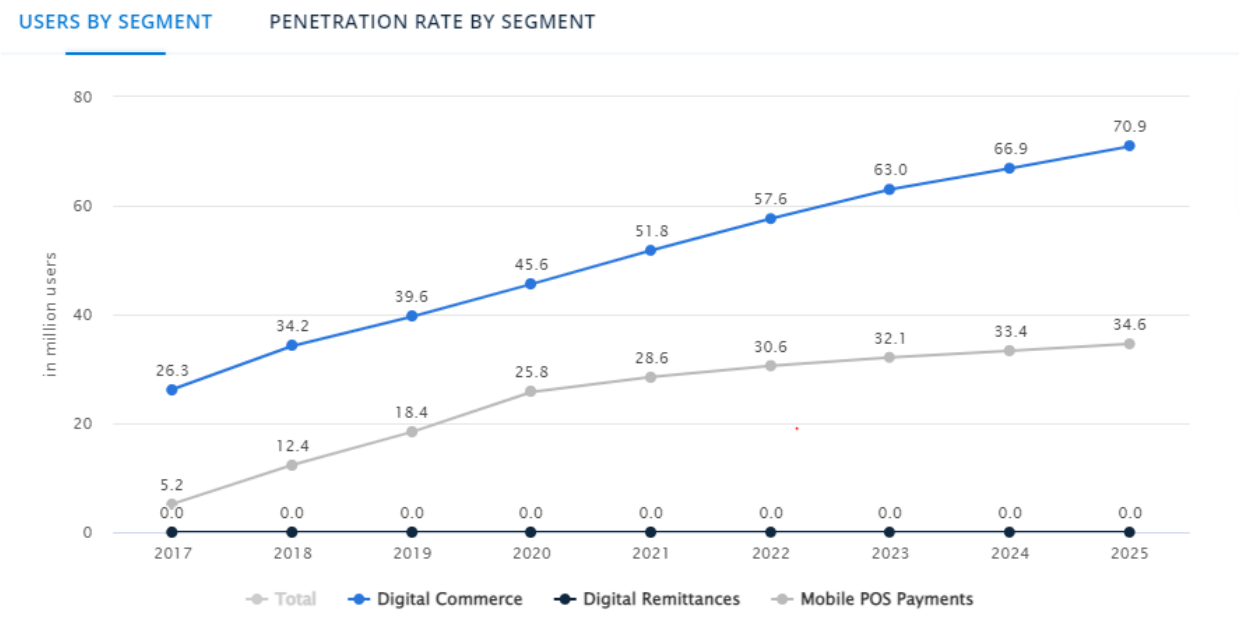

Figure 1-2 The Number of Vietnamese Digital Payment Users (in million)

De' et al., (2020) and the World bank (2022) indicated that the COVID-19 pandemic has drived a surge of digital technologies adoptions, such as digital payment systems, online retailing, work-from-home and others new forms of digital services. According to Statista Digital Market Outlook – Digital payment report 2021[3], figures 1-1 and 1-2 above have shown, with the stable growth of the number of worldwide and Vietnamese digital payment users, it stated that digital payment has now become a tendency/trend, an essential payment method in the global e-commerce market in general and Vietnam in particular. In addition, digital payment is being adopted by a large number of Vietnamese people instead of the usual form of payment (Dung & Huan,2018).

According to Mckinsey (2020), customers spent 30% more on online purchases in US retail outlets during the first six months of 2020 than during the same time in 2019. Furthermore, Amazon study showed that online shopping will nearly treble in the second half of 2020. Due to the serious risk of COVID-19 transmission, the WHO (2020b)[4] and Tang et al. (2020) both strongly advised avoiding interpersonal interaction and keeping social isolation. In this approach, the contactless function of digital or mobile payments may help customers' physical and mental expectations that their transaction processes would be supported and that their safety will be ensured (Hawley & Huynh,2020).

COVID-19 has also hampered Vietnamese firms. Digital payments in Vietnam have been popular since before COVID-19, said Dinh Hong Hanh, head of financial advisory services at PW Consulting Vietnam. The epidemic has accelerated e-payment implementation by 3-5 years. This is a fresh

[3]https://www.statista.com/study/41122/fintech-report-digital-payments/
[4]https://covid19.who.int/

opportunity for Vietnam's digital payments ecosystem, including banks, Fintech businesses, and e-wallets. According to a Visa and Rakuten Insight 2022 survey, the Vietnamese payment sector is driven by digital payment. In major electronic payment services, the e-wallet is the leading player, with 66.56 percent of customers utilizing Momo e-wallet (Figure 1-3).

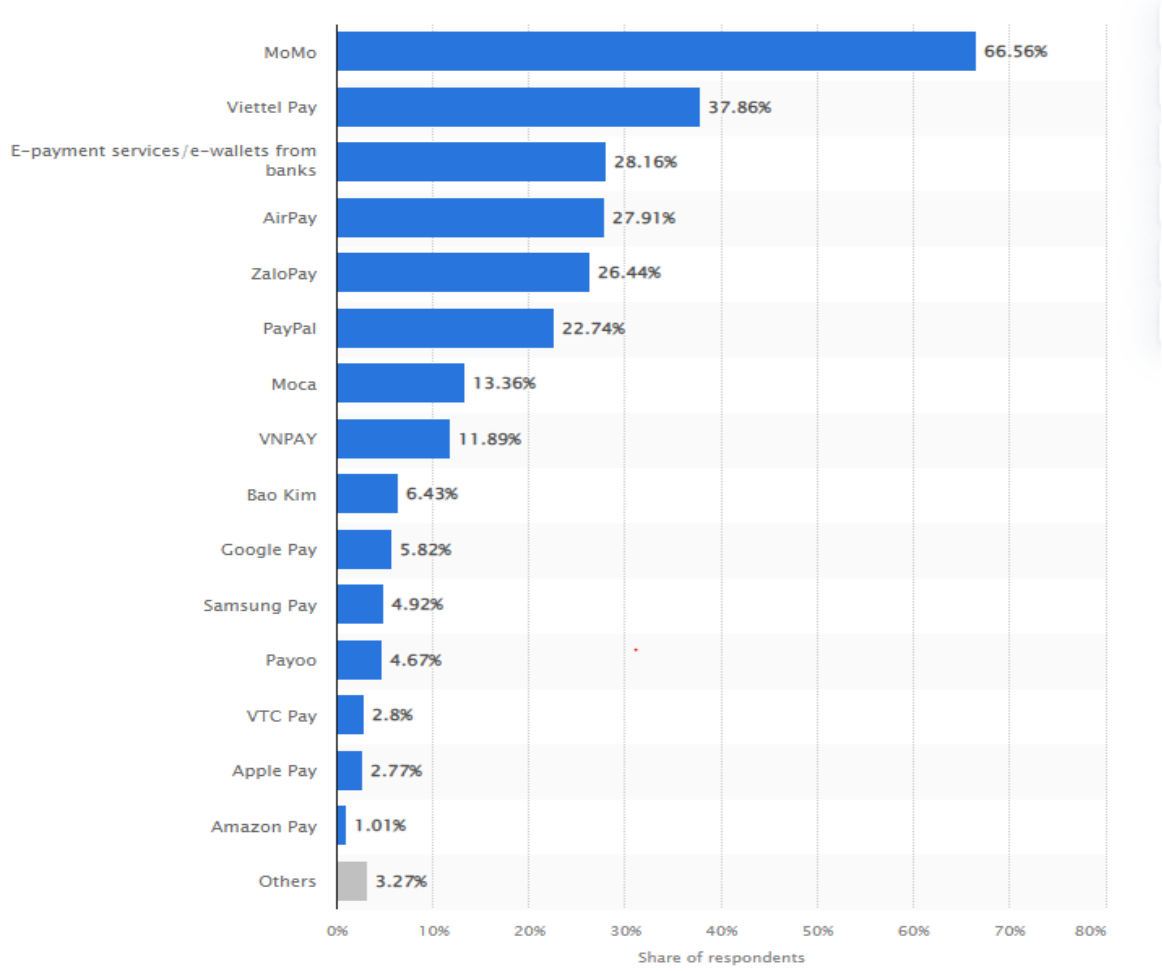

Figure 1-3 Vietnam' Major E-payment Services Used in 2020

1.2 Research Motivation and Purpose

Recent studies have indicated that the COVID-19 epidemic has had a significant and extensive influence on the socio economy, the supply chain, and the economy as a whole (Environ, 2021; Turner & Akinremi, 2020). Ather et al. (2020) claim that it is simple for the COVID-19 virus to spread when individuals contact inanimate things that are close to an infected person. Digital

technologies are currently widely used since it is recognized that actual money is the virus's preferred means of transmission (De' et al., 2020). Studies on the COVID -19 pandemic's effects on how customers or other digital users consciously accept this kind of payment, however, are still few and far between with the exception of Aji, Berakon, & Husin (2020) and in the context of Vietnam in particular.

The present studies still lack the adoptions in the post-pandemic context of Vietnam. Moreover, there were no study has been using the S-O-R model which model has abundant literature to investigate how consumer behavior has changed after post-pandemic in the Vietnam context.

According to the S-O-R model literature (Bagozzi, 1983), this study desires to examine the external stimulus (S) which is: the perceived risk of COVID-19, para-social interaction, and social influence causing consumer's inner organism (O) changes, which then influences their behavioral responses (R) in adapting digital payments and shifting their behavior to a cashless society in Vietnam.

Furthermore, to investigate and examine the consumer organism in the S-O-R model, this research uses the Technology Accepted Model to explain and forecast how well a new technology item will be expected or used (Davis, 1989). Additionally, this study also aims to determine how technology readiness and frequency of use affect to the adoption and the stickiness of digital payment in the COVID-19 context.

This study aims to explore the following content:

- To identify the main stimuli of Vietnam digital payment adoption factor in the COVID-19 pandemic context.
- To identify the moderating effect of technology readiness and frequency of use on the relationship between adoption and stickiness of digital payment.

1.3 Research Scope

Table 1-1 The Scope of The Study

Items	Scope of the study
Type of research	To construct the research hypothesis, the literature review is utilized. In order to gather empirical data and evaluate hypotheses, surveys and construct measurement are then utilized. The results and suggestions that result from this process are then presented.
Key issue	This study focuses on identify the main factors of Vietnam digital payment adoption under COVID-19 context and the moderating effects of technology readiness, frequency of use.
Dependent variables	Perceived value, adoption of digital payment, stickiness of digital payment.
Independent variables	Perceived risk of COVID-19 pandemic, para-social interaction, social influence, perceived ease of use, perceived usefulness, attitude towards of using.
Moderating variables	Technology readiness, frequency of use.
Underlying theory	S-O-R model theory, TAM model theory, theory of ultility, theory of reasoned action.
Testing location and Sample	This study conducted an empirical study that expatriates in Vietnam as the respondents. This study chooses Vietnam because due to the study of Rakuten Insight in 2020, Vietnam is now moving closer to a cashless society with a significant rise in cashless payment after being impulsed by the COVID-19 pandemic.
Analyzed unit	Individual level.
Time frame	Cross-sectional data
Research instruments	Survey: theory infernce, primary data, statistical analysis instruments.

1.4 Research Procedures

This study is consisted of five chapters, with concise abstracts for each as follows:

Chapter one provides an overview of the background information, objectives, and parameters of this inquiry.

Chapter two covers the research that has been done on the S-O-R and TAM models. This chapter also touches briefly on the external factors that have an effect on the consumers' internal organs, such as the perceived risk of the COVID-19 pandemic, para-social contact, and social influence. These factors encourage the consumers' adoption of digital payments and encourage them to stick with using digital payment methods. It has been discovered how the several significant components are connected. The hypothesized relationships are then offered once the findings from prior research are included into the discussion.

Chapter three outlines the structure of the research and its relationships. This chapter explains the research methodology and the measurements that were used in the study. In addition, the methodology behind the research is broken out, including the sample strategy, the procedures for data collection, and the instruments used for data analysis.

Chapter four includes a descriptive analysis as well as the results of testing the hypothesis, and it discusses the findings of the investigation. The next chapter presents the conclusion of the research, which is based on the arguments and comparisons presented here.

Chapter five provides an overview of the most important findings and inferences drawn from this research. In addition to the implications for management, there is also a contribution for the scholarly community. In addition, there are several restrictions and recommendations for more study. Figure 1.4 depicts the research flow as below:

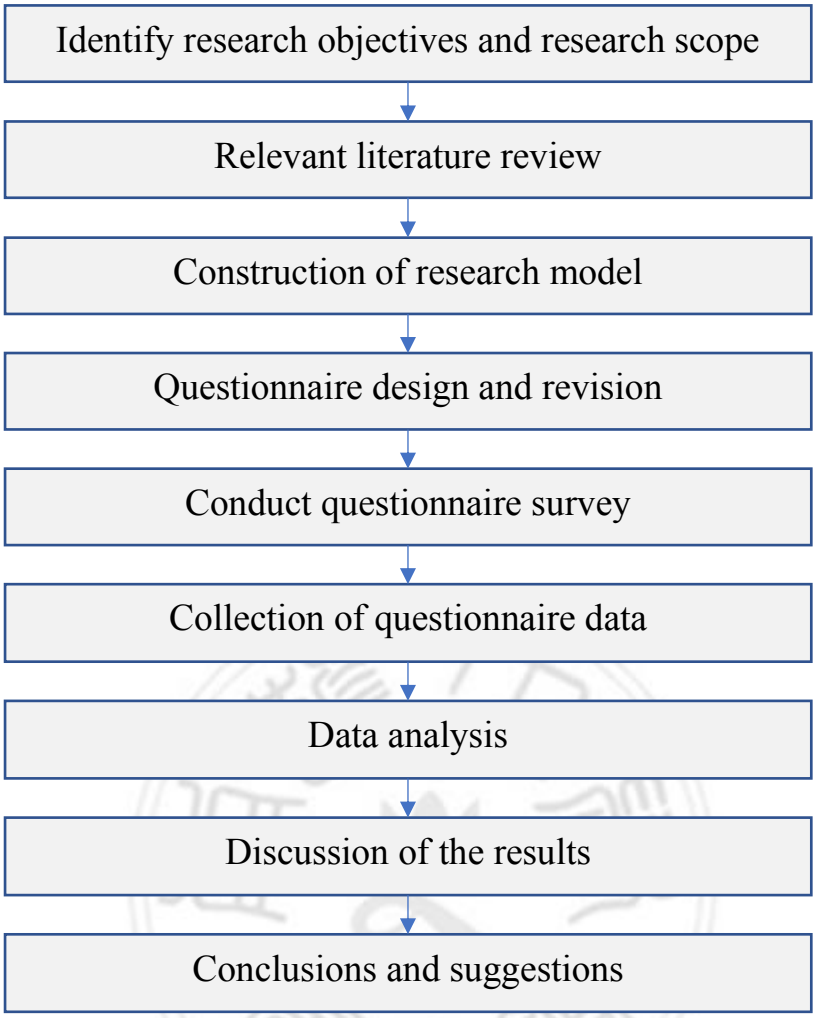

Figure 1-4 Research Flow-chart

CHAPTER TWO

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Literature Review

2.1.1 The Trendy of Worldwide Fintech and The Pandemic Facilitates Digital Payment in Vietnam.

2.1.1.1 Fintech Digital Payments During COVID-19

Digital technologies including cashless payment methods, online shopping, and work-from-home prospects have seen a substantial rise in use as a result of the Covid 19 epidemic (De' et al., 2020). De' et al. (2020) claim that during the Covid 19 epidemic, contacts between companies and industries all over the world have benefited greatly from the use of digital money and payment systems.

Researchers in other countries of the globe found a large fall in household consumption during the COVID-19 pandemic, yet in China, digital payments helped to mitigate the situation by encouraging urban consumers to spend online (Liu et al., 2020). Maritz (2020) claimed that during the present epidemic, both grew and progressing countries around the world has relied heavily on mobile payment methods and others technology services, with cashless purchases being the most popular trend among consumers. According to Martiz (2020), the use of physical cash is gradually being superseded by digital payments due to advances in science and technology as well as changes in spending patterns.

Figure 2-1 shows that cashless/digital payments gained popularity in Vietnam even before the outbreak of the pandemic (Michel Andrieu, 2001). From 2014 to 2017, the revenue of the e-commerce market in Vietnam increased steadily by about US$ 1 billion. In 2018, the revenue climbed significantly from 6.2 billion in 2017 to 8 billion US dollars in 2018, with a

good growth rate of 11.8 billion in 2020. It can be said that the Covid 19 pandemic has triggered a sharp increase in e-commerce platforms and will bring huge revenue in 2020. In 2010, there were 1000 registered e-commerce sites in Vietnam, of which 145 sites conducted online promotional sales and 47 conducted online auctions.

2.1.1.2 The Pandemic Facilitates Digital Payment in Vietnam.

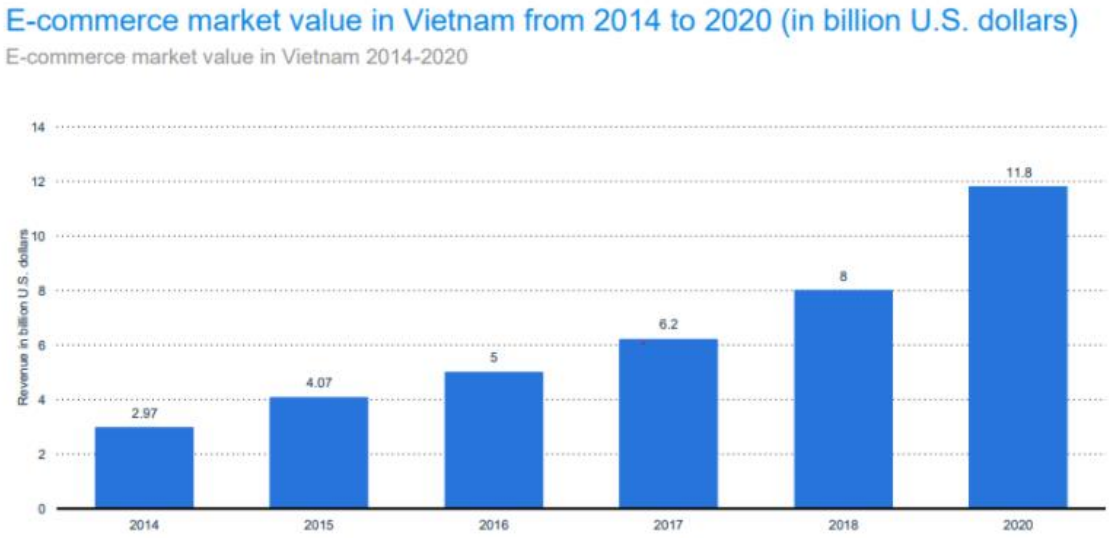

Figure 2-1 E-commerce Market Value in Vietnam from 2014 to 2020 (in billion U.S. dollars)[5]

Figure 2-1 shows that the COVID-19 pandemic has shifted and transmuted consumers behaviours in making transactions with a significant rise across cashless payment and bringing Vietnam closer to a cashless society[6].

[5] https://iris.marketing/e-commerce-in-vietnam

[6] https://www.visa.com.vn/en_VNabout-visa/newsroom/press-releases/visa-study-finds-vietnamese-consumers-keen-to-adopt-digital-payments-to-adapt-during-COVID-19 .html

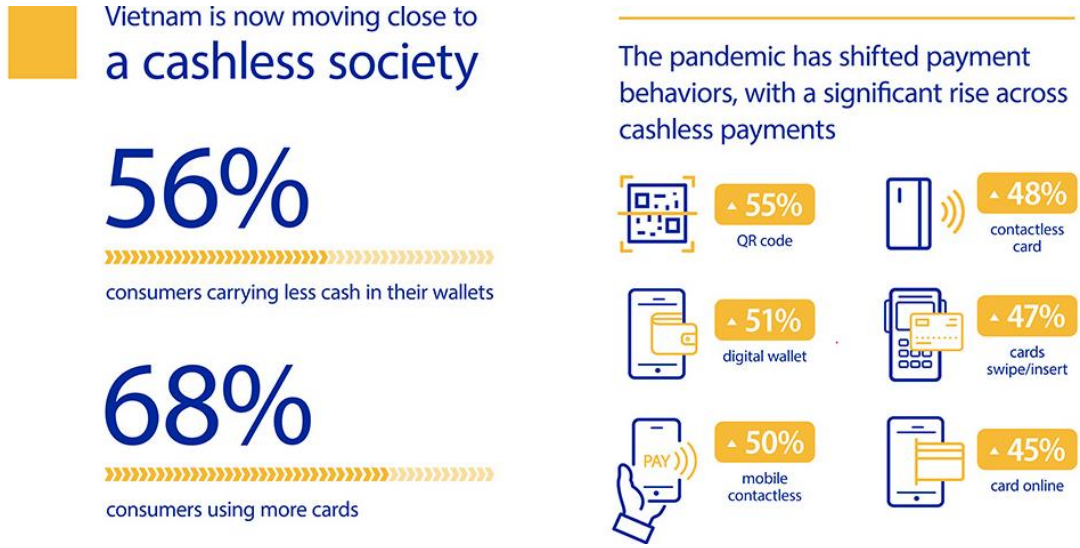

Figure 2-2 Highlights of Vietnamese Consumers Tendency Due to COVID-19

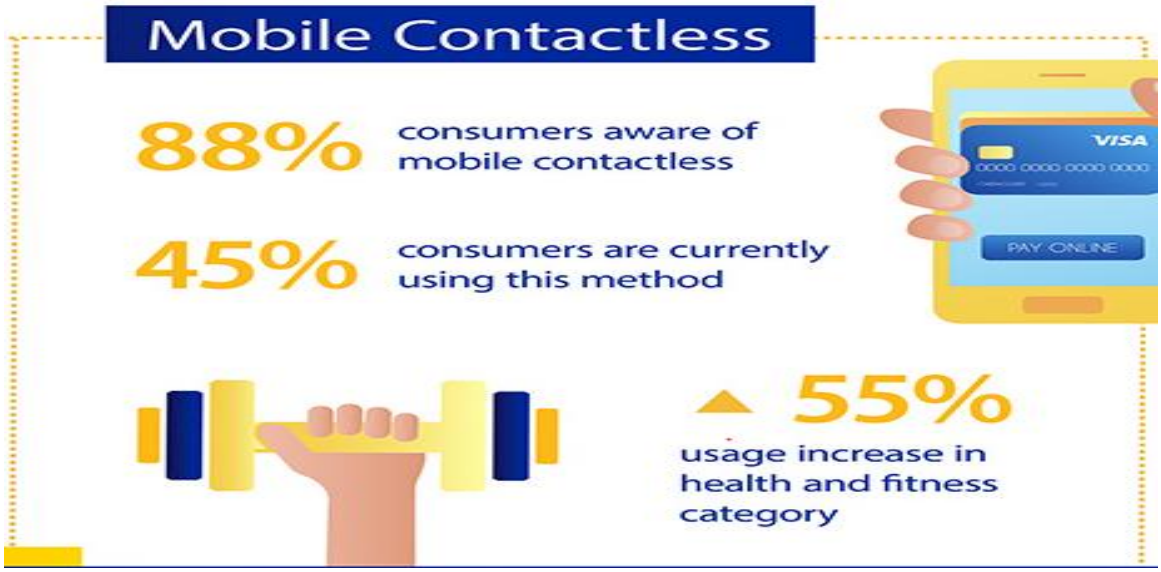

Figure 2-3 Highlights of Vietnamese Consumers Tendency Due to COVID-19

Addtionally, consumers in Vietnam have quickly adopted contacless payment methods. According to figure 2-2 and 2-3 from Rakuten insight survey, digital payments have surged in popularity, with the health and fitness sector seeing the greatest growth in transactions (55 percent). Mobile contactless payments are known to 88 percent of customers, with 45 percent already utilizing them.

2.1.2 The S-O-R Model

Psychology pioneered research into the impact of the environment on human behavior. The earliest theory outlining the relationship between environmental stimuli and human behavior was offered as the Stimulus - Respond theory (Mehrabian & Russell, 1974) This idea was later critiqued for ignoring the impact of humans on the environment (Lazarus, 2013). Other researchers asserted that this relationship is missing a link, using the human aspect as an example. As a result, Organism was added to the equation, making it Stimulus – Organism – Respond. When humans are exposed to environmental stimuli, their "inner organism" changes before their behavior responds.

The stimulus, organisms, and response (S-O-R) model have three portions: stimulus, impact, and response. It is stated that external stimuli (S) induce or stimulate changes in consumers' internal organisms (O), which then influence their behavioral responses (R) of the service (Mehrabian & Russell, 1974). The responses of individuals to environmental information are conceptualized using this approach. It has the ability to record behavioral responses as well as components of intricate decision-making procedures (Bagozzi, 1983).

The S-O-R model is a suitable model for study the environment used to study user behaviour for digital payments. Due to the worldwide COVID-19 pandemic's spread, many people started to have begun to shift their tendency of using cash to cashless payment methods after acknowledging that reduce spreading the risk of COVID-19 is needed, and the digital payments platform are highly efficient technique for a variety of payments throughout physical distance or self-quarantine periods (Aji et al., 2020).

Aji et al. (2020) noted that, in the COVID-19 context, the usages number of digital payments is growing rapidly, because the customer has begun to

develop a perception of risk that may be encountered when using cash by realizing that utilizing digital payments is the greatest solution to avoid the risk of spreading COVID-19. Aji et al. (2020) also stated that, in order to feel connected to others throughout the epidemic, people appeared to have become more dependent than ever on social media and binge-watching streaming content. One of several problems with para-social interaction that have emerged since the original wave is the implications of such social surrogacy during quarantine. Social influence also plays a significant impact in influencing customer desire to utilize digital payment, during this hard time, individual decisions and behaviors are influenced more by recommendations and suggestions from influential, relevant people (Environ, 2021). The stimulus is the perceived risk COVID-19 pandemic, para-social Interaction, social influence, as it affects the internal state of the consumer.

Accordingly, this study hypothesizes that perceived risk of COVID-19 pandemic, para-social interaction, and social influence (stimulus) positively affect the TAM model (perceived ease of use, perceived usefulness, and attitude toward use (organism), which in turn affects perceived value, which in turn affects consumer adoption and stickiness of digital payments (response).

2.1.3 The Technology Acceptance Model

The Technology Acceptance Model (TAM), a theory of information systems that examines how users embrace and use new technologies, is the most fundamental model for determining how information technology is utilized. This idea analyzes how individuals respond to new inventions (Venkatesh et al., 2007). Davis (1986) was the original author of the TAM model. Later, Fishbein and Ajzen devised a popular update to their Theory of Reasoned Action (TRA), and Davis (1986) was the first to publish the TAM model (1975).

The TAM model was developed from the Theory of Reasoned Action (Srite and Karahanna, 2006) with the goal of determining the relationship between two key beliefs: perceived usefulness, perceived ease of use of consumers and their attitude, intention, actual usage computer behavior. Perceived usefulness was revealed to be the clearest indicator of consumer's propensity to utilize technology.

The Technology Adoption Model (TAM) is a descriptive and predictive framework for the usage and acceptance of technology. The TAM model has been studied and has achieved widespread support in research on information technology. When behavioral intention to use is a key component of real system usage and other factors indirectly impact use via planned use, there is a high correlation between behavioral intention to use and actual system use (Davis, 1989). The TAM model is widely used in the information technology and telecommunications sectors to evaluate the introduction of new technical goods and services (Kuo & Yen, 2009; Shroff et al, 2011; Melas et al, 2011).

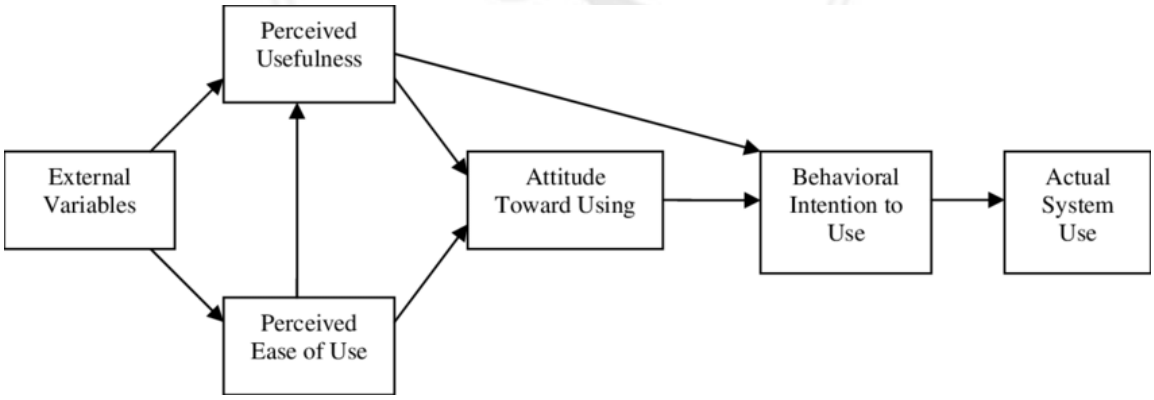

Figure 2-4 Technology Acceptance Model (TAM)

The "perceived ease of use" refers to the consumer's expectation that this technology would be simple to use (Viswanath Venkatesh et al., 2003). This element is crucial in attracting users and gaining their acceptance (Venkatesh & Davis, 1996). Furthermore, "perceived usefulness" implies that using technology would enhance their actions, which is also significant. Following

that, numerous innovators develop new technologies based on this notion to get user acceptance.

2.2 Hypotheses Development

2.2.1 Perceived Risk of the COVID-19 Pandemic

According to Im et al. (2008), perceived uncertainty, i.e., the sense of loss, is the most important definition of perceived risk in making a transaction (Bauer, 1960). Most study on consumer behavior is concerned with the latter, although it can have both good and bad effects (1993; Stone & Gronhaug). When it comes to digital payments and transactions, perceived risk can take a variety of forms, including performance risk, financial risk, time/convenience risk, and psychological risk (Forsythe & Shi, 2003). The disease risk component added by Maser and Weiermair (1998) is more relevant in the context of this research.

In the context of this research, perceived risk is the belief by consumers or users that coronavirus droplets could be present on physical currency. This study's risk factor is more closely correlated with cognitive risk and deiseal risk, in which customers fear acquiring SARS-Cov2 via real financial transactions, in accordance with Oh et al. (2015) and Maser and Weiermair (1998).

Koenig-Lewis et al., (2010) perceived risk has been introduced to the TAM model, and it has a considerable effect on perceived ease of use (Shen & Chiou, 2010), perceived usefulness (Hampshire, 2017; Lee & Park, 2016), and directly effects on attitude towards using (Ariff et al., 2014).

In other words, customers will be pushed to utilize digital payment methods as the COVID-19 epidemic draws nearer due to their perceived utility, perceived simplicity of use, and attitude towards usage. Therefore, the following three hypotheses are framed:

H1a: Perceived risk of COVID-19 pandemic positively affect perceived ease of use of digital payment.

H1b: Perceived risk of COVID-19 pandemic positively affect perceived usefulness of digital payment.

H1c: Perceived risk of COVID-19 pandemic positively affect attitude towards using of digital payment.

2.2.2 Para-social Interaction

The relationships that form between audiences and media personalities -- an individual and someone who is adored or admired, such as KOLs, celebrities and influencers, respected individuals, are referred to as para-social interaction (Horton & Wohl, 1956) that is based on emotions (Sokolova & Kefi, 2020). The emotional bond or experience, in accordance with Singh & Banerjee (2018), Song et al. (2020), and Wu et al. (2020), those connection and encounter can be used to encourage a person to pursue and emulate the influencer's attitude on some of these services. According to Sokolova & Kefi (2020), when individuals recognize a person they like or have admiration, they tend to associate that person's likeness with the services or brands.

This conforms with the results of Jin and Ryu's (2020) study, which discovered that para-social contact influenced customer confidence in a certain brand. Para-social interaction, which is defined as "a process in which a person models his or her ideas, feelings, or actions after another person who acts as a model," is another name for this "process."

It is essential to emphasize that bonding may lead a user to adopt a behavior depending on what an influencer says, and that para-social contact has a big impact on social commerce and customers' propensity to accept new technology, such as digital payment (Zheng et al., 2020). When choosing an application system, perceived ease of use, perceived usefulness, and attitude

toward using are equally important to take into account (Davis et al., 1989; Venkatesh & Davis, 2000).

Thus, this study proposed that para-social has an impact on a user about the usefulness of the digital payment, a hypothesis was added:

H2a: Para-social interaction positively affect perceived ease of use of digital payment.

H2b: Para-social interaction positively affect perceived usefulness of digital payment.

H2c: Para-social interaction positively affect attitude towards using of digital payment.

2.2.3 Social Influence

The social effect that is both created and impacted by the surrounding environment is a component in shaping a person's choice to use technology. Societal influence refers to social standards or circumstances that influence an individual's behavior and decision-making (Rice & Aydin, 1991). The word "social influence" refers to the feeling that a person is being coerced against their will to partake in certain behaviors or activities (Triandis, 1980). This impact is caused by communications or signals that heighten awareness of the value of certain items, technologies, or activities. Social influence, which refers to persons in the user's immediate environment who believe they should use technological goods, is a crucial aspect of product and technology adoption (Venkatesh, 1996).

To implement that the incorporation of social influence is one of the most significant modifications made to the TAM2 model. According to the second TAM model (TAM2), presented by Venkatesh and Davis, the perceived usefulness and perceived ease of use of IT are the two most significant factors in customer assessments of IT (Venkatesh et al., 2003). Some of the most

recent TAM studies have sought to investigate if additional factors, such as social effect, influence how customers assess the value of IT.

People are surrounded by social networks (friends, family, and colleagues) in the society in which they reside, which influence their everyday actions. This indicates that individuals do not exist or live alone. The norms, values, beliefs, ideas, prejudices, and perceptions of the people who are a part of these cultures affect their attitudes. These cultural norms, values, and beliefs, especially about digital technology, affect an individual's attitude toward technology use (Lekhanya, 2013). Other studies have also shown that the social environment has a favorable and substantial impact on consumers' attitudes about technology use (Abima et al., 2021; Hsu & Lin, 2008). As a consequence, the following hypothesis was added:

H3a: Social influence positively affect perceived ease of use of digital payment.

H3b: Social influence positively affect perceived usefulness of digital payment.

H3c: Social influence positively affect attitude towards using of digital payment.

2.2.4 The Relationship among Perceived Ease of Use, Perceived, Attitude towards Using and Perceived Value

The TAM (Davis, 1989) is based on the premise that if users perceive a technology is simple to use, they are more likely to believe it will enhance their work performance, and their attitudes about the technology are more positive. Davis did the study that led to the conception of this notion (1989). This is due to the fact that consumers who perceive a technology to be user-friendly are more inclined to assume that using it will enhance their job performance. Within the framework of the extended TAM, the adoption of

new technology depended largely on an individual's opinion of the technology's utility.

The degree to which a person believes that making use of a certain piece of technology is uncomplicated is referred to as the perceived ease of use of that technology (Davis, 1989). The phrase "perceived ease of use" is the operational word for the amount to which a user thinks that utilizing a technology requires minimal effort. This concept is quite similar to the concept of "perceived behavioral control" in TPB. Within the scope of this investigation, the phrase "perceived ease of use" refers to the degree to which customers think that making digital payments is straightforward and advantageous in terms of their perceived utility. When a system's components are easy to understand and operate, users are more likely to get used to it and put it to use.

The idea of "the amount to which a person believes the employment of a certain technology would enhance his or her work performance" is "perceived usefulness" (Davis, 1989). Perceived usefulness comprises the assumption that the system would facilitate work, boost productivity, improve work effectiveness, enhance job performance, and contribute to getting increases, promotions, bonuses, and other rewards.

Attitude towards using refers to a trained propensity to repeatedly react favorably or unfavorably to something. Being taught, attitude towards using is influenced by knowledge and experiences (Wilkie, 1994). Furthermore, one topic that has drawn the interest of many academics studying consumer behavior is perceived value, and as a result, their desire to learn more about it grows every day (Piyathasanan et al. 2015).

Perceived value refers to the contrast between perceived advantages and sacrifices by the client determination (Zeithaml, 1988; McDougall and Levesque, 2000). The perception of value from a brand or a service can be

significantly influenced by the attitude that consumers have toward it (Alden et al. 2013). Knowing how a brand/service affects this variable from a behavioral standpoint is crucial because it will help customers see a service' value as increasing when they have an increase in attitude toward it (Kang and Sharma, 2012). Moreover, consumer' attitudes toward technology will be more positive if they consider it to be beneficial, and they will be more willing to embrace and utilize it (Huang, 2015). Previous studies have shown that people are more likely to be positive about using technology if it is seen as reasonably easy to use (Viswanath Venkatesh et al., 2003). (Teo, 2010b).

Recent empirical studies (Teo, 2010a; Teo, 2011) that focused on the expected overall impact of technology use on job performance and related perceived ease of use only to the performance impact associated with the process of technology use confirmed the direct relationship between perceived ease of use and perceived usefulness. These researches investigated the projected total influence of technology usage on work performance and connected perceived ease of use exclusively to the impact on performance associated with the technology use process (Davis, 1989).

Relationships among perceived ease of use, perceived usefulness, attitude towards using digital payment, and attitude towards using with perceived value were examined in the present study. Hence, these following hypotheses were proposed:

H4: Perceived ease of use positively affect perceived usefulness of digital payment.

H5: Perceived usefulness positively affect attitude towards using of digital payment.

H6: Attitude towards using positively affect perceived value of digital payment.

2.2.5 The Relationship Among Perceived Value and Adoption, Stickiness of Digital Payment

The objective of consumers, according to the utility theory of economics, should be to maximize their degree of pleasure or utility. This is do reflected in the definition of perceived value, which compares advantages to sacrifices and so serves as a predictor of adoption (Kim et al., 2007). In addition, Thaler (2008) claimed that the value function, which takes the place of the utility function and is psychologically grounded, combines economic reasoning with cognitive psychology to influence consumer choice. Transaction utility also serves as a predictor of both purchase intention and behavior.

Any technology items/services capacity to draw in and hold users' interest is known as "stickiness," an elusive trait that motivates visitors to visit more frequently and stay on the site for longer periods of time (Sivathanu, 2017). Stickiness is taken into account in this study while implementing digital payments. Stickiness has a considerable impact on a user's desire to make an in-app purchase/use for mobile banking, according to Hsu & Lin (2016). Similar to this, in the context of e-commerce, a user's readiness to transact is closely related to how loyal they are to an online store (Lin, 2007).

This study's concept of perceived value reflects this by weighing advantages against costs, and hence serves as a predictor of adoption intention. Accordingly, we propose the following hypotheses:

H7: Perceived value positively affect adoption of digital payment.

H8: Perceived value positively affect stickiness of digital payment.

2.2.6 The Moderating Effects of Technology Readiness among the relationships with Attitude towards Using on Perceive Value

Technology ready (TR) is an evaluation of an individual's attitude and propensity to use in any technology services or items in daily life. TR is interested in whether new product of technologies are accessible in the user's

immediate area and can help individuals perform out their professional obligations.

Lin and Chang (2011) claimed that users' perceptions of technological usefulness and ease of use are influenced by their environment, personal impressions, inclinations, and traits. In their 2011 study on logistics TR, Kros et al. investigated the role of optimism and creativity in conceptualizing enterprise-level TR. Using the dimensions provided by Parasuraman, the synergistic effects resulting from the interaction influence of TR driver and inhibitor were quantified (2000). Researchers have extensively researched and validated these dimensions (Richey and Autry, 2010). The following is a list of these dimensions:

Optimism: a positive attitude toward technology and a belief that it can give you more authority, effectiveness, and freedom.

Innovativeness: the user's desire to set trends in both behavior and thinking.

Comfort level: the extent to which people are responsible for and use technology

Sense of security: the user's confidence in the technology and their trust in the performance of the system.

TAM research indicates that the greater a person's TR and likelihood of using a technology, the more beneficial and simple it is for them (Blood et al. 2016). Consequently, this research proposes the following hypotheses:

H9: Technology readiness moderates the relationship between attitude towards using and perceived value.

2.2.7 The Moderating Effects of Frequency of Use Among the Relationships with Perceived Value on Adoption of Digital Payment and Sickness of Digital Payment.

The components of a technological item or even its perceived value may have an impact on the frequency of use, which is a behavioral trait. It may sometimes be seen as a moderator of how valuable, acceptable, and sticky digital payments are judged to be. The concept of payment equity, which is based on the equity theory paradigm, was first developed by Bolton and Lemon in 1999. It claims that consumers' perceptions of a service and their interactions with the equity value of the service provider change over time. In other words, the greater the perceived value of a service, the more often people will utilize it. Wang (2010) also showed that a customer's willingness to use or adopt a certain e-commerce service is influenced by how often they use it. In addition, according to Mittelman et al. (2020), consumers may decide without spending the mental effort of evaluating how often they anticipate using the product or service if they find a compelling reason to justify their usage that is connected to the value of the service.

Increased stickiness is considered to enhance the possibility of in-app purchases by increasing the frequency and duration of each visit. It is believed that stickiness intent and the app's worth are both positively correlated. Lin (2007) investigated the relationship between perceived value and user's stickiness by demonstrating that increasing the degree of a digital instrument's perceived value will increase the user's stickiness to that digital instrument and that increasing the degree of stickiness to a digital instrument will increase digital instrument user intention to transact purchase or retain user's.

In this study, we aim to investigate the moderating effect between the relationships between frequency of use and perceived value on digital payment

adoption and digital payment adoption. Therefore, the following hypotheses were formulated:

H10a: Frequency of use moderates the relationship between perceived value and adoption of digital payment.

H10b: Frequency of use moderates the relationship between perceived value and stickiness of digital payment.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Framework

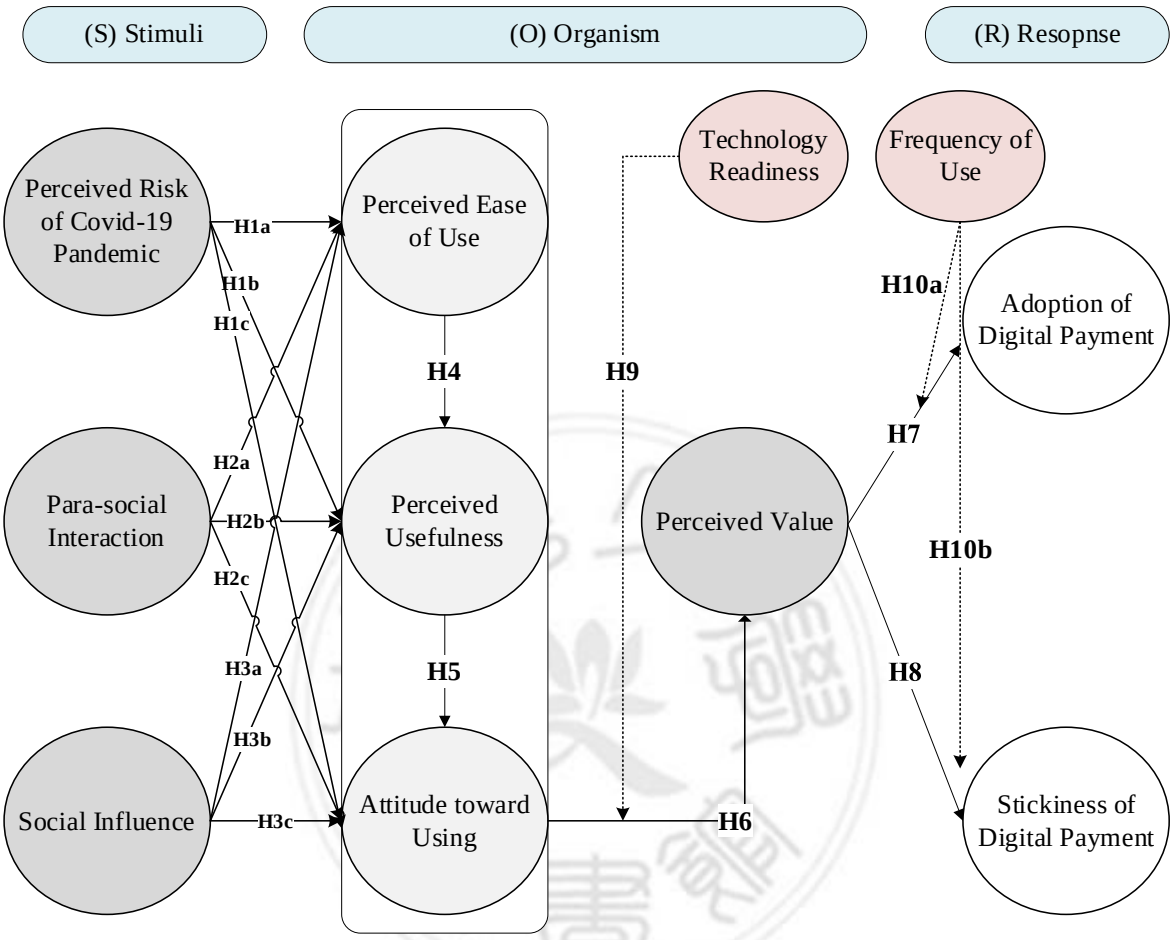

Figure 3-1 Research Framework

Combining SOR theory and the Technology Acceptance Model (TAM), this study aims to identify the most relevant factors influencing digital payment acceptance grounded in Vietnam. The study also examined the moderating effects of technical readiness and frequency of use in Vietnam. The S-O-R model is suitable for analyzing user behavior in digital payments. TAM is used to describe and forecast the uptake and use of technology. In information technology research, the model has been examined and largely approved, and its excellent predictive value is widely acknowledged. When behavioral intention to use is a necessary component of actual system usage and when

other factors indirectly influence use via planned use, behavioral intention to use is substantially linked with actual system use. With the global spread of the COVID-19 pandemic, many people have begun to switch from cash to cashless payment methods, recognizing that it is necessary to reduce the risk of COVID-19's spreads and that the digital payment platform is a highly effective method for various types of payments during physical distancing or self-quarantine. Specifically, the study examines the relationship between the perceived risk of COVID-19 pandemic, para-social interaction, and social influence (stimulus) as a cause of perceived ease of use, perceived usefulness, attitude toward using, and perceived value (organism), and the resulting consumer adoption and stickiness of digital payments(responses).

3.2 Research Hypotheses

Hypotheses are established to investigate the correlations in the research model based on the literature review in chapter 2. The following are the suggested theories, from H1 to H10: The hypotheses H1(a,b,c), H2(a,b,c), and H3(a,b,c) examine the relationship between perceived risk of COVID-19 pandemic, para-social interaction, social influence and perceived ease of use, perceived usefulness, attitude towards using. H4 tests the effect of perceived ease of use on perceived usefulness, H5 also tests the effect of perceived usefulness to attitude towards using, H6 examines the relationship of attitude towards using and perceived value. The next hypotheses H7 and H8 examine the effect of perceived value on consumer's adoption and stickiness of digital payment. Finally, H9 examines the role of moderating effects of technology readiness among the relationships with perceived usefulness on perceived value; H10 (a,b) examines the moderating effects of frequency of use among the relationships with perceived value on adoption of digital payment and stickiness of digital payment. Thus, the hypotheses are as follow:

H1a: Perceived risk of COVID-19 pandemic positively affect perceived ease of use of digital payment.

H1b: Perceived risk of COVID-19 pandemic positively affect perceived usefulness of digital payment.

H1c: Perceived risk of COVID-19 pandemic positively affect attitude towards using of digital payment.

H2a: Para-social interaction positively affect perceived ease of use of digital payment.

H2b: Para-social interaction positively affect perceived usefulness of digital payment.

H2c: Para-social interaction positively affects perceived attitude towards using of digital payment.

H3a: Social influence positively affect perceived ease of use of digital payment.

H3b: Social influence positively affect perceived usefulness of digital payment.

H3c: Social influence positively affect attitude towards using of digital payment.

H4: Perceived ease of use positively affect perceived usefulness of digital payment.

H5: Perceived usefulness positively affect attitude towards using of digital payment.

H6: Attitude towards using positively affect perceived value of digital payment.

H7: Perceived value positively affect adoption of digital payment.

H8: Perceived value positively affect stickiness of digital payment.

H9: Technology readiness moderates the relationship between attitude towards using and perceived value.

H10a: Frequency of use moderates the relationship between perceived value and adoption of digital payment.

H10b: Frequency of use moderates the relationship between perceived value and stickiness of digital payment.

3.3. Research Design

3.3.1 Research Process

The quantitative research approach was applied in this study. The research process was carried out through the following stages:

Stage 1: Literature review was used to develop a research model and hypotheses.

Stage 2: Quantitative research:

- Preliminary quantitative research: Check the reliability of the measurement scales.
- Formal quantitative research: Test the reliability of the measurement scales and research hypotheses.

The research process was carried out according to the sequence shown in the figure 3-2 below:

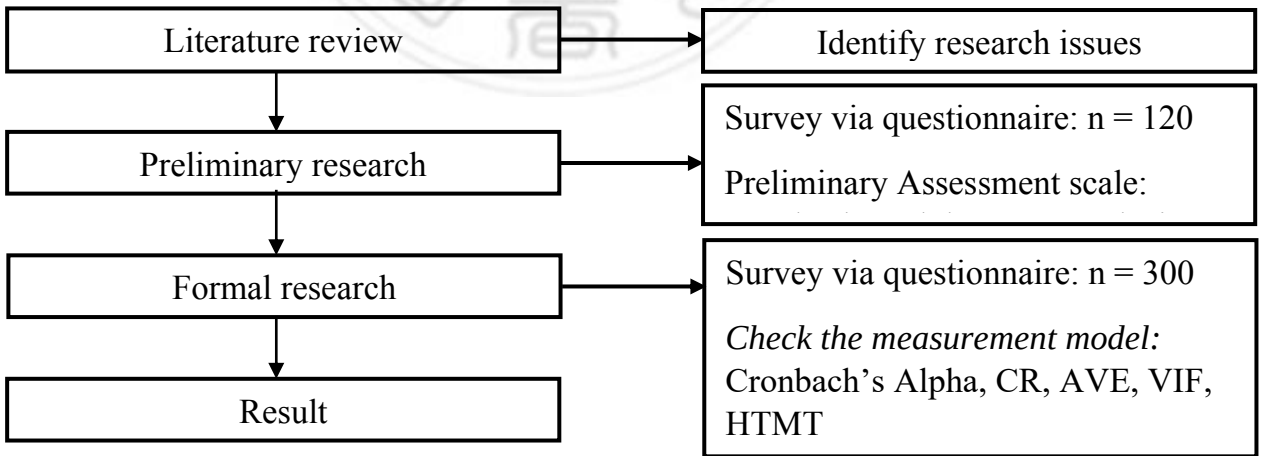

Figure 3-2 The Process Research

3.3.2. Questionnaire Design

In the quantitative research phase, the structured questionnaire survey method used to collect data for examination. The five-point Likert scales were

used in this study: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, (5) strongly agree.

Furthermore, as aforementioned in the research topic which is to investigate the adoption factors under the COVID-19 pandemic context in Vietnam, this research rounded up Vietnamese consumers. Thus, in order to make the respondent fully understand our questionnaires, with minimizing misleading to gather the most accurate responses, we invited 3 Ph.D. students who had been doing dual-language research for decades to double-check our translation in the survey. The translation from English to Vietnamese had been double-checked and is represented in the research appendix.

3.3.3. Preliminary Research

To conduct preliminary quantitative research, the draft questionnaire consists of 3 parts: (1) Introduction to the research; (2) The contents to be evaluated; (3) The personal information of the respondents was used for the interview. Due to the COVID-19 pandemic, the interview was conducted online via social media networks: Zalo, Facebook, Instagram, etc. The collection period took place for 2 weeks (from February 25, 2022, to March 10, 2022), the test sample obtained 120 responses.

The reliability of the scale was determined using the Cronbach's alpha coefficient, which takes the following parameters into account: The entire Cronbach's alpha coefficient of the scale must be greater than than 0.6. In addition, the correlation between the variable and the collection of observed variables must be larger than 0.30. (Nunnally & Bernstein, 1994). Thus, the scales were constructed and deemed suitable for use in formal quantitative research.

The EFA approach is used to assess the convergence of the concept's component variable. A variable with a factor loading of less than 0.5 will be

excluded (Nunnally & Bernstein, 1994), allowing a collection of observed variables to be reduced to a set of factors. In addition, if a total variance cumulative of less than 50% is achieved, Total Variance Cumulative will be evaluated (Gerbing. & Anderson., 1988). This approach was used to examine the draft scale in a preliminary manner. After the kind of variable was determined to be unsatisfactory, the remaining variables was entered into the whole scale of the official questionnaire used in formal quantitative research.

3.3.4 Formal Research

The study sample was selected using a probability-based method of convenience sampling. Since the population is so enormous, this is also a highly common sample technique in consumer behavior research (Meng & Choi, 2016). Several observed elements that happened during the COVID-19 outbreak in Vietnam and worldwide influenced the study's choice to adopt the online survey approach. Additionally, this is now the best option.

Regarding the number of research samples proposed when applying PLS-SEM in data analysis (Hair et al., 2013), the sample size should be equal to or larger than:

(1) Ten times the maximum *number* of causal observed variables used to measure a single study variable, or:

(2) Ten times the maximum number of structural paths *directed* at a particular research variable in the structural model.

Additionally, while OLS (Ordinary Least Square) regression is mostly focused on sample size in PLS-SEM, it is possible to base the analysis on other empirical principles. sensitivity of statistics in multiple regression models. The minimal sample size for regression analysis, according to Green (1991), is 150 samples.

According to Bollen (1989), the sample size should be calculated as follows: at least five observations per estimator (ratio 5:1). However, the

reliability of the study increases with larger sample size and higher minimum requirements (reduction of sampling errors).

The specific case of the thesis has 3 exogenous variables (independent variables) and the total number of observed variables is 41 variables. However, the research model is quite complex, with many relationships. To achieve the highest reliability (within the allowable limits), the sample size is expected to be 500.

Examine into the measuring model

The scales in the model are evaluated through testing coefficients: Outer loadings, Composite Reliability, Cronbach's Alpha coefficient, Average variance extracted (AVE), discriminant validity with Fornell & Larcker criteria and HTMT criteria. In there:

Table 3-1 The Criteria for Testing the Measurement Model

Criterion	**Condition**	**Source**
Composite reliability - CR	CR ≥ 0.7	Hair et al. (2013)
Average Variance Extract - AVE	AVE ≥ 0.5	Chin (2010)
Compare the square root of the extracted variance (AVE) with the correlation coefficient to evaluate the discriminant	The square root of extracted variance (AVE) must be greater than the correlation coefficient	Fornell & Larcker (1981)
Factor Loading and Cross Loading	Factor Loading > 0.6 and Factor Loading is larger than Cross Loading.	Hair et al. (2013)

Criterion	Condition	Source
Heterotrait-Monotrait ratio(HTMT)	The value of HTMT is <1 lower than the required threshold value of HTMT	Garson (2016)

Evaluation of impacts in structural modeling/ hypothesis testing

The bootstrapping approach is used in Smart PLS to test the study hypotheses. The Henseler et al. (2009) 5000-repeat pattern is provided in this method. In other words, the route values indicate the relationship values in the structural model, which in turn represents the predicted links between the study variables in the model. Path coefficients often fall between -1 and +1 (normalized values might be small or large, but are typically in the middle of the range). Strong positive relationships with path coefficients estimated at +1 (and vice versa for negative values) nearly invariably have statistical significance (i.e., non-zero in the population). The association becomes weaker as it approaches zero. Very low values close to 0 are often not statistically significant, that is, not statistically different from 0, and so on.

Degrees of freedom (df), or the number of constant values used in the final calculation of the test statistic, equal the number of observations minus the number of indices in the quantitative measurement model form minus one. The t-distribution is often well approximated by a (Gaussian) normal distribution for more than 30 observations. Normal (Gaussian) quanta may be used to determine the critical t-value (or theoretical t value) to test for statistical significance, since the number of observations often exceeds this threshold. We may thus presume that the route coefficients are not significant at the 5% level of significance (= 0.05; two-way test - two-tailed tests) when the magnitude of the experimental t-value obtained is over 1.96. The crucial t-values are 2.57 and 1.65, respectively, at significance levels of 1% (= 0.01;

two-tailed test) and 10% (= 0.10; two-tailed test) probability errors. Most researchers use a 5% threshold of significance, which requires that the association under investigation have a p-value of less than 0.1 and a t-value of larger than 1.96. (Hair et al., 2013)

Moderator effects

The subsequent testing procedures will also take the regulatory linkages into account in the structural model:

A moderator variable may be seen as a third variable that alters the relationship between the independent and dependent variables. The moderator variable adjusts the relationship between two variables; as a consequence, the degree or value of the moderator variable impacts how the predictor influences the criterion. In other words, the moderator variable affects the quantity of the dependent variable by interaction with the independent variable. Following the test results:

(1) Test the values of the measurement model after adding a moderator variable to the measurement model such as: factor loading (>0.6), AVE (>0.5) and CR (>0.7).

(2) Check the coefficient R^2 before and after generating the interaction term:

R^2 (after generating interaction terms) – R^2 (before generating interaction terms) = 0 => Conclusion: there is no regulatory relationship.

R^2 (after generating interaction terms) – R^2 (before generating interaction terms)>0 =>Conclusion: there is a moderating relationship.

Determine the contribution of the moderator variable by the impact value f^2 with the formula:

$$F^2 = \frac{R^2 \text{ (after interaction term generation)} - R^2 \text{ (before interaction term generation)}}{}$$

1- R^2 (after generating interaction terms)

According to Cohen (1988):

$F^2 = 0.02$ => correspondingly small effect

$F^2 = 0.15$ => average corresponding impact

$F^2 = 0.35$ => correspondingly large impact

According to Baron & Kenny (1986), then;

$F^2 = 0.005$ => correspondingly small effect

$F^2 = 0.01$ => average corresponding impact

$F^2 = 0.025$ => correspondingly large impact

(3) Evaluate the significance of the interaction term through the P-value (<0.1) and t-value (>1.96). Also, the difference-corrected 95% confidence interval of the interaction terms does not contain the value 0.

3.4. Research Instruments

In this study, the interrelationships between 11 research constructs were evaluated. These are the constructs: perceived danger of the COVID-19 pandemic, para-social contact, social influence, perceived ease of use, perceived usefulness, attitude toward using, perceived value, adoption of digital payment, stickiness of digital payment, technological readiness, and frequency of use. Identified also were the operational principles and measurement items for each component (shown in Appendix).

3.4.1 Perceived Risk of COVID-19 Pandemic

This study defines perceived risk as a consumer's concern over the possibility of coronavirus droplets on physical banknotes or money. Three modified items from Aji et al. are used to evaluate this factor (2020).

Table 3-2 Perceived Risk of COVID-19 Pandemic

Coding	Item	Source
PR1	I am worried to get infected by coronavirus when using physical cash.	Aji et al. (2020)
PR2	I am not comfortable making payment using physical cash.	Aji et al. (2020)
PR3	I am afraid to get infected by coronavirus when using physical cash.	Aji et al. (2020)

3.4.2 Para-social Interaction

This research defines para-social interaction as a process when a person imitates the ideas, emotions, or behaviors of another person who serves as a model. Three items from Lim & Kim are adjusted to test this factor (2011).

Table 3-3 Para-social Interaction

Coding	Item	Source
PSI1	I like hearing the recommendation from influencer related to digital payment methods.	Lim & Kim (2011)
PSI2	When influencer shows how he/she feels about digital payment methods, it helps me make up my mind about that.	Lim & Kim (2011)
PSI3	I like to compare my feelings for digital payment methods with what influencer I admired has to say about it.	Lim & Kim (2011)

3.4.3 Social Influence

In this study, users' social influence, which includes their friends, coworkers, and relatives, will have a positive effect on the user's intentions to use new technologies. This component is assessed using 4 questions adapted from Shen et al. (2006) and Huang (2015).

Table 3-4 Social Influence

Coding	Item	Source
SI1	People who influence my behaviour think that I should use digital payment	Huang (2015)
SI2	People who are important to me think that I should use digital payment.	Huang (2015)

SI3	People surrounding me who have good performance have benefited from using digital payment.	Huang (2015)
SI4	In general, people have supported the use of digital payment.	Shen et al. (2006)

3.4.4 Perceived Ease of Use

Perceived ease of use refers to the extent to which users believe that using digital payment is free of effort and benefits to them. In this case, this factor is measured with 4 items modified from Teo & Zhou (2014) and Chang et al. (2012).

Table 3-5 Perceived Ease of Use

Coding	Item	Source
PEOU1	I find it easy to get the digital payment methods to do what I want it to do.	Teo & Zhou (2014)
PEOU2	My interaction with digital payment methods is clear and understandable.	Teo & Zhou (2014)
PEOU3	It is easy for me to become skillful at using digital payment methods.	Chang et al. (2012)
PEOU4	I find the digital payment methods easy to use.	Teo & Zhou (2014)

3.4.5 Perceived Usefulness

Perceived usefulness includes expectations that using the system would facilitate work, increase output, enhance work effectiveness, enhance job performance, and help getting increases, promotions, bonuses, and other benefits. Three modified Shankar & Datta items are used to measure this factor (2018).

Table 3-6 Perceived Usefulness

Coding	Item	Source
PU1	In my opinion, during this COVID-19 pandemic, using digital payment methods allows me to make transaction quicker.	Shankar & Datta (2018)
PU2	In my opinion, during this COVID-19 pandemic, using digital payment methods are highly beneficial.	Shankar & Datta (2018)

PU3	Throughout this COVID-19 pandemic, I have done transactions using digital payments methods because it is beneficial.	Shankar & Datta (2018)

3.4.6 Attitude towards Using

The way a user feels about utilizing technology is referred to as their attitude toward using in this research. Four modified Teo & Zhou items are used to assess this factor (2014).

Table 3-7 Attitude Toward Using

Coding	Item	Source
AT1	In my opinion, using digital payment is a great idea during Covid 19 pandemic make transaction quicker.	Teo & Zhou (2014)
AT2	In my opinion, using digital payment is advantageous for me during COVID-19 pandemic.	Teo & Zhou (2014)
AT3	I prefer to make transactions by using digital payment methods rather than cash during this COVID-19 pandemic.	Teo & Zhou (2014)
AT4	Overall, my attitude towards using digital payment is positive.	Teo & Zhou (2014)

3.4.7 Perceived Value

Consumers strive for the greatest utility or benefits, and their perceived values reflect this by weighing the advantages and disadvantages while making decisions. In this research, perceived value is defined as a person's overall assessment of a product's usefulness based on perceptions of what is provided and what is obtained. Four items from Kim et al. were adapted to test this factor (2007).

Table 3-8 Perceived Value

Coding	Item	Source
PV1	Based on the fee I need to pay, using digital payment methods offers value for money.	Kim et al. (2007).
PV2	Based on the amount of effort I need to put in, using digital payment method is beneficial to me.	Kim et al. (2007)

PV3	Based on the amount of time I need to spend, using digital payment method is worthwhile to me.	Kim et al. (2007).
PV4	Overall, using digital payment delivers me good value.	Kim et al. (2007).

3.4.8 Adoption of Digital Payment

The two elements of usefulness and ease of use explain adoption behavior. When it comes to this situation, attitude refers to a psychological predisposition that is exhibited by judging a certain entity with a degree of favor or dislike of digital payment. 4 items adapted from Immanuel & Dewi are used to test this factor (2020).

Table 3-9 Adoption of Digital Payment

Coding	**Item**	**Source**
ADP1	During COVID-19 pandemic, I use digital payment methods to make transactions more often.	Immanuel & Dewi (2020)
ADP2	During COVID-19, if I have an opportunity to make transactions by using digital payment methods, I will do it.	Immanuel & Dewi (2020)
ADP3	I prefer using e-wallets for payment transactions during COVID-19 pandemic.	Immanuel & Dewi (2020)
ADP4	In the future, I plan to make transactions using digital payment methods.	Immanuel & Dewi (2020)

3.4.9 Stickiness of Digital Payment

Stickiness is defined as the capability of any website to capture and retain user attention (Sivathanu, 2017). Hence, in this case, stickiness is an intangible quality that encourages people to return more frequently and for longer periods of time. Furthermore, it is do considered for using digital payment. This factor is measured with 5 items modified from Sivathanu (2017).

Table 3-10 Stickiness of Digital Payment

Coding	Item	Source
SDP1	I have been using digital payment methods for a long time.	Sivathanu (2017)
SDP2	I will continue to increase the frequency of digital payment usage.	Sivathanu (2017)
SDP3	I usually spend a lot of time on digital payment methods.	Sivathanu (2017)
SDP4	I'm using digital payment methods for almost every day.	Sivathanu (2017)
SDP5	I'm used to use digital payment methods for check-out/transaction.	Sivathanu (2017)

3.4.10 Technology Readiness

Technology readiness (TR) refers to a person's attitude toward and proclivity to use technological products and services in daily life. It is interested in whether new technology that can help individuals do professional duties are available in their immediate area. This factor is measured with 7 items modified from Parasuraman (2000).

Table 3-11 Technology Readiness

Coding	Item	Source
TR1	I am open-minded toward digital payment.	Parasuraman (2000)
TR2	I like to try out new digital payment methods in my personal life or at work.	Parasuraman (2000)
TR3	I believe the new digital payment methods provide me with information that I need for my transactions.	Parasuraman (2000)
TR4	I believe the new digital payment methods provide me with useful tool to help me better control my transactions.	Parasuraman (2000)
TR5	I am adapted to the interface provided by the new digital payment methods.	Parasuraman (2000)
TR6	I am adapted to the functions provided by the new digital payment methods.	Parasuraman (2000)
TR7	I trust that the digital payment methods will help me control all kinds of informatin that I need for my transactions.	Parasuraman (2000)

CHAPTER FOUR
RESULT AND DATA ANALYSIS

The first part of this chapter includes a descriptive analysis of the respondents' contextual information and the resulting variables. Evaluation of the scale, including factor analysis and reliability of the scale, is presented in the second part. The structural model was presented in the third part.

4.1 Descriptive analysis

4.1.1 Characteristic of Respondents

The questionnaires were collected from the period of February 2022 to May 2022. Due to the COVID-19 pandemic, the survey was conducted online via social media networks: Zalo, Facebook, Instagram, etc. Total 300 received responses over the course of three months, 76 questionnaires were rejected due to missing data or respondents have no digital payment experienced or aweraness, which indicates that 74.67% of the 300 respondents having actual experience with digital payments, relatively still having 25.33 % respondents have never made a digital payment and haven't been aware of them either. Consequently, 224 valid samples to further analyze in this study.

Table 4-1 summarizes the details of the respondents' characteristics. Regarding gender, were a total of 224 respondents, females comprised around 40.6% (91) of the participants, while there were about 54.9% (123) of males. The percentage of respondents whose age range between 26-35 years old was approximately 36.2%, followed by the various group age range accounted for 29% (18-25), 17% (36-45), 9.4% (46-55), 5.4% (over 55) and 3.1% (under 17) respectively. As it is clearly shown that the majority of respondents are full-timer as their working status, accounting for 47.8% (107), followed by the master's degree with 14.7% (33), bachelor’s degree with 14.3% (32), part-timer 12.9% (29), high school student with 4.9% (11), doctorate degree with around 2.2% (5), and the rest 3.1% (7) were unemployed. The highest percentage of

annual income ranged between 200-500 and 500-800 with similarity of 33.5% (75), 17% (38) above 800$ and nearly 16.1% (36) of the respondent's income below 200$.

Table 4-1 Characteristic of Respondents

Classification	Respondents	
	Frequency	Percentage (%)
Gender		
Male	123	54.9%
Female	91	40.6%
Others	10	4.5%
Age		
Under 17 years old	7	3.1%
18-25 years old	65	29.0%
26-35 years old	81	36.2%
36-45 years old	38	17.0%
46-55 years old	21	9.4%
Above 55 years old	12	5.4%
Working Status		
High school student	11	4.9%
Bachelor	32	14.3%
Master	33	14.7%
Doctoral	5	2.2%
Full-timer	107	47.8%
Part-timer	29	12.9%
Unemployed	7	3.1%
Income		
Below 200$	36	16.1%
200-500	75	33.5%
500-800$	75	33.5%
Above 800$	38	17%

4.1.2 Measurement Results of Relevant Variables

The descriptive statistics by survey items for sample respondents are presented in this section. This section shows the descriptive statistics by questionnaire items for sample respondents. There are 3 items for the perceived risk of the COVID-19 pandemic and 3 items for para-social interaction, 4 items

for social influence, 4 items for perceived ease of use, 2 items for perceived usefulness, 4 items for attitude towards using, 5 items for the stickiness of digital payment, 7 items of technology readiness.

as shown in table 4-2, for perceived risk of COVID-19 pandemic, the sample cases show a range from 3.870 to 4.030 and the range for standard deviation is from 1.048 to 1.086 in the 5-point Likert scales.

Table 4-2 Descriptive Analysis for Perceived Risk of COVID-19 Pandemic Questionnaire Items

Perceived Risk of COVID-19 Pandemic		**Total**	
		Mean	**Standard Deviation**
PR1	I am worried to get infected by coronavirus when using physical cash.	3.870	1.086
PR2	I am not comfortable making payment using physical cash.	4.030	1.048
PR3	I am afraid to get infected by coronavirus when using physical cash.	3.890	1.074

As shown in Table 4-3, for para-social interaction, the sample cases show a range from 3.700 to 3.820 and the range for standard deviation is from 1.225 to 1.269 in the 5-point Likert scales.

Table 4-3 Descriptive Analysis for Para-social Inter Questionnaire Items

Para-social Interaction		**Total**	
		Mean	**Standard Deviation**
PI1	I like hearing the recommendation from influencer related to digital payment methods.	3.820	1.269
PI2	When influencer shows how he/she feels about digital payment methods, it helps me make up my mind about that.	3.700	1.269
PI3	I like to compare my feelings for digital payment methods with what influencer I admired has to say about it.	3.820	1.225

As shown in Table 4-4, for social influence, the sample cases show a range from 3.870 to 4.190 and the range for standard deviation is from 1.016 to 1.096 in the 5-point Likert scales.

Table 4-4 Descriptive Analysis for Social Influence Items

Social Influence		Total	
		Mean	Standard Deviation
SI1	People who influence my behaviour think that I should use digital payment	3.870	1.096
SI2	People who are important to me think that I should use digital payment.	3.980	1.090
SI3	People surrounding me who have good performance have benefited from using digital payment.	4.040	1.032
SI4	In general, people have supported the use of digital payment.	4.190	1.016

As shown in Table 4-5, perceived ease of use, the sample cases show a range from 4.270 to 4.360 and the range for standard deviation is from 0.888 to 0.948 in the 5-point Likert scales.

Table 4-5 Descriptive Analysis Perceived Ease of Use Items

Perceived Ease of Use		Total	
		Mean	Standard Deviation
PEOU1	I find it easy to get the digital payment methods to do what I want it to do.	4.360	0.888
PEOU2	My interaction with digital payment methods is clear and understandable.	4.270	0.934
PEOU3	It is easy for me to become skillful at using digital payment methods.	4.290	0.948
PEOU4	I find the digital payment methods easy to use.	4.290	0.943

As shown in Table 4-6, for perceived usefulness, the sample cases show a range from 4.350 to 4.440 and the range for standard deviation is from 0.882 to 0.958 in the 5-point Likert scales.

Table 4-6 Descriptive Analysis for Perceived Usefulness Items

Perceived Usefulness		Total	
		Mean	Standard Deviation
PU1	In my opinion, during this COVID-19 pandemic, using digital payment methods allows me to make transaction quicker.	4.350	0.949
PU2	In my opinion, during this Covid 19 pandemic, using digital payment methods are highly beneficial.	4.440	0.882
PU3	Throughout this COVID-19 pandemic, I have done transactions using digital payments methods because it is beneficial.	4.380	0.958

As shown in Table 4-7, for attitude towards using, the sample cases show a range from 4.310 to 4.420 and the range for standard deviation is from 0.854 to 1.028 in the 5-point Likert scales.

Table 4-7 Descriptive Analysis for Attitude towards Using Items

Attitude towards Using		Total	
		Mean	Standard Deviation
AT1	In my opinion, using digital payment is a great idea during Covid 19 pandemic make transaction quicker	4.420	0.854
AT2	In my opinion, using digital payment is advantageous for me during COVID-19 pandemic.	4.330	0.956
AT3	I prefer to make transactions by using digital payment methods rather than cash during this COVID-19 pandemic.	4.310	1.028
AT4	Overall, my attitude towards using digital payment is positive.	4.360	0.980

As shown in Table 4-8, for perceived value, the sample cases show a range from 4.260 to 4.350 and the range for standard deviation is from 0.901 to 1.004 in the 5-point Likert scales.

Table 4-8 Descriptive Analysis for Perceived Value Items

Perceived Value		Total	
		Mean	Standard Deviation
PV1	Based on the fee I need to pay, using digital payment methods offers value for money.	4.260	1.004

PV2	Based on the amount of effort I need to put in, using digital payment method is beneficial to me.	4.310	0.956
PV3	Based on the amount of time I need to spend, using digital payment method is worthwhile to me.	4.350	0.901
PV4	Overall, using digital payment delivers me good value.	4.330	0.996

As shown in Table 4-9, for adoption of digital payment, the sample cases show a range from 4.290 to 4.490 and the range for standard deviation is from 0.836 to 0.956 in the 5-point Likert scales.

Table 4-9 Descriptive Analysis for Adoption of Digital Payment Items

Adoption of Digital Payment		**Total**	
		Mean	**Standard Deviation**
ADP1	During COVID-19 pandemic, I use digital payment methods to make transactions more often.	4.490	0.836
ADP2	During COVID-19, if I have an opportunity to make transactions by using digital payment methods, I will do it.	4.290	0.923
ADP3	I prefer using e-wallets for payment transactions during COVID-19 pandemic.	4.330	0.956
ADP4	In the future, I plan to make transactions using digital payment methods.	4.410	0.938

As shown in Table 4-10, for Stickiness of digital payment, the sample cases show a range from 4.340 to 4.440 and the range for standard deviation is from 0.872 to 0.978 in the 5-point Likert scales.

Table 4-10 Descriptive Analysis for Stickiness of Digital Payment Items

Stickiness of Digital Payment		**Total**	
		Mean	**Standard Deviation**
SDP1	I have been using digital payment methods for a long time.	4.440	0.872
SDP2	I will continue to increase the frequency of digital payment usage.	4.340	0.944
SDP3	I usually spend a lot of time on digital payment methods.	4.360	0.978
SDP4	I'm using digital payment methods for almost every day.	4.440	0.945

SDP5	I'm used to use digital payment methods for check-out/transaction.	4.360	0.888

As shown in Table 4-11, for Technology readiness, the sample cases show a range from 4.340 to 4.440 and the range for standard deviation is from 0.888 to 0.981 in the 5-point Likert scales.

Table 4-11 Descriptive Analysis for Technology Readiness Items

Technology Readiness		Total	
		Mean	**Standard Deviation**
TR1	I am open-minded toward digital payment.	4.410	0.888
TR2	I like to try out new digital payment methods in my personal life or at work.	4.440	0.898
TR3	I believe the new digital payment methods provide me with information that I need for my transactions.	4.390	0.911
TR4	I believe the new digital payment methods provide me with useful tool to help me better control my transactions.	4.340	0.933
TR5	I am adapted to the interface provided by the new digital payment methods.	4.340	0.981
TR6	I am adapted to the functions provided by the new digital payment methods.	4.330	1.014
TR7	I trust that the digital payment methods will help me control all kinds of informatin that I need for my transactions.	4.440	0.845

4.2 Factor Analysis and Reliability Test

To ensure the reliability and size of the proposed structures, many analytic procedures were done. Exploratory factor analysis (EFA) and internal consistency analysis (Cronbach's alpha) were computed using SPSS 25.0. Prior to calculating the maximum load factor for each question item, a factor analysis was performed to determine the size of the structure. The internal consistency and reliability of the constructs were then assessed by calculating the item-total correlation and alpha coefficient. Principal component factor analysis approach and varimax rotation are used to extract significant factors when eigenvalue > 1, factor loading > 0.6, variation of factor load between each item > 0.3,

cumulative explanatory variance > 0.6, item-to-total correlation > 0.5, and alpha (α) > 0.7. (Hair et al., 2010).

4.2.1 Factor Analysis and Reliability Test of Perceived Risk of COVID-19 Pandemic

Table 4-12 illustrates the exploratory factor analysis results for the measuring of the perceived risk of a COVID-19 pandemic. The anticipated risk of a COVID-19 pandemic accounts for about 72.982% of the total variation explained; KMO is 0.672. Eigenvalue is more than 1 and Cronbach's Alpha is 0.814. The factor loading ranges from 0.811 to 0.904, while the item-to-total coefficient ranges from 0.600 to 0.754. This shows a high degree of measurement accuracy and internal consistency for each dimension.

Table 4-12 Results of Exploratory Factor Analysis of Perceived Risk of COVID-19 Pandemic

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Perceived Risk of COVID-19 Pandemic		2.189	72.982		0.814
[PR3]	0.904			0.754	
[PR2]	0.845			0.644	
[PR1]	0.811			0.600	

4.2.2 Factor Analysis and Reliability Test of Para-social Interaction

Table 4-13 shows the result of exploratory factor analysis for measurement of para-social interaction. The factor results of para-social interaction for 84.691% of total variance explained, KMO is 0.754. Eigenvalue is 2.541 > 1 and Cronbach's Alpha (α) is 0.909. Factor loading ranging from 0.908~0.928 and coefficient of item-to-total is ranging from 0.795~0.833. This generally suggests high internal consistency and measurement reliability.

Table 4-13 Results of Exploratory Factor Analysis of Para-social Interaction

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Para-social Interaction		2.541	84.691		0.909
[PI3]	0.928			0.833	
[PI1]	0.925			0.828	
[PI2]	0.908			0.795	

4.2.3 Factor Analysis and Reliability Test of Social Influence

Table 4-14 shows the result of exploratory factor analysis for measurement of social influence. The factor results of social influence for 70.960% of total variance explained, KMO is 0.808. Eigenvalue is 2.838 > 1 and Cronbach's Alpha (α) is 0.864. Factor loading ranging from 0.798~0.867 and coefficient of item-to-total is ranging from 0.650~0.749. Overall, this implies a very high level of good internal consistency and measurement dependability.

Table 4-14 Results of Exploratory Factor Analysis of Social Influence

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Social Interaction		2.838	70.960		0.864
[SI2]	0.867			0.749	
[SI1]	0.864			0.742	
[SI3]	0.839			0.707	
[SI4]	0.798			0.650	

4.2.4 Factor Analysis and Reliability Test of Perceived Ease of Use

Table 4-15 represents the result of exploratory factor analysis for measurement of perceived ease of use. The factor results of perceived ease of use for 73.386% of total variance explained, KMO is 0.784. Eigenvalue is 2.935 > 1 and Cronbach's Alpha (α) is 0.879. Factor loading ranging from 0.844~0.870 and coefficient of item-to-total is ranging from 0.721~0.759.

Overall, this indicating an agreeable score of internal consistency and reliability test.

Table 4-15 Results of Exploratory Factor Analysis of Perceived Ease of Use

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Perceived Ease of Use		2.935	73.386		0.879
[PEOU1]	0.870			0.759	
[PEOU4]	0.860			0.744	
[PEOU3]	0.852			0.728	
[PEOU2]	0.844			0.721	

4.2.5 Factor Analysis and Reliability Test of Perceived Usefulness

Table 4-16 represents the result of exploratory factor analysis for measurement of perceived usefulness. The factor results of perceived ease of Use for 73.386% of total variance explained, KMO is 0.784. Eigenvalue is 2.935 > 1 and Cronbach's Alpha (α) is 0.879. Factor loading ranging from 0.844~0.870 and coefficient of item-to-total is ranging from 0.721~0.759. Overall, this indicating an agreeable score of internal consistency and reliability test.

Table 4-16 Results of Exploratory Factor Analysis of Perceived Usefulness

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Perceived Usefulness		2.282	76.067		0.842
[PU1]	0.918			0.787	
[PU3]	0.913			0.572	
[PU2]	0.779			0.776	

4.2.6 Factor Analysis and Reliability Test of Attitude towards Using

Table 4-17 indicates the result of exploratory factor analysis for measurement of attitude towards using. The factor results of attitude towards using for 70.695% of total variance explained, KMO is 0.762. Eigenvalue is 2.828 > 1 and Cronbach's Alpha (α) is 0.861. Factor loading ranging from

0.792~0.868 and coefficient of item-to-total is ranging from 0.646~0.749. Generally, this recommends great degree of internal consistency for each item and reliability of measurement.

Table 4-17 Results of Exploratory Factor Analysis of Attitude towards Using

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Attitude towards Using		2.828	70.695		0.861
[AT2]	0.868			0.749	
[AT3]	0.860			0.737	
[AT4]	0.841			0.707	
[AT1]	0.792			0.646	

4.2.7 Factor Analysis and Reliability Test of Perceive Value

Table 4-18 indicates the result of exploratory factor analysis for measurement of perceive value. The factor results of perceive value for 69.680% of total variance explained, KMO is 0.797. Eigenvalue is 2.787 > 1 and Cronbach's Alpha (α) is 0.854. Factor loading ranging from 0.791~0.873 and coefficient of item-to-total is ranging from 0.662~0.755. This generally suggests high levels of internal consistency for each item and measurement accuracy.

Table 4-18 Results of Exploratory Factor Analysis of Perceive Value

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Perceive Value		2.787	69.680		0.854
[PV1]	0.873			0.755	
[PV2]	0.862			0.738	
[PV4]	0.810			0.635	
[PV3]	0.791			0.662	

4.2.8 Factor Analysis and Reliability Test of Adoption of Digital Payment

Table 4-19 indicates the result of exploratory factor analysis for measurement of adoption of digital payment. The factor results of adoption of

digital payment for 70.464% of total variance explained, KMO is 0.782. Eigenvalue is 2.819 > 1 and Cronbach's Alpha (α) is 0.860. Factor loading ranging from 0.818~0.854 and coefficient of item-to-total is ranging from 0.678~0.727. This generally suggests high levels of internal consistency for each item and measurement accuracy.

Table 4-19 Results of Exploratory Factor Analysis of Adoption of Digital Payment

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Adoption of Digital Payment		2.819	70.464		0.860
[ADP4]	0.854			0.727	
[ADP2]	0.850			0.721	
[APD3]	0.836			0.698	
[ADP1]	0.818			0.678	

4.2.9 Factor Analysis and Reliability Test of Stickiness of Digital Payment

Table 4-20 indicates the result of exploratory factor analysis for measurement of Stickiness of digital payment. The factor results of stickiness of digital payment for 67.923% of total variance explained, KMO is 0.860. Eigenvalue is 3.369 > 1 and Cronbach's Alpha (α) is 0.881. Factor loading ranging from 0.814~0.841 and coefficient of item-to-total is ranging from 0.703~0.740. This typically denotes high levels of measurement accuracy and internal consistency for each item.

Table 4-20 Results of Exploratory Factor Analysis of Stickiness of Digital Payment

Research Variable	Factor Loading	Eigenvalue	Cumulative Explained Variance	Corrected Item-to-total Correlation	Cronbach's Alpha (α)
Stickiness of Digital Payment		3.369	67.923		0.881
[SDP1]	0.841			0.740	
[SDP2]	0.828			0.722	

[SDP3]	0.823			0.712	
[SDP4]	0.815			0.704	
[SDP5]	0.814			0.703	

4.2.10 Factor Analysis and Reliability Test of Technology Readiness

Table 4-21 indicates the result of exploratory factor analysis for measurement of technology readiness. The factor results of Technology readiness for 66.535% of total variance explained, KMO is 0.910. Eigenvalue is 4.657> 1 and Cronbach's Alpha (α) is 0.915. Factor loading ranging from 0.768~0.851 and coefficient of item-to-total is ranging from 0.687~0.789. This typically indicates that each item has high levels of measurement accuracy and internal consistency.

Table 4-21 Results of Exploratory Factor Analysis of

Research Variable	**Factor Loading**	**Eigenvalue**	**Cumulative Explained Variance**	**Corrected Item-to-total Correlation**	**Cronbach's Alpha (α)**
Technology Readiness		4.657	66.535		0.915
[TR6]	0.851			0.789	
[TR7]	0.837			0.768	
[TR3]	0.832			0.760	
[TR5]	0.827			0.755	
[TR1]	0.811			0.736	
[TR2]	0.779			0.698	
[TR4]	0.768			0.687	

4.3 Evaluation of Measurement Model.

This research used the partial least squares structural equation model (PLS-SEM), which calculates route coefficients, to evaluate the hypotheses. Partial least squares (PLS) is an essential and successful statistical tool for variance-based structural equation modeling (SEM) in research (Hair et al., 2017). PLS-SEM can handle complicated structure models with numerous components and is particularly suitable for limited sample requirements under non-normal distribution (Hair et al., 2011). Williams and Hazer (1986) and Anderson and Gerbing (1988) both suggested that SEM can be broken down into two stages: Before understanding the validity and dependability of the

study's constructs, each dimension and item must be evaluated. Using the structural model, investigate and check the validity of the link between each idea in the measurement model. This part demonstrates the validity and reliability of the measurement model, whereas the subsequent section demonstrates the testing of hypotheses for the structural model. To evaluate the validity and reliability of the PLS-SEM measurement model, particular criteria, such as the coefficient of determination (R^2), average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha (α), must be specified.

Using the coefficient of determination and the explained variance of each latent variable, statistical measures are conducted (R^2). In other words, it may assess the linear relationship between two hypothesized constructs. In addition, it may examine the amount to which the independent construct accounts for the proportion of variation in the dependent construct. The average variance extracted (AVE) is the value to assess the concept's convergent validity, and the composite reliability (CR) is a measure to quantify the reliability of each construct. According to Hair et al. (2011), an R^2 value more than 0.75 is regarded as considerable, between 0.50 and 0.75 as moderate, between 0.25 and 0.50 as weak, and less than 0.25 as very weak.

The following is a summary of the empirical data shown in Table 4-22 on the coefficient of determination (R^2) for each of the six latent constructs: Adoption of digital payment was 0.695, attitude toward using was 0.659, perceived ease of use was 0.446, perceived usefulness was 0.669, perceived value was 0.807, and digital payment was 0.703. There is minimal variation in people's views regarding usage, perceived usefulness, adoption of digital payment method, and stickiness of digital payment; thus, there is substantial variation in people's valuations. There is little difference in the perception of its use. The range of AVE values for each building is between 0.665 and 0.909, and although this range is more than the minimum criteria of 0.5, all of these

values are still greater than 0.5. There is a large range of feasible values for the composite dependability of each build, ranging from 0.890 to 0.952, with each number above 0.7. Cronbach's alpha (α) may range from 0.814 to 0.916, and all of these values are more than the basic minimum requirement of 0.7. These results indicate that the indicators presented by each research are enough to meet the criterion. The measuring model exhibits convergent validity and enough dependability. Researchers may now examine the structural model.

Table 4-22 Evaluation of Measurement Model

Items	AVE	Composite Reliability	Cronbach's Alpha (α)	R^2
ADP	0.704	0.905	0.860	0.695
AT	0.679	0.894	0.842	0.659
PEOU	0.734	0.917	0.879	0.446
PI	0.846	0.943	0.910	
PR	0.729	0.890	0.814	
PU	0.909	0.952	0.900	0.669
PV	0.757	0.903	0.840	0.807
SI	0.709	0.907	0.863	
SDP	0.679	0.914	0.882	0.703
TR	0.665	0.933	0.916	

*Note:

(1) ADP: Adoption of Digital Payment, AT: Attitude towards Using, FOU: Frequency of Use, PEOU: Perceived Ease of Use, PI: Para-social Interaction, PR: Perceived Risk of COVID-19 Pandemic, PU: Perceived Usefulness, PV: Perceived Value, SI: Social Interaction, SDP: Stickiness of Digital Payment, TR: Technology Readiness, TR*AT-PV: Moderator Technology Readiness between the relationship of AT and PV, FOU*PV-ADP: Moderator FOU between the relationship of PV and ADP, FOU*PV-SDP: Moderator FOU between the relationship of PV and SDP.

Source: Original study.

4.4 Discriminant Validity Results Based on Fornel-Larcker Criterion

The Fornell-Larcker criterion and the Heterotrait Monotrait (HTMT) ratio were used in order to conduct an analysis of the discriminant validity of this inquiry. The selective nature of the measures is shown by the fact that all diagonal AVEs, as shown in Table 4-23, are higher than the values that correspond to such diagonals in the rows and columns. As can be seen in Table 4-24, all of the HTMT ratio values that were measured throughout this experiment had a value that was lower than 1.0, which is evidence that the discriminant validity was maintained. The discriminant validity of the measurement model was shown by these findings and confirmed.

Table 4-23 Discriminant validity results based on Fornel-Larcker criterion

	APD	AT	FOU	PEOU	PI	PU	PV	PR	SI	SPD	TR
ADP	**0.839**										
AT	0.822	**0.824**									
FOU	-0.046	-0.135	**1.000**								
PEOU	0.836	0.821	-0.127	**0.857**							
PI	0.380	0.368	-0.138	0.477	**0.920**						
PU	0.804	0.776	-0.104	0.808	0.368	**0.953**					
PV	0.828	0.841	-0.122	0.840	0.450	0.778	**0.870**				
PR	0.584	0.552	-0.168	0.613	0.719	0.562	0.569	**0.854**			
SI	0.574	0.601	-0.162	0.625	0.721	0.533	0.623	0.732	**0.842**		
SPD	0.874	0.843	-0.041	0.820	0.358	0.749	0.831	0.553	0.571	**0.824**	
TR	0.862	0.822	-0.099	0.823	0.390	0.789	0.864	0.597	0.566	0.888	**0.816**

**Note:*

(1) Diagonal elements (in bold) are the square root of AVE. Elements below the diagonal are the correlations among constructs.

(2) ADP: Adoption of Digital Payment, AT: Attitude towards Using, FOU: Frequency of Use, PEOU: Perceived Ease of Use, PI: Para-social Interaction, PR: Perceived Risk of COVID-19 Pandemic, PU: Perceived Usefulness, PV: Perceived Value, SI: Social Interaction, SDP: Stickiness of Digital Payment, TR: Technology Readiness.

Source: Original study.

Table 4-24 Discriminant validity result based on HTMT

	APD	AT	FOU	PEOU	PI	PU	PV	PR	SI	SPD	TR
APD											
AT	**0.964**										
FOU	0.049	**0.148**									
PEOU	0.959	0.953	**0.136**								
PI	0.427	0.419	0.144	**0.531**							
PU	0.915	0.891	0.109	0.905	**0.403**						
PV	0.969	1.000	0.132	0.976	0.514	**0.895**					
PR	0.691	0.659	0.190	0.721	0.833	0.651	**0.680**				
SI	0.664	0.702	0.174	0.714	0.815	0.602	0.731	**0.870**			
SPD	1.001	0.978	0.043	0.931	0.398	0.840	0.965	0.642	**0.651**		
TR	0.970	0.935	0.102	0.915	0.426	0.867	0.981	0.684	0.637	**0.987**	

**Note:*

(1) Diagonal elements (in bold) are the square root of AVE. Elements below the diagonal are the correlations among constructs.

(2) ADP: Adoption of Digital Payment, AT: Attitude towards Using, FOU: Frequency of Use, PEOU: Perceived Ease of Use, PI: Para-social Interaction, PR: Perceived Risk of COVID-19 Pandemic, PU: Perceived Usefulness, PV: Perceived Value, SI: Social Interaction, SDP: Stickiness of Digital Payment, TR: Technology Readiness.

Source: Original study.

4.5 Evaluation of Structural Model

Evaluation of the statistical significance of structural connections, such as multicollinearity and the effect size f-square, is a component of structural model assessment (f^2). In this work, SmartPLS 3 is used to carry out the aforementioned analysis. Utilizing 224 samples, the coefficient of the path parameter is utilized to test the theory. In order to evaluate the link between constructs, we use bootstrapping resampling techniques and run the PLS-SEM algorithm 5000 times (Hair, Hult, Ringle, and Sarstedt, 2016).

The variance inflation factor is used to assess multicollinearity (VIF). VIF is a value used to estimate variables in the degree of inflation. As a general rule, a VIF score more than 10 indicates the presence of a multicollinearity issue. In other words, VIF values less than 10 are permitted. According to Hair et al. (2011), a VIF value less than 5 can determine the measurement model in

the presence of low multicollinearity. f^2 is a measure of effect size. Cohen (1992) defines the f^2 value as 0.02, 0.15, and 0.35, indicating small, medium, and large influences, respectively.

As table 4-25 presents, the following are the empirical results of VIF values in each hypothesis path:

For the relationship between external factors (stimuli) to the consumer' inner organism (O) TAM model (perceived ease of use, perceived usefulness, attitude towards using): 2.580 for the perceived risk of COVID-19 pandemic towards the TAM model; 2.831 for the para-social interaction towards the TAM model; 2.913 for social influence towards the TAM model.

For the relationship between the TAM model and perceived value: 1.803 perceived ease of use towards perceived usefulness; 1.579 for perceived usefulness towards attitude towards using; 3.258 for attitude towards using towards perceived value.

For the relationship from the consumer' inner organism (O) to their responses (R): 1.015 for both perceived value towards adoption of digital payment and stickiness of digital payment.

For moderators: 3.598 for moderator technology readiness towards perceived usefulness - perceived value; 1.000 for moderator frequency of use towards perceived value - adoption of digital payment and stickiness of digital payment. In this result, all VIF values are less than 5. As a result, we believe that the multi - collinearity in our model is rather minor.

The effect size of H4, H5, H7 and H8 are relatively large, while H1c, H2a, H3b, and H10a, H10b are much weaker.

Furthermore, table 4-25 presents the analysis results of PLS-SEM path analysis for hypothesis testing. In terms of perceived risk of COVID-19 pandemic, which had statistically significant effects on the TAM model where $\beta = 0.373$, $t = 3.708 > 1.960$, $p = 0.000 < 0.001^{***}$ for perceived ease

of use; β = 0.184, t = 2.889 > 1.960, p = *0.004* < *0.05** for perceived usefulness. The study, unfortunately, found that the relationship between the perceived risk of COVID-19 pandemic had marginal significant effects on the attitude toward using where β = 0.073, t = 0.927 < 1.960$^{n.s}$, p = *0.354* < 0.1$^{n.s}$. These results illustrate that perceived risk of COVID-19 pandemic is positively related to the TAM model where two out of three hypotheses that the study proposed had significant effects.

In terms of para-social interaction, which had statistically insignificant effects on the perceived ease of use, perceived usefulness, and attitude towards using (β = -0.092, t = 1.122 < 1.96$^{n.s}$, p = *0.262* > 0.1$^{n.s}$; β = -0.150, t = 2.396 > 1.96, p = *0.017* < 0.05**; β = -0.143, t = 2.169 > 1.96, p = *0.030* < 0.05**, respectively). These results illustrate that para-social interaction is negatively related to the TAM model.

In terms of social influence, which had statistically significant effects on the perceived ease of use and attitude towards using (β = 0.418, t = 4.848 > 1.96, p = *0.000* < 0.001***; β = 0.322, t = 3.562 > 1.96, p = *0.000* < 0.001*** respectively). But insignificant effect on the perceived usefulness where β =0.046, t = 0.582 < 1.96$^{n.s}$, p = *0.561* > 0.1^{ns}. These results illustrate that social influence positively related to the TAM model where two out of three hypotheses that the study proposed had significant effects.

In terms of the relationship between the variables in TAM model, H4; H5 is significantly related where perceived ease of use had statistically significant effects on perceived usefulness and perceived usefulness had statistically significant effects on attitude towards using (β = 0.738, t = 16.467 > 1.96, p = *0.000* < 0.001***; β = 0.616, t = 11.282 > 1.96, p = *0.000* < 0.001***, respectively). These results illustrate that the relationship in TAM model is strongly related to each others.

In terms of the relationship between the attitude towards using and perceived value. Attitude towards using had statistically significant effects on perceived value ($\beta = 0.442$, $t = 5.377 > 1.96$, $p = 0.000 < 0.001^{***}$). In terms of how consumer' inner organism responses, perceived value had statistically significant effects on adoption of digital payment and stickiness of digital payment ($\beta = 0.834$, $t = 35.943 > 1.96$, $p = 0.000 < 0.001^{***}$; $\beta = 0.837$, $t = 33.821 > 1.96$, $p = 0.000 < 0.001^{***}$, respectively). These results illustrate that perceived value is significantly related to the adoption and stickiness of digital payment.

In terms of moderators, technology readiness which had statistically significant moderation on the relationship between attitude towards using and perceived value ($\beta = 0.091$, $t = 2.188 > 1.96$, $p = 0.029 < 0.05^{**}$). In the other hand, frequency of use had statistically insignificant effects of moderation on the relationship between perceived value and adoption of digital payment and stickiness of digital payment ($\beta = -0.072$, $t = 1.341 < 1.96^{n.s}$, $p = 0.186 > 0.1^{n.s}$; $\beta = -0.093 < 0.1$, $t = 1.940 < 1.96^{n.s}$, $p = 0.052 > 0.05^{n.s}$, respectively).

Table 4-25 Result of PLS-SEM Data Analysis

	Path	f^2 value	Beta	Standardized Estimate	t-value	p-value	VIF	Remarks
H1a	PR → PEOU	0.097	0.373	0.101	3.708	0.000^{***}	2.580	Supported
H1b	PR → PU	0.036	0.184	0.064	2.889	0.004^{*}	2.831	Supported
H1c	PR → AT	0.005	0.073	0.078	0.927	$0.354^{n.s}$	2.913	Not Supported
H2a	PI → PEOU	0.006	-0.092	0.082	1.122	$0.262^{n.s}$	2.490	Not Supported
H2b	PI → PU	0.027	-0.150	0.063	2.396	0.017	2.505	Not Supported
H2c	PI → AT	0.023	-0.143	0.066	2.169	0.030	2.565	Not Supported
H3a	SI → PEOU	0.121	0.418	0.086	4.848	0.000^{***}	2.590	Supported

H3b	SI → PU	0.002	0.046	0.079	0.582	0.561$^{n.s}$	2.905	Not Supported
H3c	SI → AT	0.109	0.322	0.090	3.562	0.000***	2.788	Supported
H4	PEOU → PU	0.911	0.738	0.045	16.467	0.000***	1.803	Supported
H5	PU → AT	0.703	0.616	0.055	11.282	0.000***	1.579	Supported
H6	AT → PV	0.301	0.442	0.082	5.377	0.000***	3.258	Supported
H7	PV → ADP	2.242	0.834	0.023	35.943	0.000***	1.015	Supported
H8	PV → SDP	2.318	0.837	0.025	33.821	0.000***	1.015	Supported
H9	TR*AT → PV	0.040	0.091	0.041	2.188	0.029**	3.598	Supported
H10a	FOU*PV →ADP	0.017	-0.072	0.055	1.341	0.186$^{n.s}$	1.000	Not Supported
H10b	FOU*PV → SDP	0.029	-0.093	0.048	1.940	0.052$^{n.s}$	1.000	Not Supported

*Note: (1) ADP: Adoption of Digital Payment, AT: Attitude towards Using, FOU: Frequency of Use, PEOU: Perceived Ease of Use, PI: Para-social Interaction, PR: Perceived Risk of COVID-19 Pandemic, PU: Perceived Usefulness, PV: Perceived Value, SI: Social Interaction, SDP: Stickiness of Digital Payment, TR: Technology Readiness, TR-PU ME: Moderator Technology Readiness between the relationship of PV and PU, FOU*PV-ADP: Moderator FOU between the relationship of PV and ADP, FOU*PV-SDP: Moderator FOU between the relationship of PV and SDP.

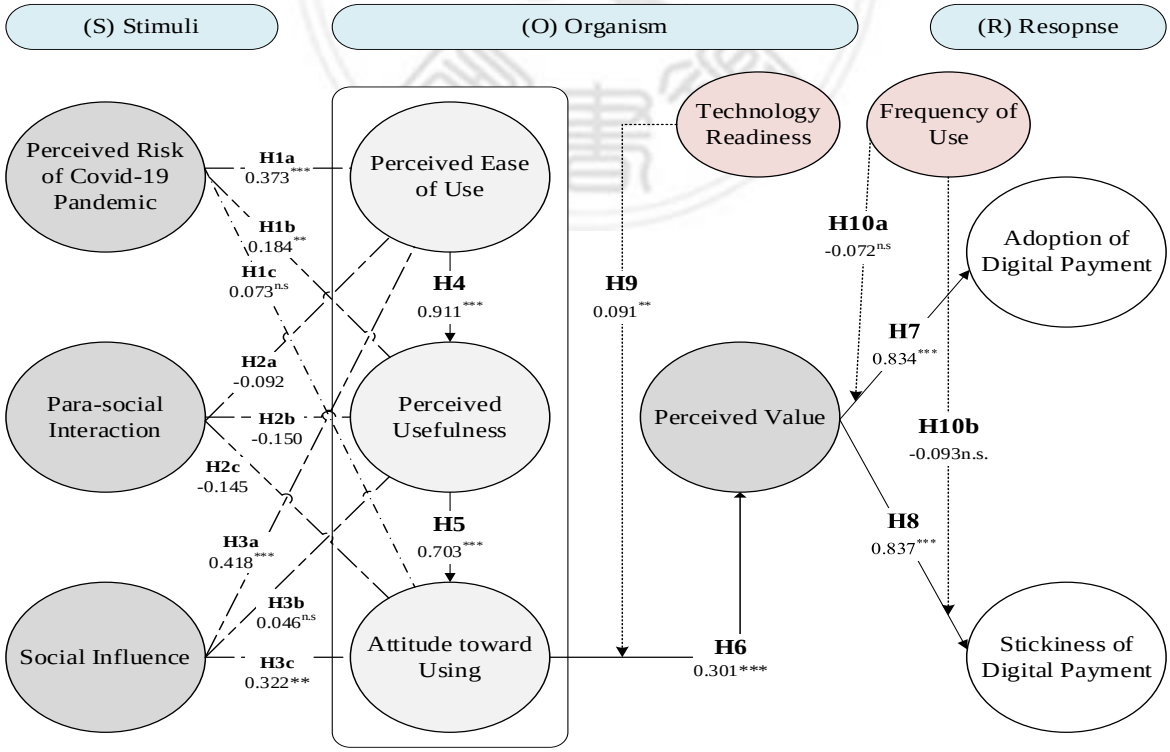

Figure 4-1 Result of PLS-SEM Data Analysis

CHAPTER FIVE

CONCLUSION AND SUGGESTION

The research summary would be presented in this final chapter with the following main section: (1) Concluding the study findings, (2) Discussing the theoretical and practical contributions of the research, and (3) Identifying research limitations and making a number of recommendations for further research.

5.1 Research Conclusion

Table 5-1 Result of the Tested Hypotheses

Hypotheses	Relationships	Assessment
H1a	Perceived Risk of COVID-19 Pandemic → Perceived Ease of Use of Digital Payment.	Supported ($\beta = 0.373$, $t = 3.708 > 1.960$, $p = 0.000 < 0.001^{***}$)
H1b	Perceived Risk of COVID-19 Pandemic → Perceived Usefulness of Digital Payment.	Supported ($\beta = 0.184$, $t = 2.889 > 1.960$, $p = 0.004 < 0.05^{*}$)
H1c	Perceived Risk of COVID-19 Pandemic → Attitude towards Using of Digital Payment.	Not Supported ($\beta = 0.136$, $t = 1.931 < 1.960^{m.s}$, $p = 0.054 < 0.1^{*}$)
H2a	Para-social Interaction → Perceived Ease of Use of Digital Payment	Not supported ($\beta = -0.092$, $t = 1.122 < 1.96^{n.s}$, $p = 0.262 > 0.1^{n.s}$)
H2b	Para-social Interaction → Perceived Usefulness of Digital Payment	Not supported ($\beta = -0.150$, $t = 2.396 > 1.96$, $p = 0.017 < 0.05^{**}$)
H2c	Para-social Interaction → Attitude towards Using of Digital Payment	Not supported ($\beta = -0.145$, $t = 2.169 > 1.96$, $p = 0.030 < 0.05^{**}$)
H3a	Social Influence → Perceived Ease of Use of Digital Payment.	Supported ($\beta = 0.418$, $t = 4.848 > 1.96$, $p = 0.000 < 0.001^{***}$)

H3b	Social Influence → Perceived Usefulness of Digital Payment.	Not supported ($\beta = 0.046$, $t = 0.582 > 1.96$, $p = 0.561 < 0.05^{n.s}$)
H3c	Social Influence → Attitude towards Using of Digital Payment.	Supported ($\beta = 0.322$, $t = 3.562 > 1.96$, $p = 0.000 < 0.001^{***}$)
H4	Perceived Ease of Use → Perceived Usefulness of Digital Payment.	Supported ($\beta = 0.738$, $t = 16.467 > 1.96$, $p = 0.000 < 0.001^{***}$)
H5	Perceived Usefulness → Attitude towards Using of Digital Payment.	Supported ($\beta = 0.616$, $t = 12.539 > 1.96$, $p = 0.000 < 0.001^{***}$)
H6	Attitude towards Using → Perceived Value of Digital Payment.	Supported ($\beta = 0.301$, $t = 5.377 > 1.96$, $p = 0.000 < 0.001^{***}$)
H7	Perceived Value → Adoption of Digital Payment.	Supported ($\beta = 0.834$, $t = 35.943 > 1.96$, $p = 0.000 < 0.001^{***}$)
H8	Perceived Value → Stickiness of Digital Payment.	Supported ($\beta = 0.837$, $t = 33.821 > 1.96$, $p = 0.000 < 0.001^{***}$)
H9	Perceived Value*Technology Readiness → Attitude toward Using and	Supported ($\beta = 0.091$, $t = 2.188 > 1.96$, $p = 0.029 < 0.05^{*}$)
H10a	Perceived Value* Frequency of Use → Adoption of Digital Payment.	Not Supported ($\beta = -0.072$, $t = 1.341 < 1.96^{n.s}$, $p = 0.186 > 0.1^{n.s}$)
H10b	Perceived Value* Frequency of Use → Stickiness of Digital Payment.	Not Supported ($\beta = -0.093 < 0.1$, $t = 1.940 < 1.96^{n.s}$, $p = 0.052 < 0.05^{*}$)

Source: Original study.

As previously stated, the objectives of this study are to examine the adoption factors: perceived risk of COVID-19 pandemic, para-social interaction, and social influence of digital payment in Vietnam during the COVID-19 pandemic by advancing the S-O-R model with the TAM model and to identify the moderators' effect of technology readiness and frequency of use.

As shown in Table 5-1, H1a,b,c; H2a,b,c and H3a,b,c demonstrated the first portion of the S-O-R model which is the relationship between the stimuli (S) and the organism (O). Hypotheses 1a,b and hypotheses 3a,c was supported, this came to the first conclusion that the perceived risk of COVID-19 pandemic and social influence positively affected the TAM model (perceived ease of use, perceived usefulness, and attitude towards using) where two over three hypotheses of social influence proposed were supported.

Unfortunately, hypothesis H1c was not supported ($t = 1.931 < 1.960^{m.s}$), and this finding was inconsistent with the study's initial assumptions. It was anticipated by Oh et al. (2015) that respondents would be worried about the current danger of coronavirus's influence on their habit consumption. Due to the fact that, in accordance with Master and Weirnerman's (1998) understanding of the disease risk dimension, an individual's or consumer's attitude would have shifted from using physical money or checks to using digital payment to protect their mental and physical health as they perceived the risk of COVID-19. Possible explanations include the fact that the COVID-19 outbreak was still ongoing at the time this study was conducted, which increased respondents' concerns and motivated them to prioritize health and minimize the infection rate of COVID-19, one of the ways being the use of digital payment without evaluating the benefits offered by the digital payment service provider, including cashback, discount, and reward. In the absence of these benefits, respondents will continue to use digital payment as a form of payment while making purchases during the COVID-19 epidemic for safety-related contactless procedure reasons.

Para-social interaction has no effect on the TAM model where hypotheses 2a,b, and c were not supported ($\beta = -0.092$; $\beta = -0.150$; $\beta = -0.145$, respectively) . The result from hypotheses 2a,b, and c differed from previous studies (Jin and Ryu's,2020; Zheng et al., 2020). Hypothesis 3c also was

found social influence negatively affected perceived usefulness, this finding supported with others previous studies (Tiainen, Kaapu & Ellman 2013; Haderi & Aziz, 2015; Hu et al. 2013). Although social influences on attitudes regarding utilizing are statistically insignificant, it has been shown that the former affects customer attitudes toward an app's usefulness. According to the central tenet of the Social Information Processing Theory (Salancik & Pfeffer, 1978), which holds that an individual receives the necessary cues to interpret an artifact's value from other people's actions, this type of social influence leads to an increased evaluation of the usefulness of the technology item. When someone is aware of how often an app is used, they may begin to value it. To explain these unsupported results, since users typically download applications voluntarily to meet their own requirements, the influence of social norms is generally limited and consumers do not take into account others' opinions when choosing to adopt an application or technology item. Users also view the apps they have downloaded to their devices as a form of privately consumed needs. Furthermore, according to Bearden and Etzel (1982), services and brands' influence among the reference groups, and influencers are minimal or limited.

The S-O-R model's section organism (O), which depicts how a consumer's inner organism interacts with new technology after being influenced by external stimuli, was outlined in hypotheses 4, 5, and 6. The second conclusion is that the perception of ease of use positively influenced perceived usefulness of digital payment, perceived usefulness positively influenced attitude toward using digital payment, and perceived value positively influenced by attitude towards using. Hypotheses 4,5, and 6 were supported. These findings are consistent with earlier research. The previous research (Viswanath Venkatesh et al., 2003) found that people are more likely to acquire a favorable attitude toward utilizing technology when it is seen as

being reasonably easy to use and beneficial for their jobs (Teo, 2010b). According to the Theory of Reasoned Action (Ajzen and Fishbein, 1980), consumer attitude also affects consumer buying behavior, with the buyer's desire to use being directly correlated with the value of the good or service.

Hypotheses 7 and 8 were supported, this means perceived value positively affected the Adoption and stickiness of digital payment. This result comes along with previous studies based on the economic Theory of Utility; customers strive to maximize their benefits. Customers are more likely to adopt or use mobile banking if they believe it to be very valuable (Xiong, 2013), and as the services or the technology items can help the user to accomplish their tasks or performances, it triggered the willingness then linked to his/her stickiness to the services (Lin, 2007).

This study also proposed that technology readiness and frequency of use played a mediator role. As hypothesis 9 was supported, technology readiness moderated the relationship between attitude towards using and perceived value. This result is consistent with the TAM literature, users are likely to use the technology items if they obtain more beneficial and it’s simple to use, they will get a higher personal technology readiness (Blut et al. 2016).

Frequency of use was shown to have a major impact on consumers' intentions to use or adopt digital payments in other research (Wang, 2010), and it also serves as a gauge for how sticky a system is with its users (Lin, 2007). However, the results of this research demonstrated that, in the present COVID-19 environment, where hypotheses 10a and b (β = -0.072; β = -0.090, respectively) were not validated, moderator frequency of use did not substantially impact the adoption and stickiness of digital payment. These findings do not agree with any of the preceding research, which suggested that the uptake and stickiness of digital payment are favorably influenced by frequency of use. Given that the COVID-19 outbreak was still ongoing when

the survey was conducted, it is likely that participants did not fully understand or perceive the situation. This led to a distortion of the connection between the amount of time spent using digital payments and their adoption and persistence after the COVID-19 outbreak.

5.2 Academic Implications

This research studied the elements that impact the adoption of digital payments in Vietnam in the context of the COVID-19 epidemic. The major purpose of this research was to experimentally evaluate the link between attitude toward usage and perceived value, perceived value and adoption, and the persistence of digital payment across two essential parameters, namely Technology Readiness and Usage Frequency. This is one of the earliest initiatives to investigate the acceptability of digital payments in Vietnam within the context of the COVID-19 epidemic.

This research has further advanced the basic model of SOR theory by integrating with the TAM model to describe consumer digital payment behavior. This resulted in the development of additional components for the SOR theory and a better understanding of digital payment behavior, particularly among consumers in Vietnam during the COVID-19 epidemic. The measurement scales for the components in the research model inherited from prior studies have also been revised and confirmed experimentally. This is also a source of reference for research-related subjects associated with this study.

In addition, this research investigated the regulating function of technology readiness in the link between attitude toward using and perceived value. This helps to the theoretical foundation for elucidating the effect forms of technology readiness in the SOR theoretical model in the context of consumption in Vietnam during the covid-19 epidemic.

However, para-social elements have negative influence on consumers' willingness to accept digital payments and have a negative impact on the model's TAM. This consisted with previous study where Yuan et al. (2016) provided that para-social interactions had a direct impact on the drivers of consumer attitude and equity, but not on ease of use and usefulness. Accordant with past studies on consumer equity, equity drivers have a positive effect on customer lifetime value (Rust et al., 2004; Vogel et al., 2008). In addition, the frequency of use is not significant moderating the link between perceived value, adoption of digital payments and the stickiness of digital payments.

After the Covid 19 outbreak, the pace at which Vietnamese used digital payments surged substantially, as highlighted by PwC's Vietnam Financial Advisor consultant: "three to five years quicker in adoption rate." This presents an opportunity for the financial technology sector as a whole to advance. Moreover, the Vietnamese have few transactional options and are worried about their mental and physical health. During the Covid 19 epidemic, digital payments will be the greatest alternative for cashless purchases.

In addition, according to the Rakuten insight 2020 report, Vietnam is becoming a cashless society. This demonstrates that Vietnam is a potential market for digital payments in particular and for the financial technology sector in general, and this research gives a deeper knowledge of the elements that influence customers' willingness to embrace and maintain digital payments.

5.3 Managerial Implications

From a management perspective, the results of this research have a number of implications for enhancing digital payment systems during and after the COVID-19 epidemic in Vietnam to promote acceptance.

The study findings indicate that the perceived risk of the COVID-19 pandemic has a significant impact on the components of the TAM, particularly the perceived ease of use (beta = 0.373). This indicates that the more the perceived risk of COVID-19 poses to consumers, the greater the perceived ease of use. Or, as the anticipated risk of a COVID-19 pandemic rises, so does the perceived usefulness among customers. Managers should thus enhance their company strategy by:

Firstly: significantly diversify payment methods so that customers have more options. From there, client satisfaction with payment services and the items or services they supply will rise.

Secondly: By enhancing the design of payment apps with easy forms, processes and operations must be simplified so that customers of all ages and abilities can use them.

Thirdly, for each payment application, there must be clear, straightforward, and easily-understood instructions on how to use the application, so that customers are not inconvenienced by problems or hassles while using the service.

Social influence has the greatest impact on Perceived ease of use (beta = 0.418) regarding the social influence component and its link to the TAM components. This demonstrates that the effect of families, friends, and other individuals close to the perceived ease of use of the Vietnam consumer is substantial. Administrators should strengthen the safety and security of payment mechanisms to encourage more consumer engagement in e-payment.

From there, customers will enhance their level of pleasure, continue to use the service, and suggest it to family and friends. In addition, it is feasible to expand after-sales programs, i.e., the real advantages clients experience while using the service.

Lastly, the findings demonstrated that technological readiness affected the association between attitude toward usage and perceived value. This implies that digital payment providers should put the efforts on enhancing their apps and offer more features to fulfill the four primary criteria of technological readiness, namely optimism, innovation, ease, and a feeling of security.

5.4 Research Limitations and Future Research Suggestions

This research has a number of drawbacks. Due to the COVID-19 epidemic, data were obtained through social media, hence they may include duplicate replies and false facts. Respondents may not have been completely aware of the Covid 19 epidemic; as a result, some ideas are inconsistent with certain theories or prior research. Due to issues throughout the survey's administration period, the sample selection is mainly dependent on random sampling, therefore the outcome may not reflect the researcher's intended complete sample.

Future research should be conducted with a bigger and more precise sample size, but the survey should be separated by area in Vietnam to enhance the representativeness of all age groups. Similarly, future research should be undertaken such that the para-social interaction cues have a beneficial effect on the model TAM. This allows the study to be consistent and to contribute to past, future investigations and support for the TAM model. In addition, this study's scope of para-social was too broad and did not focus on any specific types of para-social interaction; therefore, we recommend that future researches narrow its focus to para-social interactions with other most-popular or less-popular celebrities in order to gain a comprehensive understanding of how para-social interactions may influence consumer behavior in digital payment adoption and stickiness.

Finally, as Vietnam transitions to a cashless society, the study also challenges future researchers to broaden their scope and look at other triggers that may influence consumers' intentions to accept digital payments (Visa, 2021). We need more research on the frequency of usage as a moderator in the link between perceived value and adoption as well as the stickiness of digital payment, which this study indicated was adversely moderated.

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APPENDICES

Questionnaire

The investigation of the adoption factors of digital payment in the COVID-19 pandemic context and the moderating effects of technology readiness and frequency of use in Vietnam

Questionnaire

Dear Respondents:

This academic questionnaire is to investigate the adoption factors of digital payment in the COVID-19 pandemic context and the moderating effects of Technology Readiness and Frequency of Use in Vietnam. This study proposes a theoretical framework integrating consumer' digital payment adoption in the COVID-19 context based on the S-O-R (stimulus-organism-response) model and Technology Acceptance Model (TAM). This study also analyzes the relationship of moderating effects of technology readiness and frequency of use on the consumer intention to adopt and Stickiness of Digital Payment.

You have been reported as one of the interested respondents for this study. We have taken the liberty of your joining to express your viewpoint about these issues. Your countenance and assistance will be greatly appreciated. We sincerely invite you to spend a maximum of 15 minutes to complete the questionnaire below. No personal information will be made public. Please be assured that your answers will be kept in strict confidentiality. Please take the time to fill out this questionnaire as accurately as possible. Your help is crucial for this research and also for our understanding of these issues. We deeply appreciate your kind cooperation. Thank you.

Faithfully Yours,

Advisor: YING-KAI LIAO Ph.D.

Graduate student: NGUYEN ANH THIEN.

Department of Business Administration,

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Section 1: Personal Information.

(Phần 1: Thông tin cá nhân)

Gender: (Giới Tính)	☐ Male (Nam)	☐ Female (Nữ)	☐ Others (Khác)	
Age: (Độ Tuổi)	☐ Under 17 years old (Dưới 17 tuổi)	☐ 18 to 25 years old (18 đến 25 tuổi)	☐ 26 to 35 years old (26 đến 35 tuổi)	
	☐ 36 to 45 years old (36 đến 45 tuổi)	☐ 46 to 55 years old (46 đến 55 tuổi)	☐ Above 55 years old (Trên 55 tuổi)	
Working status: (Tình Trạng Công Việc)	☐ High-school student (Học sinh cấp 3)	☐ Bachelor student (Sinh viên đại học)	☐ Master student (Thạc sĩ)	☐ Doctor-Ph.D. (Tiến sĩ)
	☐ Full-timer (Toàn thời gian)	☐ Part-timer (Bán công)	☐ Unemployed (Không có công việc)	
Income: (Thu Nhập Cá Nhân)	☐ Below 200$ (Dưới 4,500,000 VND)	☐ 200$ - 500$ (Từ 4,500,000 - 11,500,000 VND)	☐ 500$ - 800$ (Từ 11,500,000 - 18,200,000 VND)	☐ Above 800$ (Trên 18,200,000 VND)

Section 2: Digital Payments Awareness.

(Phần 2: Nhận thức về phương thức thanh toán điện tử)

Have you ever heard about digital payments before? (Bạn đã nghe tới các phương thức thanh toán điện tử bao giờ chưa?)	☐Yes, I have heard before (Có, tôi đã nghe qua)	☐No, I have not heard before (Chưa, tôi chưa nghe tới bao giờ) ** will be moved to section 8 (*sẽ được chuyển sang mục 8)*

Have you ever used digital payments before ? (Bạn đã sử dụng các phương thức thanh toán điện tử bao giờ chưa ?)	☐Yes, I have used before (Có, tôi đã/đang/từng sử dụng)	☐No, I have not used before ** will be moved to section 8 (*sẽ được chuyển sang mục 8)* *)*

Section 3: For respondant have heard/used Digital Payment before

(Phần 3: Phần trả lời cho người phản hồi đã nghe tới hoặc sử dụng thanh toán điện)

*What digital payments have you used? *(Can be selected more than 1 answer)* (Bạn đã sử dụng qua phương thức thanh toán điện tử nào)	☐Momo e-wallet	☐Moca e-wallet	☐E-payment services from bank	☐Air Pay
	☐Zalo Pay	☐Paypal	☐Viettel Pay	☐VN Pay
	☐Bao Kim	☐Google Pay	☐Samsung Pay	☐Payoo
	☐VTC Pay	☐Apple Pay	☐Amazon Pay	☐Others

How much do you usually spend for one time using digital payments? (Bạn thường tiêu khoảng bao nhiêu tiền cho một lần sử dụng thanh toán điện tử)	☐ Under 100.000VND (Dưới 100.000VND)	☐Around 100.000VND to 500.000VND (Từ 100.000 tới 500.000 VND)	☐ Over 500.000VND (Hơn 500.00 VND)

Frequency of Use *How often do you use digital payments?* (Tần suất sử dụng thanh toán điện tử của bạn)	☐ Almost everyday (Hằng ngày)	☐ 2~3 times a week (2~3 lần mỗi ngày)	☐ At least once a week (Ít nhất 1 lần 1 ngày)	☐ At least once a month (Ít nhất 1 lần 1 tháng)
*Where do you usually find and see digital payments? *(Can be selected more than 1 answer)* (Bạn thường tìm ra hoặc thấy phương thức thanh toán tiền điện tử ở đâu ?)	☐Internet/Social-Media (Trên internet hoặc các trang mạng xã hội)		☐Indoor or digital advertising (Trước mặt cửa hàng)	☐Word of mouth (Truyền miệng (gia đình/bạn bè/người nổi tiếng/KOLs)
	☐Store Front (Trước mặt cửa hàng)		☐Out-of-home advertising (Quảng cáo tờ rơi đường phố / báo / banner)	☐Others (Khác)

What reason make you want to use digital payments? **(Can be selected more than 1 answer)* (Lý do bạn chọn sử dụng phương thức thanh toán điện tử ?)	☐Contactless payment method (Thanh toán không tiếp xúc)	☐Most used by people (Được sử dụng bởi nhiều người)	☐Habit (Thói quen)
	☐Trendy (Xu hướng)	☐Convenience (Tiện lợi)	☐Rewards/Point (Quà và tích điểm)
	☐Discount (Giảm giá)	☐Security (Bảo mật/an toàn)	☐Others (Khác)

What obstacles you have faced when using digital payments? **(Can be selected more than 1 answer)* (Những khó khăn khi sử dụng phương thức thanh toán điện tử)	☐Internet connection (Kết nối mạng)	☐Lack of features (Không nhiều tính năng)	☐Complicated to use (Khó sử dụng)
	☐Not available in every store, application, or platforms (Không có mặt tại nhiều cửa hàng, ứng dụng hoặc nền tảng)	☐Other (Khác)	

Section 4: External factors affecting the use of digital payments.

(Phần 4: Các yếu tố bên ngoài ảnh hưởng đến việc sử dụng thanh toán kỹ thuật số)

Please take a short look on the questions below related with your experience in digital payment, and then **CIRCLE** the level of agreement on each of the items below based on your opinion. (Vui lòng xem qua các câu hỏi bên dưới liên quan đến trải nghiệm của bạn trong thanh toán kỹ thuật số, sau đó khoanh tròn mức độ đồng ý đối với từng mục bên dưới dựa trên ý kiến của bạn)	**Levels of Agreement** Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree < — — — — — >				
Perceived Risk of COVID-19 Pandemic **(Nhận thức về đại dịch COVID-19)**					
1. I am worried to get infected by coronavirus when using physical cash. (Tôi cảm thấy không thoải mái khi sử dụng tiền mặt để thanh toán)	**1**	**2**	**3**	**4**	**5**
2. I am not comfortable making payment using physical cash. Tôi cảm thấy lo lắng rằng tôi sẽ bị lây nhiễm COVID-19 khi sử dụng tiền mặt để thanh toán	**1**	**2**	**3**	**4**	**5**
3. I am afraid to get infected by coronavirus when using physical cash (Tôi cảm thấy sợ hãi rằng tôi sẽ bị lẫy nhiễm COVID-19 khi sử dụng tiền mặt để thanh toán)	**1**	**2**	**3**	**4**	**5**
Para-social Interaction **(Tương tác với xã hội)**					
1. I like hearing the recommendation from influencer related to digital payment methods. (Tôi thích nghe đề xuất từ người nổi tiếng có ảnh hưởng liên quan đến các phương thức thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**
2. When influencer shows how he/she feels about digital payment methods, it helps me make up my mind about that. (Khi người nổi tiếng có ảnh hưởng cho biết cảm nhận của anh/cô ấy về các phương thức thanh toán kỹ thuật số, điều đó sẽ giúp tôi quyết định về việc sử dụng phương thức thanh toán)	**1**	**2**	**3**	**4**	**5**
3. I like to compare my feelings for digital payment methods with what influencer I admire has to say about it. (Tôi muốn so sánh cảm nhận của mình về các phương thức thanh toán kỹ thuật số với những người có ảnh hưởng mà tôi ngưỡng mộ đã nói về nó)	**1**	**2**	**3**	**4**	**5**

Social Influence **(Ảnh hưởng từ xã hội)**					
1. People who influence my behavior think that I should use digital payment. (Những người ảnh hưởng đến hành vi của tôi nghĩ rằng tôi nên sử dụng thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**
2. People who are important to me think that I should use digital payment. (Những người quan trọng với tôi nghĩ rằng tôi nên sử dụng thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**
3. People surrounding me who have good performance have benefited from using digital payment. (Những người xung quanh tôi có hiệu suất tốt đã được hưởng lợi từ việc sử dụng thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**
4. In general, people have supported the use of digital payment. (Nhìn chung, mọi người đã ủng hộ việc sử dụng thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**

Section 5: Factors Influencing to The Use of Digital Payments.

Phần 5: Các yếu tố ảnh hưởng đến việc sử dụng thanh toán kỹ thuật số.

Please take a short look on the questions below related with your experience in digital payment, and then CIRCLE the level of agreement on each of the items below based on your opinion. (Vui lòng xem qua các câu hỏi bên dưới liên quan đến trải nghiệm của bạn trong thanh toán kỹ thuật số, sau đó khoanh tròn mức độ đồng ý đối với từng mục bên dưới dựa trên ý kiến của bạn)	**Levels of Agreement** Strongly Agree Agree Neutral Disagree Strongly Disagree < — — — — — >				
Perceived Ease of Use **(Nhận thức về việc sử dụng dễ dàng)**					
1. I find it easy to get the digital payment methods to do what I want it to do. (Tôi thấy thật dễ dàng để các phương thức thanh toán kỹ thuật số thực hiện những gì tôi muốn)	**1**	**2**	**3**	**4**	**5**
2. My interaction with digital payment methods is clear and understandable. (Tương tác của tôi với các phương thức thanh toán kỹ thuật số rất rõ ràng và dễ hiểu)	**1**	**2**	**3**	**4**	**5**
3. It is easy for me to become skillful at using digital payment methods. (Tôi dễ dàng trở nên thành thạo trong việc sử dụng các phương thức thanh toán kỹ thuật số)	**1**	**2**	**3**	**4**	**5**
4. I find digital payment methods easy to use. (Tôi nghĩ rằng các phương thức thanh toán kỹ thuật số dễ sử dụng)	**1**	**2**	**3**	**4**	**5**
Perceived Usefulness **(Nhận thức về việc sử dụng có hiệu quả)**					
1. In my opinion, during this COVID-19 pandemic, using digital payment methods allows me to make transaction quicker. (Theo tôi, trong đại dịch COVID-19 này, việc sử dụng các phương thức thanh toán kỹ thuật số cho phép tôi thực hiện giao dịch nhanh hơn)	**1**	**2**	**3**	**4**	**5**
2. In my opinion, during this COVID-19 pandemic, using digital payment methods are highly beneficial. (Theo tôi, trong đại dịch COVID-19 này, sử dụng các phương thức thanh toán kỹ thuật số rất có lợi)	**1**	**2**	**3**	**4**	**5**
3. Throughout this COVID-19 pandemic, I have done transactions	**1**	**2**	**3**	**4**	**5**

using digital payments methods because it is beneficial. (Trong suốt đại dịch COVID-19 này, tôi đã thực hiện các giao dịch bằng các phương thức thanh toán kỹ thuật số vì nó có lợi)					
Attitude Toward of Using **(Thái độ của người dùng khi sử dụng)**					
1. In my opinion, using digital payment is a great idea during COVID-19pandemic. (Theo tôi, sử dụng thanh toán điện tử số là một ý tưởng tuyệt vời trong đại dịch COVID-19)	**1**	**2**	**3**	**4**	**5**
2. In my opinion, using digital payment is advantageous for me during COVID-19 pandemic. (Theo tôi, sử dụng thanh toán điện tử số có lợi cho tôi trong thời kỳ đại dịch COVID-19)	**1**	**2**	**3**	**4**	**5**
3. I prefer to make transactions by using digital payment methods rather than cash during this COVID-19 pandemic. (Tôi thích thực hiện các giao dịch bằng thanh toán điện tử hơn là tiền mặt trong đại dịch COVID-19 này)	**1**	**2**	**3**	**4**	**5**
4. Overall, my Attitude towards Using Digital Payment is positive. (Nhìn chung, thái độ của tôi đối với việc sử dụng thanh toán điện tử là tích cực)	**1**	**2**	**3**	**4**	**5**
Perceived Value **(Nhận thức về giá trị)**					
1. Based on the fee I need to pay, using digital payment methods offers value for money. (Dựa trên khoản phí tôi cần trả, việc sử dụng các phương thức thanh toán kỹ thuật số mang lại giá trị về đồng tiền cho tôi)	**1**	**2**	**3**	**4**	**5**
2. Based on the amount of effort I need to put in, using a digital payment method is beneficial to me. (Dựa trên số lượng nỗ lực tôi cần bỏ ra, việc sử dụng phương thức thanh toán kỹ thuật số có lợi cho tôi)	**1**	**2**	**3**	**4**	**5**
3. Based on the amount of time I need to spend, using a digital payment method is worthwhile to me. (Dựa trên lượng thời gian tôi cần bỏ ra, tôi thấy việc sử dụng phương thức thanh toán kỹ thuật số là đáng giá)	**1**	**2**	**3**	**4**	**5**
4. Overall, using digital payment delivers me good value). (Nhìn chung, việc sử dụng thanh toán kỹ thuật số mang lại cho tôi giá trị tốt)	**1**	**2**	**3**	**4**	**5**

Section 6: Technology Readiness

(Phần 6: Sự sẵn sàng của người dùng đúng với thanh toán điện tử)

Please take a short look on the questions below related with your experience in digital payment, and then **CIRCLE** the level of agreement on each of the items below based on your opinion. (Vui lòng xem qua các câu hỏi bên dưới liên quan đến trải nghiệm của bạn trong thanh toán kỹ thuật số, sau đó khoanh tròn mức độ đồng ý đối với từng mục bên dưới dựa trên ý kiến của bạn)	**Levels of Agreement** < Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree >
Technology readiness **Sự sẵn sàng của người dùng đúng với thanh toán điện tử**					
1. I am open-minded toward digital payment. (Tôi cởi mở với thanh toán điện tử)	**1**	**2**	**3**	**4**	**5**
2. I like to try out new digital payment methods in my personal life or at work. (Tôi muốn thử các phương thức thanh toán điện tử mới trong cuộc sống cá nhân hoặc trong công việc)	**1**	**2**	**3**	**4**	**5**
3. I believe the new digital payment methods provide me with information that I need for my transactions. (Tôi tin rằng các phương thức thanh toán điện tử mới cung cấp cho tôi thông tin mà tôi cần cho các giao dịch của mình)	**1**	**2**	**3**	**4**	**5**
4. I believe the new digital payment methods provide me with useful tool to help me better control my transactions. (Tôi tin rằng các phương thức thanh toán điện tử mới cung cấp cho tôi các công cụ hữu ích để giúp tôi kiểm soát tốt hơn các giao dịch của mình)	**1**	**2**	**3**	**4**	**5**
5. I am adapted to the interface provided by the new digital payment methods. (Tôi thích nghi với giao diện được cung cấp bởi các phương thức thanh toán điện tử mới)	**1**	**2**	**3**	**4**	**5**
6. I am adapted to the functions provided by the new digital payment methods. (Tôi thích nghi với các chức năng được cung cấp bởi các phương thức thanh toán điện tử mới)	**1**	**2**	**3**	**4**	**5**
7. I trust that the digital payment methods will help me control all kinds of information that I need for my transactions. (Tôi tin tưởng rằng các phương thức thanh toán điện tử sẽ giúp tôi kiểm soát tất cả các loại thông tin mà tôi cần cho các giao dịch của mình)	**1**	**2**	**3**	**4**	**5**

Section 6:Adoption and Stickiness of Digital Payment.

(Phần 6: Sự chấp nhận và tính ổn định của thanh toán kỹ thuật số)

Please take a short look on the questions below related with your experience in digital payment, and then **CIRCLE** the level of agreement on each of the items below based on your opinion. (Vui lòng xem qua các câu hỏi bên dưới liên quan đến trải nghiệm của bạn trong thanh toán kỹ thuật số, sau đó khoanh tròn mức độ đồng ý đối với từng mục bên dưới dựa trên ý kiến của bạn)	**Levels of Agreement**				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	< — — — — — >				
Adoption of Digital Payment **(Sự tiếp nhận với thanh toán điện tử)**					
1. During COVID-19 pandemic, I use digital payment methods to make transactions more often. (Trong đại dịch COVID-19, tôi sử dụng các phương thức thanh toán điện tử để thực hiện các giao dịch thường xuyên hơn)	**1**	**2**	**3**	**4**	**5**
2. During COVID-19, if I have an opportunity to make transactions by using digital payment methods, I will do it. (Trong đại dịch COVID-19, nếu tôi có cơ hội thực hiện giao dịch bằng các phương thức thanh toán điện tử, tôi sẽ thực hiện)	**1**	**2**	**3**	**4**	**5**
3. I prefer using e-wallets for payment transactions during COVID-19 pandemic. (Tôi thích sử dụng thanh toán điện tử cho các giao dịch trong đại dịch COVID-19)	**1**	**2**	**3**	**4**	**5**
4. In the future, I plan to make transactions using digital payment methods. (Trong tương lai, tôi dự định thực hiện các giao dịch bằng phương thức thanh toán điện tử)	**1**	**2**	**3**	**4**	**5**
Stickiness of Digital Payment					
1. I have been using digital payment methods for a long time. (Tôi đã sử dụng các phương thức thanh toán điện tử trong một thời gian dài)	**1**	**2**	**3**	**4**	**5**
2. I will continue to increase the frequency of digital payment usage. (Tôi sẽ tiếp tục tăng tần suất sử dụng thanh toán điện tử)	**1**	**2**	**3**	**4**	**5**
3. I usually spend a lot of time on digital payment methods. (Tôi thường dành nhiều thời gian cho các phương thức thanh toán điện tử)	**1**	**2**	**3**	**4**	**5**
4. I'm using digital payment methods for almost every day. (Tôi đang sử dụng các phương thức thanh toán điện tử hầu như hàng ngày)	**1**	**2**	**3**	**4**	**5**
5. I'm used to use digital payment methods for check-out/transaction. (Tôi đã quen với việc sử dụng các phương thức thanh toán điện tử cho giao dịch)	**1**	**2**	**3**	**4**	**5**

Section 7: Never Used or Heard Before Section

(Phần 7: Chưa từng sử dụng hoặc nghe nói trước phần)

Why wouldn't you use digital payments *(Can be selected more than 1 answer)* (Lý do bạn không chọn sử dụng thanh toán điện tử)	☐Complicated registration (Đăng ký phức tạp)	☐Not yet popular (Chưa phổ biến)	☐Unqualified registration (Chưa đủ tuổi để đăng ký)
	☐Not available in some store (Chưa phổ biến ở một số cửa hàng)	☐Not convinced with the security (Không thấy thuyết phục với độ bảo mật)	☐Other (Khác)

In case you are offered to use digital payments, which factor could affect your decision of using it? *(Can be selected more than 1 answer)* (Trong trường hợp bạn được đề nghị sử dụng thanh toán kỹ thuật số, yếu tố nào có thể ảnh hưởng đến quyết định sử dụng nó?)	☐Reward, Points, Cashback (Phần thưởng)	☐Secured Transactions (Giao dịch an toàn)	☐ Secured Privacy (Bảo mật quyền riêng tư)	☐Brand Loyalty (Mức độ trung thành với thương hiệu)
	☐Easy to use (Dễ sử dụng)	☐Convenience (Tiện lợi)	☐ Popularity (Phổ biến)	☐Other (Khác)