モバイル決済システムの導入における商人の意図と感情 - 日本，中国，台湾，タイ

Merchants' intentions and emotions for introducing mobile payment system

– Cases of Japan, Mainland China, Taiwan, and Thailand –

PONNAPA MUSIKAPUN

Muroran Institute of Technology

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This paper discusses the effects of merchants' intentions and emotions on introducing mobile payment systems. We considered the acceptance of mobile payment systems' technology in the merchants' shops. We used and extended the new model based on the Unified theory of acceptance and use of technology (UTAUT). The performance of the model was shown by conducting experiments.

In Chapter 1, the introduction and proposal of this research is shown. We compared the acceptance of mobile payment systems' technology in the merchants' shops in different countries. And we modified and proposed new model based on the Unified theory of acceptance and use of technology (UTAUT) model. We modified UTAUT model by adding the factors of positive social influence, negative social influence as constructs and the factors of emotions as the moderators. And we call the new model as Extended-UTAUT model.

In Chapter 2, we reviewed the acceptance factors of mobile payment from previous studies. We found that social influence is one of the essential critical factors for accepting the mobile payment system. Moreover, we reviewed and found more about positive and negative social influences. Furthermore, the emotion model of the Plutchik wheel of emotions was reviewed and applied as the moderators for finding the influence on the relationship between factors.

The research methodologies are described in chapter 3. The target participants were Japanese, Chinese, Taiwanese, and Thai merchants who use and do not use mobile payment systems in small business shops. The question items were created based on Extended-UTAUT and were translated into Japanese, Chinese, Taiwanese and Thai, and used in the surveys in each country. We collect data by paper questionnaire, online, mail, and facsimile. After that we screened data and choose only complete questionnaire before analyzing.

In Chapter 4, We analyzed the results of Structure Equation modelling of the factors. We used moderator analysis for finding the influence on the relationship between factors. Moreover, the Chi-square was used to find the difference between the merchants who used and do not use mobile payment in the shop. In Chapter 5, the results from these four countries are concluded and discussed. We found that the positive social influence has a significant difference in behavioral intention for groups of Japanese, Chinese, and Taiwanese merchants who use mobile payment systems in shop. For the group of merchants who do not use the mobile payment system in the shop, the positive social influence is significantly different to behavioral intention for Japanese, Taiwanese, and Thai merchants. For the facilitating condition, the influence has a significant difference to use behavior; the results show in the group of Chinese, Taiwanese, and Thai merchants who use mobile payment system in the shop and Thai merchants who do not use mobile payment systems in shop. The negative social influence has a significant difference in behavioral intention in the case of Thai who use mobile payment system in shop. Moreover, we

found that the moderators of emotions have influence on the relationship in every country. Furthermore, we found high significant difference in emotions between these two groups in every country.

This paper contributes to the investigation on mental model of technology acceptance from the perspective of merchants' intention and emotion towards using the mobile payment system.

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本稿は，モバイル決済システムの導入における商人の意図と感情の影響を調べたものである．本研究は商人の経営する店舗のシステム導入状況に着目した．Unified theory of acceptance and use of technology (UTAUT) を用いてモデルの拡張を行った．拡張したモデルの有用性を実験で検証した．

１章に，本研究の着目した問題点と研究の概要を示す．違う国の商人のモバイル決済システムの導入状況の比較を行った．UTAUT に基づいて新しいモデルの提案を行った．従来のモデルに正の社会的影響（Positive Social Influence）と負の社会的影響（Negative Social Influence）を追加した．また，感情を調節器（moderator）として追加した．追加後のモデルを UTAUT の拡張モデルと呼ぶ．

２章に，先行研究が発見したモバイル決済システム導入の要素について記述する．社会的影響（Social Influence）がシステム導入に大きく影響するとわかった．また，正の社会的影響（Positive Social Influence）と負の社会的影響（Negative Social Influence）を論じたものについても言及した．そして，感情が要素間の関係への影響を調べるために，感情モデルである Plutchik wheel of emotions を調節器として用いた．

３章に，研究の手法を記述する．データ収集の対象は，日本，中国，台湾，タイのモバイル決済システムを導入または未導入の小型商業店舗である．UTAUT の拡張モデルに基づいてアンケートの設問項目をデザインして，各国の言語に翻訳したバージョンを作成し，アンケート調査を行った．アンケートは紙媒体，オンライン，郵便，ファックスで実施した．分析前，収集したデータを前処理した．

４章に，構造方程式モデリングの分析結果を示す．調節器分析で要素間の関係を調べた．また，カイ二乗検定を用いてモバイル決済システムを導入したと導入しなかった商人の違いを示した．５章に，各国のデータで得られた結果の考察を示す．日本，中国，台湾のシステム導入の商人には，正の社会的影響と行為的意図（Behavioral intention）の違いに有意差がみられた．かつ，日本，台湾，タイのシステム未導入の商人には，正の社会的影響と行為的意図の違いに有意差がみられた．中国，台湾，タイのシステム導入の商人とタイのシステム未導入の商人には，促進条件（Facilitating condition）と使用行為（Use behavior）の違いに有意差がみられた．タイのシステム導入の商人には，負の社会的影響と行為的意図の違いに有意差がみられた．また，各国の結果によって感情が要素間の関係に影響を与えていることがわかった．各国において，システム導入と未導入の商人の感情に有意差がみられた．

本稿は，商人のモバイル決済システムに対する意図と感情の視点から，技術受容のメンタルモデルの調査に貢献するものである．

Abstract

This paper discusses the effects of merchants' intentions and emotions on introducing mobile payment systems. We considered the acceptance of mobile payment systems' technology in the merchants' shops. We used and extended the new model based on the Unified theory of acceptance and use of technology (UTAUT). The main constructs are (1) Performance Expectancy (PE), (2) Effort Expectancy (EE), (3) Social Influence (SI), (4) Facilitating Condition (FC), (5) Behavioral Intention (BI), and (6) Use Behavior (UB). PE, EE, and SI influence the BI. The FC and BI are affected by UB. The moderators of the UTAUT are gender, age and voluntariness of use. For the Extended-UTAUT model, the construct of SI was extended to Positive Social Influence (PSI) and Negative Social Influence (NSI). Moreover, we applied the Plutchik wheel of emotions as the moderator for finding the effect on the relationship between constructs. Four pairs of Positive and Negative Emotions are used for finding the effect of the relationship between constructs: (1) Sad-Happy, (2) Disappointing-Trustworthy, (3) Anxious-Calm, and (4) Boring-Interesting. We surveyed both merchants who use and do not use mobile payment systems in small business shops.

Because of the different cultural characteristics that may impact the acceptance of technology, we conducted and compared four cases of (1) Japan, (2) Mainland China, (3) Taiwan, and (4) Thailand. We collected eight hundred thirty-eight questionnaires from four countries and used them for analysis. To analyze the factor in each construct, we analyzed by using the Structural Equation Modelling (SEM). The results of the group of merchants who introduced mobile found the PSI and NSI effect to BI. Moreover, FC also affects the UB. Four pairs of emotions affect the relationship between constructs of PSI and BI, and the pair of Boring-Interesting affect the relationship between constructs of EE and BI. But the results of the group of merchants who have not introduced the mobile payment system in shops, the PSI effect on the BI and the FC effect on UB. And the pair of Boring-Interesting effects on the relationship between constructs of PE and BI. Moreover, we compared the results of four pairs of emotions between the group of merchants who use and do not use mobile payment in their shop for each country by using the Chi-square test. We found significant differences between the group of merchants who use and do not use mobile payment in the shop in every country.

概要

この論文では、モバイル決済システムの導入における商人の意図と感情の影響について論じます。我々はその商店でのモバイル決済システムのテクノロジーの受容を検討しました。総合技術受容理論（UTAUT）に基づいて、新たなモデルを使用し、拡張しました。主な構成要素は、（1）成果期待値（Positive social influence: PE）、（2）努力期待値（Effort Expectancy: EE）、（3）社会的影響（Social Influence: SI）、（4）施設状態（Facilitating Condition: FC）、（5）行動意思（Behavioral Intention: BI）、及び（6）使用行動（Use Behavior: UB）を含めます。 PE、EE 及び SI は、BI に影響を与えます。FC と BI は、UB の影響を受けます。 UTAUT のモデレーターは性別、年齢及び使用の自発性です。拡張 UTAUT モデルでは、SI の構成が正の社会的影響（Positive Social Influence: PSI）と負の社会的影響（Negative Social Influence: NSI）に拡張されました。更に、構成間の関係への影響を見つけるために、モデレーターとしてプルチックの感情の輪を適用しました。4 つのペアの正と負の社会的影響は、構成要素間の関係の効果を見つけるために、使用されます。それは、（1）悲しい－幸せ、（2）失望－信頼できる、（3）不安－落ち着き、（4）退屈－興味深いを含めます。中小企業の店舗でモバイル決済システムを使用する、と使用しない両方の商人を調査しました。

技術の受容に影響を与える可能性のある文化的特徴が異なるため、我々は、（1）日本、（2）中国本土、（3）台湾、及び（4）タイ国の 4 つのケースを実施して比較しました。我々は、それらの 4 カ国から 838 部のアンケートを収集し、分析に使用しました。各構成の因子を分析するために、構造方程式モデリング（Structure Equation Modelling: SEM）を使用して分析しました。モバイル決済システムを導入した商人のグループの結果は、PSI と NSI が BI に影響を与えることを発見しました。更に、FC は UB にも影響します。4 つのペアの感情が PSI と BI の構成間の関係に影響を与え、退屈－興味深いのペアは EE と BI の構成間の関係に影響を与えます。しかし、店舗にモバイル決済システムを導入していない商店グループの結果では、PSI が BI に影響し、FC が UB に影響する。そして、退屈－興味深いのペアは PE と BI の構成間の関係に影響を与えます。更に、カイ二乗検定（Chi-squared test）を使用して、各国の店舗でモバイル決済システムを使用する商人と使用しない商人における 4 つのペアの感情の結果を比較しました。各国の店舗でモバイル決済を使用する商人と使用しない商人のグループには、有意差があること発見しました。

Contents

List of tables

List of figures

Chapter 1
Introduction

1 INTRODUCTION

1.1 Introduction

Mobile payment is the activity of payments for goods, services, and bills by using a mobile device with the benefit of wireless and other communication technology (Dahlberg et al., 2015). Mobile payment is one of Near Field Communication (NFC) that has the purpose of contactless communication. For the process of mobile payment, a customer transfers money to a merchant by using the mobile payment system of a service provider. Then, three main actors, i.e., customers, merchants, and service providers, are in the mobile payment system.

The customer and merchant use mobile payment system, while service provider design and provide mobile payment system. Service provider of mobile payment system has to install a mobile payment system in the business, an owner has to decide to choose the service provider's service and use that system in their business. If the merchants do not have intention and emotion to use the mobile payment system. Then, the customer have to find another way to pay money

For the popularity of using mobile payment, almost 2 million merchants in Thailand used the standardized QR Code (Quick Response Code) in 2018 (Bank of Thailand, 2018). In 2017, the value treated by mobile payment was around 9,014.19 billion THB (around 2,704 billion JPY) (Bank of Thailand, 2017). While, in 2017, the mobile payment market size in Japan was around 1,025 billion JPY (Yano Research Institute, 2018). It is only about 1/3 of Thailand despite many promotions of the Japan. For Mainland China and Taiwan, the government also promote to use mobile payment system. Moreover, the proximity mobile payment users in 2020 of Japan was around 21.5% (eMarketer Insider Intelligence, 2020) meanwhile China was around 83.6% (eMarketer Insider Intelligence, 2019). Smartphone users in 2020 of Taiwan was around 93.4% (eMarketer Insider Intelligence, 2016) and Thailand was around 53.57% (Statista, 2021).

Generally, the acceptance of technology in each country is different, for example, MP3 and internet banking in Korea and the U.S (Im et al., 2011), mobile shopping apps in India and the USA (Chopdar et al., 2018). The interestingness is what are the key factors of acceptance of new technology in each country. For the one reason of acceptance of the mobile payment system, Karsen, Chandra, and Juwitasary (2019) reviewed fifty-four literature research. They found forty-four in the design and development of mobile payments for human use. One of the top five

in these critical factors is social influence. However, social influence can be divided into positive and negative social influences, such as the study of Muchnik, Aral, and Taylor (2013), who found positive and negative social influence on a social news aggregation website. Moreover, Verkijika (2020) studied the affected and responses of acceptance of mobile payment systems. The result of respondents showed that the emotional also effect of mobile payment acceptance. For merchants, the factor which effect to the adoption of mobile payment (Krassie Petrova and Bo Wang, 2013) and platform-based mobile payment service were found in previous studies (Jiyoon Lee, Min Ho Ryu and Daeho Lee, 2019).

In this study, we choose the model of acceptance technology of the Unified Theory of Acceptance and Use of Technology model (UTAUT model). The UTAUT model was presented by Venkatesh, Morris, Davis, and Davis (2003). The structure of the UTAUT model composes four constructs of (1) Performance Expectancy, (2) Effort Expectancy, (3) Social Influence, and (4) Facilitating Condition to consider the effect to the Behavioral Intention and Use Behavior. Moreover, the moderator effect of gender, age, experience, and emotions of use are composed for finding the effect between the relationship of the factors. Intention is the factor that influence to desire for introduced mobile payment system in shop and emotion is the feeling for introduced mobile payment system in shop.

In this paper, we extended the UTAUT model by dividing social influence into positive and negative social influences to show the effect of positive and negative social influence.

1.2 Goal of this study

(1) To determine the merchants' intentions and emotions for introducing mobile payment system in different countries

(2) To find how the difference of emotions between the groups of merchants who use and do not use mobile payment system in different countries.

1.3 Scope of the study

Participant: All participants are merchants of the small shop
Area: Japan, Mainland China, Taiwan, and Thailand
Period of survey: 1 August, 2020 to 30 March, 2021

1.4Research contributions

Practical contribution:

- A novel acceptance technology model of mobile payment system is proposed.
- Four cases from Japan, Mainland China, Taiwan, and Thailand can be applied in the proposed model.

1.5Novelty of research

(1) None of the existing empirical research has included the Positive Social Influence and Negative Social Influence in the acceptance technology model because we found two of these show the results in previous studies of effect to intention.

(2) We included the moderator for finding the effect to the relationship between factors and behavioral intention.

1.6The originality of research

Figure 1 shows the existing the UTAUT model were modified by include positive social influence and negative social influence as the constructs and emotions as the moderators.

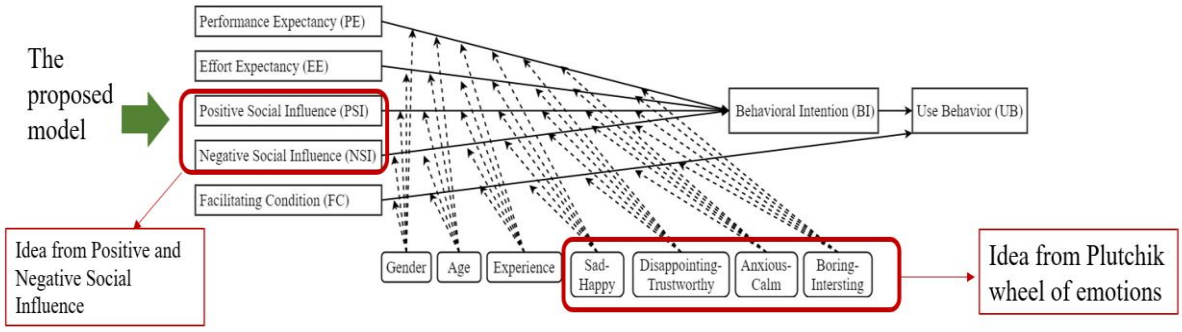

Figure 1 The modifying UTAUT model

1.7Benefit after finding in this research

(1) The finding of this paper will help to know the factors of acceptance of mobile payment systems in the shop for merchants in Japan, Mainland China, Taiwan, and Thailand.

(2) Emotions affect the relation between factors and behavioral intention.

(3) Because of these differences in the acceptance of new technology in each country and each group of users, the service provider should know and provide a suitable system by pay attention on important factors and emotions of users.

1.8 Structure of research

This research consists of five chapters. The first chapter is introduction the background of this research. The second chapter is the literature review of previous studies about the acceptance new technology model and the factors about the Positive Social Influence, Negative Social Influence, and emotions. The third chapter, the research methodology and experimental design are described about how to modified the model and the survey methodology. The fourth chapter shows the results from four countries (Japan, Mainland China, Taiwan, and Thailand). Finally, the conclusion and discussion are presented in this chapter.

Chapter 2

Literature review

2 LITERATURE REVIEW

In this section, the literature reviews are described. We start from the explanation about the factor of Social Influence because this is the famous factor that is used to find the influence in acceptance of mobile payment. Moreover, we find out more about Positive Social Influence and Negative Social Influence. We will modify the previous study of acceptance of new technology by using the Positive Social Influence and Negative Social Influence. Furthermore, we also use the concept of emotion as the moderator to find the moderator's influence on the relationship between the factors and behavioral intention.

2.1 Social Influence (SI)

From the previous studies of the UTAUT model, the interesting factor is social influence. In this section, the previous studies about the social influence are presented.

For previous studies about SI, Al-Okaily et al. (2020) studied about the behavioral intention to use Jordan mobile payment system by using the UTAUT 2. In this model, the factor of social influence effect to the intention to use Jomopay system is moderated by culture. The results show that the social influence effect to the intention to use Jomopay system but the moderator of culture is not effected to the relationship between social influence and intention to use Jomopay system.

Pushp Patil et al. identified major determinants of the consumer mobile payment adoption in India. The results of this research reflect that the factor of social influence strongly positive effect to the behavioral intention.

Karrar Al-Saedi et al. extended the UTAUT model for study the mobile payment adoption from the users in Oman. The results shows the social influence strongly has positive effect to the behavioral intention.

Ricardo de Sena Abrahão (2016) surveyed and conducted the experiment for finding the intention of adopting a future mobile payment service from the perspective of the consumers' Brazilian mobile phones. The social influence was chosen in the ones of the factors which effect to the behavioral intention.

From previous studies, the questionnaire items of social influence are shown in Table 1.

Table 1 The questionnaire items of social influence in previous studies

No.	Questionnaire items	Previous studies
1	People who are important to me think that I should use JoMoPay system.	(Al-Okaily et al., 2020)
	People who influence my behaviour think that I should use JoMoPay system.	
	People whose opinions valuable the most will prefer that I use JoMoPay system.	
	People in the ministry who use JoMoPay system have a high profile.	
	My friends would think that I should use the JoMoPay system.	
	My relatives would think that I should use JoMoPay system.	
	My peers would think that I should use JoMoPay system.	
	My co-workers would believe that I should use JoMoPay system.	
2	(1) People around me who use mobile payment systems have more prestige than those who do not	(Patil et al., 2020)
	(2) Using mobile payment systems is considered a status symbol among my friends	
3	(1) People who are close to me think that I should use the mobile payment system.	(Al-Saedi et al., 2020)
	(2) People who influence my behavior think that I should use the mobile payment.	
	(3) People whose opinions that I value prefer that I use the mobile payment system. Behavioral	
4	People who influence my behavior would think I should use mobile payment (when available)	(Abrahão et al., 2016)
	People who are important to me would think that I should use mobile payment (when available).	
	People who are important to me could assist me in the use of mobile payment (when available). SI4	
	SI4 – In the future, organizations that offer mobile payment services will guarantee its proper functioning.	

From previous studies, the social influence are discussed or research in the positive attitude. For the next step, we confirm that the social influence can separated into the positive social influence and the negative social influence by literature reviews.

2.2 Positive social influence

The positive social influence means the positive attitude or positive perspective from the other people. For the previous studies about the positive social influence are shown as below.

Jalayer Khalilzaheh et al. studied about the fac tors of tendencies for PSI, NSI, and having friends who smoke will effect or moderate to web-based program for smoking prevention. The results showed that PSI exhibited a significant negative relationship with the intention to smoke.

Ying Teng, Zhenzhong Ma, and LeiJing (2021) purposed to understand about the motivation of Chinese tourists to participate ethical tourism. They examined about the adoption the planned behavior theory to explore the impact of Chinese tourists' personal factors, PSI, the image of destination. This study examines this issue by adopting the planned behavior theory to explore the impact of Chinese tourists' personal factors, positive social influence, image of destination and quality of services on their behavioral intentions in order to better understand what motivate Chinese tourists to participate ethical tourism. The PSI in this research focus on the influence of media and the influence of family and friends. They found that the influence of media is not significantly related to any criterion variable. But the influence of family and friends is a significant predictor of both behavioral intentions and high satisfaction level.

Neeraj Pandey, Sumi Jha, and Vaibhav Rai (2021) aims to understand service adoption challenges in the Ayushman Bharat (the universal healthcare system of setting in India). This research focuses on the service adoption challenges from the patient and physician perspectives while implementing this system. For the social acceptance of this system, friends, peer, and people in the vicinity would create a PSI.

Josep Llados-Masllorens and Elisabet Ruiz-Dotras (2021) aims to determine the contribution of financial skills to entrepreneurial intentions among women involved in university education. They found that the relational capital and PSI

contribute to mitigating the effects of risk aversion, one of the main barriers for potential female entrepreneurs.

Dimitrios Hatjidis et al. aims to examine empirically, of the context of the public sector, overall quality of the way perception of an individual's network relationships at work affect the psychological condition known as change readiness. They found that the universal network quality perception as a conduit of positive social influence on change readiness.

Rajib Sinha, Lars E. Olsson, and Bjorn Frostell aims to develop a model which allowing to estimate potential environmental gains by changing travel behavior. From the results, they found that the potential of PSI is needed to the transportation intervention.

Christian Young et al. studied about the community members' perspectives on the outcomes and origins of resilience among Aboriginal children. They consider the six factors of withstanding risk, adapting to adversity, PSI, instilling cultural identity, community safeguards, and personal empowerment. The PSI in this research are secure family environments, role modelling healthy behaviors and relationships. For the PSI from the secure family environment, they found that the growing up in safe, structured, supportive and stable family environment were needed to avoid the engaged in their children. Moreover, they found that the participants believe that exposure to positive role models raised children's awareness for the potential of living and the good strategies that could help them.

Mohammardreza Hojat, J. Jon Veloski, and Mark L. Tykocinski (2015) studied about the medical students recognized by peers as the most PSI. The PSI was considered by (1) the high on measures of engaging personality attributes that are conductive to relationship building, and (2) low on disengaging personality attributes. The results show the positive social influencers appear to prossess personality attributes conductive to relationship building.

Sherry Pagoto et al. (2014) described about the adults who use Twitter during a weight loss attempt and they compared the PSI and NSI from the offline friends, online friends and family members. The results show that the PSI occurred when they discuss about weigh loss on Twitter better than discuss with family and friends or Facebook friends.

2.3Negative social influence

The negative social influence means the negative attitude or negative perspective from the other people. For the previous studies about the negative social influence are shown as below.

Wenda Li et al. (2021) study about identify the prominent smart home technology services (Li et al., 2021). The NSI was chosen for find the influence. The results showed that the NSI was ones of the main barriers to the smart phone adoption.

Lee Vien Leong et al. (2021) studied about the risky riding behavior of motorcyclists at unsignalized interactions in Malaysia by considered the effect of attitude, social influences, and control factors. The results show that the negative outcomes and the NSI are significantly associated with risky riding behavior. The NSI on the risky riding behavior in this research is the other road users, followed by friend, parents, love ones, and family.

Isaac H. Smith and Maryam Kouchachi (2021) studied about the developing for an organizational environment for helping workers from the barriers and promoted ethical learning and character development. Five key barriers in this study were presented: defensiveness, overconfidence, selfishness, inexperience, and the NSI. From the results of this study, because of they reinforce unethical learning, they found that the NSI can be a barrier to ethical learning. Thus, in this study they suggested the guiding for solve the problem of social influence is create an ethical culture. They recommended to provide ethical leadership, harness the power of stories, establish rituals that promote ethical behavior, and incorporate ethics into formal organization system.

Ida Salusky et al. (2021) explored the perceived benefits of participation in evangelical communities of woman in and setting characteristics that lead to benefits. They found that if their the participants viewed their participation they will have an opportunity for personal growth and development, protective against negative social influence; and providing social support in the face of life challenges.

Georges E. Khalil et al. (2021) examined the tendencies for PSI, NSI, and having friends who smoke moderate the success of a web-based program for smoking prevention. From the results they found the NSI tendencies weaken the ability of a web-based intervention called A Smoking Prevention Interactive Experience (ASPIRE) and the NSI significant positive relationship with intention to smoke.

Wenyi Wang and Qiang Guo (2021) investigated the optimal subscription strategies (paid strategies, free strategies, and trial strategies) for network video platforms and show how it is affected by PSI and NSI. They found when the platform adopts a free strategy or a paid strategy, NSI cannibalizes demand.

Olalla Cutrin et al. (2020) aimed to test the applicability of theory of planned behavior in predicting alcohol use in normative pre-adolescent. Related point: The findings suggest the point to consider about the NSI in decision making processes in early adolescence.

Natalia Ongtengo et al. (2020) analyzed gender differences on perceptions of gender roles, discrimination, cancer attitudes, cancer stigma, and influences in healthcare decision making within our study population to inform ongoing cervical cancer prevention work in the rural region of Ke´dougou, Se´ne´gal. They found that the potential of NSI can directly act as or contribute to barriers for healthcare services utilization, community outreach activities including social and behavior change communication.

Isabelle Collin-Lachaud and Mbaye Fall Diallo (2020) investigated how to in-store mobile use affects store with the loyalty directly or indirectly for the mediation of store value and whether social influence moderates the relationships. From the results of this research, in order to prevent the NSI, retailers could develop the way to control social influence through their own private mobile app to favors interaction.

Deirdre Holly and Vivien Swanson (2019) investigated the barriers and facilitators of physical activity in midwives in hospital an community environment. The NSI were barriers, whereas the PSI support facilitated physical activities.

Glenn D. Walters (2018) studied about (1) the PSI would be at leatst as important as the NSI in shaping later offending behavior during the child-to-adolescent transition; (2) parental social influences would be more prominent during childhood, and sibling and peer social influences would be more prominent during adolescence; and (c) parents would have a more positive influence. For the results that related with the positive social experiences were associated with reduced offending, whereas the NSI were associated with increased offending.

Moreover, from previous study of Karsen, M., Chandra, Y. U., & Juwitasary, H. (2019) showed the literature review of technological of mobile payment in 2019. From this research, 44 key factors were found for the human influences using mobile payment from 54 research literature. The top five key factors are (1) Perceived ease of use (2) Perceived usefulness (3) Perceived trust (4) Perceived risk, and (5) Social influence. F. J. Liébana-Cabanillas, J. Sánchez-Fernández, and F. Muñoz-Leiva

(2014) used these top five key factors in their model. From their model, the social influence is cause and effect of intention to use and the other 4 top key factors. It's mean Social Influence may be the importance key factors for the acceptance mobile payment. Even though their model combined top five key factors but they did not consider the effect from the moderator to the relationship between factors. Then, we try to find another model which include (1) the factor of social influence (2) the effect from the moderator to the relationship between factors (3) the model has purpose about acceptance technology. We found the model of Unified Theory of Acceptance and Use of Technology model (UTAUT model). This model composes the relation between factors to behavioral intention and use behavior. Moreover, the moderators were considered as the influence to the relationship. UTAUT model will described in the next section.

2.4 Acceptance of new technologies

Venkatesh, Morris, Davis, and Davis (2003) proposed the Unified Theory of Acceptance and Use of Technology model (UTAUT model) for presenting factors of new technology acceptance based on eight previous models such as the theory of reasoned action (TRA), the technology acceptance model (TAM), and the theory of planned behavior (TPB). The results of experiments show that R-square, a goodness of fit index of the UTAUT model is 69% while the R-squares of the traditional models are from 17% to 53% (Venkatesh et al., 2003). Figure 3 (A) shows the structure of the UTAUT model.

In these figures, each box stands for a construct, and each solid arrow stands for a relation between two constructs. And each solid arrow stands for a relation between two constructs. Each rounded box stands for a moderator and each dashed line stands for the effects of the moderator on the relation.

The model has four core constructs, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) which affect the behavioral intention (BI) and use behavior (UB). In the model,

(1) PE means the degree to which a person believes that using the systems can help them to improve his/her work performances.
(2) EE means the degree to which a person thinks that using the system is easy.
(3) SI means the degree to which a person believes that the dominant others think he/she should use the system.
(4) FC means the degree to which a person believes that there are some support frameworks to use the systems.

Gender, age, experience and voluntariness of use are the moderators regulating the relations between the four main constructs, behavioral intention and use behavior.

2.5Emotions and acceptance of new technologies

Liébana-Cabanillas, Sánchez-Fernández, and Muñoz-Leiva (2014) analyzed the relationships between several factors and intention to use a payment system called Zong, which is used in virtual social network systems. Then they created mathematical models based on the Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM), and compared the experts' case and the others' case. The model involves an emotion of "trust" as a component, and found that external influences effect trust and it effects on ease of use in the case of inexperienced users. They also focused on an emotional factor but they used only one kind of emotion, "trust".

Jung, Kwon, and Kim (2020) also focused on the relation between emotion of "trust" and mobile payments acceptance. They surveyed the motivations and obstacles of accepting mobile payment services in the U.S. They created a model based on UTAUT model, and added emotion of "trust" as a factor, and analyzed the model. As a result, they found that "trust" effects on behavioral intention.

Partala, and Saari (2015) used emotions to investigate user experiences that affect technology adoptions. The participants of the study were given an electronic device, e.g. tablet and e-reader, and were observed the adaptions. Then the participants were divided into two groups: success to adapt and the other is failing to adapt. The two groups were compared by using a model developed based on TAM. The model involves emotions, ten positive ones, and ten negative ones, as components for understanding the users' feelings in technology adoptions. They found that the group of success to adapt has positive emotions and another group has negative emotions. The results suggest that emotions affect the decision to continue to use new technologies.

From the Partala and Saari's study, we can assume that emotions are important factors for understanding new technologies' acceptances. Thus, the authors also focus on emotions. However, Partala and Saari's study studied about the new device for the personal.

In this study, the introducing mobile payment system in shop that mean the introducing new system of mobile payment for the business in their shop. In order

to make the decision to use new system in term of personal or business, the factors and emotions can effect to choosing the system to use.

In this study, merchants' internal emotions are discussed, meanwhile, images of others were discussed in Partala and Saari's study. Moreover, for the previous studies, the emotions was used for considered as independent variable effect to dependent variable (Partala, & Saari, 2015) (Partala & Saari, 2015). But in this study, we had concern about the effect of emotion on the relationship between independent variable and dependent variable.

2.6 Model of Emotion

The emotion can be intricately tied to the affective processes with using technology (Shank, 2014). Generally, a human has various emotions. To classify an emotion, Plutchik and Kellerman (2013) established the model for representing the nature of emotions.

The model included positive and negative emotions. All emotions were grouped into eight sectors. The eight sectors correspond to eight basic emotions: joy, trust, fear, surprise, sadness, disgust, anger, anticipation. Moreover, these eight groups have sub emotions for each group as follows:

(1) Joy: ecstasy, joy and serenity
(2) Acceptance: admiration, trust and acceptance
(3) Fear: terror, fear and apprehension
(4) Surprise: amazement, surprise and distraction
(5) Sadness: grief, sadness and pensiveness
(6) Disgust: loathing, disgust and boredom
(7) Anger: rage, anger and annoyance
(8) Anticipation: vigilance, anticipation and interest

All emotions are arranged in the circle as the wheel of emotions and indicated as four pairs of opposites. In this way, the whole space of emotions is represented.

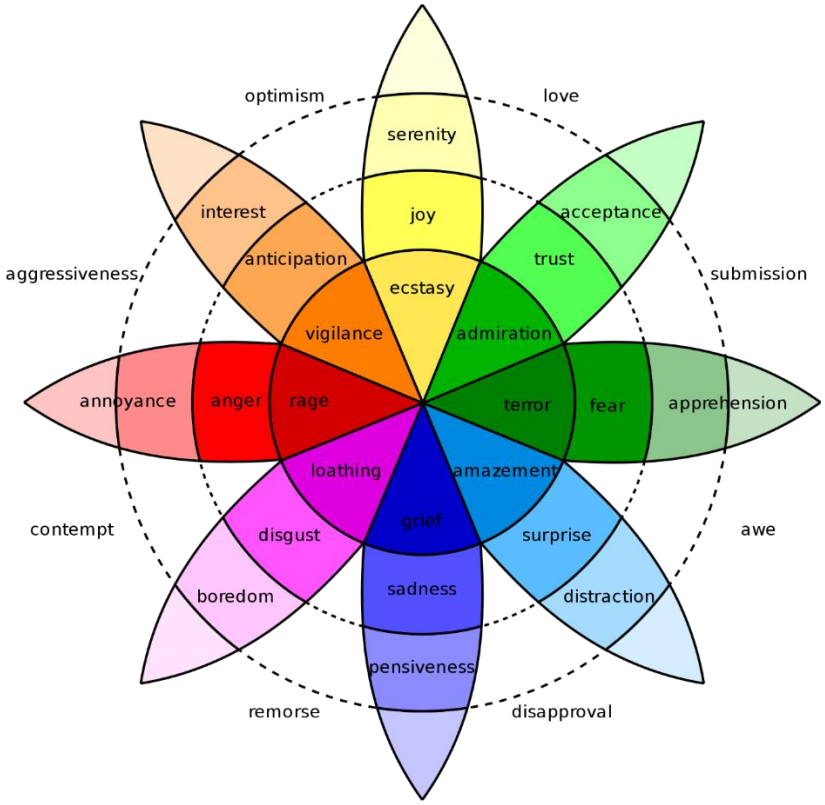

Figure 2 Plutchik wheel of emotion

In this paper, four evaluation axes consisting of the eight emotions are used for representing users' emotions for using mobile payment systems.

Chapter 3
Research Methodology

3 RESEARCH METHODOLOGY

This chapter formulated the model that has the effect factors of performance expectancy, effort expectancy, social influence, positive social influence, negative social influence, facilitating condition, behavioural intention, and use behaviour of introducing mobile payment in a small shop. After that, these factors was tested. This study was conducted by using the survey method with the quantitative approach. And the data were collected through the structured questionnaire from the respondents. This chapter is divided into five sections. The population and sample size is described in the first section. The second section shows how to collect data. The third section discusses the research instrument and measurement. The fourth section described the reliability and validity. Finally, the data analysis is discussed.

The goal of this study is to investigate effects of merchants' emotions on the decision of introducing mobile payment systems. First, the UTAUT model is extended to represent the merchants' emotions for introducing mobile payment systems. Then, questionnaire items are designed based on the extended UTAUT model and the surveys are conducted. Finally, the effects are represented by using the extended UTAUT model for each country and discussed.

3.1 Extended-UTAUT model

UTAUT model is a kind of model created by using Structural Equation Modelling (SEM). SEM is a statistic method that used to test the relationships between variables. By using the models, we can analyze relationships between observed variables and phenomena (Civelek, 2018). SEM can show the correlation between the independent variable and dependent variable. In this research, the relationships between ideas for mobile payment system and the introducing are analyzed by using SEM. To represent acceptances of mobile payment systems, we have proposed a model based on the UTAUT model.

We named it as Extended-UTAUT model (Song, Lian, & Suto, 2019). Figure 3 (B) shows the structure of the Extended-UTAUT model. In the original UTAUT model, SI stands for how people around the subject expect that he/she should use the new technology; usually, it affects positively.

From these previous studies, we can see the positive social influence and negative social influence effect to the intention for the people. Positive Social Influence and Negative Social Influence are not found in previous studies.

Then, Positive Social Influence and Negative Social Influence is added in UTAUT model in this research.The social influence is included the positive and negative social influence. The positive social influence can affect to the positive results. While the negative social influence can effect to the negative results. From

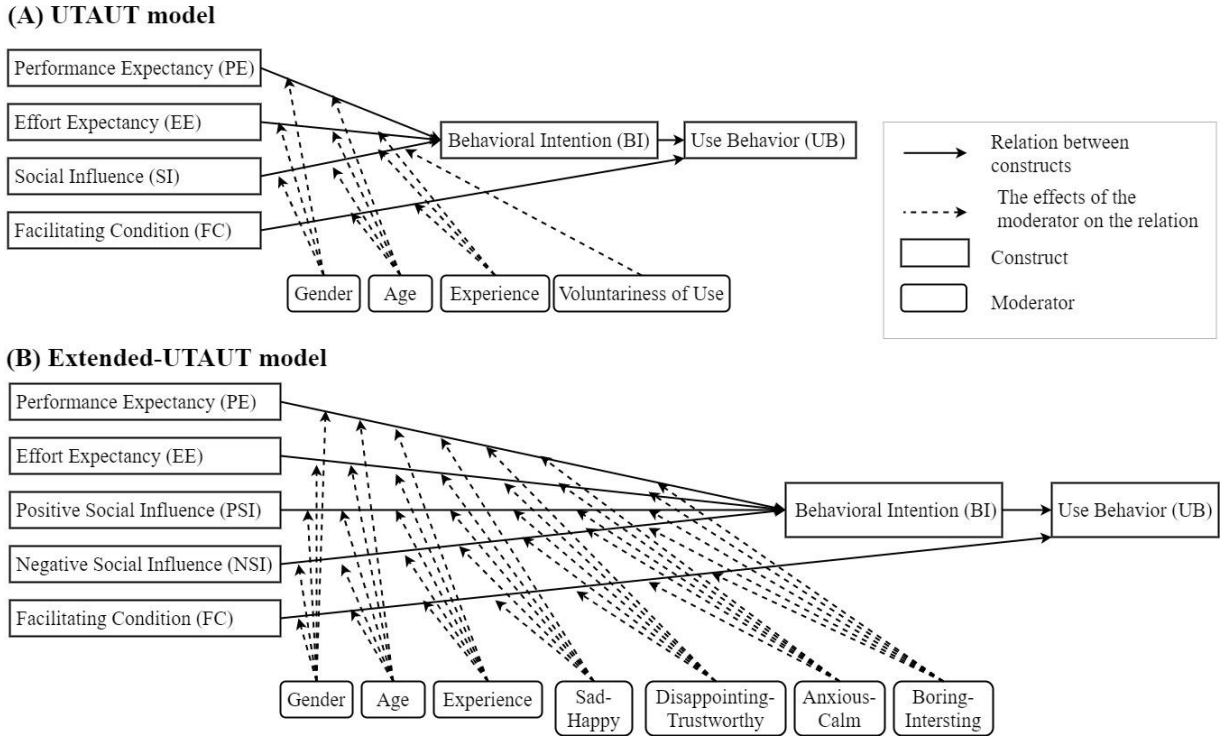

Figure 3 UTAUT and Extended-UTAUT model

previous studies, Subaramaniam, Kolandaisamy, Jalil, and Kolandaisamy (2020) analyzed the positive and negative impacts of using E-wallets to users. E-wallet is a software application for managing money on mobile. The convenience, access to new rewards, help to control the budget, can apply to pay money for other services and high availability for the positive impact results. For the negative impact results are technical problems, some of the E-wallet cannot worldwide, security risks and reckless spending habits. Akram, and Kumar (2017) studied about the positive and negative effects of social media on society. For the positive influence, social networks have an invaluable. While the negative social influence can effect to a number of risks associated with the online communities. In the case of introducing

mobile payment systems, negative influences also exist. For example, if a problem happens in the mobile payment system, we get negative images for the system.

The conceptual framework of the methodology is shown in figure 3 and The methodology for analyzing the Extended-UTAUT model in figure 5.

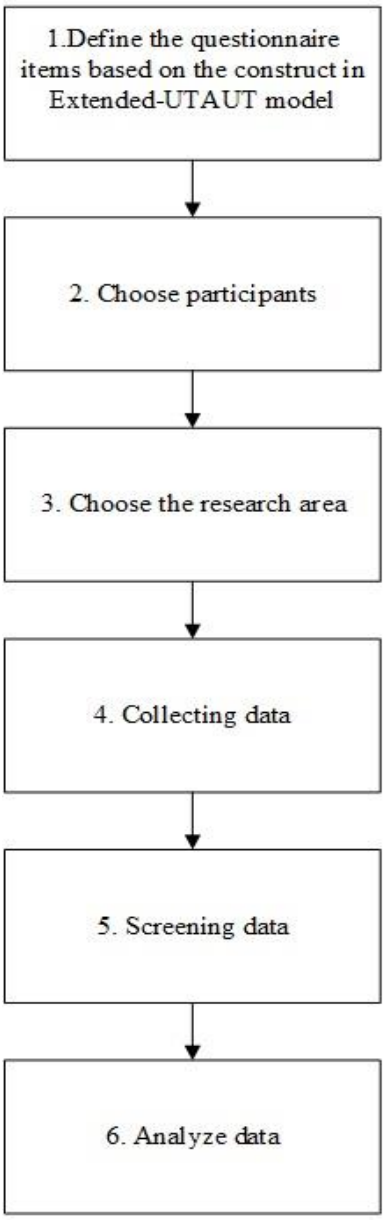

Figure 4 Conceptual framework of methodology

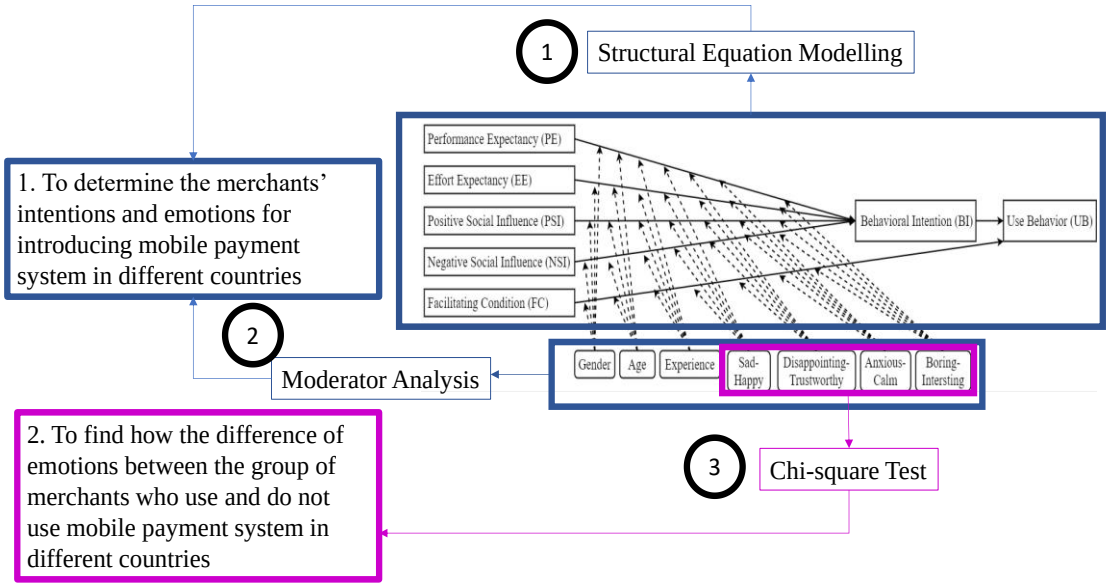

Figure 5 The methodology for analyzing the Extended-UTAUT model

Therefore, the SI is divided into two categories: positive social influence and negative social influence. Then, the Positive Social Influence (PSI) and Negative Social Influence (NSI) were added as in the core construct of the Extended-UTAUT model. In order to understand the effects of emotions on the relationships between two factors, emotion factors are added to the model as moderator variables. Plutchik's wheel of emotions (Plutchik, & Kellerman, 2013) is used for the space of emotions, and four pairs of emotions, Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting are used. In this paper, we had classified into four groups: (1) Sad-Happy, (2) Disappointing-Trustworthy, (3) Anxious-Calm, and (4) Boring-Interesting as follows:

(1) Sad can be classified into the group of sadness that has the emotion of grief, sadness and pensiveness.

(2) Happy can be classified as Joy, which has the emotion of ecstasy, joy, and serenity.

(3) Disappointing can be classified in the group of anger that has the emotion of rage, anger and annoyance.

(4) Trustworthy can be classified in the group of acceptance which has the emotion of admiration, trust and acceptance.

(5) Anxious can be classified in the group of fear that has the terror, fear and apprehension.

(6) Clam can be classified in the group of anticipation that has the emotion of vigilance, anticipation and interest.

(7) Boring can be classified in the group of disgust that has the emotion of loathing, disgust and boredom.

(8) Interesting can be classified in the group of surprise that has amazement, surprise and distraction.

The construct of "Voluntariness of use" is eliminated because usually merchants use mobile payments voluntary rather than mandatory (Morris, & Venkatesh, 2000) and we use it for measured as an "Experience" by considering the activity of use and do not use mobile payment system in shop. In our model, we measured the experience by considering the activity of use and do not use mobile payment system in shop. In our model, we measured the experience by considering the activity of use and do not use mobile payment system in shop.

3.2 Population and Sample size

For the population in this survey, we focus the merchants in four countries as follow: Japan, Thailand, Mainland China, and Taiwan. The entire population for this research study consisted of merchants who are the owner of small shops. The characteristics and criteria of an owner of small shop in this research are:

1. Not the chain shop
2. Not the online shop
3. Permanent shop and not permanent shop (The example of these shops are shown as figure 6.
4. That shop still have the activities or do the business on the day that we surveyed.

(a) Permanent shop (b) Not permanent shop

Figure 6 The example of permanent and not permanent shop

3.3 The sample size setting or estimate

In quantitative research, most researchers are unable to study with all populations that have a large number. Then, we have to choose the methodology for defining the appropriated total number of the sampling size. In order to determine the sampling size, Taro Yamane (1973) presented the formulation as follows.

The population size of the merchants in each country cannot find the true number. But we forecast that the number of merchants in each country has more than 100,000 people. For this research, we used the sampling size of respondents at least 100 people in each country because in the period of the survey of this research is 1 August, 2020 to 30 March, 2021.

3.4 Design Questionnaire and Survey

The questionnaire items can be divided into three groups; demographic information, ideas for mobile payment system, and emotions for mobile payments.

(1) Demographic information: The items of questionnaires for asking demographic information are (1) Gender (Male or Female), (2) Age, and (3) Are any mobile payment systems introduced? If you introduced it, how long have you been using it? (Yes or No, ...year ...month).

(2) Ideas for mobile payment system: Question items in this group are designed based on the study of the original UTAUT model (Viswanath. 2003). There are nineteen questionnaire items for asking ideas for mobile payment systems. Participants answered by using five points Likert scale from strongly disagree to strongly agree. The detail of questionnaire are shown in Table 2

(3) Emotions for mobile payments: The four items in figure 7 were used for asking merchants' emotions to introduce mobile payment in the shops. These items are decided based on Plutchik's wheel of emotions (Plutchik, & Kellerman, 2013). The participants answered the items by using a five-point Likert scale. Figure 7 shows an example of the part of sheet of questionnaire sheet.

Table 2 Question items

Observed Variable		Item No.	Question	Base on Venkatesh, Morris, Davis, and Davis (2003)	New
UTAUT	Extended-UTAUT				
PE		1	I think the introduction of mobile payments in the shop will make work more convenient.	/	

Observed Variable		**Item No.**	**Question**	**Base on** Venkatesh, Morris, Davis, and Davis (2003)	**New**
UTAUT	**Extended-UTAUT**				
		2	I think the introduction of mobile payments will help to finish the job quickly.	/	
		3	Introducing mobile payments can save the time of changing cash.	/	
		4	Introducing mobile payments can reduce my tasks.	/	
EE		5	It's easy for me to become skillful of using mobile payment.	/	
		6	Learning to operate mobile payments is easy for me.	/	
SI	PSI	7	People who influence my behavior recommend that you should use mobile payments.	/	
		8	I want to be a leader in introducing mobile payments.	/	
		9	I will use mobile payment if my competitors use it.	/	
	NSI	10	Providing personal information to mobile payment systems is dangerous.		/
		11	Mobile payment systems are likely high problems.		/
FC		12	I have the necessary equipment to introduce mobile payments.	/	
		13	I have the necessary knowledge to introduce mobile payment.	/	
		14	I have taken guidance to start a mobile payment service.	/	
		15	Mobile payments can be used in combination with other payment services.	/	
BI		16	I want to use mobile payments.	/	
		17	I plan to use mobile payments in the near future. Or, continue to use it in the future.	/	
UB		18	I want customers to use mobile payments.	/	
		19	I would recommend mobile payments to the people around me.	/	

3.5The translation of the questionnaire

In this survey, the targets are owners of permanent and non-permanent small shops in Japan and Thailand. Questionnaire items were translated into Japanese, Chinese, Taiwanese and Thai, and used in the surveys in each country. The questionnaire was first developed in Japanese before being translated into the other.

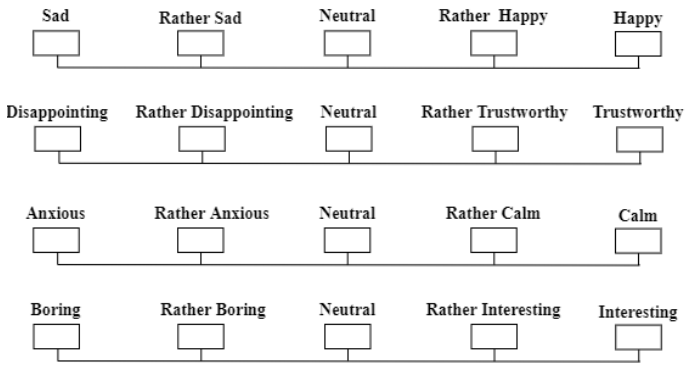

Figure 7 Items for asking emotions

In order to confirmed the equivalence of meaning of items in questionnaire between Thailand and Japan, the translation was reviewed by a third party.

3.6Collecting Data

There are four methods to collect data:

(1) Paper questionnaire:

(2) Online: We created the online questionnaire. For Mainland China, we used Wenjuanxiang, otherwise, we use Google form. Before the participants start to answer the question, we showed the purpose of the research.

(3) Mail: We print out the questionnaire and the letter for introduced the research. Moreover, we attached the stamps and envelop for the respondents for send back the answer of the questionnaire.

(4) Facsimile: We attached the letter for introduced the research and the questionnaire to the merchants. We also identified the fax number and other information to contact us.

3.7Screening Data of missing data

In order to avoid the noise of the data, we fixed and removed the data which error. The completed questionnaires were then screened. The completed questionnaires were then screened. For this method, if the respondent forget or did not want to fill some information in the questionnaire, we rejected and did not accept that questionnaire.

3.8Limitations

This period of survey is the same time of COVID-19 crisis in every country. Many small shops were closed or go out of business.

3.9Ethics in research

In this study, the participants were voluntary and with permission. The designed of the questions were avoid to asking for any sensitive and unreasonable information. We respected the participants' privacy and anonymity. The interviews were conducted when the participants preferred way, place, and times. Moreover, the interviewer avoid to make something that effect to participants about feeling and opinion. Before distributing the questionnaire, if we sent the questionnaire by mail or fax, we attached the letter of ask for cooperation to collect the data. But if we interviewed the respondents face-to-face or the paper questionnaire, we also gave the letter and described this research. In the letter, we described the detail of the research about the title, goal of the study, and ethics. Also, in the survey face-to-face, informed consent was conducted, followed by the surveys. In the informed consent, the purposes of the survey were given to the participants.

Then we explained that the data are handled anonymously and used only for academic research. Furthermore, we explained that they can stop the survey anytime if they want. Then only the participants who can agree to the instructions have joined the survey by their own decisions.

3.10 Analysis tool

The analyzing tool are R (version 1.3.1056), a numerical analysis software with packages, "lavvan" (version lavvan 0.6-7)

Chapter 4
Research Results

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4 RESEARCH RESULTS

4.1 The respondent from participants

Table 3 shows the total number from collecting data from different methods in each country. In the detail from respondents, Table 4 shows the demographic information of four countries. Total acceptable questionnaires are 838. The total number of questionnaires of Japan, Mainland China, Taiwan, and Thailand are 269, 117, 179, and 273, respectively. From these data show that the most of merchants in Mainland China, Taiwan, and Thailand are female while the most merchants in Japan are Male. Most of the generation of merchants in Mainland China, Taiwan, and Thailand are in generation Y (the people who has age around 26-43 years old.

Moreover, Mainland China, Taiwan, and Thailand have the number of merchants who introduced mobile payment system in shop more than the number of merchants who are not introduced mobile payment system in shop.

For the group of merchant who use mobile payment system in shop, most of merchants in Mainland China and Taiwan had used over two years. Meanwhile most of merchants who are used mobile payment system in shop in Japan and Thailand had used around one year. For Japan, the groups of merchants in generation X and the age below than 26 years old introduced mobile payment system in shop. Meanwhile, the groups of merchants in generation post-war cohort and baby boomer do not introduced mobile payment system in shop. For Mainland China and Thailand, all of generation introduced mobile payment in shop.For Taiwan, the groups of merchants in generation baby boomer, generation X, and generation Y introduced mobile payment system in shop, the otherwise groups do not introduced mobile payment system in shop.

Table 3 The total number from collecting data from different methods in each country

Country	Total number from collecting data from different methods			
	Paper	Online	Mail	Facsimile
Japan	202	14	51	2
Mainland China	0	127	0	0
Taiwan	5	174	0	0
Thailand	273	0	0	0

Table 4: Demographic information

Demographic Information	Japan (n=269)		Thailand (n=273)		Taiwan (n=179)		Mainland China (n=117)		Total (n=838
	Total number	Percentage	Total number	Percentage	Total number	Percentage	Total number	Percentage	
Gender									
Male	**165**	**61.34%**	119	43.59%	76	42.46%	40	34.19%	400
Female	104	38.66%	**154**	**56.41%**	**103**	**57.54%**	**77**	**65.81%**	438
Generation (Ting, Lim, de Run, Koh, & Sahdan, 2018)									
Post-war cohort (75-94 years old)	13	4.83%	0	0.00%	1	0.56%	0	0.00%	14
Baby boomers (56-74 years old)	**109**	**40.52%**	8	2.93%	22	12.29%	4	3.42%	143
Generation X (44-55 years old)	79	29.37%	28	10.26%	62	34.64%	43	36.75%	212
Generation Y(26-43 years old)	65	24.16%	**217**	**79.49%**	**87**	**48.60%**	**65**	**55.56%**	434
Age below than 26 years old	3	1.12%	20	7.33%	7	3.91%	5	4.27%	35

Demographic Information	Japan (n=269)		Thailand (n=273)		Taiwan (n=179)		Mainland China (n=117)		Total (n=838
	Total number	Percentage	Total number	Percentage	Total number	Percentage	Total number	Percentage	
Are any mobile payment systems introduced?									
Yes	130	48.33%	**215**	**78.75%**	**127**	**70.95%**	**106**	**90.60%**	578
Maximum		125 months		84 months		88 months		120 months	
Minimum		1 months		3 months		2 months		3 months	
Average		9.78 months		19.01 months		16.42 months		36.08 months	
Use around 1 year	**48**	**36.92%**	**130**	**60.47%**	42	33.07%	25	23.58%	245
Use around 1 - 2 year	47	36.15%	48	22.33%	42	33.07%	12	11.32%	149
Use over 2 years	35	26.92%	37	17.21%	**43**	**33.86%**	**69**	**65.09%**	184
No	**139**	**51.67%**	58	21.25%	52	29.05%	11	9.40%	260
Introducing mobile payment in each generation									
Yes									
Post-war cohort (75-94 years old)	5	38.46%	0	0.00%	0	0.00%	0	0.00%	5
Baby boomers (56-74 years old)	36	33.03%	**7**	**87.50%**	**12**	**54.55%**	**4**	**100.00%**	59

Demographic Information	**Japan (n=269)**		**Thailand (n=273)**		**Taiwan (n=179)**		**Mainland China (n=117)**		**Total (n=838**
	Total number	**Percentage**	**Total number**	**Percentage**	**Total number**	**Percentage**	**Total number**	**Percentage**	
Generation X (44-55 years old)	**47**	**59.49%**	**20**	**71.43%**	**45**	**72.58%**	**39**	**90.70%**	151
Generation Y(26-43 years old)	40	61.54%	**168**	**77.42%**	**67**	**77.01%**	**58**	**89.23%**	333
Age below than 26 years old	**2**	**66.67%**	**20**	**100.00%**	3	42.86%	**5**	**100.00%**	30
No									
Post-war cohort (75-94 years old)	**8**	**61.54%**	0	0.00%	**1**	**100.00%**	0	0.00%	9
Baby boomers (56-74 years old)	**73**	**66.97%**	1	12.50%	10	45.45%	0	0.00%	84
Generation X (44-55 years old)	32	40.51%	8	28.57%	17	27.42%	4	9.30%	61
Generation Y(26-43 years old)	25	38.46%	49	22.58%	20	22.99%	7	10.77%	101

Demographic Information	**Japan (n=269)**		**Thailand (n=273)**		**Taiwan (n=179)**		**Mainland China (n=117)**		**Total (n=838**
	Total number	**Percentage**	**Total number**	**Percentage**	**Total number**	**Percentage**	**Total number**	**Percentage**	
Age below than 26 years old	1	33.33%	0	0.00%	**4**	**57.14%**	0	0.00%	5

4.2Validity of Extended-UTAUT model

The goodness of fit indices are used for checking the validity of UTAUT and Extended-UTAUT model. The Extended-UTAUT model is better to analyze the intention of using a mobile payment system than the UTAUT model because every factor has better value than internal consistency criteria, as shown in Table 5.

Table 5 The comparison of goodness of fit indices Japan And Thailand

Goodness of fit index	Criteria	UTAUT (Use)	Extended-UTAUT (Use)	UTAUT (Do not use)	Extended-UTAUT (Do not use)
x^2		1129.158	644.860	462.278	303.179
df		141	136.000	141.000	136.000
x^2/df	2-5	8.001	**4.74**	**3.28**	**2.230**
Root Mean Squared Residuals (RMR)	<0.05	0.075	**0.040**	0.068	0.057
Standard Root Mean Square Residual (SRMR)	<0.05	0.070	**0.043**	0.067	**0.050**
Tucker-Lewis index (TLI)	>0.9	0.841	**0.915**	**0.901**	**0.947**
Normal Fit Index (NFI)	>0.9	0.853	**0.916**	0.888	**0.926**
Comparative Fit Index (CFI)	>0.9	0.869	**0.932**	**0.919**	**0.958**
Parsimonious Normed Fit Index (PNFI)	>0.5	**0.704**	**0.729**	**0.732**	**0.737**
Parsimonious Goodness-of-Fit Index (PGFI)	>0.5	**0.628**	**0.642**	**0.640**	**0.643**

After that we show the value of the Cronbach alpha value of PE, EE, FC, BI, and UB by using the data of two groups of merchants who use and do not use mobile payment system in shop in Table 6.

Table 6 The value of Cronbach's Alpha

Factor	Cronbach's Alpha	
	Extended-UTAUT (Use)	Extended-UTAUT (Do Not Use)
Performance Expectancy	0.888	0.881
Effort Expectancy	0.890	0.904
Positive Social Influence	0.821	0.893
Negative Social Influence	0.854	0.795
Facilitating Condition	0.800	0.851
Behavioral Intention	0.859	0.928
Use behavior	0.869	0.921

4.3 The result of four countries (Japan, Mainland China, Taiwan, and Thailand)

(1) SEM ANALYSIS

As shown in figure 8, the results show the PSI and NSI has significance difference on the BI of the merchants who introduced a mobile payment system in shops. Moreover, the FC also has significance difference on UB.

On the other hand, as shown in figure 9 for the group of merchants who do not introduce a mobile payment system in the shop, the results show the PSI has significance difference on BI. Moreover, the FC has significance difference on UB.

(2) MODERATOR ANALYSIS

For the results of the moderator effect in the group of merchants who use mobile payment system in shop,

(1) Gender has significant difference on the relationship between PE and BI ($p < 0.05$).
(2) Sad-Happy has significant difference on the relationships between PSI and BI ($p < 0.01$).
(3) Disappointing-Trustworthy has significant difference on the relationships between PSI and BI ($p < 0.001$).

(4) Anxious-Calm has significant difference on the relationships between PSI and BI ($p < 0.001$)..

(5) Boring-Interesting has significant difference on the relationships between EE and BI ($p < 0.001$) and PSI and BI ($p < 0.001$).

The factor which has the highest of influence in the relationship in this group is PSI. However, the strongest influence (significant difference ($p < 0.001$)) on the relationships are Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, Boring-Interesting influence on the relationships between PSI and BI and the relationships between EE and BI.

On the contrast of the significance influence in the relationship at $p < 0.01$ are Sad-Happy has significant difference on the relationships between PSI and BI.

Finally, the significance influence at $p < 0.05$, there is only the Gender has significant difference on the relationship between PE and BI.

For the results of the moderator effect in the group of merchants who do not use mobile payment system in shop,

(1) Gender has significant difference on the relationship between PE and BI ($p < 0.05$) and the relationship between NSI and BI $p < 0.01$

(2) Age has significant difference on the relationship between PE and BI $p < 0.01$ and the relationship between NSI and BI $p < 0.01$

(3) Boring-Interesting has significant difference on the relationships between PE and BI $p < 0.01$.

The factor which has the highest of influence in the relationship in this group is PE. However, the significance influence in the relationship at $p < 0.01$ are Gender has significant difference on the relationship between NSI and BI, Age has significant difference on the relationship between PE and BI, the relationship between NSI and BI, and Boring-Interesting has significant difference on the relationships between PE and BI.

Finally, the significance influence at $p < 0.05$, there is only the Gender has significant difference on the relationship between PE and BI.

Thus, for four countries results, the possible explanation for this might be that the PSI and FC the key factors in both group of merchants who use and do not use mobile payment in shop. Moreover, NSI also the one of key factor for the group of merchants who use mobile payment system in shop. For the influence from moderator, Gender might be the key influence in both groups of merchants who use and do not use mobile payment system in shop.

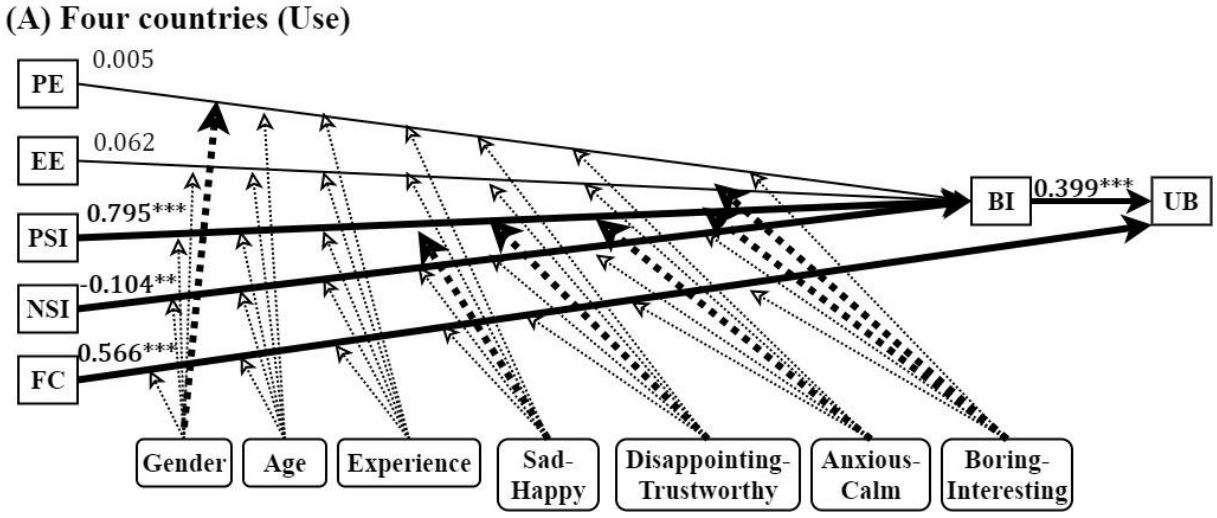

Figure 8 Extended-UTAUT result of the merchants who introduced mobile payment system in shop of four countries

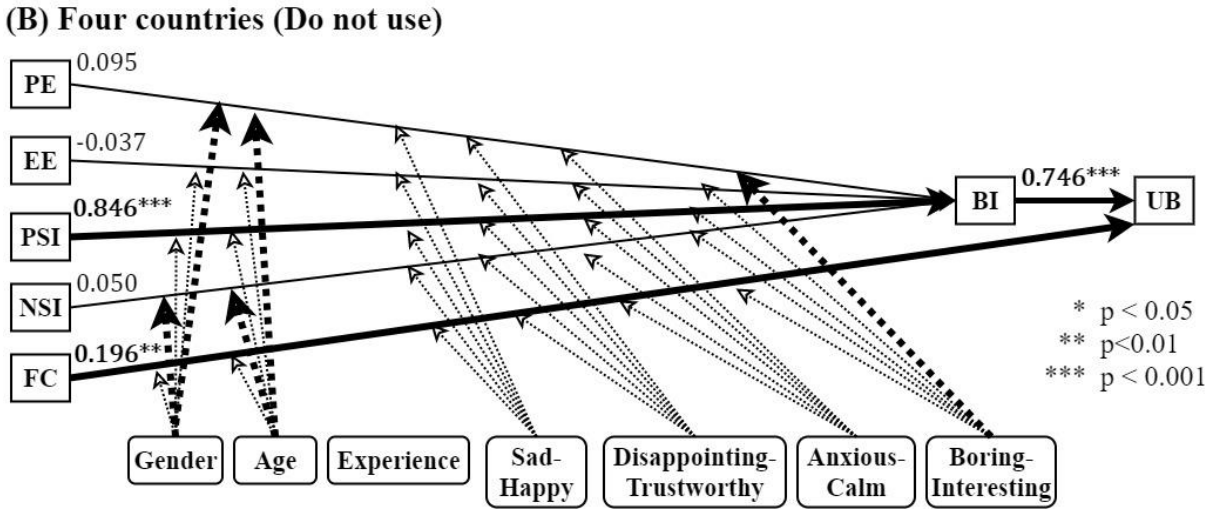

Figure 9 Extended-UTAUT result of the merchants who do not introduced mobile payment system in shop of four countries

Table 7 The score of agreement of the group of merchants of four countries (Japan, Mainland China, Taiwan, and Thailand) who introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	6	29	79	**277**	187	Agree
		1.04%	5.02%	13.67%	**47.92%**	32.35%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	7	40	91	**259**	181	Agree
		1.21%	6.92%	15.74%	**44.81%**	31.31%	
x3	Introducing mobile payments can save the time of changing cash.	11	20	53	**280**	214	Agree
		1.90%	3.46%	9.17%	**48.44%**	37.02%	
x4	Introducing mobile payments can reduce my tasks.	14	43	100	**252**	169	Agree
		2.42%	7.44%	17.30%	**43.60%**	29.24%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	9	35	91	**264**	179	Agree
		1.56%	6.06%	15.74%	**45.67%**	30.97%	
X10	Learning to operate mobile payments is easy for me.	6	29	109	**257**	177	Agree
		1.04%	5.02%	18.86%	**44.46%**	30.62%	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	27	46	112	**245**	148	Agree
		4.67%	7.96%	19.38%	**42.39%**	25.61%	
X12	I want to be a leader in introducing mobile payments.	7	29	117	**254**	171	Agree
		1.21%	5.02%	20.24%	**43.94%**	29.58%	
X14	I will use mobile payment if my competitors use it.	9	36	109%	**261**	163	Agree
		1.56%	6.23%	18.86%	**45.16%**	28.20%	
Negative Social Influence							

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
X20	Providing personal information to mobile payment systems is dangerous.	28	61	154	**203**	132	Agree
		4.84%	10.55%	26.64%	**35.12%**	22.84%	
X21	Mobile payment systems are likely high problems.	23	72	161	**207**	115	Agree
		3.98%	12.46%	27.85%	**35.81%**	19.90%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	15	25	66	**305**	167	Agree
		2.60%	4.33%	11.42%	**52.77%**	28.89%	
X16	I have the necessary knowledge to introduce mobile payment.	7	32	86	**265**	188	Agree
		1.21%	5.54%	14.88%	**45.85%**	32.53%	
X17	I have taken guidance to start a mobile payment service.	43	43	77	**232**	183	Agree
		7.44%	7.44%	13.32%	**40.14%**	31.66%	
X19	Mobile payments can be used in combination with other payment services.	10	16	64	**289**	199	Agree
		1.73%	2.77%	11.07%	**50.00%**	34.43%	
Behavioral Intention							
X22	I want to use mobile payments.	9	22	83	**270**	194	Agree
		1.56%	3.81%	14.36%	**46.71%**	33.56%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	5	21	67	**300**	185	Agree
		0.87%	3.63%	11.59%	**51.90%**	32.01%	
Use Behavior							
X24	I want customers to use mobile payments.	14	42	119	**236**	167	Agree
		2.42%	7.27%	20.59%	**40.83%**	28.89%	
X25	I would recommend mobile payments to the people around me.	10	30	136	**237**	165	Agree
		1.73%	5.19%	23.53%	**41.00%**	28.55%	

The score of the level of agreement in every question item of the group of merchants of four countries (Japan, Mainland China, Taiwan, and Thailand) who introduced a mobile payment system in the shop are shown in Table 7.

In the section of the PE, the merchants quite agree with every question that introducing mobile payments in the shop will make work more convenient, mobile payments will help finish the job quickly, introducing mobile payments can save the time of changing cash and reduce their tasks.

They also entirely agree with the EE that the merchants think it is easy for them to become skillful in using and learning to operate mobile payment.

In the agreement about the PSI, they also agree that the people who influence their behavior recommend that they use mobile payments. So they seem to agree to be a leader in introducing mobile payments, and they will use mobile payment if their competitors use it.

Moreover, they quite agree with the NSI that providing personal information to mobile payment systems is dangerous, and mobile payment systems are likely high problems.

In the section of the FC, the merchants entirely agree that they have the necessary equipment and knowledge to introduce mobile payments. They have taken guidance to start a mobile payment service, and mobile payments can be combined with other payment services.

Furthermore, they also quite agree with the BI that they want to use mobile payment and plan to use mobile payments soon or continue to use it in the future.

Finally, they still quite agree with the UB that they want customers to use mobile payments and would recommend mobile payments to the people around them.

Table 8 The score of agreement of the group of merchants of four countries (Japan, Mainland China, Taiwan, and Thailand) who do not introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	12	46	94	**102**	6	Agree
		4.62%	17.69%	36.15%	**39.23%**	2.31%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	13	49	79	**110**	9	Agree
		5.00%	18.85%	30.38%	**42.31%**	3.46%	
x3	Introducing mobile payments can save the time of changing cash.	11	28	58	**135**	28	Agree
		4.23%	10.77%	22.31%	**51.92%**	10.77%	
x4	Introducing mobile payments can reduce my tasks.	22	50	78	**96**	14	Agree
		8.46%	19.23%	30.00%	**36.92%**	5.38%	
Effort Expectancy							
9	It's easy for me to become skillful of using mobile payment.	29	52	80	**85**	14	Agree
		11.15%	20.00%	30.77%	**32.69%**	5.38%	
10	Learning to operate mobile payments is easy for me.	29	61	76	**81**	13	Agree
		11.15%	23.46%	29.23%	**31.15%**	5.00%	
Positive Social Influence							
11	People who influence my behavior recommend that you should use mobile payments.	42	50	**84**	74	10	Neutral
		16.15%	19.23%	**32.31%**	28.46%	3.85%	
12	I want to be a leader in introducing mobile payments.	49	51	**82**	70	8	Neutral
		18.85%	19.62%	**31.54%**	26.92%	3.08%	
14	I will use mobile payment if my competitors use it.	40	61	**82**	62	15	Neutral
		15.38%	23.46%	**31.54%**	23.85%	5.77%	
Negative Social Influence							

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
20	Providing personal information to mobile payment systems is dangerous.	9	20	70	**119**	42	Agree
		3.46%	7.69%	26.92%	**45.77%**	16.15%	
21	Mobile payment systems are likely high problems.	9	22	78	**119**	32	Agree
		3.46%	8.46%	30.00%	**45.77%**	12.31%	
Facilitating Condition							
15	I have the necessary equipment to introduce mobile payments.	**67**	57	55	62	19	Strongly Not Agree
		25.77%	21.92%	21.15%	23.85%	7.31%	
16	I have the necessary knowledge to introduce mobile payment.	51	61	65	**72**	11	Agree
		19.62%	23.46%	25.00%	**27.69%**	4.23%	
17	I have taken guidance to start a mobile payment service.	**88**	43	48	70	11	Strongly Not Agree
		33.85%	16.54%	18.46%	26.92%	4.23%	
19	Mobile payments can be used in combination with other payment services.	29	26	**79**	108	18	Neutral
		11.15%	10.00%	**30.38%**	41.54%	6.92%	
Behavioral Intention							
22	I want to use mobile payments.	43	54	**76**	71	16	Neutral
		16.54%	20.77%	**29.23%**	27.31%	6.15%	
23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	45	57	**72**	**72**	14	Neutral-Agree
		17.31%	21.92%	**27.69%**	**27.69%**	5.38%	
Use Behavior							
24	I want customers to use mobile payments.	48	48	**91**	61	12	Neutral
		18.46%	18.46%	**35.00%**	23.46%	4.62%	
25	I would recommend mobile payments to the people around me.	51	48	**88**	61	12	Neutral
		19.62%	18.46%	**33.85%**	23.46%	4.62%	

The score of the level of agreement in every question item of the group of merchants of four countries (Japan, Mainland China, Taiwan, and Thailand) who do not introduces mobile payment system in shop are shown in Table 8.

In the section of the PE, the merchants quite agree with every question that introducing mobile payments in the shop will make work more convenient, mobile payments will help finish the job quickly, introducing mobile payments can save the time of changing cash and reduce their tasks.

They also entirely agree with the EE that the merchants think it is easy for them to become skillful in using and learning to operate mobile payment.

The opinion about the PSI is that the merchants quite feel neutral about the people who influence their behavior recommend that they use mobile payments. Moreover, they also think neutral to be a leader in introducing mobile payments, and they will use mobile payment if their competitors use it.

But the agreement about the NSI, the merchants quite agree that providing personal information to mobile payment systems is dangerous, and mobile payment systems are likely high problems. However, in the section of the FC, the merchants quite strongly disagree that they have the necessary equipment and knowledge to introduce mobile payments and have taken guidance to start a mobile payment service. But they quite agree that they have the necessary knowledge to introduce mobile payment. However, they seem to be neutral mobile payments can be used in combination with other payment services

In the opinion about the BI, the merchants quite feel neutral about they want to use mobile payment. But for planning to use mobile payments in the near future or continue to use it in the future they feel neutral and agree.

For the UB, the merchants seem to be neutral about wanting customers to use mobile payments and recommending mobile payments to the people around them.

The average score of seven constructs of the Extended-UTAUT model for the groups of merchants who use and do not use mobile payment systems in the shop are shown in figure 10 and , figure 11, respectively.

In figure 10, the average score of PE and BI are 4.02 and 4.09, respectively. These results mean that the group of merchants who introduced a mobile payment system in the shop agree about the PE and tend to have a positive intention to BI. Meanwhile, the average results of EE, PSI, NSI, FC, and UB have 3.99, 3.88, 3.58, 3.99, and 3.88, respectively. These results mean they feel neutral.

In figure 11, the average score of PE and NSI are 3.26 and 3.59. These mean the group of merchants who do not use a mobile payment system in the shop feel

neutral. Meanwhile, the average score of EE, PSI, FC, BI, and UB are 2.98, 2.81, 2.78, 2.84, and 2.76, respectively. These mean they quite not agree.

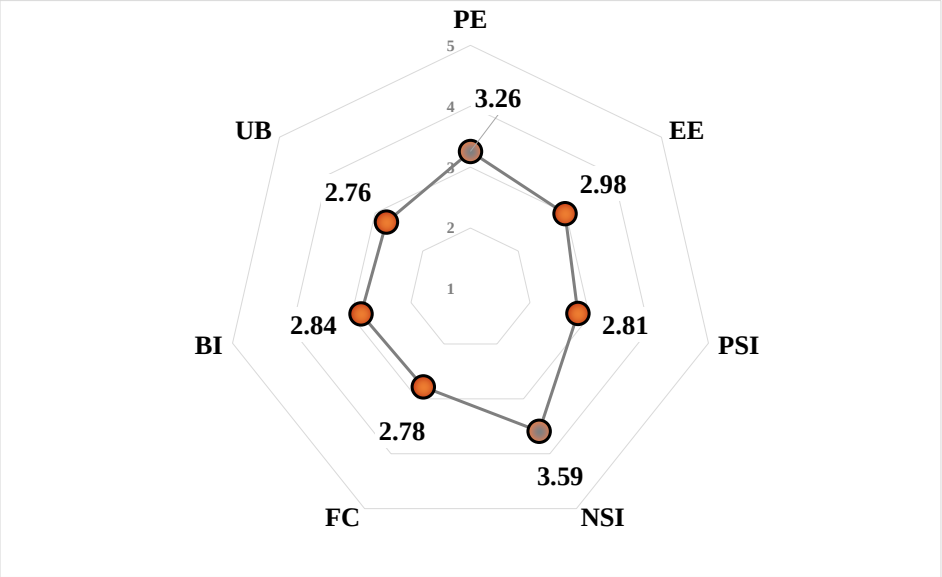

Figure 10 Average of seven constructs of the merchants who do not introduced mobile payment system in shop from four countries

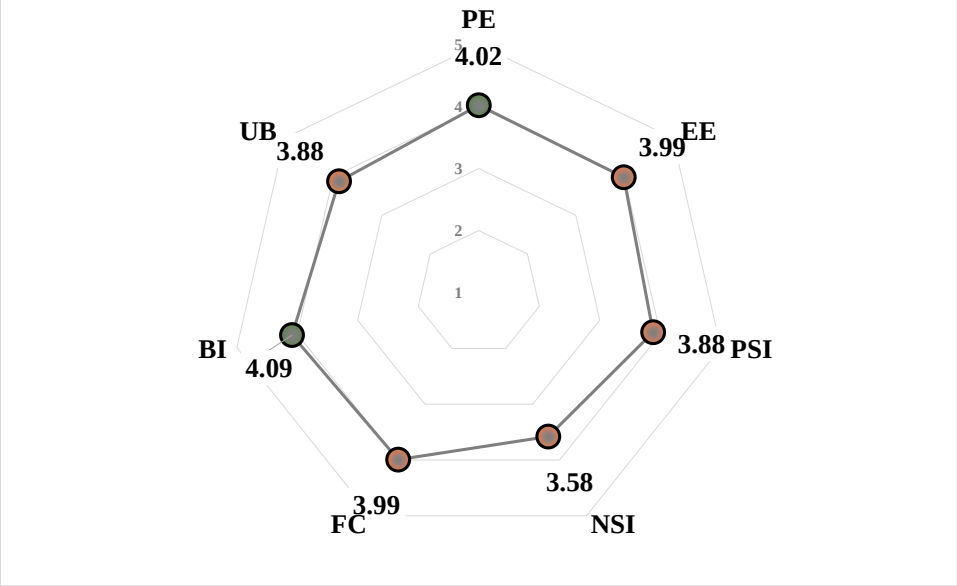

Figure 11 Average of seven constructs of the merchants who introduced mobile payment system in shop from four countries

4.4 The result of Japan

(1) SEM ANALYSIS

As shown in figure 12 and figure 13, the result shows the PSI has highest significance difference on the BI for the group of merchants who use and do not use mobile payment system in the shop.

(2) MODERATOR ANALYSIS

For the results of the moderator effect in the group of Japanese merchants who use mobile payment system in shop, Gender has significant difference with ($p < 0.05$) on the relationship between PE and BI, and the relationship between NSI and BI.

For the results of the moderator effect in the group of Japanese merchants who do not use mobile payment system in shop,

(1) Age has significant difference on four relationships: (1) The relationship between PE and BI ($p < 0.05$) (2) The relationship between PSI and BI ($p < 0.05$), (3) The relationship between FC and BI ($p < 0.01$).

(2) Sad-Happy has significant difference on three relationships (1) the relationship between PE and BI ($p < 0.05$).

(3) Boring-Interesting has significant difference on three relationships (1) the relationship between PE and BI ($p < 0.01$).

Thus, a possible of explanation of this might be the PSI is the most importance factor for BI of Japanese merchants who use and do not use mobile payment system in shop. For the influence from moderator, both group of merchants have the difference influence from moderator. Only the moderator of gender influence for the relationship of PE and NSI on BI in the group of merchants who use mobile payment system in shop. For the other group, Age, Sad-Happy, and Boring-Interesting influence on the relationship between PE and BI. Age also influence to the relationship between PSI and BI, and FC and BI. PE might be the same factor which influence from the moderators.

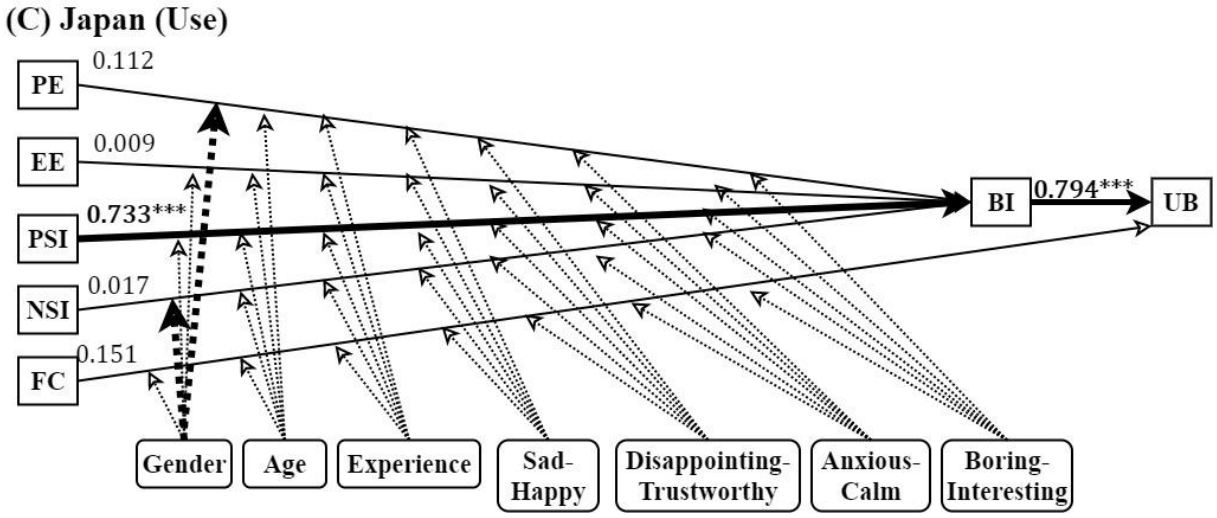

Figure 12 Extended-UTAUT result of the merchants who introduced mobile payment system in shop of Japan

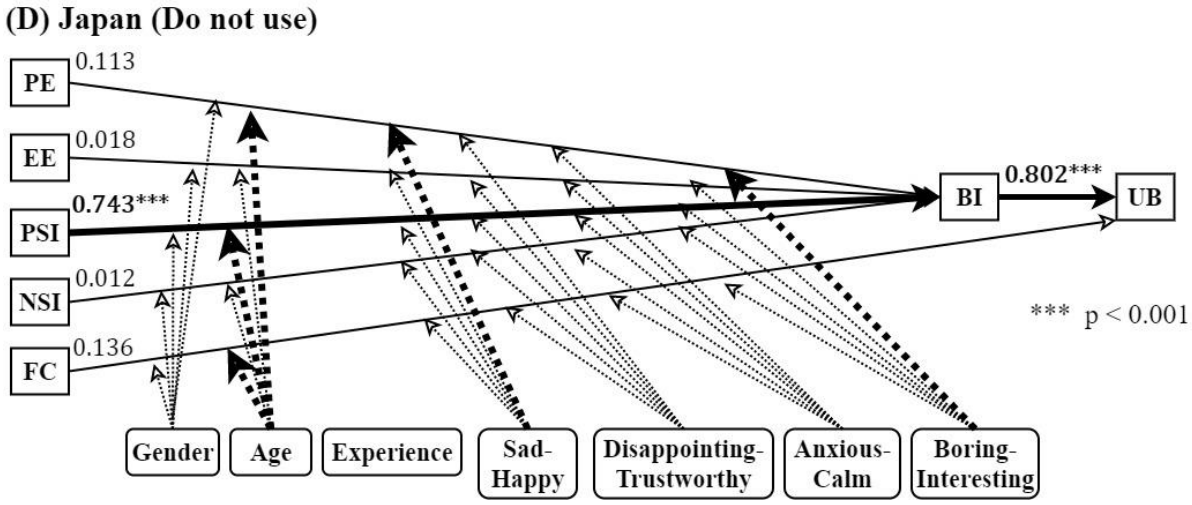

Figure 13 Extended-UTAUT result of the merchants who do not introduced mobile payment system in shop of Japan

Table 9 The score of agreement of the group of merchants of Japan who introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	3	13	31	**64**	19	Agree
		2.31%	10.00%	23.85%	**49.23%**	14.62%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	4	20	34	**55**	17	Agree
		3.08%	15.38%	26.15%	**42.31%**	13.08%	
x3	Introducing mobile payments can save the time of changing cash.	3	7	13	**68**	39	Agree
		2.31%	5.38%	10.00%	**52.31%**	30.00%	
x4	Introducing mobile payments can reduce my tasks.	5	16	**49**	44	16	Neutral
		3.85%	12.31%	**37.69%**	33.85%	12.31%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	5	26	**43**	41	15	Neutral
		3.85%	20.00%	**33.08%**	31.54%	11.54%	
X10	Learning to operate mobile payments is easy for me.	3	21	**51**	47	8	Neutral
		2.31%	16.15%	**39.23%**	36.15%	6.15%	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	25	29	**54**	16	6	Neutral
		19.23%	22.31%	**41.54%**	12.31%	4.62%	
X12	I want to be a leader in introducing mobile payments.	6	19	**54**	35	16	Neutral
		4.62%	14.62%	**41.54%**	26.92%	12.31%	
X14	I will use mobile payment if my competitors use it.	6	20	**65**	28	11	Neutral
		4.62%	15.38%	**50.00%**	21.54%	8.46%	
Negative Social Influence							
X20		4	21	**49**	37	19	Neutral

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
	Providing personal information to mobile payment systems is dangerous.	3.08%	16.15%	**37.69%**	28.46%	14.62%	
X21	Mobile payment systems are likely high problems.	5	16	**56**	43	10	Neutral
		3.85%	12.31%	**43.08%**	33.08%	7.69%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	4	12	25	**67**	22	Neutral
		3.08%	9.23%	19.23%	**51.54%**	16.92%	
X16	I have the necessary knowledge to introduce mobile payment.	6	23	35	**50**	16	Neutral
		4.62%	17.69%	26.92%	**38.46%**	12.31%	
X17	I have taken guidance to start a mobile payment service.	43	**36**	28	16	7	Not Agree
		33.08%	**27.69%**	21.54%	12.31%	5.38%	
X19	Mobile payments can be used in combination with other payment services.	7	11	35	**55**	22	Agree
		5.38%	8.46%	26.92%	**42.31%**	16.92%	
Behavioral Intention							
X22	I want to use mobile payments.	9	12	**45**	**45**	19	Neutral-Agree
		6.92%	9.23%	**34.62%**	**34.62%**	14.62%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	5	8	29	**65**	23	Agree
		3.85%	6.15%	22.31%	**50.00%**	17.69%	
Use Behavior							
X24	I want customers to use mobile payments.	8	19	**74**	21	8	Neutral
		6.15%	14.62%	**56.92%**	16.15%	6.15%	
X25	I would recommend mobile payments to the people around me.	7	19	**76**	24	4	Neutral
		5.38%	14.62%	**58.46%**	18.46%	3.08%	

The score of the level of agreement in every question item of the group of Japanese merchants who introduced a mobile payment system in the shop is shown in Table 9.

The opinion about the PE of Japanese merchants is that the merchants entirely agree that introducing mobile payments in the shop will make work more convenient. The introduction of mobile payments will help finish the job quickly, and introducing mobile payments can save the time of changing cash. But they quite feel neutral about introducing mobile payments can reduce my tasks.

With the agreement of the EE, the merchants quite feel neutral about the ease for them to become skillful of using and learning to operate mobile payment.

In the opinion about the PSI, the merchants quite feel neutral about the people who influence their behavior recommend that they should use mobile payments. They also feel neutral about the leader in introducing mobile payments, and they will use mobile payment if their competitors use it.

For the agreement in the NSI, the merchants quite feel neutral about providing personal information to mobile payment systems is dangerous and mobile payment systems are likely high problems.

But the agreement of the FC is different. The merchants quite agree that they have the necessary equipment and knowledge to introduce mobile payments, and mobile payments can be used in combination with other payment services. But, only the opinion of taking guidance to start a mobile payment service, they quite disagree.

However, from the viewpoint of BI, the merchants quite feel neutral-agree about they want to use mobile payment. But they quite agree about planning to use mobile payments in the near future or continue to use it in the future.

Finally, for the attitude of the UB, the merchants quite feel neutral about they want customers to use mobile payments and would recommend mobile payments to the people around them.

Table 10 The score of agreement of the group of merchants of Japan who do not introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	6	39	**47**	45	2	Neutral
		4.32%	28.06%	**33.81%**	32.37%	1.44%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	7	42	43	**45**	2	Agree
		5.04%	30.22%	30.94%	**32.37%**	1.44%	
x3	Introducing mobile payments can save the time of changing cash.	6	20	22	**73**	18	Agree
		4.32%	14.39%	15.83%	**52.52%**	12.95%	
x4	Introducing mobile payments can reduce my tasks.	12	41	**42**	38	6	Neutral
		8.63%	29.50%	**30.22%**	27.34%	4.32%	
Effort Expectancy							
9	It's easy for me to become skillful of using mobile payment.	21	45	**54**	18	1	Neutral
		15.11%	32.37%	**38.85%**	12.95%	0.72%	
10	Learning to operate mobile payments is easy for me.	20	**52**	48	18	1	Not Agree
		14.39%	**37.41%**	34.53%	12.95%	0.72%	
Positive Social Influence							
11	People who influence my behavior recommend that you should use mobile payments.	37	41	**47**	12	2	Neutral
		26.62%	29.50%	**33.81%**	8.63%	1.44%	
12	I want to be a leader in introducing mobile payments.	41	**46**	44	5	3	Not Agree
		29.50%	**33.09%**	31.65%	3.60%	2.16%	
14	I will use mobile payment if my competitors use it.	35	46	**48**	9	1	Neutral
		25.18%	33.09%	**34.53%**	6.47%	0.72%	
Negative Social Influence							
		5	13	35	**59**	27	Agree

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	**Not Agree**	**Neutral**	**Agree**	**Strongly Agree**	
20	Providing personal information to mobile payment systems is dangerous.	3.60%	9.35%	25.18%	**42.45%**	19.42%	
21	Mobile payment systems are likely high problems.	6	13	40	**58**	22	Agree
		4.32%	9.35%	28.78%	**41.73%**	15.83%	
Facilitating Condition							
15	I have the necessary equipment to introduce mobile payments.	**51**	41	30	11	6	Strongly Not Agree
		36.69%	29.50%	21.58%	7.91%	4.32%	
16	I have the necessary knowledge to introduce mobile payment.	39	**49**	34	15	2	Not Agree
		28.06%	**35.25%**	24.46%	10.79%	1.44%	
17	I have taken guidance to start a mobile payment service.	**79**	37	17	3	3	Strongly Not Agree
		56.83%	26.62%	12.23%	2.16%	2.16%	
19	Mobile payments can be used in combination with other payment services.	22	20	**47**	45	5	Neutral
		15.83%	14.39%	**33.81%**	32.37%	3.60%	
Behavioral Intention							
22	I want to use mobile payments.	38	**44**	42	11	4	Not Agree
		27.34%	**31.65%**	30.22%	7.91%	2.88%	
23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	39	**43**	39	13	5	Not Agree
		28.06%	**30.94%**	28.06%	9.35%	3.60%	
Use Behavior							
24	I want customers to use mobile payments.	38	38	**52**	7	4	Neutral
		27.34%	27.34%	**37.41%**	5.04%	2.88%	
25	I would recommend mobile payments to the people around me.	41	36	**55**	4	3	Neutral
		29.50%	25.90%	**39.57%**	2.88%	2.16%	

The score of the level of agreement in every question item of the group of Japanese merchants who do not introduce a mobile payment system in the shop is shown in Table 10.

From the perspective of the PE, the Japanese merchants quite feel neutral about the introduction of mobile payments in the shop will make work more convenient and introducing mobile payments can save the time of changing cash and reduce their tasks. But they quite agree that introducing mobile payments will help finish the job quickly and introducing mobile payments can save the time of changing cash.

The opinions about the EE, the Japanese merchants tend to agree about the ease of becoming skillful of using mobile payment. But they quite disagree about learning to operate mobile payment.

From the viewpoint of the PSI, the merchants quite feel neutral about the people who influence their behavior recommend that they should use mobile payments and they will use mobile payment if their competitors use it. However, they quite disagree about they want to be the leader in introducing mobile payments.

In the agreement about the NSI, the merchants quite agree that providing personal information to mobile payment systems is dangerous and that mobile payment systems are likely high problems.

From the point of view of the FC, the Japanese merchants quite strongly disagree that they have the necessary equipment and knowledge to introduce mobile payments and they have taken guidance to start a mobile payment service. But they entirely disagree about they have the necessary knowledge to introduce mobile payment. However, they quite feel neutral mobile payments can be used in combination with other payment services.

For the BI, the Japanese merchants quite disagree about they want to use mobile payment. But for planning to use mobile payments in the near future or continue to use it in the future they feel neutral and agree.

Finally, with the agreement of the UB, the merchants quite feel neutral about they want customers to use mobile payments and they would recommend mobile payments to the people around them.

The average score of seven constructs of the Extended-UTAUT model for the groups of Japanese merchants who use and do not use a mobile payment system in a shop are shown in figure 14 and figure 15, respectively.

In figure 14, the average scores of PE, EE, PSI, NSI, FC, BI, and UB are 3.63, 3.27, 3.01, 3.32, 3.23, 3.56, and 3.00, respectively. This mean that the group of merchants who use mobile payment systems in shop feel neutral.

In figure 15, the average scores of PE and NSI are 3.12 and 3.62. This means the group of merchants who do not use mobile payment systems in the shop feel neutral. Meanwhile, the average score of EE, PSI, FC, BI, and UB are 2.50, 2.26, 2.23, 2.32, 2.28, respectively. This means they feel not agree.

From the comparison of sad-happy of the Japanese merchants that show in figure 16 and figure 17, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Japanese data have significant differences (p=0.006). From the graphs in figure 16 and figure 17, we can see that many Japanese merchants who use and do not use mobile payment system in shops do not feel happy or sad about using mobile payment systems irrespective of introducing or not introducing them.

From the comparison of disappointing-trustworthy of the Japanese merchants that show in figure 18 and figure 19, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Japanese data have significant differences (p=0.000). From the graphs in Figure 18 and Figure 19, we can see that many Japanese merchants who use and do not use mobile payment system in shops feel neutral about using mobile payment systems.

From the comparison of anxious-calm of the Japanese merchants that show in figure 20 and figure 21, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Japan. As the result of the Chi-square test, Japanese data have significant differences (p=0.000). From the graphs in figure 20 and figure 21, we can see that many Japanese merchants who use and do not use mobile payment system in shops feel neutral about using mobile payment systems.

From the comparison of boring-interesting of the Japanese merchants that show in figure 22 and figure 23, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Japanese data have significant differences (p=0.000). From the graphs in figure 22 and figure 23, we can see that many Japanese merchants who use and

do not use mobile payment system in shops feel neutral about using mobile payment systems.

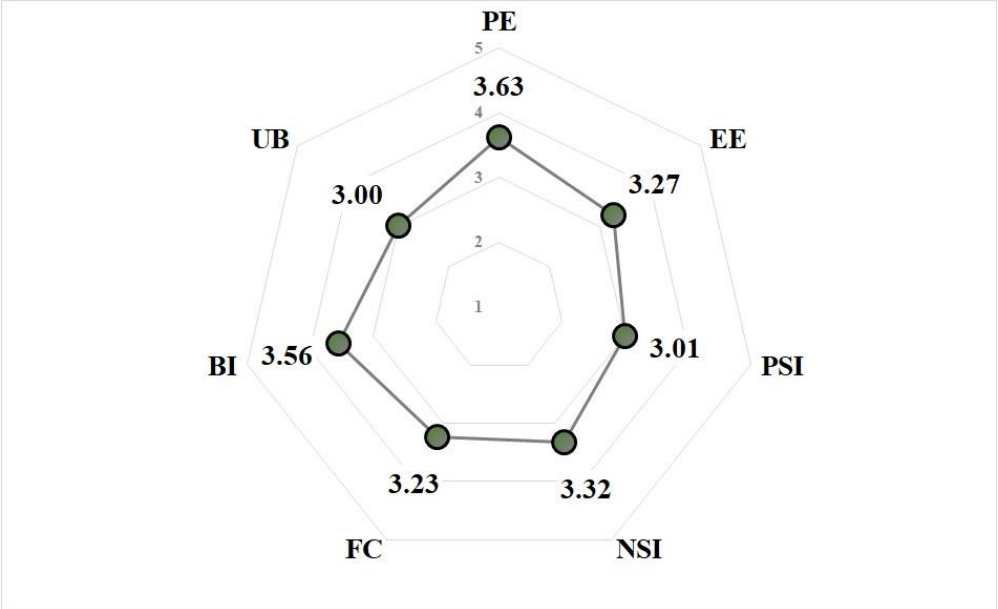

Figure 14 Average of seven constructs of the merchants who introduced mobile payment system in shop from Japan

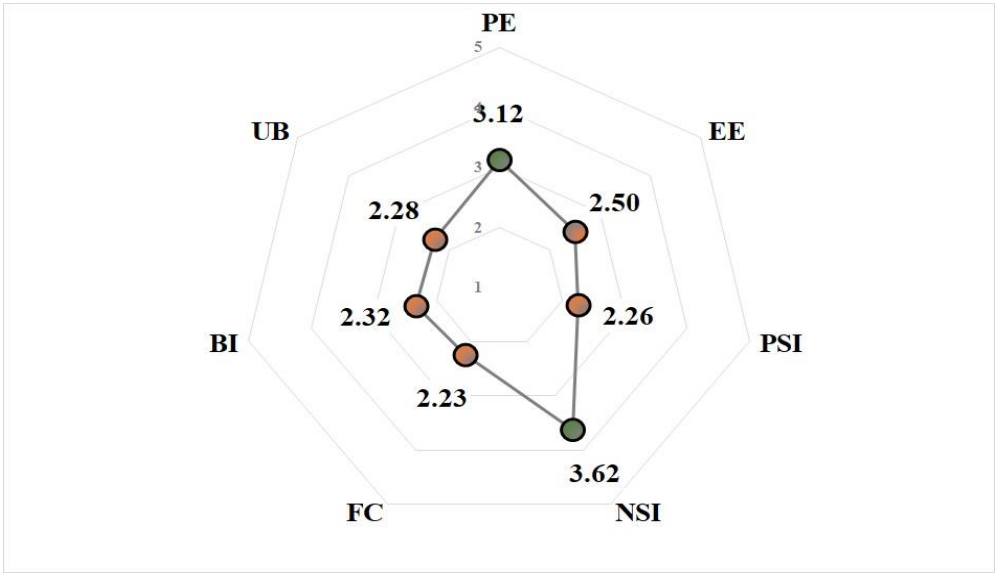

Figure 15 Average of seven constructs of the merchants who do not introduced mobile payment system in shop from Japan

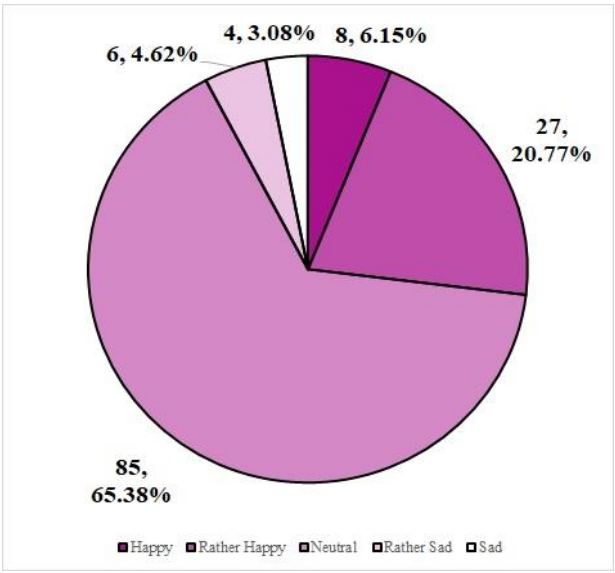

Figure 16 The comparison of sad-happy in the group of merchants who introduced mobile payment system in shop (Japan)

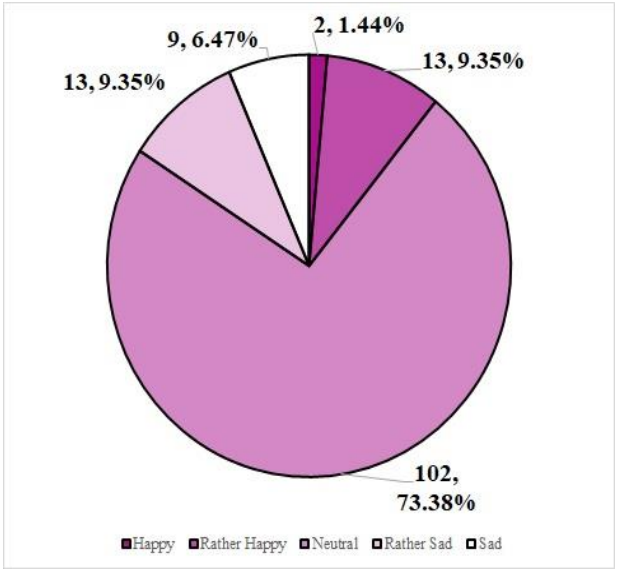

Figure 17 The comparison of sad-happy in the group of merchants who do not introduced mobile payment system in shop (Japan)

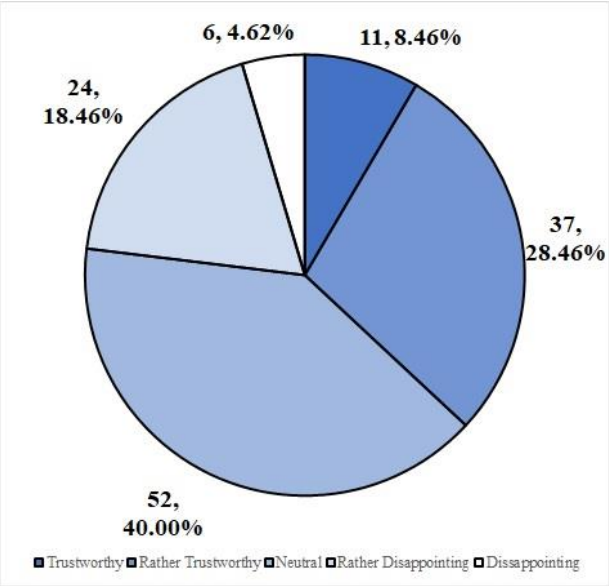

Figure 18 The comparison of disappointing-trustworthy in the group of merchants who introduced mobile payment system in shop (Japan)

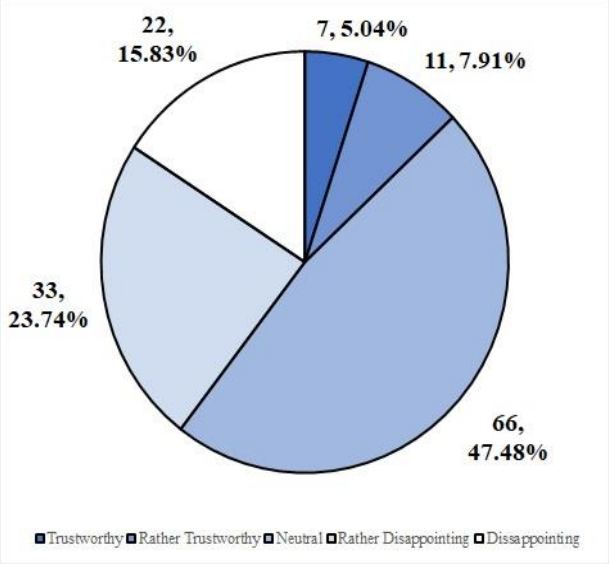

Figure 19 The comparison of disappointing-trustworthy in the group of merchants who do not introduced mobile payment system in shop (Japan)

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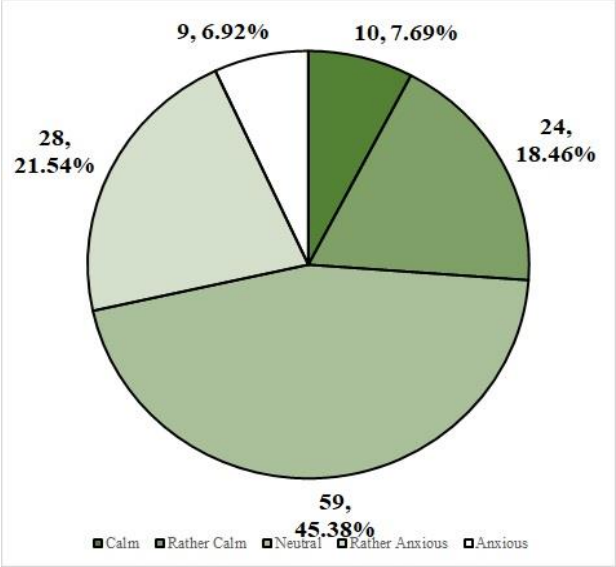

Figure 20 The comparison of anxious-clam in the group of merchants who introduced mobile payment system in shop (Japan)

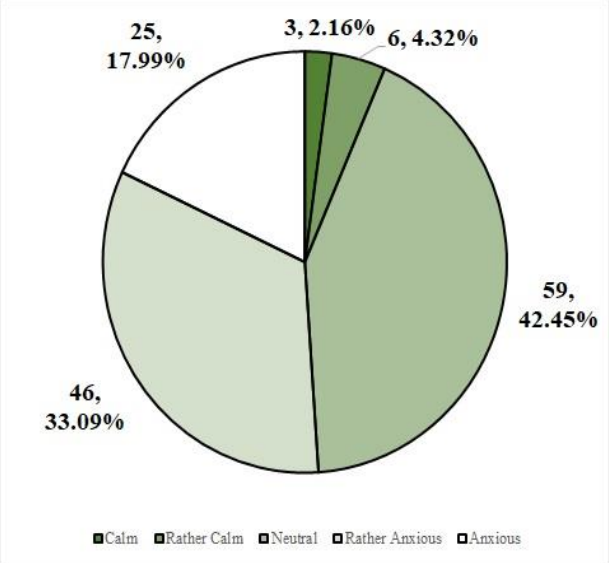

Figure 21 The comparison of anxious-clam in the group of merchants who do not introduced mobile payment system in shop (Japan)

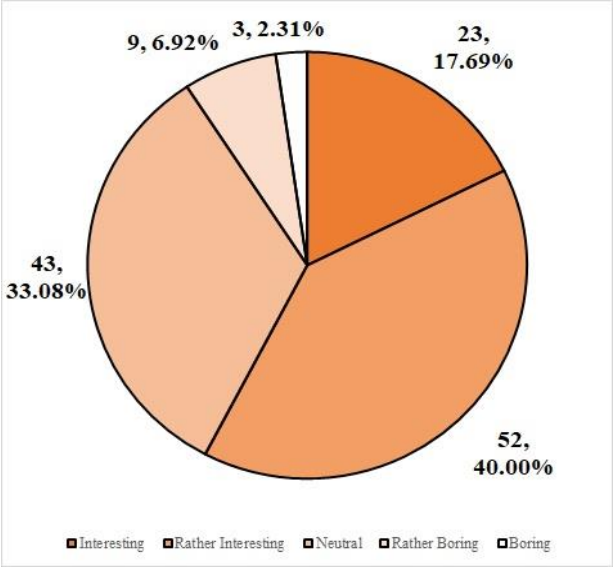

Figure 22 The comparison of boring-interesting in the group of merchants who introduced mobile payment system in shop (Japan)

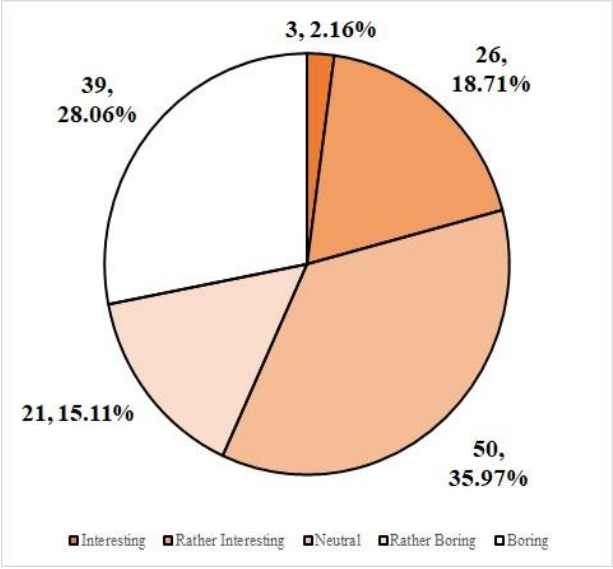

Figure 23 The comparison of boring-interesting in the group of merchants who do not introduced mobile payment system in shop (Japan)

4.5The result of Mainland China

(1) SEM ANALYSIS

As show in figure 24, for the group of merchants who introduced mobile payment system in shop, the results show the PSI has significance difference to BI and the FC has strongest significance difference to UB.

(2) MODERATOR ANALYSIS

For the moderator effect in the group of merchants who use mobile payment system in shop, for the significance difference on the relationship with ($p<0.01$) are

(1) Gender has significant difference on the relationship between PSI and BI

(2) Age has significant difference on the relationship between PE and BI, and the relationship between EE and BI.

For the significance difference on the relationship with ($p < 0.05$) are has significant difference of Age on the relationship between FC and UB and Sad-Happy has significant difference on the relationship between NSI and BI ($p < 0.05$)

The score of the level of agreement in every question item of the group of Chinese merchants who introduced a mobile payment system in the shops is shown in Table 11.

From the perspective of the PE, the merchants quite strongly agree that the introduction of mobile payments in the shop will make work more convenient. The introduction of mobile payments will help finish the job quickly and introducing mobile payments can save the time of changing cash. But they quite agree that introducing mobile payments can reduce their tasks.

In the agreement about the EE, the merchants quite agree about the easy for them to become skillful of using and learning to operate mobile payment.

From the viewpoint of the PSI, the merchants quite agree that the people who influence their behavior recommend that they should use mobile payments. They also quite agree about a leader in introducing mobile payments and they will use mobile payment if their competitors use it.

The attitude about the NSI, the merchants quite agree that providing personal information to mobile payment systems is dangerous. But they quite disagree that mobile payment systems are likely high problems.

The point of view of the FC is that the merchants quite agree that they have the necessary equipment and knowledge to introduce mobile payments.

Moreover, they also quite agree that mobile payments can be used in combination with other payment services and the taking guidance to start a mobile payment.

The agreement about the BI, the merchants quite agree that they want to use mobile payment and plan to use mobile payments in the near future or continue to use it in the future.

Finally, for the UB, the merchants quite agree that they want customers to use mobile payments and would recommend mobile payments to the people around them.

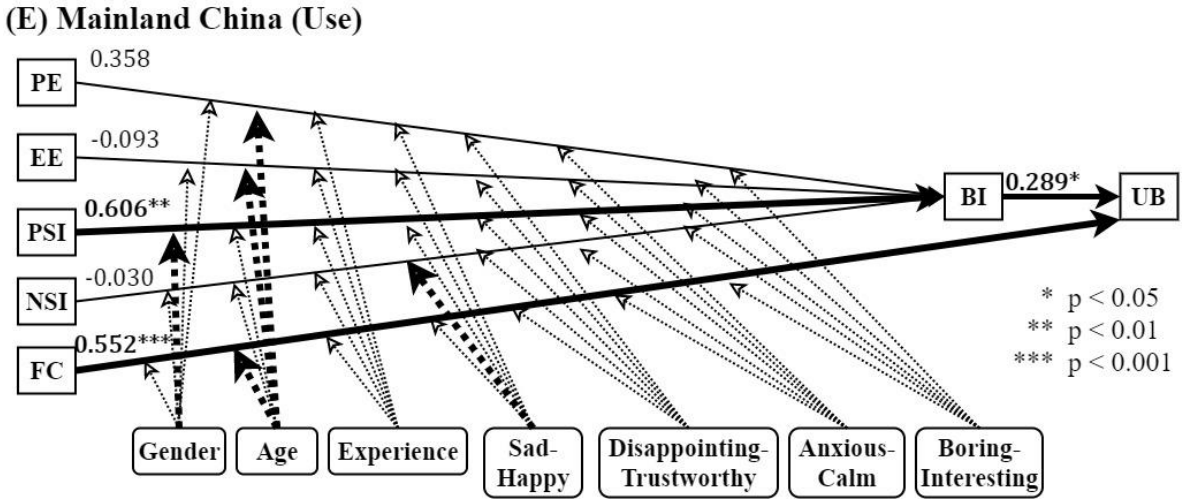

Figure 24 Extended-UTAUT result of the merchants who introduced mobile payment system in shop of Mainland China

Table 11 The score of agreement of the group of merchants of Mainland China who introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	0	0	7	49	**50**	Strongly agree
		0.00%	0.00%	6.60%	46.23%	**47.17%**	
x2	I think the introduction of mobile payments will help to finish the job quickly.	1	0	7	47	**51**	Strongly agree
		0.94%	0.00%	6.60%	44.34%	**48.11%**	
x3	Introducing mobile payments can save the time of changing cash.	1	1	8	42	**54**	Strongly agree
		0.94%	0.94%	7.55%	39.62%	**50.94%**	
x4	Introducing mobile payments can reduce my tasks.	2	1	8	**54**	41	Agree
		1.89%	0.94%	7.55%	**50.94%**	38.68%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	1	0	8	**56**	41	Agree
		0.94%	0.00%	7.55%	**52.83%**	38.68%	
X10	Learning to operate mobile payments is easy for me.	0	0	15	**48**	43	Agree 6
		0.00%	0.00%	14.15%	**45.28%**	40.57%	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	1	1	11	**62**	31	Agree
		0.94%	0.94%	10.38%	**58.49%**	29.25%	
X12	I want to be a leader in introducing mobile payments.	0	0	14	**61**	31	Agree
		0.00%	0.00%	13.21%	**57.55%**	29.25%	
X14	I will use mobile payment if my competitors use it.	0	0	11	**58**	37	Agree
		0.00%	0.00%	10.38%	**54.72%**	34.91%	
Negative Social Influence							
		4	24	41	**29**	8	

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
X20	Providing personal information to mobile payment systems is dangerous.	3.77%	22.64%	38.68%	**27.36%**	7.55%	Agree
X21	Mobile payment systems are likely high problems.	5	**31**	42	19	9	Not Agree
		4.72%	**29.25%**	39.62%	17.92%	8.49%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	0	1	16	**63**	26	Agree
		0.00%	0.94%	15.09%	**59.43%**	24.53%	
X16	I have the necessary knowledge to introduce mobile payment.	0	0	22	**52**	32	Agree
		0.00%	0.00%	20.75%	**49.06%**	30.19%	
X17	I have taken guidance to start a mobile payment service.	0	1	21	**56**	28	Agree
		0.00%	0.94%	19.81%	**52.83%**	26.42%	
X19	Mobile payments can be used in combination with other payment services.	1	0	7	**69**	29	Agree
		0.94%	0.00%	6.60%	**65.09%**	27.36%	
Behavioral Intention							
X22	I want to use mobile payments.	0	0	6	**61**	39	Agree
		0.00%	0.00%	5.66%	**57.55%**	36.79%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	0	0	7	**61**	38	Agree
		0.00%	0.00%	6.60%	**57.55%**	35.85%	
Use Behavior							
X24	I want customers to use mobile payments.	0	0	11	**60**	35	Agree
		0.00%	0.00%	10.38%	**56.60%**	33.02%	
X25	I would recommend mobile payments to the people around me.	0	0	17	**58**	31	Agree
		0.00%	0.00%	16.04%	**54.72%**	29.25%	

Table 12 The score of agreement of the group of merchants of Mainland China who do not introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	0	1	**9**	1	0	Neutral
		0.00%	9.09%	**81.82%**	9.09%	0.00%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	0	1	3	**6**	1	Agree
		0.00%	9.09%	27.27%	**54.55%**	9.09%	
x3	Introducing mobile payments can save the time of changing cash.	0	0	**5**	**5**	1	Neutral-Agree
		0.00%	0.00%	**45.45%**	**45.45%**	9.09%	
x4	Introducing mobile payments can reduce my tasks.	1	0	4	**6**	0	Agree
		9.09%	0.00%	36.36%	**54.55%**	0.00%	
Effort Expectancy							
x9	It's easy for me to become skillful of using mobile payment.	0	0	**6**	4	1	Neutral
		0.00%	0.00%	**54.55%**	36.36%	9.09%	
x10	Learning to operate mobile payments is easy for me.	0	0	**5**	**5**	1	Neutral-Agree
		0.00%	0.00%	**45.45%**	**45.45%**	9.09%	
Positive Social Influence							
x11	People who influence my behavior recommend that you should use mobile payments.	0	1	**5**	4	1	Neutral
		0.00%	9.09%	**45.45%**	36.36%	9.09%	
x12	I want to be a leader in introducing mobile payments.	0	0	4	**6**	1	Agree
		0.00%	0.00%	36.36%	**54.55%**	9.09%	
x14	I will use mobile payment if my competitors use it.	0	1	**5**	4	1	Neutral
		0.00%	9.09%	**45.45%**	36.36%	9.09%	

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Negative Social Influence							
x20	Providing personal information to mobile payment systems is dangerous.	1	1	**6**	3	0	Neutral
		9.09%	9.09%	**54.55%**	27.27%	0.00%	
x21	Mobile payment systems are likely high problems.	0	0	**7**	4	0	Neutral
		0.00%	0.00%	**63.64%**	36.36%	0.00%	
Facilitating Condition							
x15	I have the necessary equipment to introduce mobile payments.	0	2	**5**	3	1	Neutral
		0.00%	18.18%	**45.45%**	27.27%	9.09%	
x16	I have the necessary knowledge to introduce mobile payment.	0	2	**4**	**4**	1	Neutral-Agree
		0.00%	18.18%	**36.36%**	**36.36%**	9.09%	
x17	I have taken guidance to start a mobile payment service.	0	1	4	**5**	1	Agree
		0.00%	9.09%	36.36%	**45.45%**	9.09%	
X19	Mobile payments can be used in combination with other payment services.	0	1	3	**6**	1	Agree
		0.00%	9.09%	27.27%	**54.55%**	9.09%	
Behavioral Intention							
x22	I want to use mobile payments.	0	1	**6**	4	0	Neutral
		0.00%	9.09%	**54.55%**	36.36%	0.00%	
x23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	0	2	**7**	2	0	Neutral
		0.00%	18.18%	**63.64%**	18.18%	0.00%	
Use Behavior							
x24	I want customers to use mobile payments.	0	0	**6**	5	0	Neutral
		0.00%	0.00%	**54.55%**	45.45%	0.00%	
x25	I would recommend mobile payments to the people around me.	0	1	**5**	**5**	0	Neutral-Agree
		0.00%	9.09%	**45.45%**	**45.45%**	0.00%	

The score of the level of agreement in every question item of the group of Chinese merchants who do not introduce a mobile payment system in the shops is shown in Table 12.

From the perspective of the PE, the Chinese merchants quite feel neutral about the introduction of mobile payments in the shop will make work more convenient. But they quite agree that the introduction of mobile payments will help to finish the job quickly and introducing mobile payments can save the time of changing cash and reduce their tasks. However, they quite feel neutral-agree that introducing mobile payments can save the time of changing cash.

For the opinion about the EE, the Chinese merchants quite feel neutral about the easy for them to become skillful of using mobile payment. But they quite feel neutral-agree about learning to operate mobile payment.

In the agreement about the PSI, the Chinese merchants quite feel neutral about the people who influence their behavior recommend that they should use mobile payments and they will use mobile payment if their competitors use it. But they quite agree that they want to be a leader in introducing mobile payments.

From the viewpoint of the NSI, the Chinese merchants quite feel neutral about providing personal information to mobile payment systems is dangerous and mobile payment systems are likely high problems.

The attitude about the FC, the Chinese merchants quite feel neutral about they have the necessary equipment to introduce mobile payments.

However, they quite feel neutral-agree about they have the necessary knowledge to introduce mobile payment. But, they quite agree that they have taken guidance to start a mobile payment service and mobile payments can be used in combination with other payment services.

For the issue about the BI, the Chinese merchants quite feel neutral about they want to use mobile payment and planning to use mobile payments in the near future or continue to use it in the future.

Finally, in the opinion about the UB, the merchants seem to be neutral about they want customers to use mobile payments. Meanwhile, they seem to be feel neutral-agree about they would recommend mobile payments to the people around them.

The average score of seven constructs of the Extended-UTAUT model for the groups of Chinese merchants who use and do not use mobile payment system in the shop are shown in figure 25 and figure 26, respectively.

In figure 25, the group of merchants who use mobile payment systems in the shop quite agree with PE, EE, PSI, FC, BI, and UB with the average score 4.35, 4.27, 4.18, 4.10, 4.30, 4.18, respectively. Except for the NSI with the average score of 3.04, that means that merchants who use mobile payment system in shop feel neutral.

In figure 26, the average score of all constructs of PE, EE, PSI, NSI, FC, BI, and UB are 3.41, 3.59, 3.55, 3.18, 3.45, 3.14, and 3.41, respectively. This means the group of merchants who do not use mobile payment system in the shop feel neutral.

From the comparison of sad-happy of the Chinese merchants that is shown in figure 27 and figure 28, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Mainland China. As the result of the Chi-square test, Chinese data have significant differences ($p=0.0014$). From the graphs in figure 27 and figure 28, we can see that many Chinese merchants who use mobile payment system in shops feel happy, while the Chinese merchants who do not use mobile payment systems in shops only feel neutral about using mobile payment systems.

From the comparison of disappointing-trustworthy of the Chinese merchants that is shown in figure 29 and figure 30, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Chinese data have significant differences ($p=0.000$). From the graphs in figure 29 and figure 30, we can see that many Chinese merchants who use mobile payment systems in shops feel happy. Meanwhile, the Chinese merchants who do not use mobile payment systems in shops feel neutral about using mobile payment systems.

From the comparison of anxious-calm of the Chinese merchants that show in figure 31 and figure 32, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Mainland China. As the result of the Chi-square test, Chinese data have significant differences ($p=0.0061$). From the graphs in figure 31 and figure 32, we can see that many Chinese merchants who use mobile payment system in shop feel happy. Meanwhile, the merchants who do not use mobile payment system in shops feel neutral.

From the comparison of boring-interesting of the Chinese merchants that is shown in figure 33 and figure 34, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Mainland China. As the result of the Chi-

square test, Japanese data have significant differences (p=0.000). From the graphs in figure 33 and figure 34, we can see that many Chinese merchants who use mobile payment systems in shops feel interesting. Meanwhile, the merchants who do not use mobile payment systems in shops feel neutral.

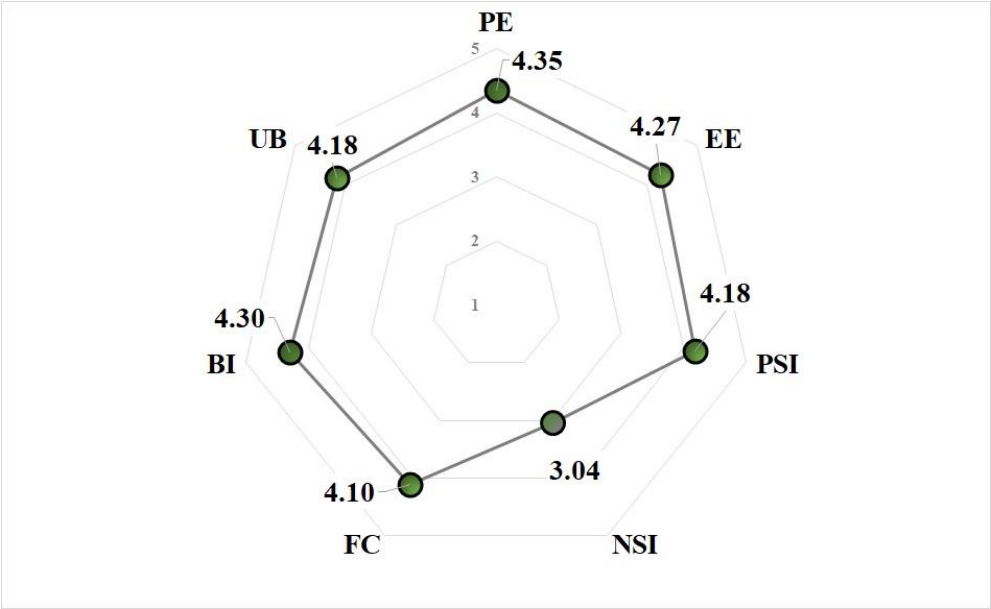

Figure 25 Average of seven constructs of the merchants who introduced mobile payment system in shop from Mainland China

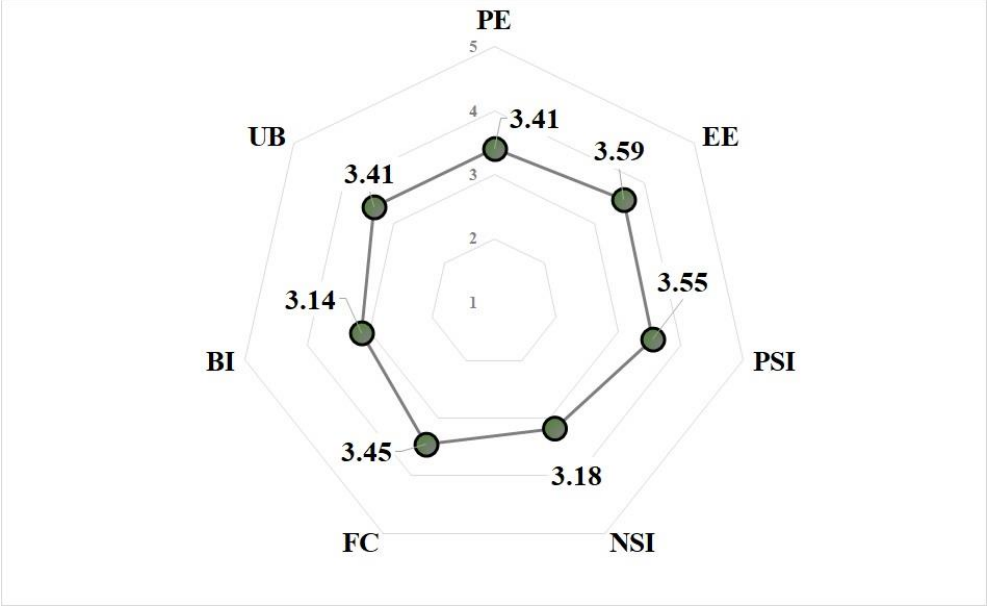

Figure 26 Average of seven constructs of the merchants who do not introduced mobile payment system in shop from Mainland China

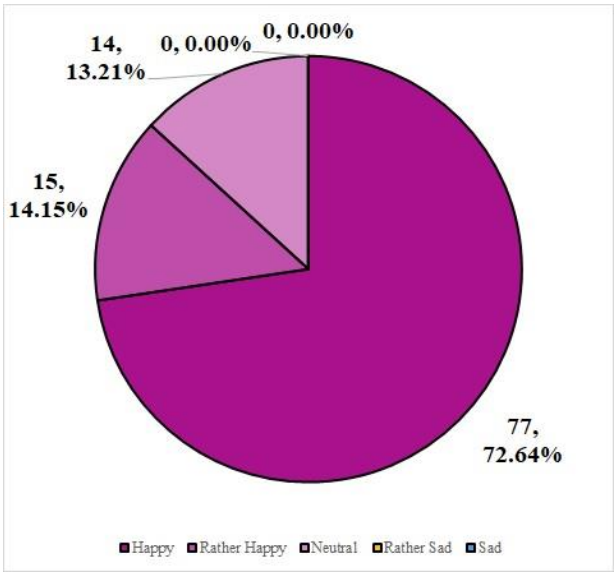

Figure 27 The comparison of sad-happy in the group of merchants who introduced mobile payment system in shop (Mainland China)

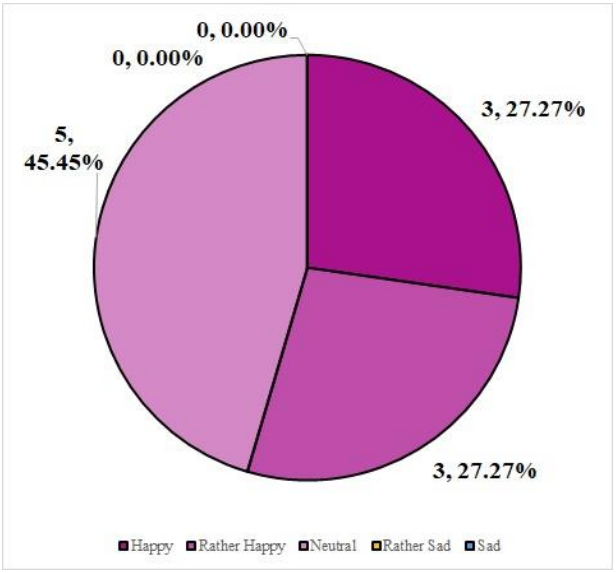

Figure 28 The comparison of sad-happy in the group of merchants who do not introduced mobile payment system in shop (Mainland China)

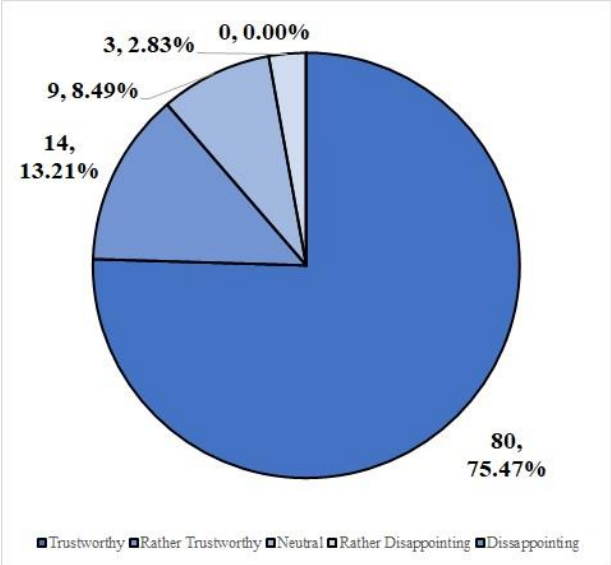

Figure 29 The comparison of disappointing trustworthy in the group of merchants who introduced mobile payment system in shop (Mainland China)

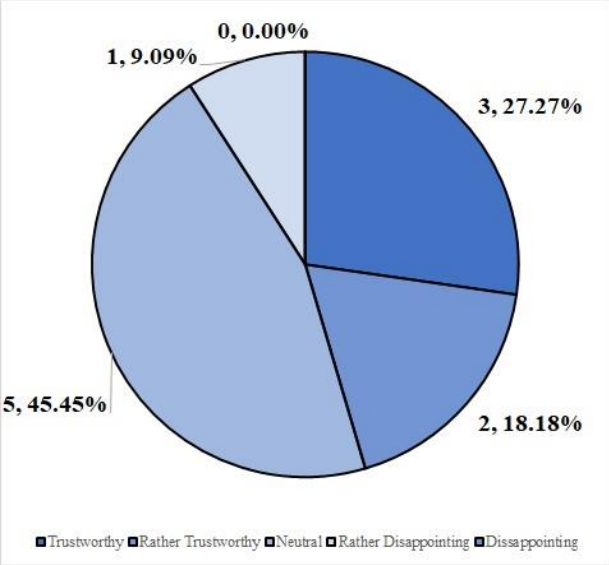

Figure 30 The comparison of disappointing-trustworthy in the group of merchants who do not introduced mobile payment system in shop (Mainland China)

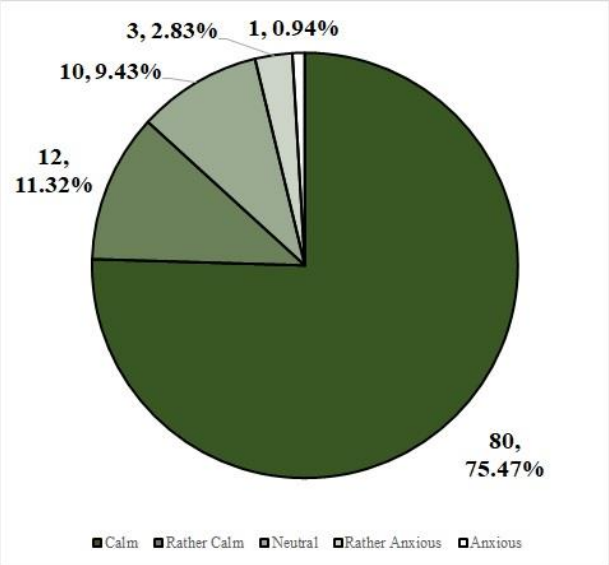

Figure 31 The comparison of anxious-clam in the group of merchants who introduced mobile payment system in shop (Mainland China)

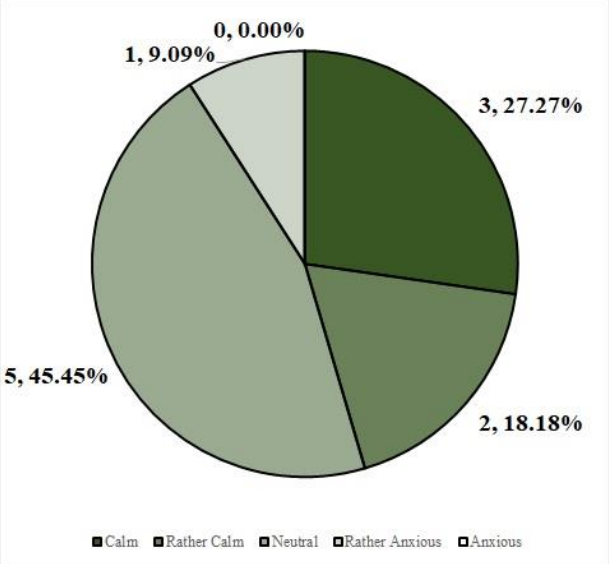

Figure 32 The comparison of anxious-clam in the group of merchants who do not introduced mobile payment system in shop (Mainland China)

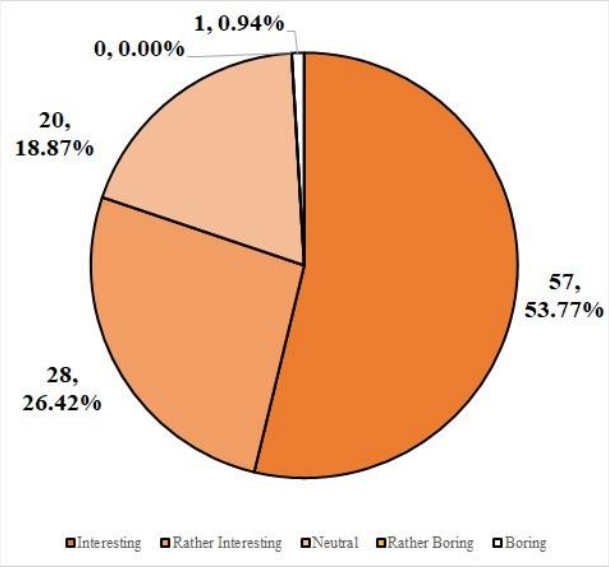

Figure 33 The comparison of boring-interesting in the group of merchants who introduced mobile payment system in shop (Mainland China)

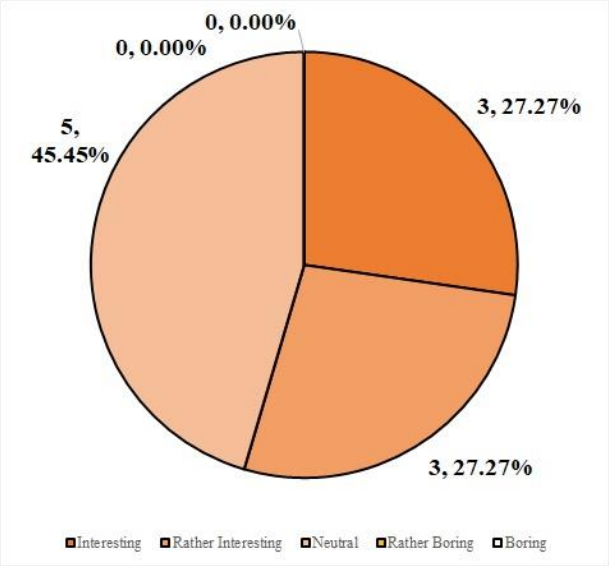

Figure 34 The comparison of boring-interesting in the group of merchants who do not introduced mobile payment system in shop (Mainland China)

4.6The results of Taiwan

(1) SEM ANALYSIS

As shown in figure 35 for the group of merchants who introduced mobile payment systems in the shop, the results show the PSI significance influence on BI and the FC significance influence on UB.

In the other hand, ss shown in figure 36, the results show that only the PSI significance influence on BI for the group of merchants who do not introduce a mobile payment system in the shop.

From theses figure, we can see the PSI has the strongest significance influence on BI in both of the group of merchants who use and do not use mobile payment in shop. In addition, FC also has the strongest significance influence on BI for the group of merchants who use mobile payment in shop.

(2) MODERATOR ANALYSIS

For the moderator effect in the group of merchants who use mobile payment system in shop,

(1) Gender has significant difference on the relationship between EE and BI ($p < 0.05$)
(2) Sad-Happy has significant difference on the relationship between PSI and BI ($p < 0.05$)
(3) Disappointing-Trustworthy has significant difference on the relationship between EE and BI ($p<0.01$) and PSI and BI ($p<0.01$)
(4) Anxious-Calm has significant difference on the relationship between EE and BI ($p<0.01$) and PSI and BI ($p<0.01$)
(5) Boring-Interesting has significant difference on the relationship between PSI and BI ($p<0.01$) and NSI and BI ($p<0.01$)

There are six influences on the significance difference ($p<0.01$). are

(1) The relationship between PSI and BI is the most influenced by three moderators of Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting.
(2) Disappointing-Trustworthy and Anxious-Calm has significant difference on the relationship between EE and BI
(3) Boring-Interesting has significant difference on the relationship between NSI and BI

There are two influences on the significance difference ($p<0.05$). are Gender has significant difference on the relationship between EE and BI and Sad-Happy has significant difference on the relationship between PSI and BI

For the moderator effect in the group of merchants who do not use mobile payment system in shop

(1) Gender has significant difference on the relationship between NSI and BI ($p<0.01$)
(2) Anxious-Calm has significant difference on the relationship between NSI and BI ($p < 0.05$)

Thus, a possible of explanation of this might be the PSI is the most importance factor for BI of Taiwanese merchants who use and do not use mobile payment system in shop. For the influence from moderator, both group of merchants have the difference influence from moderator.

Only the relationship between NSI and BI is influenced by Gender and Anxious-Calm in the group of merchants who do not use mobile payment in shop while only Boring-Interesting influence to the relationship between NSI and BI. Moreover, in the group of merchants who use mobile payment in shop, the relationship between PSI and BI is influenced by Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting. For the relationship between EE and BI is influenced by Gender, Disappointing-Trustworthy, and Anxious-Calm.

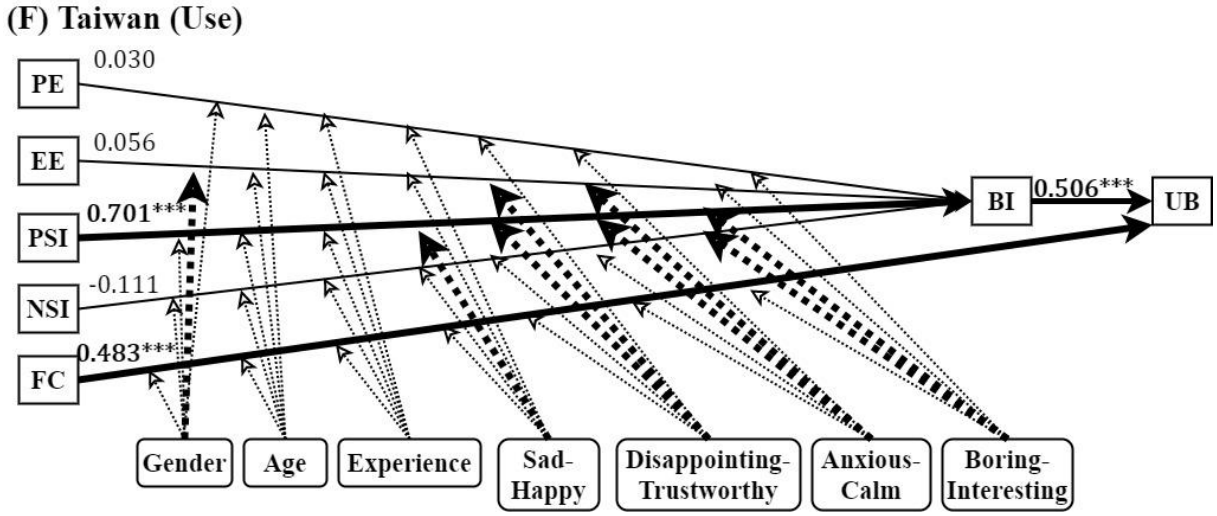

Figure 35 Extended-UTAUT result of the merchants who introduced mobile payment system in shop of Taiwan

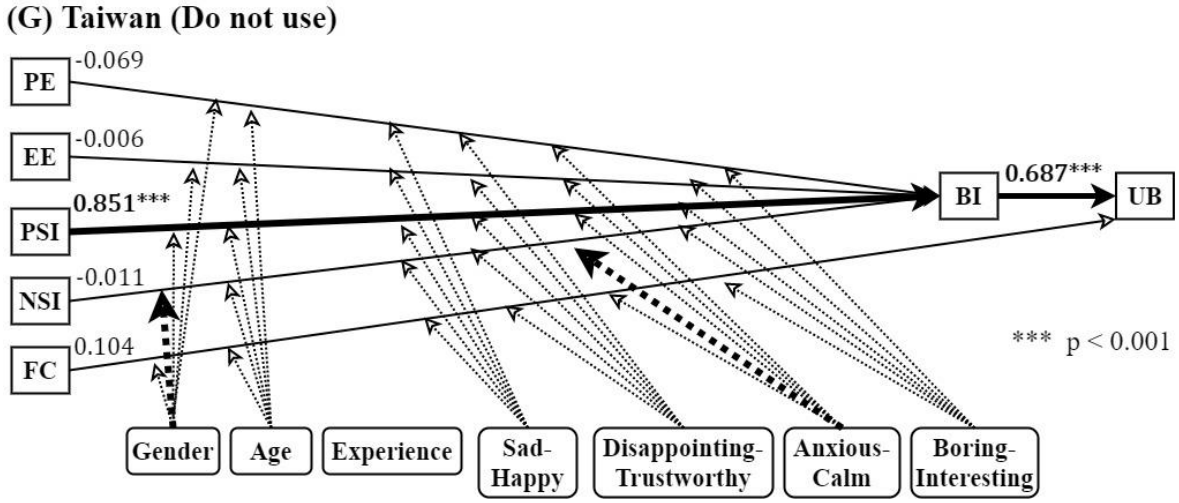

Figure 36 Extended-UTAUT result of the merchants who do not introduced mobile payment system in shop of Taiwan

Table 13 The score of agreement of the group of merchants of Taiwan who introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	2	13	34	**36**	42	Agree
		1.57%	10.24%	26.77%	**28.35%**	33.07%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	2	17	**46**	30	32	Neutral
		1.57%	13.39%	**36.22%**	23.62%	25.20%	
x3	Introducing mobile payments can save the time of changing cash.	6	9	25	39	**48**	Strongly agree
		4.72%	7.09%	19.69%	30.71%	**37.80%**	
x4	Introducing mobile payments can reduce my tasks.	6	24	**38**	34	25	Neutral
		4.72%	18.90%	**29.92%**	26.77%	19.69%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	3	2	24	44	**54**	Strongly agree
		2.36%	1.57%	18.90%	34.65%	**42.52%**	
X10	Learning to operate mobile payments is easy for me.	3	2	23	44	**55**	Strongly agree
		2.36%	1.57%	18.11%	34.65%	**43.31%**	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	1	13	**41**	32	40	Neutral
		0.79%	10.24%	**32.28%**	25.20%	31.50%	
X12	I want to be a leader in introducing mobile payments.	1	9	26	41	**50**	Strongly agree
		0.79%	7.09%	20.47%	32.28%	**39.37%**	
X14	I will use mobile payment if my competitors use it.	3	12	30	31	**51**	Strongly agree
		2.36%	9.45%	23.62%	24.41%	**40.16%**	
Negative Social Influence							

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
X20	Providing personal information to mobile payment systems is dangerous.	20	14	**47**	21	25	Neutral
		15.75%	11.02%	**37.01%**	16.54%	19.69%	
X21	Mobile payment systems are likely high problems.	13	22	**42**	29	21	Neutral
		10.24%	17.32%	**33.07%**	22.83%	16.54%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	10	10	19	34	**54**	Strongly agree
		7.87%	7.87%	14.96%	26.77%	**42.52%**	
X16	I have the necessary knowledge to introduce mobile payment.	1	8	23	41	**54**	Strongly agree
		0.79%	6.30%	18.11%	32.28%	**42.52%**	
X17	I have taken guidance to start a mobile payment service.	0	5	25	39	**58**	Strongly agree
		0.00%	3.94%	19.69%	30.71%	**45.67%**	
X19	Mobile payments can be used in combination with other payment services.	2	4	18	40	**63**	Strongly agree
		1.57%	3.15%	14.17%	31.50%	**49.61%**	
Behavioral Intention							
X22	I want to use mobile payments.	0	8	21	37	**61**	Strongly agree
		0.00%	6.30%	16.54%	29.13%	**48.03%**	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	0	10	21	41	**55**	Strongly agree
		0.00%	7.87%	16.54%	32.28%	**43.31%**	
Use Behavior							
X24	I want customers to use mobile payments.	6	20	31	26	**44**	Strongly agree
		4.72%	15.75%	24.41%	20.47%	**34.65%**	
X25	I would recommend mobile payments to the people around me.	2	9	32	38	**46**	Strongly agree
		1.57%	7.09%	25.20%	29.92%	**36.22%**	

The score of the level of agreement in every question item of the group of Taiwanese merchants who introduced mobile payment system in the shop is shown in Table 13.

From the viewpoint of the PE, the Taiwanese merchants quite agree that the introduction of mobile payments in the shop will make work more convenient. But for the point of view of the introduction of mobile payments will help to finish the job quickly and introducing mobile payments can reduce their tasks they feel neutral. In contrast, introducing mobile payments can save the time of changing cash, they quite agree.

In the agreement about the EE, the Taiwanese merchants quite strongly agree about the ease for them to become skillful of using and learning to operate mobile payment.

Opinion about the PSI, the Taiwanese merchants quite feel neutral about the people who influence their behavior recommend that they should use mobile payments. But they quite strongly agree about a leader in introducing mobile payments and they will use mobile payment if their competitors use it.

From the perspective of the NSI, the Taiwanese merchants quite feel neutral about providing personal information to mobile payment systems is dangerous and mobile payment systems are likely high problems.

In the issue about the FC, the Taiwanese merchants quite strongly agree that they have the necessary equipment and knowledge to introduce mobile payments. Mobile payments can be used in combination with other payment services, and the taking guidance to start a mobile payment service also quite strongly agree.

The attitude about the BI, the Taiwanese merchants quite strongly agree that they want to use mobile payment and plan to use mobile payments in the near future or continue to use it in the future.

Finally, in the opinion about the UB, the Taiwanese merchants quite strongly agree about they want customers to use mobile payments and they would recommend mobile payments to the people around them.

Table 14 The score of agreement of the group of merchants of Taiwan who do not introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	5	4	**30**	11	2	Neutral
		9.62%	7.69%	**57.69%**	21.15%	3.85%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	5	6	**26**	12	3	Neutral
		9.62%	11.54%	**50.00%**	23.08%	5.77%	
x3	Introducing mobile payments can save the time of changing cash.	4	6	**23**	13	6	Neutral
		7.69%	11.54%	**44.23%**	25.00%	11.54%	
x4	Introducing mobile payments can reduce my tasks.	8	8	**24**	10	2	Neutral
		15.38%	15.38%	**46.15%**	19.23%	3.85%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	5	6	**16**	**16**	9	Neutral-Agree
		9.62%	11.54%	**30.77%**	**30.77%**	17.31%	
X10	Learning to operate mobile payments is easy for me.	5	6	**18**	15	8	Neutral
		9.62%	11.54%	**34.62%**	28.85%	15.38%	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	4	7	**25**	12	4	Neutral
		7.69%	13.46%	**48.08%**	23.08%	7.69%	
X12	I want to be a leader in introducing mobile payments.	6	3	**27**	13	3	Neutral
		11.54%	5.77%	**51.92%**	25.00%	5.77%	
X14	I will use mobile payment if my competitors use it.	4	13	**20**	9	6	Neutral
		7.69%	25.00%	**38.46%**	17.31%	11.54%	

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Negative Social Influence							
X20	Providing personal information to mobile payment systems is dangerous.	2	5	**20**	12	13	Neutral
		3.85%	9.62%	**38.46%**	23.08%	25.00%	
X21	Mobile payment systems are likely high problems.	2	7	**24**	13	6	Neutral
		3.85%	13.46%	**46.15%**	25.00%	11.54%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	15	**12**	**12**	7	6	Not Agree-Neutral
		28.85%	**23.08%**	**23.08%**	13.46%	11.54%	
X16	I have the necessary knowledge to introduce mobile payment.	11	7	**22**	7	5	Neutral
		21.15%	13.46%	**42.31%**	13.46%	9.62%	
X17	I have taken guidance to start a mobile payment service.	8	4	**22**	14	4	Neutral
		15.38%	7.69%	**42.31%**	26.92%	7.69%	
X19	Mobile payments can be used in combination with other payment services.	6	4	**23**	12	7	Neutral
		11.54%	7.69%	**44.23%**	23.08%	13.46%	
Behavioral Intention							
X22	I want to use mobile payments.	4	7	**22**	11	8	Neutral
		7.69%	13.46%	**42.31%**	21.15%	15.38%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	5	9	**23**	9	6	Neutral
		9.62%	17.31%	**44.23%**	17.31%	11.54%	
Use Behavior							
X24	I want customers to use mobile payments.	9	9	**26**	5	3	Neutral
		17.31%	17.31%	**50.00%**	9.62%	5.77%	
X25	I would recommend mobile payments to the people around me.	9	10	**22**	7	4	Neutral
		17.31%	19.23%	**42.31%**	13.46%	7.69%	

The score of the level of agreement in every question item of the group of Taiwanese merchants who do not introduce mobile payment systems in the shop is shown in Table 14.

For the opinion about the PE, the Taiwanese merchants quite feel neutral about introducing mobile payments in the shop making work more convenient. They also quite feel neutral that the introduction of mobile payments will help to finish the job quickly and to introduce mobile payments can save the time of changing cash and reduce their tasks. Moreover, they quite feel neutral-agree that introducing mobile payments can save the time of changing cash.

From the perspective of the EE, the Taiwanese merchants quite feel neutral-agree about the easy for them to become skillful of using mobile payment. But they quite feel neutral about learning to operate mobile payment.

From the viewpoint of the PSI, the Taiwanese merchants quite feel neutral about the people who influence their behavior recommend that they should use mobile payments and they will use mobile payment if their competitors use it. They also feel neutral about they want to be leader in introducing mobile payments.

In the agreement about the NSI, the Taiwanese merchants quite feel neutral about providing personal information to mobile payment systems is dangerous and mobile payment systems are likely high problems. For the opinion about the FC, the Taiwanese merchants quite feel disagree-neutral about they have the necessary equipment to introduce mobile payments. But they quite feel neutral about they have the necessary knowledge to introduce mobile payment, they have taken guidance to start a mobile payment service and mobile payments can be used in combination with other payment services.

In the attitude about the BI, the Taiwanese merchants quite feel neutral about they want to use mobile payment and planning to use mobile payments in the near future or continue to use it in the future. Moreover, in the same level of the UB agreement, the merchants seem to feel neutral about they want customers to use mobile payments and would recommend mobile payments to the people around them.

The average score of seven constructs of the Extended-UTAUT model for the groups of Taiwanese merchants who use and do not use mobile payment systems in the shop are shown in figure 37 and figure 38, respectively. In figure 37, the Taiwanese merchants who use mobile payment systems in the shop agree with PE, EE, PSI, FC, BI, and UB with an average score of 4.35, 4.27, 4.18, 4.10, 4.30, 4.18, respectively. Except for the NSI with an average score of 3.04, that means the group

of merchants who use mobile payment systems in the shop feel neutral. In figure 38, the average score of all constructs of PE, EE, PSI, NSI, FC, BI, and UB are 3.41, 3.59, 3.55, 3.18, 3.45, 3.14, and 3.41, respectively. This means the group of Taiwanese merchants who do not use mobile payment systems in the shop feel neutral.

From the comparison of sad-happy of the Taiwanese merchants that is shown in Figure 39 and Figure 40, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Taiwan. As the result of the Chi-square test, Chinese data have significant differences (p=0.000). From the graphs in Figure 39 and Figure 40, we can see that many Taiwanese merchants who use and do not use mobile payment systems in shops only feel neutral about using mobile payment systems.

From the comparison of disappointing-trustworthy of the Taiwanese merchants that is shown in figure 41 and figure 42, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Taiwanese data have significant differences (p=0.000). From the graphs in figure 41 and figure 42, we can see that many Taiwanese merchants who use mobile payment systems in shops feel rather happy. Meanwhile, the Taiwanese merchants who do not use mobile payment systems in shops feel neutral about using mobile payment systems.

From the comparison of anxious-calm of the Taiwanese merchants that is shown in figure 43 and figure 44, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Taiwan. As the result of the Chi-square test, Taiwanese data have significant differences (p=0.000). From the graphs in figure 43 and figure 44, we can see that many Taiwanese merchants who use mobile payment systems in shops feel happy. Meanwhile, the merchants who do not use mobile payment systems in shops feel neutral.

From the comparison of boring-interesting of the Taiwanese merchants that is shown in figure 45 and figure 46, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Taiwan. As the result of the Chi-square test, Taiwanese data have significant differences (p=0.000). From the graphs in figure 45and figure 46, we can see that many Taiwanese merchants who use mobile

payment systems in shops feel interesting. Meanwhile, the merchants who do not use mobile payment systems in shops feel neutral.

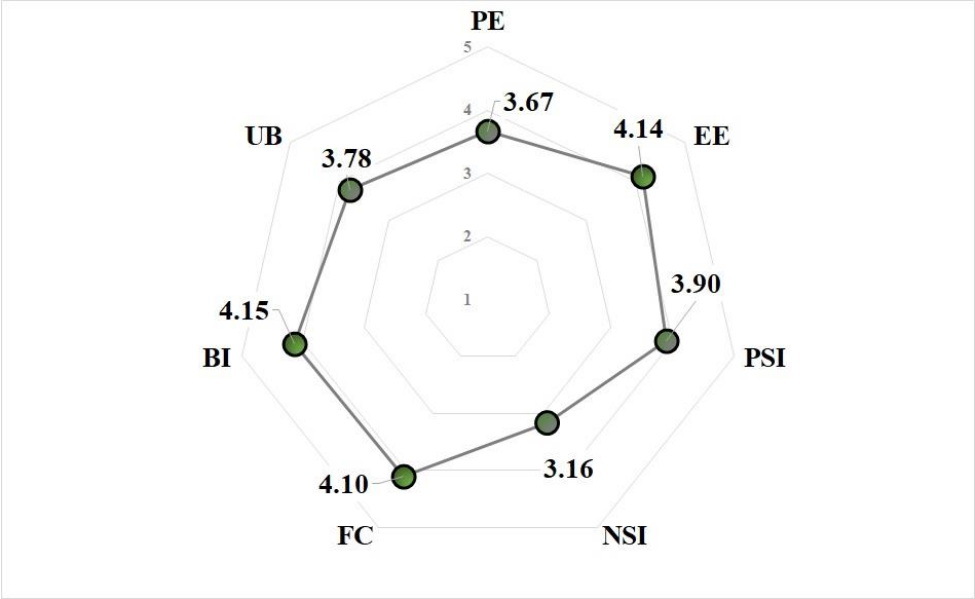

Figure 37 Average of seven constructs of the merchants who introduced mobile payment system in shop from Taiwan

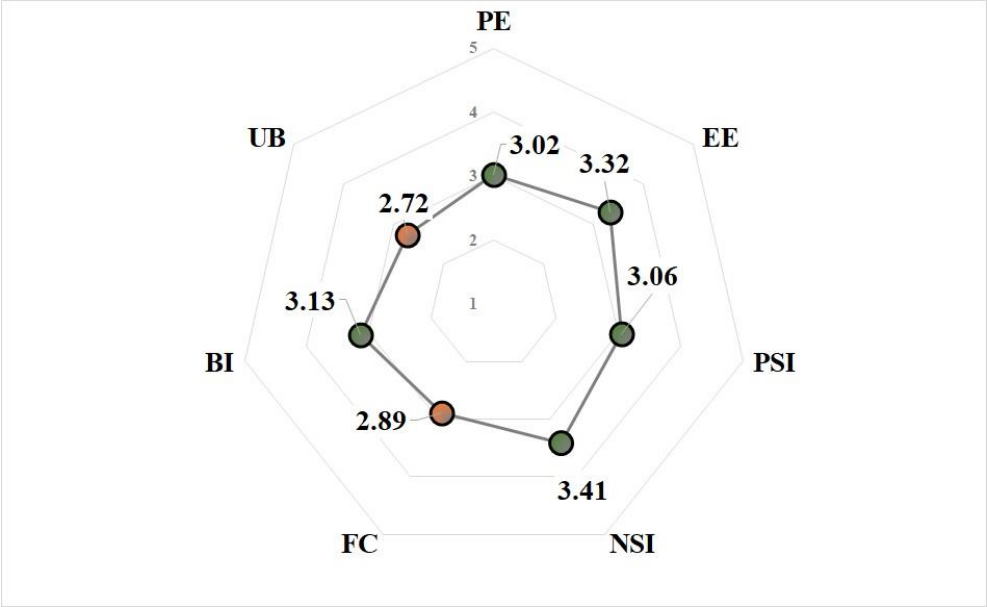

Figure 38 Average of seven constructs of the merchants who do not introduced mobile payment system in shop from Taiwan

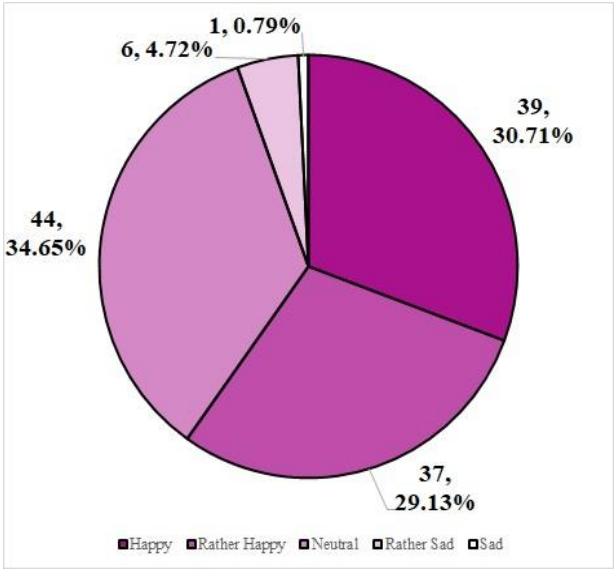

Figure 39 The comparison of sad-happy in the group of merchants who introduced mobile payment system in shop (Taiwan)

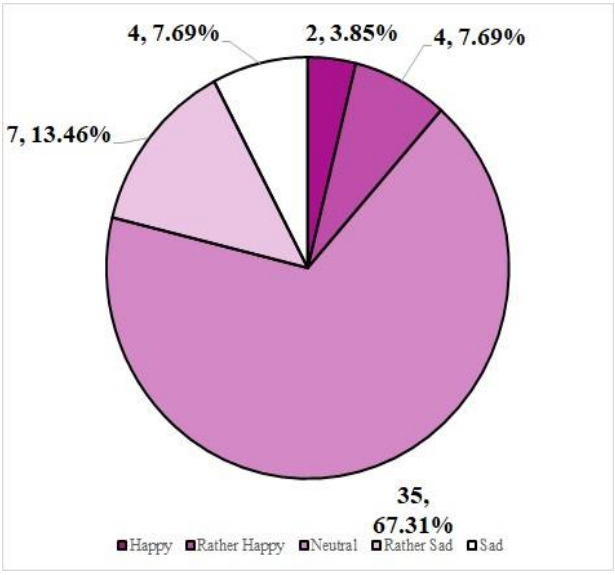

Figure 40 The comparison of sad-happy in the group of merchants who do not introduced mobile payment system in shop (Taiwan)

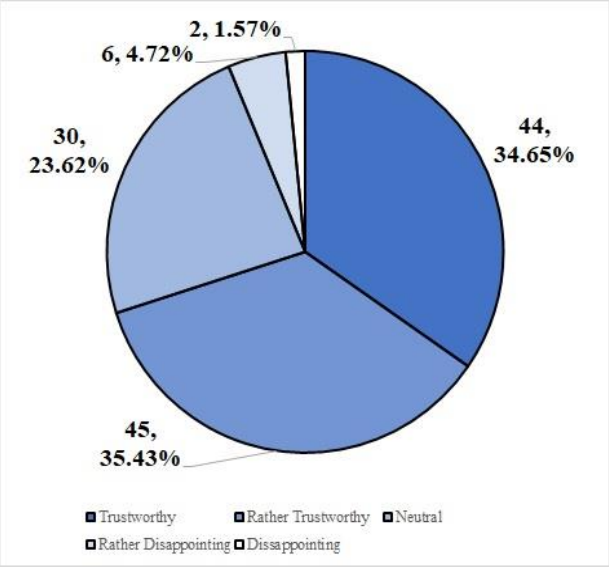

Figure 41 The comparison of disappointing-trustworthy in the group of merchants who introduced mobile payment system in shop (Taiwan)

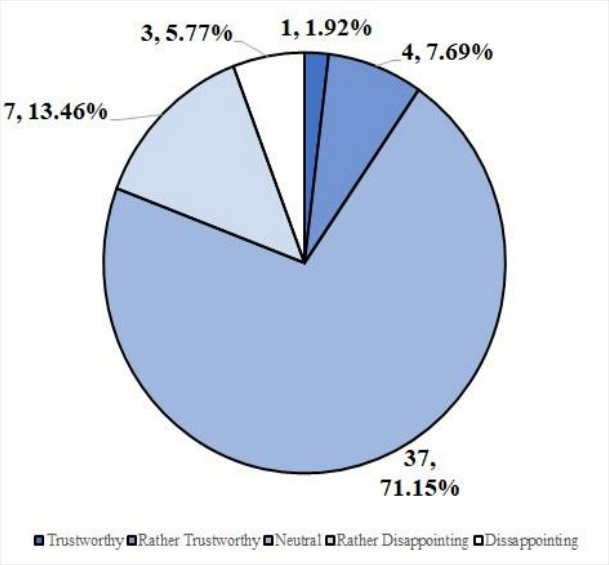

Figure 42 The comparison of disappointing-trustworthy in the group of merchants who do not introduced mobile payment system in shop (Taiwan)

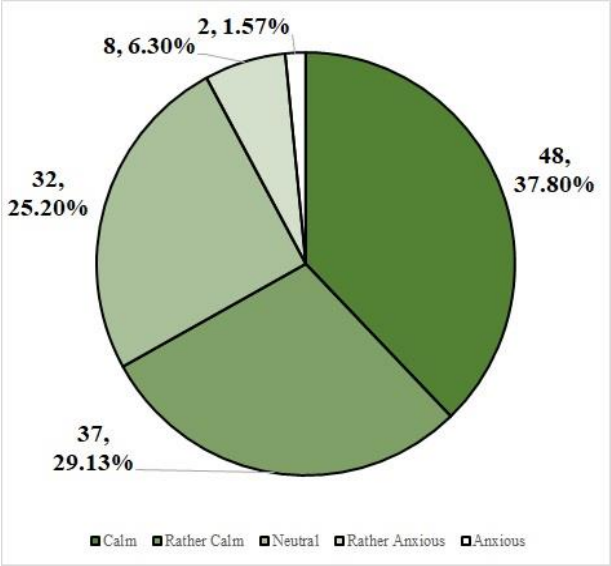

Figure 43 The comparison of anxious-clam in the group of merchants who introduced mobile payment system in shop (Taiwan)

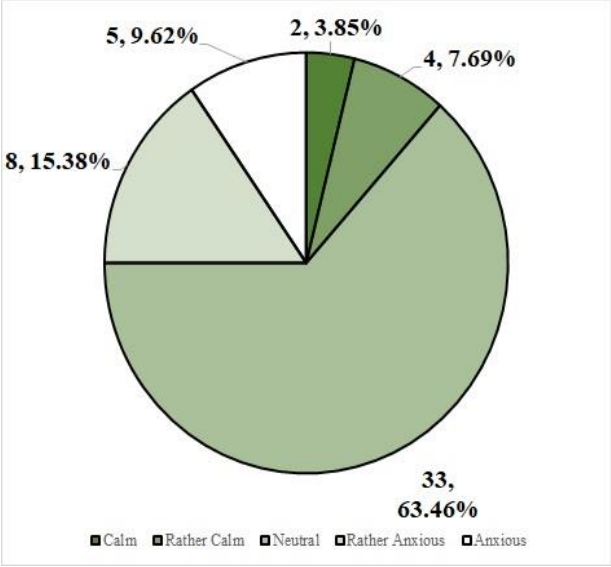

Figure 44 The comparison of anxious-clam in the group of merchants who do not introduced mobile payment system in shop (Taiwan)

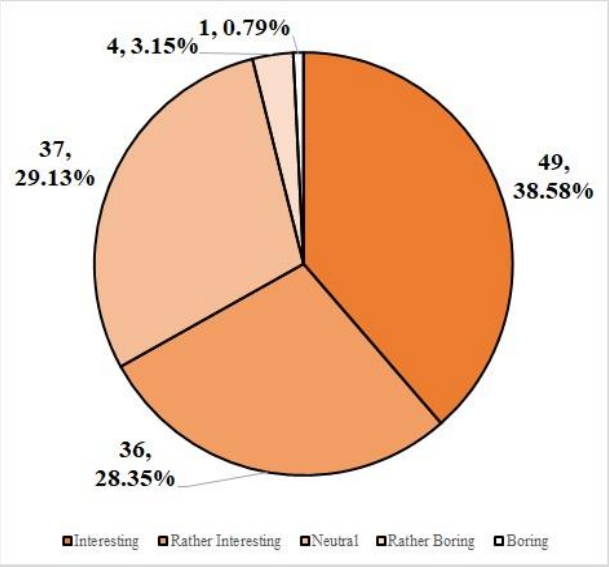

Figure 45 The comparison of boring-interesting in the group of merchants who introduced mobile payment system in shop (Taiwan)

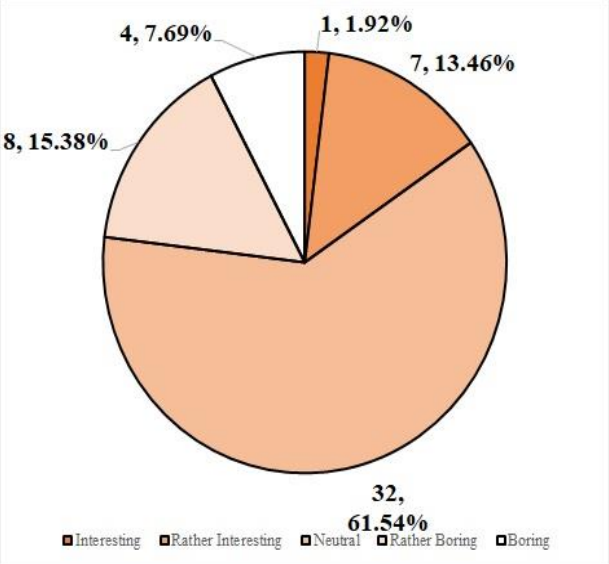

Figure 46 The comparison of boring-interesting in the group of merchants who do not introduced mobile payment system in shop (Taiwan)

4.7The results of Thailand

(1) SEM ANALYSIS

As shown in Figure 47, for the group of merchants who introduced mobile payment systems in the shop, the results show the NSI has significant difference on BI. Moreover, the FC has highest significant difference UB.

On the other hand, as shown in figure 48 for the group of merchants who do not introduce a mobile payment system in the shop, the results show the PSI has significant difference to BI. Moreover, the FC affects UB.

(2) MODERATOR ANALYSIS

For the results of the moderator effect in the group of Thai merchants who use mobile payment system in shop,

(4) Gender has significant difference on the relationship between FC and UB ($p < 0.01$).

(5) Age has significant difference on four relationships: (1) The relationship between PE and BI ($p < 0.01$), (2) The relationship between PSI and BI ($p < 0.01$), (3) The relationship between NSI and BI ($p < 0.01$), and (4) The relationship between FC and UB

(6) Sad-Happy has significant difference on three relationships (1) the relationship between PE and BI ($p < 0.05$), (2) the relationship between PSI and BI ($p < 0.01$), and (3) the relationship between FC and UB ($p < 0.001$).

(7) Disappointing-Trustworthy has significant difference on two relationships (1) the relationship between PE and BI ($p < 0.05$) (2) the relationship between PSI and BI ($p < 0.05$), and (3) the relationship between FC and UB ($p < 0.05$).

(8) Anxious-Calm has significant difference on three relationships (1) the relationship between PE and BI ($p < 0.05$) (2) the relationship between PSI and BI ($p < 0.01$) and (3) the relationship between FC and UB ($p < 0.01$).

(9) Boring-Interesting has significance difference on four relationships (1) the relationship between PE and BI ($p < 0.05$), (2) the relationship between EE and BI ($p < 0.05$), (3) the relationship between PSI and BI ($p < 0.05$), and (4) the relationship between FC and UB ($p < 0.001$).

Thus, the strongest influence (significant difference ($p < 0.001$)) on the relationships are Sad-Happy and Boring-Interesting influence to the relationship between FC and UB.

There are seven influences on the significance difference ($p < 0.01$). are

(1) Gender influence on the relationship between FC and UB

(2) Age influence on the relationship between PSI and BI

(3) Age influence on the relationship between NSI and BI

(4) Anxious-Calm influence on the relationship between PSI and BI

(5) Anxious-Calm influence on the relationship between FC and UB

There are eight influence on the significance difference ($p < 0.05$) are

(1) Sad-Happy influence on the relationship between PE and BI

(2) Disappointing-Trustworthy influence on the relationship between PE and BI, PSI and BI and FC and UB

(3) Anxious-Calm influence on the relationship between PE and BI

(4) Boring-Interesting influence on the relationship between PE and BI, EE and BI, and PAI and UB.

The relationship between PE and BI, PSI and BI, and FC and UB maybe the most influence by the moderators especially the emotions.

For the results of the moderator effect in the group of Thai merchants who do not use mobile payment system in shop

(4) Gender has significant difference on two relationship (1) the relationship between EE and BI ($p < 0.001$), (2) the relationship between FC and UB ($p < 0.05$).

(5) Age has significant difference on two relationships (1) the relationship between PE and BI ($p < 0.05$) and (2) the relationship between PSI and BI ($p < 0.05$).

(6) Sad-Happy has significant difference on every relationship (1) the relationship between PE and BI ($p < 0.05$) (2) the relationship between EE and BI ($p < 0.001$) (3) the relationship between PSI and BI ($p < 0.05$) (4) the relationship between NSI and BI ($p < 0.05$), and (5) the relationship between FC and UB ($p < 0.01$)

(7) Disappointing-Trustworthy has significant differences in three relationships (1) the relationship between EE and BI ($p < 0.001$), (2)

the relationship between PSI and BI ($p < 0.05$) , and (3) the relationship between FC and UB ($p < 0.01$).

(8) Anxious-Clam has significant difference in every relationship (1) the relationship between PE and BI ($p < 0.05$) (2) the relationship between EE and BI ($p < 0.001$) (3) the relationship between PSI and BI ($p < 0.05$) (4) the relationship between NSI and BI ($p < 0.05$), and (5) the relationship between FC and UB ($p < 0.01$)

(9) Boring-Interesting has significant differences in three relationships (1) the relationship between EE and BI ($p < 0.01$), (2) the relationship between PSI and BI ($p < 0.05$), and (3) the relationship between FC and UB ($p < 0.01$).

Thus, the strongest influence (significant difference ($p<0.001$)) on the relationships are (1) Gender, Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting influence on the relationship between EE and BI.

The relationship between FC and UB is influenced with the significance difference ($p < 0.01$) by Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting.

There are eight influence on the significance difference ($p<0.05$) are

(1) Gender influence on the relationship between FC and UB
(2) Age influence on the relationship between PE and BI and PSI and BI
(3) Sad-Happy influence on the relationship between PE and BI, PSI and BI, and NSI and BI
(4) Disappointing-Trustworthy influence on the relationship between PSI and BI
(5) Anxious-Calm influence on the relationship between PSI and BI and NSI and BI
(6) Boring-Interesting influence on the relationship between PSI and BI

The relationship between EE and BI, PSI and BI, and FC and UB maybe the most influence by the moderators especially the emotions.

Thus, the FC strongest influence to UB in groups of Thai merchants who use mobile payment in shop and do not use mobile payment system in shop. However, the NSI influence to BI in the Thai merchant who use mobile payment in shop but the PSI influence to BI in the group of Thai merchants who do not use mobile payment in shop.

For the influenced from the moderators in both group of Thai merchants who use and do not use mobile payment in shop, the relationship between PE and BI is influenced by Age, Sad-Happy, and Anxious-Calm. The relationship between EE and BI is influenced by Boring-Interesting. The relationship between PSI and BI is influenced by Age, Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting. The relationship between FC and UB is influenced by Gender, Sad-Happy, Anxious-Calm, and Boring-Interesting.

For the different result of the moderators between two groups, in the group of merchants who use mobile payment system in shop, Gender influences to the relationship between EE and BI. The relationship between NSI and BI and the relationship between FC and UB are influence by Age. And Boring-Interesting influence to the relationship between PE and BI.

For the other group, Gender influences the relationship between EE and BI. Sad-Happy and Anxious-Calm influence the relationship between EE and BI and the relationship between NSI and BI. Disappointing-Trustworthy influences the relationship between EE and BI.

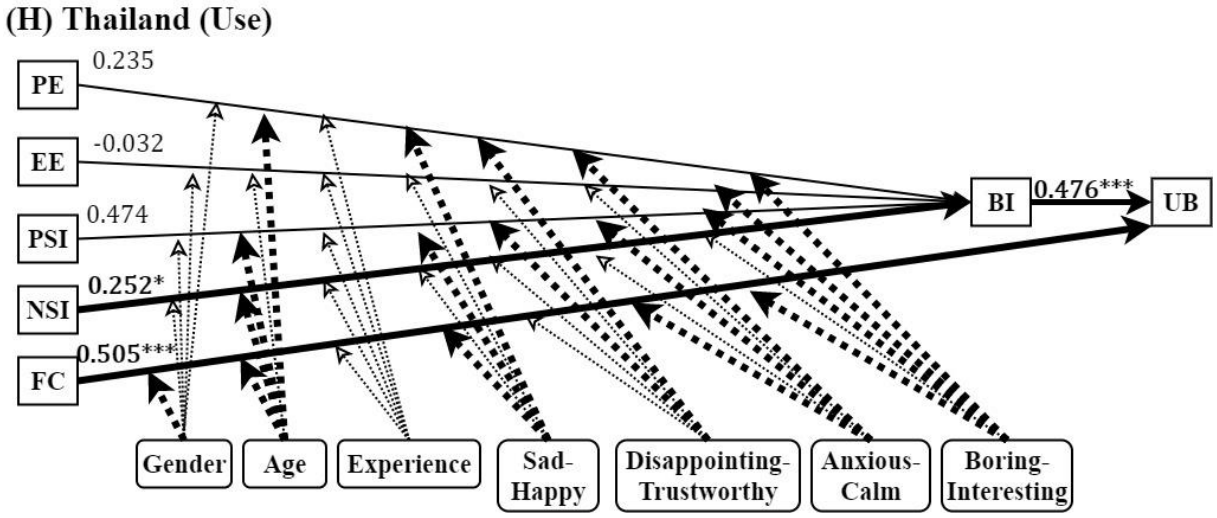

Figure 47 Extended-UTAUT result of the merchants who introduced mobile payment system in shop of Thailand

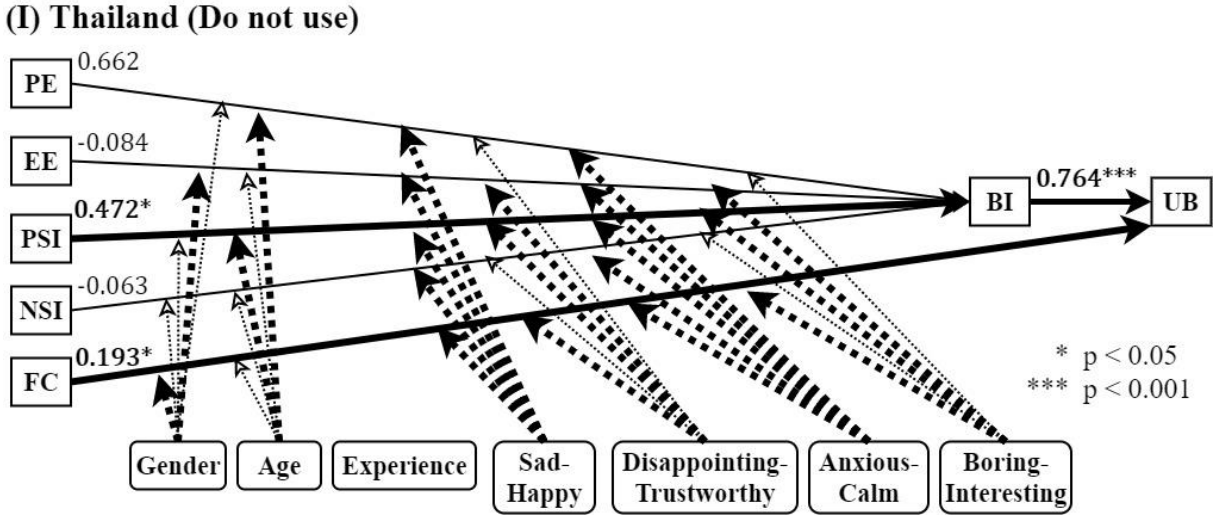

Figure 48 Extended-UTAUT result of the merchants who do not introduced mobile payment system in shop of Thailand

Table 15 The score of agreement of the group of merchants of Thailand who introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	1	3	7	**128**	76	Agree
		0.47%	1.40%	3.26%	**59.53%**	35.35%	
x2	I think the introduction of mobile payments will help to finish the job quickly.	0	3	4	**127**	81	Agree
		0.00%	1.40%	1.86%	**59.07%**	37.67%	
x3	Introducing mobile payments can save the time of changing cash.	1	3	7	**131**	73	Agree
		0.47%	1.40%	3.26%	**60.93%**	33.95%	
x4	Introducing mobile payments can reduce my tasks.	1	2	5	**120**	87	Agree
		0.47%	0.93%	2.33%	**55.81%**	40.47%	
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	0	7	16	**123**	69	Agree
		0.00%	3.26%	7.44%	**57.21%**	32.09%	
X10	Learning to operate mobile payments is easy for me.	0	6	20	**118**	71	Agree
		0.00%	2.79%	9.30%	**54.88%**	33.02%	
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	0	3	6	**135**	71	Agree
		0.00%	1.40%	2.79%	**62.79%**	33.02%	
X12	I want to be a leader in introducing mobile payments.	0	1	23	**117**	74	Agree
		0.00%	0.47%	10.70%	**54.42%**	34.42%	
X14	I will use mobile payment if my competitors use it.	0	4	3	**144**	64	Agree
		0.00%	1.86%	1.40%	**66.98%**	29.77%	
Negative Social Influence							

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
X20	Providing personal information to mobile payment systems is dangerous.	0	2	17	**116**	80	Agree
		0.00%	0.93%	7.91%	**53.95%**	37.21%	
X21	Mobile payment systems are likely high problems.	0	3	21	**116**	75	Agree
		0.00%	1.40%	9.77%	**53.95%**	34.88%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	1	2	6	**141**	65	Agree
		0.47%	0.93%	2.79%	**65.58%**	30.23%	
X16	I have the necessary knowledge to introduce mobile payment.	0	1	6	**122**	86	Agree
		0.00%	0.47%	2.79%	**56.74%**	40.00%	
X17	I have taken guidance to start a mobile payment service.	0	1	3	**121**	90	Agree
		0.00%	0.47%	1.40%	**56.28%**	41.86%	
X19	Mobile payments can be used in combination with other payment services.	0	1	4	**125**	85	Agree
		0.00%	0.47%	1.86%	**58.14%**	39.53%	
Behavioral Intention							
X22	I want to use mobile payments.	0	2	11	**127**	75	Agree
		0.00%	0.93%	5.12%	**59.07%**	34.88%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	0	3	10	**133**	69	Agree
		0.00%	1.40%	4.65%	**61.86%**	32.09%	
Use Behavior							
X24	I want customers to use mobile payments.	0	3	3	**129**	80	Agree
		0.00%	1.40%	1.40%	**60.00%**	37.21%	
X25	I would recommend mobile payments to the people around me.	1	2	11	**117**	84	Agree
		0.47%	0.93%	5.12%	**54.42%**	39.07%	

The score of the level of agreement in every question item of the group of Thais merchants who introduced a mobile payment system in the shop are shown in Table 15.

From the agreement of the PE, the merchants quite agree with every question that introducing mobile payments in the shop will make work more convenient, mobile payments will help finish the job quickly, introducing mobile payments can save the time of changing cash and reduce their tasks.

In the issue of the EE, They also entirely agree with the EE that the merchants think it is easy for them to become skilful in using and learning to operate mobile payment.

From the attitude about the PSI, they also agree that the people who influence their behaviour recommend that they use mobile payments. So they seem to agree to be a leader in introducing mobile payments, and they will use mobile payment if their competitors use it.

For the viewpoint of the NSI, they quite agree with the NSI that providing personal information to mobile payment systems is dangerous, and mobile payment systems are likely high problems.

For the opinion about the FC, the merchants entirely agree that they have the necessary equipment and knowledge to introduce mobile payments. They have taken guidance to start a mobile payment service, and mobile payments can be combined with other payment services.

Furthermore, they also quite agree with the BI that they want to use mobile payment and plan to use mobile payments soon or continue to use it in the future.

Finally, In the perspective of the UB, they still quite agree with the UB that they want customers to use mobile payments and would recommend mobile payments to the people around them.

Table 16 The score of agreement of the group of merchants of Thailand who do not introduced mobile payment system in shop

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	Not Agree	Neutral	Agree	Strongly Agree	
Performance Expectancy							
x1	I think the introduction of mobile payments in the shop will make work more convenient.	1 1.72%	2 3.45%	8 13.79%	**45** **77.59%**	2 3.45%	Agree
x2	I think the introduction of mobile payments will help to finish the job quickly.	1 1.72%	0 0.00%	7 12.07%	**47** **81.03%**	3 5.17%	Agree
x3	Introducing mobile payments can save the time of changing cash.	1 1.72%	2 3.45%	8 13.79%	**44** **75.86%**	3 5.17%	Agree
x4	Introducing mobile payments can reduce my tasks.	1 1.72%	1 1.72%	8 13.79%	**42** **72.41%**	6 10.34%	Agree
Effort Expectancy							
X9	It's easy for me to become skillful of using mobile payment.	3 5.17%	1 1.72%	4 6.90%	**47** **81.03%**	3 5.17%	Agree
X10	Learning to operate mobile payments is easy for me.	4 6.90%	3 5.17%	5 8.62%	**43** **74.14%**	3 5.17%	Agree
Positive Social Influence							
X11	People who influence my behavior recommend that you should use mobile payments.	1 1.72%	1 1.72%	7 12.07%	**46** **79.31%**	3 5.17%	Agree
X12	I want to be a leader in introducing mobile payments.	2 3.45%	2 3.45%	7 12.07%	**46** **79.31%**	1 1.72%	Agree
X14	I will use mobile payment if my competitors use it.	1 1.72%	1 1.72%	9 15.52%	**40** **68.97%**	7 12.07%	Agree

Item no.	Question item	The level of agreement					Meaning
		Strongly Not Agree	**Not Agree**	**Neutral**	**Agree**	**Strongly Agree**	
Negative Social Influence							
X20	Providing personal information to mobile payment systems is dangerous.	1	1	9	**45**	2	Agree
		1.72%	1.72%	15.52%	**77.59%**	3.45%	
X21	Mobile payment systems are likely high problems.	1	2	7	**44**	4	Agree
		1.72%	3.45%	12.07%	**75.86%**	6.90%	
Facilitating Condition							
X15	I have the necessary equipment to introduce mobile payments.	1	2	8	**41**	6	Agree
		1.72%	3.45%	13.79%	**70.69%**	10.34%	
X16	I have the necessary knowledge to introduce mobile payment.	1	3	5	**46**	3	Agree
		1.72%	5.17%	8.62%	**79.31%**	5.17%	
X17	I have taken guidance to start a mobile payment service.	1	1	5	**48**	3	Agree
		1.72%	1.72%	8.62%	**82.76%**	5.17%	
X19	Mobile payments can be used in combination with other payment services.	1	1	6	**45**	5	Agree
		1.72%	1.72%	10.34%	**77.59%**	8.62%	
Behavioral Intention							
X22	I want to use mobile payments.	1	2	6	**45**	4	Agree
		1.72%	3.45%	10.34%	**77.59%**	6.90%	
X23	I plan to use mobile payments in the near future. Or, continue to use it in the future.	1	3	3	**48**	3	Agree
		1.72%	5.17%	5.17%	**82.76%**	5.17%	
Use Behavior							
X24	I want customers to use mobile payments.	1	1	7	**44**	5	Agree
		1.72%	1.72%	12.07%	**75.86%**	8.62%	
X25	I would recommend mobile payments to the people around me.	1	1	6	**45**	5	Agree
		1.72%	1.72%	10.34%	**77.59%**	8.62%	

The score of the level of agreement in every question item of the group of Thais merchants who do not introduce mobile payment system in the shop are shown in Table 16.

From the perspective of the PE, the Thai merchants quite agree that the introduction of mobile payments in the shop will make work more convenient. The introduction of mobile payments will help finish the job quickly and introducing mobile payments can save the time of changing cash reduce their tasks. Moreover, they seem quite agree that introducing mobile payments can save the time of changing cash.

For the opinion of the EE, the Thai merchants quite agree about the easy for them to become skillful of using mobile payment. And they seem to be agree about learning to operate mobile payment.

Regarding the PSI issue, the Thai merchants quite agree that the people who influence their behavior recommend that they should use mobile payments and use mobile payment if their competitors use it. However, they also quite agree that they want to be leader in introducing mobile payments.

From the attitude about the NSI, the Thai merchants quite agree about providing personal information to mobile payment systems is dangerous and mobile payment systems are likely high problems.

Opinion about the FC, the Thai merchants quite agree about they have the necessary equipment to introduce mobile payments.

Moreover, they also quite agree that they have the necessary knowledge to introduce mobile payment. They have taken guidance to start a mobile payment service and mobile payments can be used in combination with other payment services.

In the agreement about the BI, the Thai merchants quite agree that they want to use mobile payment and plan to use mobile payments in the near future or continue to use it in the future. In the same way with the UB, the merchants quite agree about they want customers to use mobile payments they would recommend mobile payments to the people around them.

The average score of seven constructs of the Extended-UTAUT model for the groups of Thais merchants who use and do not use mobile payment systems in the shop is shown in figure 49 and figure 50, respectively.

In figure 49, the group of Thais merchants who use mobile payment systems in the shop seem to agree with PE, EE, PSI, NSI, FC, BI, and UB with the average score 4.31, 4.18, 4.25, 4.23, 4.34, 4.26, and 4.32, respectively.

In figure 50, the average score of all constructs of PE, EE, PSI, NSI, FC, BI, and UB are 3.83, 3.72, 3.82, 3.81, 3.86, 3.84, and 3.89, respectively. This means the group of Taiwanese merchants who do not use mobile payment system in the shop feel neutral.

From the comparison of sad-happy of the Thais merchants that is shown in figure 51 and figure 52, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Taiwan. As the result of the Chi-square test, Taiwanese data have significant differences (p=0.000). From the graphs in figure 51 and figure 52, we can see that many Taiwanese merchants who use mobile payment systems in shops feel rather happy. Meanwhile, the merchants who do not use mobile payment systems in shops only feel neutral about using mobile payment systems irrespective of introducing or not introducing them.

From the comparison of disappointing-trustworthy of the Thai merchants that is shown in figure 53 and figure 54, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for each country. As the result of the Chi-square test, Thais data have significant differences (p=0.000). From the graphs in figure 53 and figure 54, we can see that many Thais merchants who use and do not use mobile payment systems in the shop feel rather trustworthy.

From the comparison of anxious-calm of the Thais merchants that is shown in figure 55 and figure 56, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Thailand. As the result of the Chi-square test, Thais data have significant differences (p=0.000). From the graphs in figure 55 and figure 56, we can see that many Thais merchants who use mobile payment systems in shops feel happy. Meanwhile, the merchants who do not use mobile payment systems in shops feel neutral.

From the comparison of boring-interesting of the Thais merchants that is shown in figure 57 and figure 58, the data of participants who are using mobile payments and the data of participants who are not using mobile payments are compared by using the Chi-square test for Thailand. As the result of the Chi-square test, Thais data have significant differences (p=0.000). From the graphs in figure 57 and figure 58, we can see that many Thais merchants who use mobile payment systems in shops feel interesting. Meanwhile, the merchants who do not use mobile payment systems in shops think neutral.

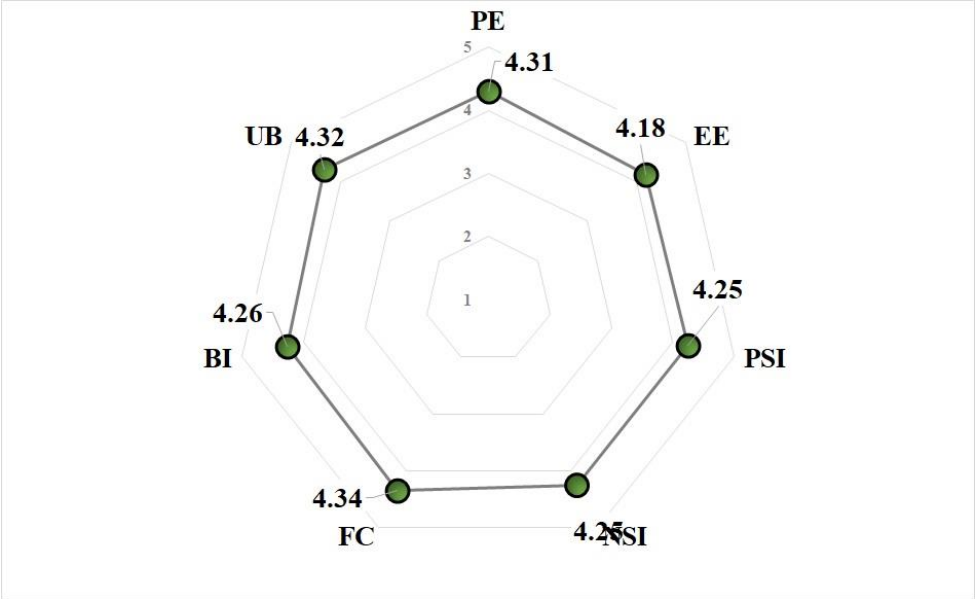

Figure 49 Average of seven constructs of the merchants who introduced mobile payment system in shop from Thailand

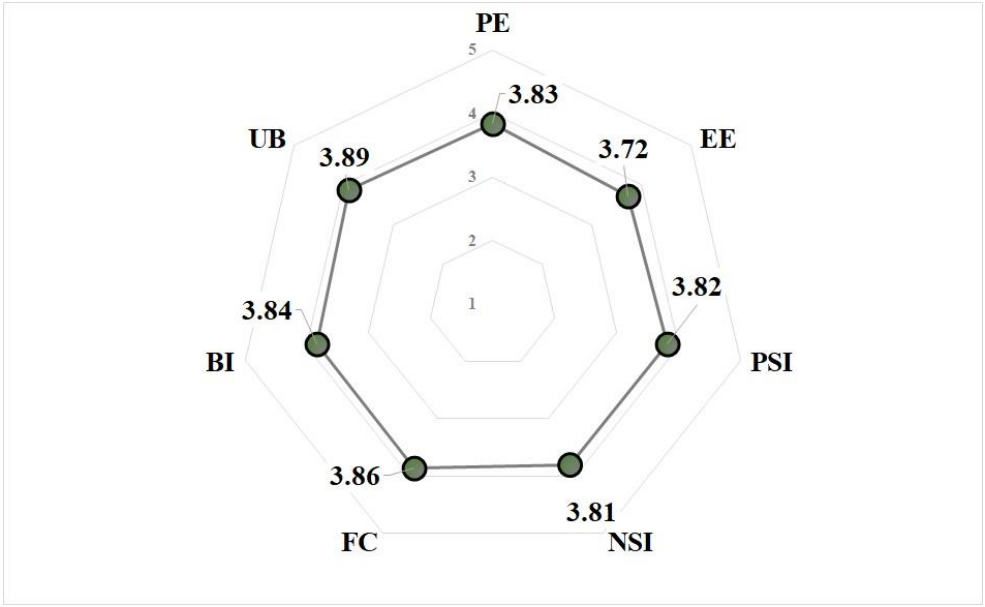

Figure 50 Average of seven constructs of the merchants who do not introduced mobile payment system in shop from Thailand

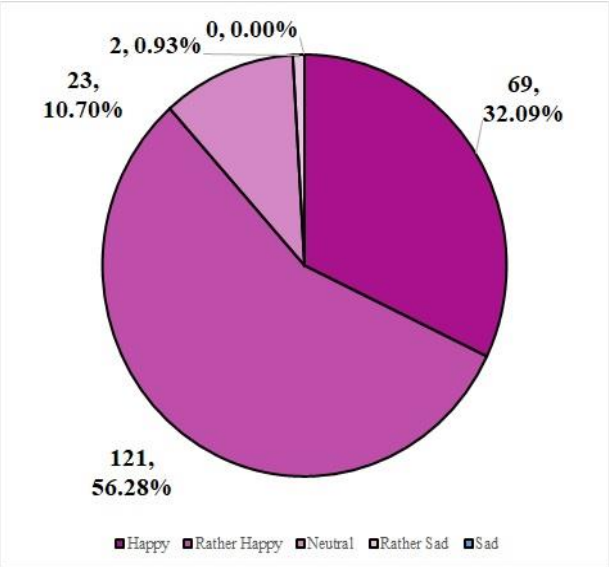

Figure 51 The comparison of sad-happy in the group of merchants who introduced mobile payment system in shop (Thailand)

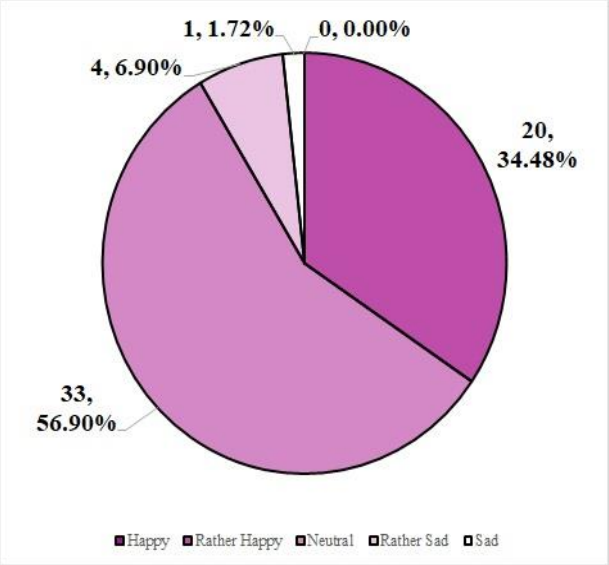

Figure 52 The comparison of sad-happy in the group of merchants who do not introduced mobile payment system in shop (Thailand)

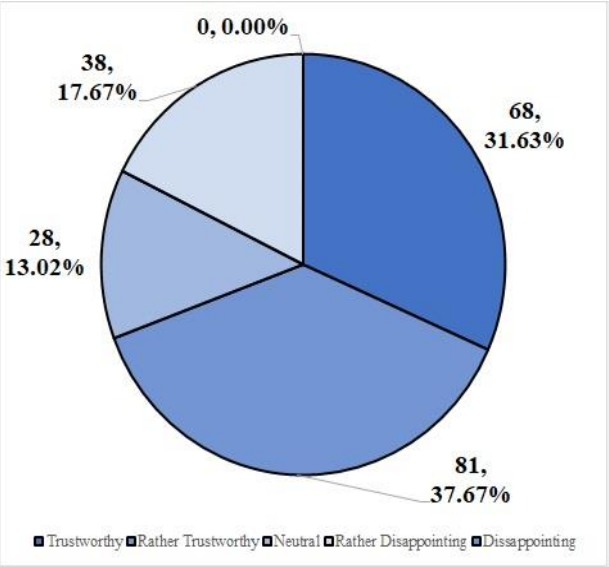

Figure 53 The comparison of disappointing-trustworthy in the group of merchants who introduced mobile payment system in shop (Thailand)

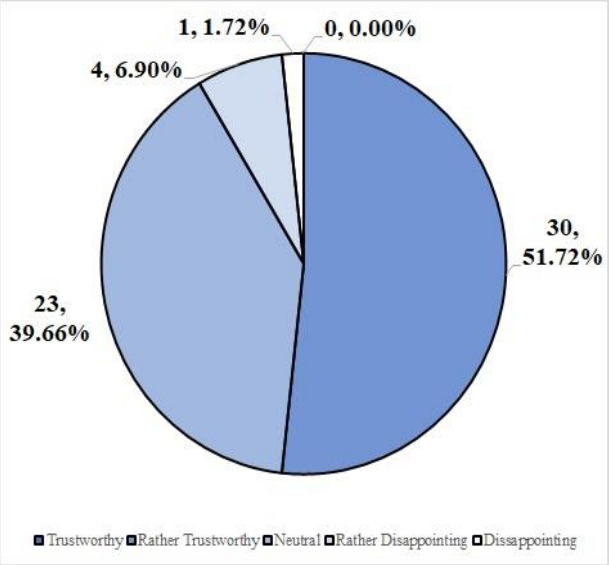

Figure 54 The comparison of disappointing-trustworthy in the group of merchants who do not introduced mobile payment system in shop (Thailand)

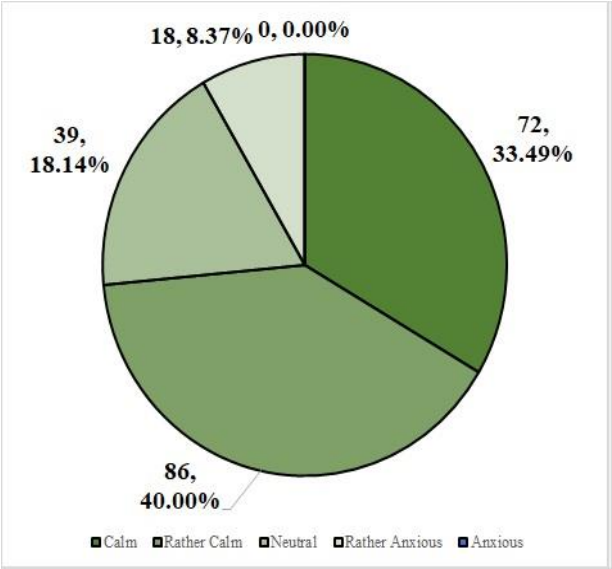

Figure 55 The comparison of anxious-clam in the group of merchants who introduced mobile payment system in shop (Thailand)

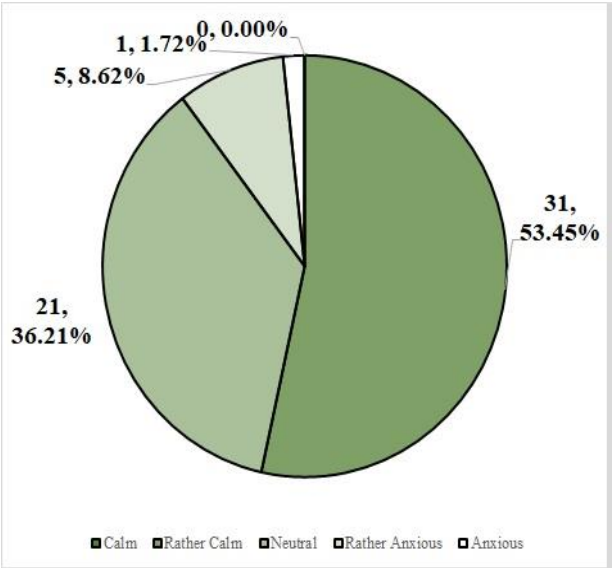

Figure 56 The comparison of anxious-clam in the group of merchants who do not introduced mobile payment system in shop (Thailand)

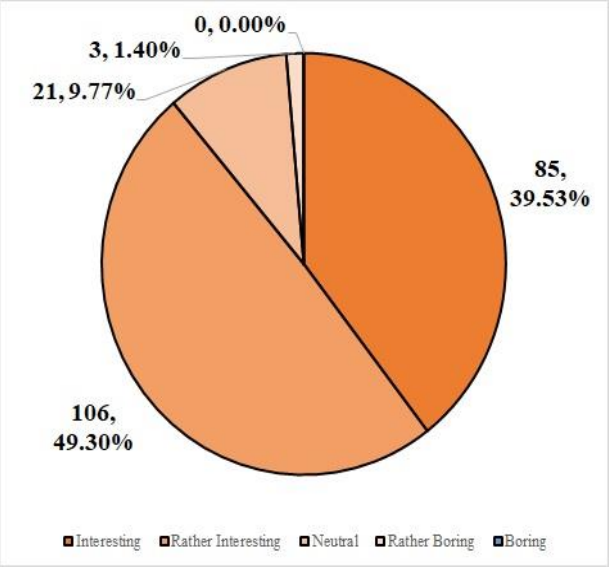

Figure 57 The comparison of boring-interesting in the group of merchants who introduced mobile payment system in shop (Thailand)

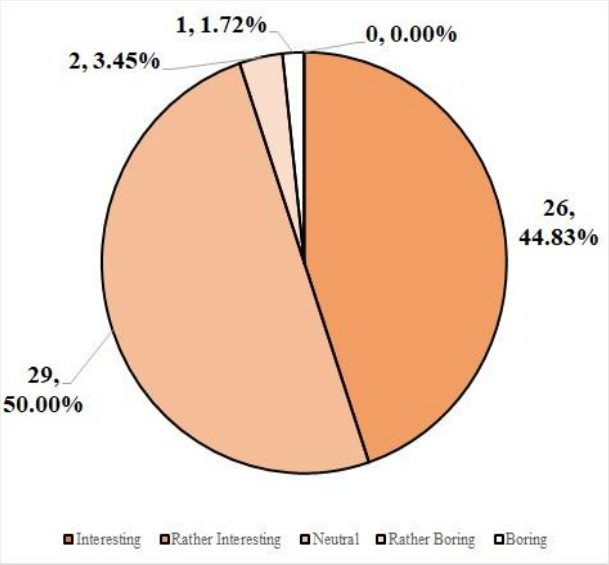

Figure 58 The comparison of boring-interesting in the group of merchants who do not introduced mobile payment system in shop (Thailand)

Chapter 5
Discussion and Conclusion

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5 DISCUSSION AND CONCLUSION

5.1 Conclusion

In this paper, the assumption that merchants' emotions for mobile payment system affect on the decision to introduce was discussed based on the results of surveys in Japan and Thailand. First, UTAUT model is extended by introducing emotions as constructs. Then questionnaire surveys were conducted in Japan, Mainland China, Taiwan, and Thailand. Extended-UTAUT models were constructed by using Japanese, Chinese, Taiwanese and Thai data, and they were compared.

For the generation of merchants that use mobile payment in the shop, the Japanese in generation X, generation Y, and the merchants who have age under 26 have a higher percentage of use than do not use mobile payment in the shop. In Japan, the percentage of the merchants who do not use mobile payment in shop are higher than the percentage of the merchants of use mobile payment in shop, these results of Japan in this paper are conform with Chang, Chen, & Hashimoto (2021) that cashless on mobile payment is not yet popular in Japan. In contrast, Thai have a higher percentage of use more than do not use in every generation.

Social influence was found the effect on behavior intention from previous studies (de Sena Abrahão, Moriguchi, & Andrade, 2016; Khalilzadeh, Ozturk, & Bilgihan, 2017; Al-Okaily, Lutfi, Alsaad, Taamneh, and Alsyouf, 2020; Al-Saedi, Al-Emran, Ramayah, & Abusham, 2020; Jung, Kwon, & Kim, 2020; Patil, Tamilmani, Rana, & Raghavan, 2020). However, social influence can be separated into positive social influence and negative social influence (Muchnik, et al. (2019). Then, in this paper, social influence was extended the social influence to positive and negative social influences and tested the effect on behavioral intention.

As a results, we found that the positive social influence affect to behavioral intention for group of Japanese, Chinese, and Taiwanese merchants who use mobile payment system, Chinese merchants who use mobile. For the group of merchants who do not use mobile payment system in shop, the positive social influence affect to behavioral intention for Japanese, Taiwanese, and Thai merchants

For the factor of facilitating condition influence to use behavior, the results show in the group of Chinese, Taiwanese, and Thai merchants who use mobile payment system in shop and also in Thai merchants who do not use mobile payment system in shop. For the negative social influence effect on behavioral intention in case of Thailand who use mobile payment system in shop. And the moderator of

emotion seem to be influence to the factors on behavioral intention more than the other countries. Our result consonant with Kladkleeb, and Vongurai (2019) research that found the social influence effect to behavioral intention for usage of digital payment system. Then, we can be described more about social influence by using positive and negative social influence.

As a result of comparing emotions, we found that groups that do not use mobile payment in shops in Japanese, Chinese, Taiwanese, and Thai have an emotional effect on the relationship more than the group that use mobile payment in the shop. Every emotion can affect the relationship between factors in every group of Thai but only sad-happy and boring-interesting effect on the relationship between factors in Japanese. Moreover, Chinese and Taiwanese merchants feel more positive about introduced mobile payment system in shop.

The finding of this paper will help to know the factors of acceptance of mobile payment systems in the shop for merchants in Japan, Mainland China, Taiwan, and Thailand. Moreover, we can see that emotions affect the relation between factors and behavioral intention. Because of these differences in the acceptance of new technology in each country and each group of users, the service provider should know and provide a suitable system by pay attention on important factors and emotions of users. The reason that causes the differences is not discussed because it is not the scope of this paper. However, the authors consider it an important point to understand the problem and think of it as future work.

In the future works, we are planning to conduct the survey in about the acceptance of technology for logistics transportation to compare with other countries.

Table 17 The summarize of the influence from moderator to the relationship between constructs

Construct	**Moderator**	**Use**					**Do not use**				
		A	**J**	**M**	**T**	**L**	**A**	**J**	**M**	**T**	**L**
PE→BI	Gender	**E**	**E**	N	N	N	**E**	N		N	N
EE→ BI		N	N	N	**E**	N	N	N		N	E
PSI→ BI		N	N	**E**	N	N	N	N		N	N
NSI→ BI		N	**E**	N	N	N	**E**	N		E	N
FC→UB		N	N	N	N	**E**	N	N		N	E
PE→BI	Age	N	N	**E**	N	**E**	**E**	**E**		N	E

Construct	**Moderator**	**Use**					**Do not use**				
		A	**J**	**M**	**T**	**L**	**A**	**J**	**M**	**T**	**L**
EE→ BI		N	N	**E**	N	N	N	N		N	N
PSI→ BI		N	N	N	N	**E**	N	**E**		N	E
NSI→ BI		N	N	N	N	**E**	**E**	N		N	N
FC→UB		N	N	**E**	N	**E**	N	**E**		N	N
PE→BI	Experience	N	N	N	N	N					
EE→ BI		N	N	N	N	N					
PSI→ BI		N	N	N	N	N					
NSI→ BI		N	N	**E**	N	N					
FC→UB		N	N	N	N	N					
PE→BI	Sad-Happy	N	N	N	N	**E**	N	**E**		N	**E**
EE→ BI		N	N	N	N	N	N	N		N	**E**
PSI→ BI		**E**	N	N	**E**	**E**	N	N		N	**E**
NSI→ BI		N	N	N	N	N	N	N		N	**E**
FC→UB		N	N	N	N	**E**	N	N		N	**E**
PE→BI	Disappointing-Trustworthy	N	N	N	N	**E**	N	N		N	N
EE→ BI		N	N	N	**E**	N	N	N		N	**E**
PSI→ BI		**E**	N	N	**E**	E	N	N		N	**E**
NSI→ BI		N	N	N	N	N	N	N		N	N
FC→UB		N	N	N	N	N	N	N		N	**E**
PE→BI	Anxious-Calm	N	N	N	N	**E**	N	N		N	**E**
EE→ BI		N	N	N	**E**	N	N	N		N	**E**
PSI→ BI		**E**	N	N	**E**	E	N	N		N	**E**
NSI→ BI		N	N	N	N	N	N	N		E	**E**
FC→UB		N	N	N	N	**E**	N	N		N	**E**
PE→BI	Boring-Interesting	N	N	N	N	**E**	**E**	**E**		N	N
EE→ BI		**E**	N	N	N	**E**	N	N		N	**E**
PSI→ BI		**E**	N	N	**E**	**E**	N	N		N	**E**
NSI→ BI		N	N	N	**E**	N	N	N		N	N
FC→UB		N	N	N	N	**E**	N	N		N	N

E: The moderator effect to the relationship between constructs.
N: The moderator does not effect to the relationship between constructs.
A: Japan, Mainland China, Taiwan, and Thailand, J: Japan, M: Mainland China, T: Taiwan, and L: Thailand
S: Support hypothesis, N: Not support hypothesis, - : Do not analyze

5.2Discussion

Positive Social Influence maybe the key factor for introducing mobile payment system in shop for the merchants. Moreover, most of the moderators affect the relationship between Positive Social Influence and Behavioral Intention. Every moderator can affect to the relationship between construct except the experience. The moderator which has the highest number is Age However, Gender is the most effective to the relationship between factors from every case.

For four countries results, the possible explanation for this might be that the PSI and FC the key factors in both group of merchants who use and do not use mobile payment in shop. Moreover, NSI also the one of key factor for the group of merchants who use mobile payment system in shop. For the influence from moderator, Gender might be the key influence in both groups of merchants who use and do not use mobile payment system in shop.

For Japan, a possible of explanation of this might be the PSI is the most importance factor for BI of Japanese merchants who use and do not use mobile payment system in shop. For the influence from moderator, both group of merchants have the difference influence from moderator. Only the moderator of gender influence for the relationship of PE and NSI on BI in the group of merchants who use mobile payment system in shop. For the other group, Age, Sad-Happy, and Boring-Interesting influence on the relationship between PE and BI. Age also influence to the relationship between PSI and BI, and FC and BI. PE might be the same factor which influence from the moderators.

For Mainland China, the group of merchants who introduced mobile payment system in shop, the results show the PSI has significance difference to BI and the FC has strongest significance difference to UB. For the moderator effect in the group of merchants who use mobile payment system in shop, for the significance difference on the relationship with are Gender has significant difference on the relationship between PSI and BI and Age has significant difference on the relationship between PE and BI, and the relationship between EE and BI. For the significance difference on the relationships, Age has significant difference on the relationship between FC and UB and Sad-Happy has significant difference on the relationship between NSI and BI.

For Taiwan, a possible of explanation of this might be the PSI is the most importance factor for BI of Taiwanese merchants who use and do not use mobile payment system in shop. For the influence from moderator, both group of merchants

have the difference influence from moderator. Only the relationship between NSI and BI is influenced by Gender and Anxious-Calm in the group of merchants who do not use mobile payment in shop while only Boring-Interesting influence to the relationship between NSI and BI. Moreover, in the group of merchants who use mobile payment in shop, the relationship between PSI and BI is influenced by Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting. For the relationship between EE and BI is influenced by Gender, Disappointing-Trustworthy, and Anxious-Calm.

For Thailand, the FC strongest influence to UB in groups of Thai merchants who use mobile payment in shop and do not use mobile payment system in shop. However, the NSI influence to BI in the Thai merchant who use mobile payment in shop but the PSI influence to BI in the group of Thai merchants who do not use mobile payment in shop. For the influenced from the moderators in both group of Thai merchants who use and do not use mobile payment in shop, the relationship between PE and BI is influenced by Age, Sad-Happy, and Anxious-Calm. The relationship between EE and BI is influenced by Boring-Interesting. The relationship between PSI and BI is influenced by Age, Sad-Happy, Disappointing-Trustworthy, Anxious-Calm, and Boring-Interesting. The relationship between FC and UB is influenced by Gender, Sad-Happy, Anxious-Calm, and Boring-Interesting. For the different result of the moderators between two groups, in the group of merchants who use mobile payment system in shop, Gender influences to the relationship between EE and BI. The relationship between NSI and BI and the relationship between FC and UB are influence by Age. And Boring-Interesting influence to the relationship between PE and BI. For the other group, Gender influences the relationship between EE and BI. Sad-Happy and Anxious-Calm influence the relationship between EE and BI and the relationship between NSI and BI. Disappointing-Trustworthy influences the relationship between EE and BI.

5.3The benefit after finding

The finding of this paper will help to know the factors of acceptance of mobile payment systems in the shop for merchants in Japan, Mainland China, Taiwan, and Thailand. Moreover, we can see that emotions affect factors and behavioural intention. Because of these differences in the acceptance of new technology in each country and each group of users, the service provider should know and provide a suitable system by paying attention to users' important factors and emotions. The

reason that causes the differences is not discussed because it is not the scope of this paper. However, the authors consider it essential to understand the problem and think of it as future work.

5.4Future work

We plan to survey the acceptance of technology for mobile payment systems with the dial-a-ride system. In future work, we will still observe the intention and emotion of the merchant in the acceptance of delivery service. The delivery service is combined between the mobile payment system and the dial-a-ride system's transportation system. Because this system has to add the transportation system, then the cost of transportation and service quality of transportation.

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