國立臺灣大學管理學院企業管理碩士專班

碩士論文

Global MBA

College of Management

National Taiwan University

Master Thesis

在泰國近距離行動支付足以取代傳統支付方式嗎？論近距離

行動支付的使用誘因

Will PMP (Proximity Mobile Payment) substitute traditional

payment in Thailand?: A study on key factors of switching

intention from traditional payment to PMP.

Kawin Suwanban

指導教授: 潘雪博士

孔令傑博士

Advisor: Shweta Pandey, Ph.D

Ling-Chieh Kung, Ph.D

中華民國 112 年 5 月

May, 2023

Oral Defense Committee Signature Form

國立臺灣大學碩士學位論文
口試委員會審定書
Master Thesis Certification by Oral Defense Committee
National Taiwan University

在泰國近距離行動支付足以取代傳統支付方式嗎？論近距離行動支付
的使用誘因

Will PMP (Proximity Mobile Payment) substitute traditional payment in Thailand?:
A study on key factors of switching intention from traditional payment to PMP.

本論文係 Kawin Suwanban 君（R10749088）在國立臺灣大學企業管理
碩士專班完成之碩士學位論文，於民國 112 年 5 月 12 日承下列考試委員審
查通過及口試及格，特此證明

This is to certify that the Master thesis above is completed by ___Kawin Suwanban___ (R10749088)
during his/her studying in the Global MBA Program at National Taiwan University, and that the oral
defense of this thesis is passed on __(12/5/2023)__ in accordance with decisions of the following
committee members:

指導教授/Advisor(s)：

suneeta Pandey 　　　　　　（簽名/Signature(s)）

口試委員/Committee members：

英語撰著品質委員/English Proficiency Examiner：

系主任、所長(Department Chair/Program Director)

Acknowledgment

I would like to dedicate my acknowledgment to everyone who supported me during the writing until completion.

First and foremost, I would like to thank my thesis advisor, Prof. Shweta Pandey, for her essential help and support during my thesis writing process. Professor Pandey's skill and patience assisted in improving my thesis to meet academic standards.
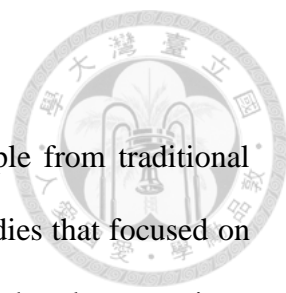
Second, I would like to thank my thesis co-advisor, Prof. Ling Chieh Kung for his encouragement and kindness during my thesis writing process. His invaluable insight was extremely beneficial to this thesis.

Third, I would like to extend my gratitude to my dissertation committee, Prof. Audrey Hsu, and Prof. Leon Van Jaarsveldt, who provided me with extensive insight and feedback.

Furthermore, I would like to thank GMBA professors, GMBA office, and classmates for their continuous support.

Finally, I would like to take this opportunity to convey my deepest gratitude to my family for their unwavering support throughout my GMBA journey.

Abstract

This study investigates the key factors that drive Thai people from traditional payments to proximity mobile payment (PMP). Unlike previous studies that focused on adoption models like TAM, UTAUT, and UTAUT2, this research takes a unique "switching" approach that considers the transition from traditional payment methods. Conducted during the post-pandemic period, the study offers new insights and implications for Thai businesses and public organizations seeking to promote PMP usage in the post-pandemic environment. The research model was formed based on migration theory and UTAUT2 reflecting the switching behavior. We collected data from sample in Thailand and analyzed the data using PLS-SEM to investigate causal relationship between variables based on 168 responses. Result indicated that habit has the strongest influence on switching intention which is found to be aligned with existing studies. On the contrary, the result presented a new determinant: dissatisfaction with traditional payments. Also, we found that gender moderates performance expectations leading to higher influence in males compared to females. On the contrary, effort expectancy was found to influence only females. There are some implications to this study. Firstly, the study suggests that PMP firms should create a mechanism that constantly reminds users to use the PMP. Secondly, communicating health safety benefit from using PMP could promote adoption. Lastly, promoting PMP benefit such as faster payment could help to attract male users and simplified UX and UI could also attract females. This study also has some limitations. This study used convenience sampling and we did not differentiate between cases and bank cards, which have different contact rates.

Keywords: Proximity mobile payment, Traditional payment, Migration theory, UTAUT2

Table of Contents

Figures and Table List

Chapter 1: Introduction

1.1 Research Background

Sara (2021) reported that the pandemic forced retailers to adopt contactless payment leading to the rise of Proximity Mobile Payment (PMP) globally. However, the trend has been upward in Thailand for over four years since the government-backed "PromptPay QR" interbank payment system was introduced in December 2017 (Bank of Thailand & Hothai, 2021). Consequently, cash has been slowly disappearing from the system. The pandemic in Thailand was just another accelerator among many others. This study investigates the shifting payment behavior of Thai people and provides practical suggestions for private and public sectors who wish to implement PMP in their organizations.

During the past five years, Thailand's banking industry has been undergoing a drastic change in both the consumer and service provider side. For example, 5 years ago, mobile banking users in Thailand were only 21 million. In February 2021, Thailand had 78 million mobile banking users. Furthermore, yearly mobile banking transactions per user witnessed a 600% growth from 49 to 279 (ThaiPublica, 2021)

Focusing deeper on the payment area, the catalyst of this exploding trend is the "PromptPay" system, the interbank fund transfer system that allows Thai people to pay via QR code at retail stores with any bank account. According to the Bank of Thailand report, from 2018 to 2021, the number of transactions made in the PromptPay network spiked by 503% (Bank of Thailand & Hothai, 2021). This indicates that Thai people have undergone drastic changes in the context of payment behavior.

This study focuses solely on PMP or proximity mobile payment. The term "proximity mobile payments" (PMP) refers to mobile transactions involving payer and

payee in the same place transacting with their devices via proximity technology (such as Bluetooth, Near Field Communication (NFC), and Quick Response (QR) codes, etc.). This technology can be used in both person-to-business and person-to-person (European Payments Council, 2017). This study aimed to explore the reasons driving the shift from traditional payment to PMP for Thai people.

1.2 Scope of The Research

This research used both primary and secondary data. First, secondary data was used to establish a firm understanding of the topic by studying related theories and past research through a literature review and data retrieved from government, private companies, and market reports. Second, primary data was collected by an online survey form and analyzed using quantitative data analysis methods. Finally, this study is focused on key factors that causes Thai people to shift away from traditional payment to proximity mobile payment.

1.3 Importance & Significance of The Research

Based on the findings, the researcher provides managerial implications that may benefit marketers, business owners, and the public sector who aim to implement PMP. The researcher believes this study will contribute to Thailand's effort toward a "cashless society" that benefits all stakeholders. Furthermore, this study applies migration theory in the context of mobile payments which is among the first in Thailand. Lastly, this study was conducted during a unique time which is the post-pandemic period and provided unique result that could be compared with or investigated further in the future.

1.4 Research Overview

The remainder of this study is organized as follows. The next section would provide deeper understanding of the proximity mobile payment in both global and Thailand perspective. In addition, overview of related prior research and theory are presented as an integral part of hypotheses development for this study. Subsequently, methodology is mentioned in the third chapter which provides detailed picture of research process, data collection, and data analysis. Afterward, the results from the analysis are presented in the fourth chapter along with model construct assessment. Subsequently, result interpretation, theoretical implications, and managerial implications are discussed in the final chapter. Lastly, limitations and future research opportunities are provided as the conclusion part.
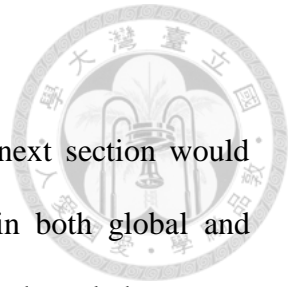
2.1 Proximity Mobile Payment (PMP)

Proximity mobile payment (PMP) is a method of paying for goods or services using a mobile device, such as a smartphone, that is close to a payment terminal. This is typically done using near-field communication (NFC) technology or Quick Response (QR) codes. Such technologies allow mobile devices and payment terminals to communicate wirelessly when they are held close together (European Payments Council, 2017). Examples of proximity mobile payment facilitators include Apple Pay and Google Wallet.

The origins of proximity mobile payments (PMP) may be traced back to the early 2000s when firms like Nokia and Sony Ericsson released mobile phones equipped with near-field communication (NFC) technology. This technique enabled short-range wireless communication between devices and paved the way for developing mobile payment systems. (Banks.am, 2022).

In 2011, Google introduced Google Wallet, which used NFC technology to facilitate users making payments by tapping their phones on a point-of-sale terminal (Warren, 2011). However, Reibstein et al. (2014) stated that a lack of support from mobile carriers and retailers and consumer trust hindered the widespread adoption of the technology. In the same year, a group of major credit card companies, including Visa and Mastercard, formed a partnership called Isis to develop a mobile payment system using NFC technology (Mastercard, 2011). However, it was renamed Softcard due to a conflict with the name of a terrorist group (Kastrenakes, 2014).

In 2014, Apple introduced Apple Pay which uses a combination of NFC and a technology called "tokenization" to make payments more secure (Buddhika, 2018). This

sparked a renewed interest in mobile payments and increased the number of retailers and financial institutions supporting the technology. Today, proximity mobile payments are becoming increasingly popular, with many retailers and financial institutions supporting various mobile payment systems such as Google Pay, Samsung Pay, and Apple Pay.
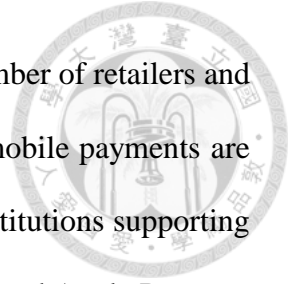
2.2 Proximity Mobile Payment Usage Trend.

Proximity mobile payment (PMP) is growing worldwide. Sara (2021) states that the pandemic forced retailers to adopt contactless payment worldwide. As a result, global PMP users increased to over 1 billion in 2021 and are expected to grow to 1.49 billion by 2025. In terms of transaction value, the average PMP annual spending per user in the United States is $1,937 in 2020 and expected to grow at 12.8% CAGR in the next five years.

A report from PricewaterhouseCoopers (2022) stated that cashless transactions will be doubled by 2030 driven by rapid growth in Asia-Pacific countries which expected to grow by 109% until 2025 and then by 76% from 2025 to 2030. On the banks side, 90% of useful information comes from consumers' payment data which is the key motivation for banks to incorporate mobile payments in their services. Moreover, the report also mentions that 84% of respondents in the US believe that traditional payment providers will collaborate with financial technology companies to improve their payments innovations capabilities.

In Thailand, the Bank of Thailand & Hothai (2021) shows that the PMP annual transaction was 804.4 million in 2021 and has grown at 10.5% CAGR since 2017. The trend has been upward for over four years since the government backed "PromptPay QR" was introduced in December 2017. On the other hand, cash is slowly disappearing from

5

the system (Bank of Thailand & Hothai, 2021). This study aims to discover important switching intention elements that cause users to switch from traditional payment methods to proximity mobile payment.

2.3 Proximity Mobile Payment Development in Thailand.

The first development of PMP in Thailand was conceived in 2016. The Thai government launched the "National Electronic Payment" initiative elevating Thailand's electronic payment infrastructure. The objective was pushing Thai people to use electronic payment and reduce the cost of bank-to-bank money transfers (Bank of Thailand, 2020). Bank of Thailand was tasked with a leading role in regulating and overseeing the "PromptPay" system, the government's main electronic payment system.

PromptPay is the system that facilitates near-instant interbank money transfers with virtually no fee for most transactions. The system was opened for public use in 2016. PromptPay system supports mobile phones and citizen IDs for money transfers and existing bank accounts. This feature also enables intermittence between government and individuals or private businesses, improving efficiency and accuracy in various governments' activities and policies such as tax refunds, payment for disaster relief, and social security pensions.

In December 2017, PromptPay launched its QR code payment system, the standardized QR payment system that connects almost every major bank in Thailand and can be used with any Thai mobile banking applications. With a low fee, high trust in security, and ease of use, PromptPay QR has seen widespread adoption among individuals, SMEs, and corporations across the country. According to an article from the Bank of Thailand (Bank of Thailand, 2020), the payment system can be divided into two

6

main categories, consisting of business scans customer (B scan C) and customer scans business (C scan B).

Currently, there are two types of QR codes: Static and Dynamic. Static QR code is the QR code that can be repeatedly used hence low setup cost since businesses need only to print the QR code and put it on the counter. However, this method requires payers to input their payment amount manually. Consequently, this procedure is prone to human error. On the other hand, Dynamic QR code requires businesses to generate new QR codes for each transaction containing payment amounts and account detail. This resulted in reduced human error and improved transaction efficiency. However, this QR code requires integration with a business Point-of-Sale system leading to higher setup costs. As of February 2020, a report from the Bank of Thailand (2020) shows that there are 6.1 million PromptPay payment points in Thailand including both C scan B and B scan C.

2.4 Existing Research

Globally, there are several existing studies in mobile payment adoption context. Souiden et al. (2020) reported that the most two popular frameworks used among researchers are the Technology Acceptance Model (TAM) and followed by the unified theory of acceptance and use of technology (UTAUT/UTAUT2). Most of the studies were conducted before the pandemic. Thus, this study could provide new insights to the literature as it was conducted during the post-pandemic period.

In Thailand, existing studies are found to use TAM and UTAUT frameworks which provide only consumer adoption view without taking incumbent methods such as cash and bank cards into account. (Changchit et al., 2017, 2018; Intarot & Beokhaimook, 2018; Mortimer et al., 2015; Souiden et al., 2020). Hence, this study could present the

7

"switching" of payment method to the literature by adopting migration theory. Furthermore, there are no studies on mobile payments adoption conducted in Thailand during the post-pandemic period which the author thought it was an opportune time to gather information from this unique event.

2.5 Theoretical Background

2.5.1 Push-Pull-Mooring (PPM)

Originally, migration theory was proposed by Lee in 1966 to explain why people migrate from one place to another. Lee (1966) stated that migration activities always involve three main things: origin, destination, and obstacles along the way. The act of migration is driven by both positive and negative factors in origin and destinations, which push a person from the original location and, likewise, pull a person to a new location. Later, another migration study by Moon (1995) proposed that mooring is a personal or household issue binding a person to their original location. Mooring issues can be in the form of life-course, cultural and spatial issues. For example, a person might not want to migrate to a new location due to deep bonding with their friends in the original location, binding that person to the original place.

In the consumer behavior context, Bansal (2005) mentioned that the PPM framework could be used to study consumer switching behavior in service businesses. The push factor could be viewed as customers' dissatisfaction and trust in services, while the pull factor could be regarded as the attractiveness of alternative options customers has on hand. Bansal (2005) suggested that Mooring effects are specific variables that are subjective to personal factors such as switching cost, subjective norms, experience, and variety-seeking tendency.

8

2.5.2 Push Factor

As mentioned in the literature review, push factors could be negative in the original location. It could be interpreted in the service context as low discontent, trust, and perceived quality when utilizing the service. According to this study, the push factor is dissatisfaction when using traditional payment methods, namely cash, physical credit cards, and debit cards. This study addresses several dissatisfactions of traditional payment. First, paper money, coins and bank cards can lead to disease transmission (Angelakis et al., 2014). Second, using cash could require more transaction time as changes might occur. Third, using cash could expose the user to a potential risk of physical theft and fraud. Furthermore, this study also incorporates age, gender, and PMP use experience as it might moderate dissatisfaction on switching intention as Yu & Chen (2022) mentioned that gender, age and PMP use experience should be incorporated to examine any differences in payment switching behaviors. Chen et al. (2022) reported that mobile payment use experience, age, and gender affects Taiwanese people' preference in selecting payment method in restaurant. Hence, this study proposes that.

H1 – Dissatisfaction with traditional payments (DIS) positively influences the switching intention of consumers.

H1a – Age moderates the relationship between dissatisfaction with traditional payment and the switching intention of consumers.

H1b – Gender moderates the relationship between dissatisfaction with traditional payment and the switching intention of consumers.

H1c – PMP use experience moderates the relationship between dissatisfaction with traditional payment and the switching intention of consumers.

9
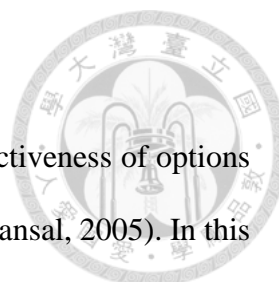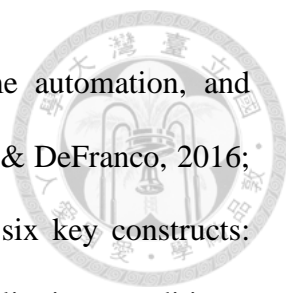
2.5.3 Pull Factor

In the switching intention context, pull factors mean the attractiveness of options that positively affect consumer decision to switch to a new service (Bansal, 2005). In this study, we will concentrate on customer acceptance of PMP, which can be considered a pull factor. Wang and Shin (2022) created a parsimonious model for investigating the usage intention of a metaverse education platform by using PPM as the overarching framework and perceived utility and perceived ease of use from the technology acceptance model (TAM) as pull variables. Kang et al. (2021) investigated Chinese students' intentions to migrate from traditional classroom teaching to massive open online courses (MOOCs) using PPM as an overall framework and task-technology-fit (TTF) as a pull factor construct. Similarly, to identify pull factors, this study utilizes the unified theory of acceptance and use of technology 2 (UTAUT2).

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

Souiden et al. (2020) found that several researchers have used the technology acceptance model (TAM) theory to study consumers' mobile banking acceptance during 2005-2019. TAM was first developed to predict user acceptance of technology (Koul & Eydgahi, 2017). Later, TAM was widely used and further developed, which led to the introduction of several frameworks with better performance on variance explanations (Marikyan, 2021).

The unified theory of acceptance and use of technology 2 (UTAUT2), proposed by Venkatesh et al. (2012), is widely used and accepted framework. Originally, UTAUT was modified from the corporate context to develop UTAUT2 which is more suitable for the consumer context (Koul & Eydgahi, 2017). Furthermore, UTAUT2 has been widely used to explain consumer technology adoption in various fields, such as NFC payment,

10

Mobile payment, Mobile commerce, Online education, IoT home automation, and Augmented Reality. (Faqih & Jaradat, 2021; Imtiaz, 2018; Morosan & DeFranco, 2016; Tseng et al., 2022; Upadhyay et al., 2022). UTAUT2 consists of six key constructs: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. In addition, the model also has moderating factors: age, gender, and technology usage experience.

Performance Expectancy (PEX)

Performance expectancy is a user's perceived usefulness of a technology while performing their tasks (Venkatesh et al., 2003). Marikyan (2021) and Oliveira et al. (2014) stated that performance expectancy development is based on perceived usefulness in the TAM model and could be viewed as such. Prastiawan et al. (2021) concluded that perceived usefulness positively influences mobile banking usage attitudes among consumers in Indonesia. Chang et al. (2014) proposed that perceived benefits could drive customers to adopt new services. In addition, previous research has consistently supported a moderating effect on the performance expectancy and switching intention relationship. For example, Venkatesh et al. (2003) found that performance expectancy is higher in young men. Additionally, age and gender were found to has significantly moderate performance expectancy on adopting telemedicine (Schmitz et al., 2022). Furthermore, Izkair & Lakulu (2021) found that students with high experience in mobile learning were likelier to use mobile learning. Moreover, Verkijika (2018) mentioned that age, gender, and experience should be included as moderators in m-commerce adoption study. Hence, this study proposes that.

11

H2 – Performance expectancy (PE) positively influences the switching intentions of consumers.

H2a – Age moderates the relationship between performance expectancy and switching intention.

H2b – Gender moderates the relationship between performance expectancy and switching intention.

H2c – PMP use experience moderates the relationship between performance expectancy and switching intention.

Effort expectancy (EEX)

Effort expectancy is the degree of easiness the user expects when using the technology. In an online learning setting, Tseng et al. (2022) suggested that effort expectancy positively influences teachers' adoption of massive open online courses (MOOCs). Furthermore, several studies indicated that perceived ease of use positively impacts mobile adoption (Changchit et al., 2017, 2018; Mortimer et al., 2015). Additionally, previous studies suggested that age, gender, and experience have moderation effect on effort expectancy. For instance, Schmitz et al. (2022) reported significant moderation effect of age and gender on effort expectancy in adopting telemedicine. Also, a past study found that mobile learning experience moderates on mobile learning use intention of students in Iraq (Izkair & Lakulu, 2021). In addition, Schomakers et al. (2022) found that younger users are more likely to adopt health therapy mobile applications in contrast to older people whose might need digital help. The study also reported a significant positive impact of health mobile app familiarity on effort expectancy in behavioral intention. Consequently, this study posits:

12

H3 - Effort expectancy (EEX) positively influences the switching intentions of the consumer.

H3a – Age moderates the relationship between effort expectancy and switching intention.

H3b – Gender moderates the relationship between effort expectancy and switching intention.

H3c – PMP use experience moderates the impact of effort expectancy on switching intention.

Facilitating Condition (FCO)

Facilitating condition is the level at which a person believes organizational and infrastructure exist to maintain the system in working condition and thus allow them to use it (Venkatesh et al., 2003). Oliveira et al. (2014) concluded that facilitating conditions such as promotion and removal of adoption obstacles can positively affect the adoption of mobile banking among consumers in Portugal. Furthermore, previous studies also suggested that age, gender, and experience play an important role in moderating latent variables. Age, gender and experience are moderating factors in both UTAUT and UTAUT2 (Venkatesh et al., 2003, 2012). In telemedicine context, Schmitz et al. (2022) showed that age and gender have significant moderation effect on facilitating condition for adopting the technology. Afonso et al. (2012) confirmed that facilitating condition has stronger effect on men than women in adopting electronic document management system. Additionally, C.-M. Chang et al. (2019) reported a significant moderation effect of experience on facilitating condition in the online hotel booking context. Therefore, this study posits:

13

H4 – Facilitating condition (FCO) positively influences the switching intentions of consumers.

H4a – Age moderates on facilitating condition on switching intention.

H4b – Gender moderates on facilitating condition on switching intention.

H4c – PMP use experience moderates on facilitating condition on switching intention.

Hedonic Motivation (HMO)

Hedonic motivation is the enjoyment of using technology (Venkatesh et al., 2016). Faqih & Jaradat (2021) suggested that hedonic motivation in the augmented reality adoption context is pleasure and enjoyment while using the technology. In-home automation, hedonic motivation could be regarded as the enjoyment a person receives while turning music and light on and off in his or her home (Iqbal & Idrees, 2022). Karjaluoto et al. (2019) believe that hedonic motivation plays a positive role and affects consumers' usage tendency of contactless payment. Additionally, several existing studies found that age, gender, and experience moderate hedonic motivation. Age significantly moderates hedonic motivation in online hotel booking adoption (C.-M. Chang et al., 2019). Venkatesh et al. (2012) confirmed that age, gender, and experience have a moderation effect on hedonic motivation. Schmitz et al. (2022) found that age and gender significantly moderate hedonic motivation. Besides, Castañeda et al. (2007) confirmed significant moderating effect of experience on using online websites. Also, experience moderates hedonic motivation on Chinese travelers' intention to use online room-sharing platform (Wu et al., 2017). Therefore, this study proposes the following.

14

H5 – Hedonic motivation (HMO) positively influences the switching intentions of consumers.

H5a – Age moderates on hedonic motivation on switching intention.

H5b – Gender moderates on hedonic motivation on switching intention.

H5c – PMP use experience moderates on hedonic motivation on switching intention.

Habit (HAB)

Habit is the level to which an individual tends to carry out specific actions automatically (Venkatesh et al., 2012). In the information system context, habit is a degree of automatic activity from a person caused by learning (Limayem et al., 2007). Morosan and DeFranco (2016) used UTAUT2 in research related to hotel settings and found that habit positively impacts the intention to use the NFC. Moreover, past studies also found that age, gender, and experience have significant moderation effect on habit. Firstly, Venkatesh et al. (2012) found that age, gender, and experience when interacting with habit has a moderation effect on behavioral intention to use technology. Furthermore, C.-M. Chang et al. (2019) found that gender and experience moderates habit on behavioral intention in online hotel booking adoption. Additionally, Schmitz et al. (2022) reported significant moderation effect on habit from age and gender. Also, a study found that age and gender moderate habit on intention to use e-book among Brazilian (Martins et al., 2018). Hence, this study proposes the following.

15

H6 – Habit (HAB) positively influences the switching intentions of the consumer.

H6a – Age moderates on habit on switching intention.

H6b – Gender moderates on habit on switching intention.
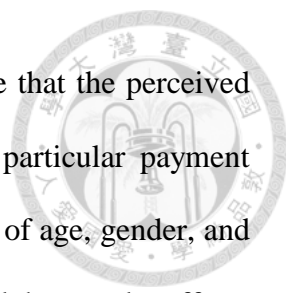
H6c – PMP use experience moderates on habit on switching intention.

2.5.4 Mooring Factors

The mooring effect in migration theory refers to the range of issues that bind a person or household, affecting migration decisions (Moon, 1995). In the consumer behavior context, Bansal (2005) defined mooring as variables that impact the decision to switch from a current service provider to a new one. For example, these variables could be switching costs, past behavior, and variety-seeking propensity.

Perceived Risk (PR)

Perceived risk in a consumer behavior context is the feeling of uncertainty when consumers purchase particular products or services (Lake, 2019). In the prior consumer payment adoption study, perceived risk was considered an obstacle to adoption related to the security and risk issue for the first-time user of a particular payment application (Humbani & Wiese, 2019). Furthermore, Kim et al. (2019) suggested there is a significant risk when using credit or debit cards because there is a chance of information leaking, as evident in the past. For example, in Thailand and Malaysia, several news articles stated that an e-wallet platform encountered data leakage and fraudulent activities resulting in the suspending bank account linking features in both countries (CH7 news, 2022;

16

Chapree, 2022; Leesa-nguansuk, 2021). Therefore, we can conclude that the perceived risk of payment platforms is the feeling of uncertainty toward a particular payment system. Moreover, existing studies also supported moderation effect of age, gender, and experience on perceived risk. Moreover, Buchanan et al. (2014) found that gender affects perceived risk on online shopping intention. Age also affected how people perceive risk, older adults tend to be more risk-averse than their younger counterparts (Bonem et al., 2015). Furthermore, Ohman (2017) confirmed that experience affected perceived risk when performing certain behavior. Additionally, age, gender, and experience were found to moderate perceived risk in their decision to travel abroad (Hillingdon et al., 2012). Hence, this study proposes the following.

H7 – Perceived risk (PR) moderates the relationship between hedonic motivation and switching intention.

H7a – Age moderates on perceived risk on switching intention.

H7b – Gender moderates on perceived risk on switching intention.

H7c – PMP use experience moderates on perceived risk on switching intention.

2.6 Research Model Hypotheses Development

As the research topic involve both traditional payment and proximity mobile payment. Thus, migration theory was used to be the overarching theory for the model linking both elements together to present a holistic view of the current and alternate services.

Therefore, this study presents a switching intention model comprised of push, pull and mooring factors. Push factor is the factor that pushes people away from the original

17

position to the new one. The author proposed dissatisfaction with traditional payment as a push factor based on existing studies related to mobile and traditional payments.

Next, pull factor is positive influence from new service pulling people away from the incumbent service. In PMP adoption context, derived from prior research, several technology acceptance frameworks deem suitable for the study namely technology acceptance model (TAM), theory of planned behaviour (TPB), unified theory of acceptance and use of technology (UTAUT), and unified theory of acceptance and use of technology 2 (UTAUT2). However, this study employed UTAUT2 because it was developed based on widely accepted UTAUT and adjusted for non-organizational context by including construct like habit, hedonic motivation, and price value (Marikyan, 2021). Consequently, this study suggested constructs from UTAUT2 as pull factors: performance expectancy, effort expectancy, facilitation condition, hedonic motivation, and habit.

Furthermore, the model incorporated mooring factor which is the factor that prevent people from switching to a new location or service (Lee, 1966). In PMP adoption background, the mooring factor should be switching cost and perceived risk as mentioned in the preceding literature review. However, the author ruled out switching cost due to high tendency to overlap with effort expectancy. Therefore, only perceived risk was left in the model as a sole mooring factor. Perceived risk was formulated because of increasing fraudulent news in Thailand mobile banking & payment industry, its influence on consumers should be significant.

In the original UTAUT2 article, the study suggested that moderating factors are gender, age, and technology use experience. The same moderating factors also found in prior studies that involve technology acceptance models. Therefore, this study also

18

incorporated age, gender, and PMP use experience as its moderating factors. Thus, this study suggested below research model (**Figure *1***).

Figure 1

Research Model
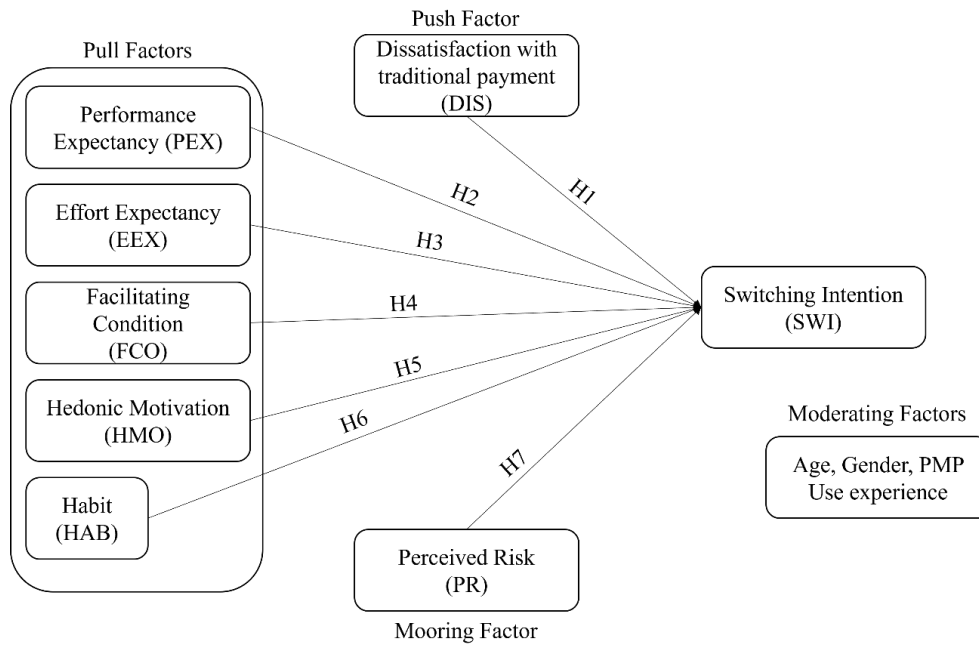
Chapter 3: Methodology

3.1 Research Design

The thesis used quantitative analysis method and gathered data by using convenience sampling due to geographic, cost and time constraints of researcher. These data were gathered and analysed to answer formulated research hypotheses that contribute to the research questions: What are the key factors that drive Thai people from traditional payment to PMP?

3.2 Research Process

Once the parsimonious research model was finalized, population, sample, sample size, and sampling method were determined. Subsequently, data collection instrument was developed based on the research model. The respondent base for this research is Thai people who use proximity mobile payment in a physical store at least once. The item and scale for the questionnaire were adapted from Venkatesh et al. (2003, 2012) and (Mu & Lee, 2022). The items were measured in 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Next, researcher collected data using a web-based questionnaire then distributed on social media and online forum. After data was collected, the researcher used data analysis software to analyse and interpret the data to gain theoretical and managerial implications to answer the study topic. **Figure *2*** shows the high-level research process from start to finish.

Figure 2

Research Process


```
┌─────────────────────┐
│  Literature Review  │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│   Research Model    │
│    Formulation      │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│   Data Collection   │
│   (Primary Data)    │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│    Data Analysis    │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ Result Interpretation│
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│  Derive Implications │
└─────────────────────┘
```
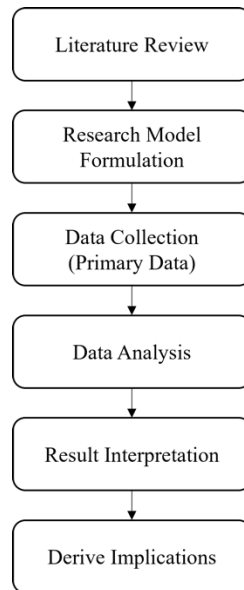
3.3 Data Collection

The population of this study was Thai working adult aged 21-60 which was considered to have purchasing power and formulated payment method preference. The study used non-probability sampling as it was the most appropriate method to obtain the most accurate data given the geographic remoteness of the author and sample. Online survey form was employed to collect data as it was the most cost-effective method and PMP users are usually spend time on social media and internet. Survey was distributed online on social media sites of the researcher and 176 responses were received. The items in the survey were shuffled to avoid common-method bias (MacKenzie & Podsakoff, 2012). After removing unengaged responses, 168 were left. The sample size was enough according to the suggested minimum sample size for partial least squares structural equation model (Hair et al., 2019).

21
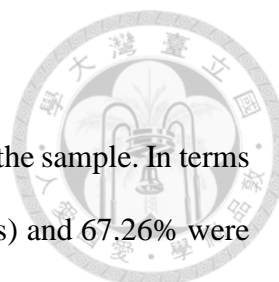
3.4 Descriptive Analysis

(**Table _1_**) describes the primary demographics information of the sample. In terms of gender, out of the total sample, 32.74% were male (55 respondents) and 67.26% were female (113 respondents). The largest group was in the 25-28 age range, accounting for 33.33% (56 respondents) of the sample, followed by the 29-32 age range, which represented 29.17% of the sample (49 respondents) and the 21-24 age range accounted for 26.79% (45 respondents), while the remaining age categories had smaller representations, ranging from 0.60% to 5.36% of the sample.

In terms of PMP use experience, the highest frequency was found in the 3-4 years category, representing 30.95% of the sample (52 respondents). This was followed by those with more than 6 years of PMP experience, accounting for 25.00% of the sample (42 respondents). The categories of 1-2 years and 5-6 years had frequencies of 18.45% (31 respondents) and 21.43% (36 respondents), respectively. The category of less than 1 year had the lowest frequency at 4.17% (7 respondents).

Table 1

Primary Demographic Information

Variable	Category	Frequency	%
Gender	Male	55	32.74
	Female	113	67.26
Age (Years)	21-24	45	26.79
	25-28	56	33.33
	29-32	49	29.17
	33-36	9	5.36
	37-40	2	1.19
	41-44	4	2.38
	49-52	2	1.19
	57-60	1	0.60
PMP use experience (Years)	less than 1 year	7	4.17

1-2	31	18.45	
3-4	52	30.95	
5-6	36	21.43	
More than 6 years	42	25.00	

In term of data splitting for multi group analysis (Table 2), the author divided the data into 2 groups for each moderator which are age, gender, and PMP use experience. For age, the author divided the data into two groups namely people aged less than 28 and people aged 28 and above. Respondents less than 28 years old constituted 44.05% of the sample, whereas those aged 28 and above comprised 55.95%. Next, we divided responses by gender which are male and female. Most respondents were female, accounting for 67.26% of the total, while males made up 32.74% Lastly, we split observations by PMP use experience which are people with less than 1 year of experience to 3 years and people with 4-5 years and more than 6 years of experience. The data shows that 53.57% of respondents had less than 1 year to 4 years of experience, while 46.43% had 5 years to more than 6 years of experience.

Table 2

Data Group Information

Variable	Category	Frequency	%
Gender	Male	55	32.74
	Female	113	67.26
Age (Years)	Less than 28	74	44.05
	28 and above	94	55.95
PMP use experience (Years)	Less than 1 year to 4 years	90	53.57
	5 years to more than 6 years	78	46.43
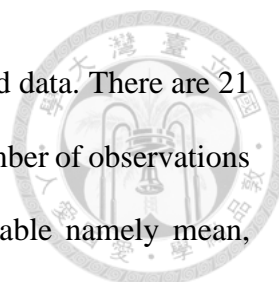
(Table 3) describes initial statistics parameters of the collected data. There are 21 variables in total representing 21 measurement items and the total number of observations in the table is 168. There are seven statistical parameters in the table namely mean, median, min, max, standard deviation, excess kurtosis, and skewness.

From the table, the mean value of the variables ranges from 3.155 to 4.339, while the medians range from 3.000 to 5.000. The maximum and minimum are consistently 1.000 and 5.000. The standard deviations range from 0.899 to 1.209 indicating the spread of the data around the mean. Excess kurtosis measure fatness of tail in comparison t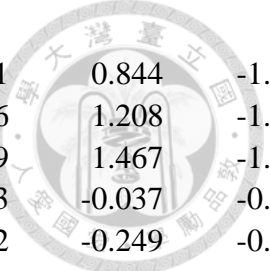o normal distribution curve (Hair et al., 2014). The value of 0 suggests a normal distribution curve whereas positive value suggests platykurtic distribution and negative value suggesting leptokurtic distribution (Hair et al., 2014). Excess kurtosis in the table ranges from -0.799 to 3.058. Skewness measures the asymmetry of distribution. Negative skewness values indicate a longer left tail, while positive values indicate a longer right tail (Hair et al., 2014). The skewness values range from -1.778 to -0.075, indicating different degrees and directions of skewness across the variables.

Table 3

Descriptive Analysis

Variable	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
DIS1	3.155	3.000	1.000	5.000	1.160	-0.799	-0.075
DIS2	3.667	4.000	1.000	5.000	1.158	-0.307	-0.713
DIS3	3.774	4.000	1.000	5.000	1.199	-0.124	-0.852
EEX1	4.339	5.000	1.000	5.000	0.963	3.058	-1.778
EEX2	4.298	5.000	1.000	5.000	0.942	2.581	-1.620
EEX4	4.298	5.000	1.000	5.000	0.923	2.136	-1.499
FCO1	4.339	5.000	1.000	5.000	0.899	2.292	-1.570
FCO3	3.732	4.000	1.000	5.000	1.026	-0.130	-0.576
FCO4	3.940	4.000	1.000	5.000	1.028	1.504	-1.241

24

HAB1	4.000	4.000	1.000	5.000	1.041	0.844	-1.119
HAB2	4.071	4.000	1.000	5.000	0.936	1.208	-1.067
HAB4	4.101	4.000	1.000	5.000	0.949	1.467	-1.217
HMO1	3.423	3.000	1.000	5.000	1.003	-0.037	-0.357
HMO2	3.500	4.000	1.000	5.000	1.012	-0.249	-0.330
HMO3	3.429	3.000	1.000	5.000	0.997	0.014	-0.364
PEX3	4.137	4.000	1.000	5.000	1.052	1.458	-1.362
PEX4	4.006	4.000	1.000	5.000	1.094	0.608	-1.113
PRI1	3.452	4.000	1.000	5.000	1.209	-0.933	-0.316
PRI2	3.530	4.000	1.000	5.000	1.134	-0.363	-0.557
PRI3	3.470	4.000	1.000	5.000	1.128	-0.529	-0.427
SWI1	4.149	4.000	1.000	5.000	0.924	2.385	-1.399
SWI2	4.036	4.000	1.000	5.000	0.938	0.729	-0.945
SWI3	4.065	4.000	1.000	5.000	0.946	0.639	-0.941

3.5 Data Analysis

In this study, we used partial least squares structural equation modelling (PLS-SEM) using Smart PLS software for the analysis. PLS-SEM was developed for analysing cause-effect paths that occur between latent variables. In recent years, the method has gained acceptance substantially in social science research. In this study, the researcher used PLS-SEM to analyse the research data due to small sample size data and ease of analysis with multiple moderators (Hair & Alamer, 2022). PLS-SEM analysis is divided into two parts: measurement model assessment (outer model) and structural assessment model (inner model).

3.5.1 Measurement Model Assessment (Outer Model)

The measurement model is generally denoted as outer model. Measurement model represents relationship between laten variable and their indicators (Aburumman et al., 2023). Identifying appropriate indicators is crucial for operationalizing a construct. The measurement model assessment evaluates how well the indicators are

25

linked to the theoretically defined constructs. This process ensures that the survey items effectively measure the intended constructs, ensuring the validity and reliability of the survey instrument. To assess the measurement model, there are four assessments needed in total: (1) internal consistency

(2) convergent validity

(3) discriminant validity

(4) Multi-Collinearity assessment

Internal consistency comprised of two test which are Cronbach's alpha (CA) and Composite reliability (CR). CA measure reliability by examining the inter-correlations among the observed indicator constructs, while CR determines the extent to which the items consistently reflect the latent construct. Commonly acceptable threshold of CA and CR is 0.7 and higher (Hair et al., 2019).

Convergent validity refers to the degree to which indicators developed to measure a specific construct measure that construct. In other words, indicators intended to measure the same or similar constructs should exhibit a high level of correlation. This concept highlights the importance of ensuring that different measures of the same underlying construct are consistently and strongly related (Aburumman et al., 2023; Carlson & Herdman, 2012). To establish convergent validity, there are two required tests: factor loading (FL) and average-variance extract (AVE). Factor loading is a correlation coefficient indicating the relationship between a variable and a factor. Generally, loading above 0.708 is recommended as it suggests that a construct explain more than 50% of the indicator's variance (Hair et al., 2019). Average-variance extract or AVE measures the amount of variance captured by latent variables relative to measurement error. AVE is calculated by dividing the sum of square loadings by number of indicators. According to

26

Hair et al. (2019), AVE should be 0.50 or greater, indicating that the construct explains at least 50% of its components.
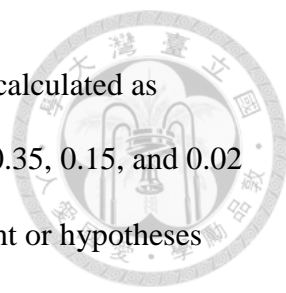
The Fornell-Larcker criterion is employed to assess the discriminant validity. Fornell-Larcker criterion is one of the most widely used techniques for determining discriminant validity. This criterion states that the correlation between a construct and any other construct must be bigger than the square root of the average variance retrieved by the construct (Analysis INN, 2020).

Lastly, multi-collinearity is examined to prevent high correlation between independent variables. The Variance inflation factor or VIF is used to quantify the degree of correlation between an independent variable and the other independent variables in the model. The VIF measures how much the variance of the estimated regression coefficient is inflated due to multicollinearity. Acceptable VIF value is between 0.2 to 5 (Owusu Kwateng et al., 2019).

3.5.2 Structural Assessment Model (Inner Model)

The structural assessment model is generally denoted as inner model. This assessment is employed to determine the relationship of latent variables and the predictive capability of the research model. In this process, bootstrapping with 5,000 samples is applied to R^2, f^2, and path coefficient (hypotheses testing) are three main aspects for the assessment.

R^2 or known as coefficient of determination is the statistical measure that indicates the proportion of variance in the dependent variable that the independent variables can explain in a regression model. R^2 values of 0.75, 0.50, and 0.25 are often regarded as significant, moderate, and weak, respectively. Furthermore, f^2 or effect size

27

is used to determine the effect size of an independent variable. f^2 is calculated as follows: f-square = R-square / (1 - R-square). Commonly, values of 0.35, 0.15, and 0.02 are considered strong, moderate, and weak for f^2. For path coefficient or hypotheses testing, direct and indirect relations should have p-value lower than 0.05 to achieve 95% confidence. Then, hypothesis could be considered acceptable and supported (Aburumman et al., 2023).

3.5.3 Multi-Group Analysis (MGA)

Multi-group analysis or MGA is used to test and see if there's differences between pre-defined data group. Differences in mean, path coefficient, loading, and variances could be observed by performing MGA (LauraCS, 2023). In this study, the result from MGA will come in a form of difference in path coefficients and p-value confirming moderation effect of the moderators. Multi-group PLS analysis was employed to identify the moderating effect first for Age less than 28 vs Age 28 and above. The reason for dividing respondents at the age of 28 was to identify the generational differences in technology adoption between Gen Z and older generations which Gen Z is defined as people who born between 1996 and 2010 (McKinsey, 2023). An existing study found that people in Gen Z tend to be more influenced by perceived ease of use or simpler user interface compared to older generation (Shams et al., 2020; Windasari et al., 2022) . and then male vs female and lastly high PMP use experience and low PMP use experience. The sample size of 74 and 94 responses for Age less than 28 and Age 28 and above, 55 and 113 responses for male and females, 90 and 78 responses for low and high PMP use experience.

28

Chapter 4: Research Finding

4.1 Measurement Model Analysis (Outer Model)

To assess the model, we first analyzed the measurement model. Initially, we assessed internal consistency by examining Cronbach alpha. According to Table 3, all constructs exhibited a Cronbach alpha value greater than 0.7, indicating that internal consistency was verified. Next, we look at the composite reliability threshold of 0.7, which all constructs passed (

Table 4) (Hair et al., 2019). In addition, we evaluated the average variance extracted (AVE) for each construct and discovered that they all exceeded the necessary value of 0.5 (Table 4), thus verifying convergent validity. To establish discriminant validity, we utilized the Fornell-Larcker criterion (Table *6*) which requires latent constructs to share more variability with their indicators than with other model indicators; however, no issues were found during our evaluation process regarding this matter. In addition, factor loading was examined (Table 5), all variables are found to have sufficient correlation between measurement items and the latent constructs.

Table 4:

Model Validity and Reliability

Variable	Cronbach's Alpha	ρ A	Composite Reliability	Average Variance Extracted (AVE)
DIS	0.726	0.745	0.846	0.649
EEX	0.934	0.936	0.958	0.883
FCO	0.721	0.798	0.838	0.636
HAB	0.922	0.922	0.950	0.865
HMO	0.933	0.935	0.957	0.882
PEX	0.777	0.777	0.900	0.818
PR	0.937	0.960	0.959	0.887

| SWI | 0.891 | 0.893 | 0.932 | 0.821 |

Table 5

Factor Loading

Variable	DIS	EEX	FCO	HAB	HMO	PEX	PR	SWI
DIS1	0.811							
DIS2	0.719							
DIS3	0.879							
EEX1		0.948						
EEX2		0.925						
EEX4		0.946						
FCO1			0.881					
FCO3			0.693					
FCO4			0.806					
HAB1				0.932				
HAB2				0.915				
HAB4				0.943				
HMO1					0.934			
HMO2					0.939			
HMO3					0.944			
PEX3						0.905		
PEX4						0.903		
PRI1							0.957	
PRI2							0.957	
PRI3							0.911	
SWI1								0.909
SWI2								0.912
SWI3								0.898

Table 6

Fornell - Larcker Criterion

Variable	DIS	EEX	FCO	HAB	HMO	PEX	PR	SWI
DIS	0.805							
EEX	0.548	0.940						
FCO	0.549	0.799	0.797					
HAB	0.599	0.775	0.757	0.930				
HMO	0.411	0.412	0.509	0.482	0.939			
PEX	0.535	0.665	0.700	0.681	0.566	0.904		
PR	0.421	0.260	0.347	0.322	0.407	0.341	0.942	
SWI	0.639	0.727	0.694	0.804	0.444	0.661	0.353	0.906

30

4.2 Multi-Collinearity Assessment

The Variance inflation factor (VIF) scales ranged from 0.2 to 5 in the study

(Table 7) showing no multi-collinearity issues.

Table 7

Collinearity Statistics (VIF)

|	DIS	EEX	FCO	HAB	HMO	PEX	PR	SWI
DIS								1.800
EEX								3.558
FCO								3.601
HAB								3.281
HMO								1.655
PEX								2.513
PR								1.338
SWI								

4.3 Assessment of Structural Model

The bootstrapping process with 5,000 samples was used to assess the significance

of the relationship between constructs in the model. To assess the significance of each

relation, p-value should lower than 0.05. From the result (Table 8), DIS and HAB

significantly influence the intention of Thai individuals to transition from conventional

payment methods to PMP.

Table 8

Path Coefficients

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	Significance level

31
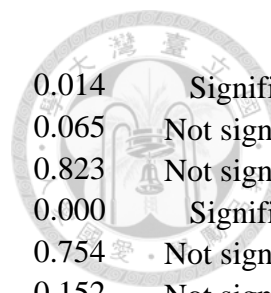
DIS -> SWI	0.186	0.193	0.076	2.447	0.014	Significant
EEX -> SWI	0.170	0.169	0.092	1.848	0.065	Not significant
FCO -> SWI	0.019	0.036	0.084	0.224	0.823	Not significant
HAB -> SWI	0.463	0.445	0.092	5.012	0.000	Significant
HMO -> SWI	-0.018	-0.017	0.057	0.314	0.754	Not significant
PEX -> SWI	0.116	0.112	0.081	1.434	0.152	Not significant
PR -> SWI	0.042	0.039	0.050	0.839	0.401	Not significant

4.4 Coefficients of Determination (R^2 and adjusted R^2)

The coefficient of Determination depicts the amount of variance of the dependent variable explained by the independent variables. T, R^2 values of 0.75, 0.50 and 0.25 are considered strong, moderate, and weak respectively. This study (Table 9) achieved R^2 and adjusted R^2 of 0.71 and 0.69 respectively which was acceptable.

Table 9

R Square

	R Square	R Square Adjusted
SWI	0.711	0.699

4.5 Effect Size (f^2)

In this section, we utilized effect size measurement to determine the magnitude of the effects observed in our analysis. The analysis indicates moderate effect size for HAB (0.226) and small effect size for DIS (0.067) and EEX (0.028). Besides, other predictors have small effect since their f^2 were less than 0.02.

Table 10

F Square

	DIS	EEX	FCO	HAB	HMO	PEX	PR	SWI

DIS	0.067
EEX	0.028
FCO	0.000
HAB	0.226
HMO	0.001
PEX	0.018
PR	0.005
SWI	

4.6 Moderation Effect Analysis

The impact of PEX on SWI is significantly higher for males than females. Next, MGA results for path coefficients were checked to analyze moderation effects of gender, age and PMP experience.
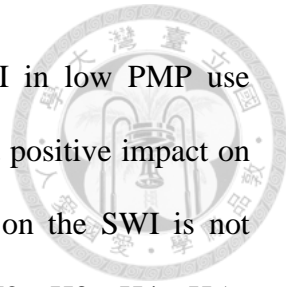
Gender-specific path coefficients (Table 11) show that DIS and EEX in females have a significant positive impact in SWI while these latent variables show no significant impact in males. On the other hand, PEX has a significant positive impact on SWI only in males, leading to the acceptance of H2b. HAB is the only latent variable that has significant positive impact in both male and female groups. However, apart from PEX, the path of other latent variables on the SWI is not moderated by Gender, leading to the rejection of H1b, H3b, H4b, H5b, H6b, H7b.

Next, we investigated the Age-specific path coefficients (Table 11) and found that EEX significantly positively impacts SWI in the low age group. In contrast, HAB significantly positively impacts SWI in both groups. However, the impact of all latent variables on the SWI is not moderated by Age which leads to the rejection of H1a, H2a, H3a, H4a, H5a, H6a, and H7a.

Lastly, we investigated PMP use experience-specific path coefficients (Table 11) and the result shows that DIS has significant positive impact on SWI in high PMP use

33

experience group. EEX has a significant positive impact on SWI in low PMP use experience group. HAB is the only latent variable with a significant positive impact on SWI in both groups. However, the impact of all latent variables on the SWI is not moderated by PMP use experience, leading to the rejection of H1c, H2c, H3c, H4c, H5c, H6c, and H7c.

Table 11

Group-specific Path Coefficients and Multi-group Analysis Results

Variable	Female sample		Male sample		p-value new
	Path coefficients	p-value	Path coefficients	p-value	(Females vs Males)
DIS -> SWI	0.190	0.012	0.196	0.178	0.997
PEX -> SWI	-0.060	0.532	0.328	0.024	0.046
EEX -> SWI	0.223	0.033	0.199	0.139	0.866
FCO -> SWI	0.159	0.121	-0.128	0.496	0.198
HMO -> SWI	-0.007	0.913	-0.086	0.430	0.525
HAB -> SWI	0.428	0.000	0.435	0.013	0.939
PR -> SWI	0.050	0.420	0.190	0.332	0.480

Variable	High age sample		Low age sample		p-value new
	Path coefficients	p-value	Path coefficients	p-value	(High vs low age)
DIS -> SWI	0.202	0.065	0.153	0.123	0.752
PEX -> SWI	0.142	0.184	0.028	0.812	0.462
EEX -> SWI	0.087	0.390	0.372	0.009	0.100
FCO -> SWI	0.017	0.889	0.012	0.911	0.996
HMO -> SWI	-0.027	0.753	0.020	0.804	0.695
HAB -> SWI	0.483	0.000	0.377	0.008	0.561
PR -> SWI	0.058	0.549	0.036	0.596	0.782
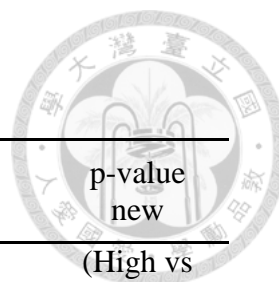
Variable	Low PMP use experience sample		High PMP use experience sample		p-value new
	Path coefficients	p-value	Path coefficients	p-value	(High vs low experience)
DIS -> SWI	0.112	0.299	0.322	0.004	0.183
PEX -> SWI	0.068	0.582	0.197	0.106	0.455
EEX -> SWI	0.260	0.023	-0.054	0.692	0.088
FCO -> SWI	-0.048	0.690	0.169	0.216	0.234
HMO -> SWI	0.038	0.632	-0.119	0.118	0.157
HAB -> SWI	0.531	0.000	0.406	0.003	0.498
PR -> SWI	-0.007	0.934	0.048	0.467	0.603

35

Chapter 5: Interpretation & Conclusion

5.1 Theoretical Implication

This study use Venkatesh's UTAUT2 model in the context of proximity payment adoption of Thai people. This research provides several theoretical implications in proximity mobile payment.

DIS has a significant positive impact for Thai people migrating from cash and card payment to PMP. This may be partly driven by the Covid-19 pandemic, which aligns with the results of other existing studies (Mu & Lee, 2022). Further research may be done by focusing on the relationship of cleanliness concern and the adoption of PMP.

HAB has the highest significant impact on SWI. The impact of HAB on SWI is common for users in digital age which they use mobile phone daily leading to higher adoption level in PMP (Moorthy et al., 2019). Also, HAB tends to be dominant predictor in the market that the technology has existed already past introduction stage (Tamilmani et al., 2021).

Furthermore, FCO has no effect on SWI which could be from the fact that Thailand has PromptPay system allows interoperability for the most PMP in Thailand so facilitating condition might not be the key concern for Thai people. This finding also corroborates existing research in Thailand (Intarot & Beokhaimook, 2018). Additionally, despite recent news about increasing Thai cybercrime related to mobile banking, PR has no significant impact on SWI in Thai people (The Nation Thailand, 2023). This could be an area for future research investigating the development in the behaviour of Thai people caused by concerns on cybercrimes. HMO was also found to be no influence for Thai people which contradicts existing studies in contactless and mobile payment context
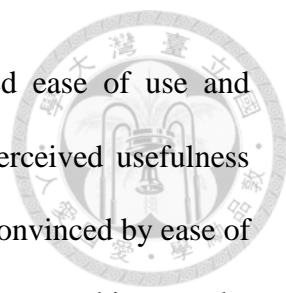
which might be the result from differences in cultures (Jayarathne et al., 2022; Karjaluoto et al., 2019).

5.1.2 Multi-Group Analysis

In multi-group analysis, Gender moderated the impact of PEX on SWI and found difference between two genders. PEX showed significant positive impact on SWI in males while the same predictor showed significant slight negative impact in females. Existing studies also concluded that performance expectancy has stronger influence in males in accepting new technology namely e-learning and electronic document management system. (Alghamdi et al., 2022). When introduced to new software in organization, male users were found to be more strongly influenced by perceived usefulness whereas female users were more prone to perceived ease of use (Venkatesh & Morris, 2000). Furthermore, Namabira (2022) discovered that males perceived more usefulness in human resource technologies than females. Also, males are usually more skillful in technologies like computer, email and electronic data management than females (Goswami & Dutta, 2016). This could indicate that male users are more likely to consider performance enhancement and usefulness while adopting new PMP, while female users appeared to be less concerned with this factor.

EEX has significance positive influence on SWI in females while has no significance impact in males this is consistent with prior research (Purohit & Arora, 2021), It's possible that females are more interested in the process and concern about the method of completing the tasks (Purohit & Arora, 2021). Additionally, Venkatesh & Morris (2000) discovered that perceived ease of use was more influential in females' adoption of new organizational software. In e-learning context, according to previous
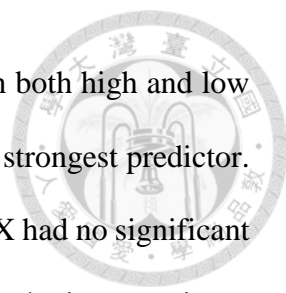
37

research, females were more significantly influenced by perceived ease of use and computer self-efficacy, whereas males were more influenced by perceived usefulness (Ong & Lai, 2006). This might suggest that females are likely to be convinced by ease of use when deciding to adopt new PMP compared to males. However, this may be influenced by differences in technological literacy, leading to an opportunity for further studies.

Regarding age, multi-group analysis found no significance difference between high and low age for the path coefficients of independent variables. This contradicts previous studies suggesting that older adults were significantly influenced by the perceived ease of use (Arning & Ziefle, 2007; Ma et al., 2021). However, the result might not properly represent population due to convenience sampling Thus, further study is needed to investigate the result.

HAB has a significant positive impact on SWI in both age groups, consistent with existing research. Macedo (2017) found that habit directly affected elders in adopting new communication technologies. Karjaluoto et al. (2019) confirmed that habit influenced intention to use contactless payment in all consumer age groups. This suggested that habit is the main factor that drive people to adopt new technologies. Thus, in the context of PMP adoption, having a system that constantly reminds customers to use PMP to pay at the store is critical in promoting switching intention. In low age group, EEX shows significant impact which might be from the trait of Generation Z (Gen Z) since all responses in this group came from Gen Z or younger. Aseng (2020) found that effort expectancy is a significant predictor for Gen Z in Fintech adoption context.

Regarding PMP use experience, multi-group analysis shows no significant difference between high and low PMP use experience for the path coefficients of

38

independent variables. HAB has the highest significance influence in both high and low experience groups. This upholds prior research that posit HAB is the strongest predictor. DIS had a significant impact only in high experience group while EEX had no significant impact. This could imply that high experience PMP users do not like the inconvenience of traditional payment and are already familiar with PMP system to the point that it has become effortless. On the other hand, EEX significantly impacted SWI in the low PMP use experience group. Since these users are not as familiar with PMP system as high experience group, they tend to care more about effort needed in using PMP.

5.2 Managerial Implication

This study has four managerial implications. Firstly, HAB shows high impact across sample groups. Consequently, PMP firms should encourage usage habit by reminding users on the point of sale, for example, staffs in retail stores can ask purchasing users if they would like to use any PMP services to complete the payment. Marketers can also encourage using gamification to provide fun and enjoyable experience when using the PMP (Yang et al., 2023). Moreover, marketers can place media at point of sale to help remind users of the PMP.

Second, DIS has significant impact in pushing Thai people toward PMP. This could be driven by health safety concern caused by the pandemic. A report from Dynata, LLC (2020) indicated that contactless payment usage has increased during the pandemic in major countries namely US, UK, France, Germany, China, and New Zealand. Consumers in these countries also preferred contactless payment over chip, PIN, magnetic stripe card or cash. It could be implied that concerns in health safety drive people away from traditional payment therefore marketers can leverage on the finding by

39

focusing their communication on health safety benefits from using PMP (PayPal Inc., 2020).

Third, as EEX show high impact in low age group, PMP firms that wish to acquire Gen Z users may want to lower effort expected to use their product as much as possible. In other words, user interface and user experience of the PMP should be easy to understand, simple, and intuitive to use as supported by an existing study (Windasari et al., 2022). Therefore, marketers should also focus their communication on the easiness of the PMP to ensure higher usage among younger users,

Furthermore, EEX also has statistically significant and positive association with SWI in female group. Thus, marketers may highlight the intuitiveness of PMP usage experience to target female users. Besides, EEX also positively impacts people with low PMP use experience. Users with low experience might not be familiar with the system so marketer should focus on building familiarity in this group to increase usage frequency.

Lastly, given the positive impact of PEX in male users, marketers may highlight benefits of the PMP such as faster payments, traceable transactions, and ability pay with multiple sources of funds. Such benefits might impact male user adoption and therefore, increase the usage of PMP.

In conclusion, the study finds that the SWI from traditional payment to PMP differs due to differences in gender, PMP use experience, and age. Thus, including these factors in the development of marketing strategies targeting Thailand market could be significant.

5.3 Conclusion

From theoretical standpoint, the study found that habit and dissatisfaction in traditional payment have a significant positive impact on switching intention of Thai people. It also suggested that gender moderates the impact of performance expectancy, which is stronger in males. In addition, effort expectancy, although it was not moderated by gender, was found to has weaker influence in females. Furthermore, the study highlights the importance of habit and ease of use for PMP adoption among different age groups.

For managerial implication, this article provides four implications for PMP firms and public organizations. Firstly, encouraging usage habits and reminding users at the point of sale can increase adoption. Secondly, emphasizing health safety benefits can push Thai people towards PMP. Thirdly, focusing on ease of use is crucial for attracting Gen Z users. Additionally, highlighting the intuitive experience and building familiarity can increase adoption among females and users with low PMP experience. Lastly, emphasizing benefits like faster payments can impact adoption of PMP by males.

5.4 Limitations

There are limitations to the study, Firstly, this research used quantitative methodology with convenience sampling due to time and cost constraints. Consequently, the primary information from the survey method might not be normally distributed, resulting in less credibility, particularly in age and gender-specific findings as the gathered data is skewed in favour of females. Hence, further research with probability sampling could be employed to confirm the findings in this study. Secondly, this study did not differentiate between cash and bank cards. Doing so might discover more insight

as contact rate of cash and bank cards should be significantly lower as bank cards are personal product. Third, this study only covers Thailand population and predictors might perform differently in other countries. So further research could conduct cross-cultural studies to gain more comprehensive view.
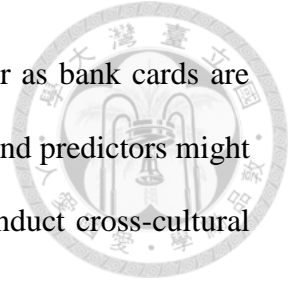
5.5 Future Research

Some interesting key points could be derived from this thesis. Firstly, dissatisfaction in traditional payment could be studies in future research given the post-pandemic context. Furthermore, this point could be studied in longitudinal research to compare data from pre and post pandemic to see possible dissatisfaction changes.

Secondly, perceived risk is another key area that could be further investigated. As mentioned before, there are recent news regarding cybersecurity related to digital banking in Thailand. Thus, it is interesting to see how perceived risk might change in the future. Lastly, further research can also investigate the adoption behaviour from business side which is another key factor in encouraging PMP usage in Thailand.

References

Aburumman, O. J., Omar, K., Al Shbail, M., & Aldoghan, M. (2023). How to Deal with the Results of PLS-SEM? In B. Alareeni & A. Hamdan (Eds.), *Explore Business, Technology Opportunities and Challenges After the Covid-19 Pandemic* (Vol. 495, pp. 1196–1206). Springer International Publishing. https://doi.org/10.1007/978-3-031-08954-1_101

Afonso, C. M., Roldán, J. L., & Sánchez-Franco, M. (2012). *The moderator role of Gender in the Unified Theory of Acceptance and Use of Technology (UTAUT): A study on users of Electronic Document Management Systems*.

Alghamdi, A. M., Alsuhaymi, D. S., Alghamdi, F. A., Farhan, A. M., Shehata, S. M., & Sakoury, M. M. (2022). University students' behavioral intention and gender differences toward the acceptance of shifting regular field training courses to e-training courses. *Education and Information Technologies*, *27*(1), 451–468. https://doi.org/10.1007/s10639-021-10701-1

Analysis INN. (2020, February 27). *Discriminant Validity through Fornell-Larcker Criterion*. Analysis INN. https://www.analysisinn.com/post/discriminant-validity-through-fronell-larcker-criterion/

Angelakis, E., Azhar, E. I., Bibi, F., Yasir, M., Al-Ghamdi, A. K., Ashshi, A. M., Elshemi, A. G., & Raoult, D. (2014). Paper money and coins as potential vectors of transmissible disease. *Future Microbiology*, *9*(2), 249–261. https://doi.org/10.2217/fmb.13.161

Arning, K., & Ziefle, M. (2007). Understanding age differences in PDA acceptance and performance. *Computers in Human Behavior*, *23*(6), 2904–2927. https://doi.org/10.1016/j.chb.2006.06.005

43

Aseng, A. C. (2020). Factors Influencing Generation Z Intention in Using FinTech Digital Payment Services. *CogITo Smart Journal*, *6*(2), 155–166. https://doi.org/10.31154/cogito.v6i2.260.155-166

Bank of Thailand. (2020, July). *PromptPay: The Game Changer for Payments*. https://www.bot.or.th:443/Thai/BOTMagazine/Pages/256303_TheKnowledge_PromptPay.aspx

Bank of Thailand, & Hothai, C. (2021). *Payment systems report*. Bank of Thailand.

Banks.am. (2022). *History of contactless payments: From past century to the present day*. Banks.Am. https://banks.am/en/news/fintech/22668

Bansal, H. S. (2005). "Migrating" to New Service Providers: Toward a Unifying Framework of Consumers' Switching Behaviors. *Journal of the Academy of Marketing Science*, *33*(1), 96–115. https://doi.org/10.1177/0092070304267928

Bonem, E., Ellsworth, P., & Gonzalez, R. (2015). Age Differences in Risk: Perceptions, Intentions and Domains. *Journal of Behavioral Decision Making*, *28*. https://doi.org/10.1002/bdm.1848

Buchanan, J., Dillon, S., & Al-Otaibi, K. (2014). Perceived Risk and Online Shopping Intention: A Study Across Gender and Product Type. *International Journal of E-Business Research*, *10*, 17–39. https://doi.org/10.4018/ijebr.2014100102

Buddhika, D. (2018, May 7). *How Apple Pay Works Under the Hood*. FreeCodeCamp.Org. https://www.freecodecamp.org/news/how-apple-pay-works-under-the-hood-8c3978238324/

44

Carlson, K. D., & Herdman, A. O. (2012). Understanding the Impact of Convergent Validity on Research Results. *Organizational Research Methods*, *15*(1), 17–32. https://doi.org/10.1177/1094428110392383

Castañeda, J. A., Muñoz-Leiva, F., & Luque, T. (2007). Web Acceptance Model (WAM): Moderating effects of user experience. *Information & Management*, *44*(4), 384–396. https://doi.org/10.1016/j.im.2007.02.003

CH7 news. (2022, June 12). ผู้เสียหาย ร้องแอปฯ ช็อปปิงออนไลน์ ตัดเงินในบัญชี. *CH7 Thailand*. https://news.ch7.com/detail/609684

Chang, C.-M., Liu, L.-W., Huang, H.-C., & Hsieh, H.-H. (2019). Factors Influencing Online Hotel Booking: Extending UTAUT2 with Age, Gender, and Experience as Moderators. *Information*, *10*(9), 281. https://doi.org/10.3390/info10090281

Chang, I.-C., Liu, C.-C., & Chen, K. (2014). The push, pull and mooring effects in virtual migration for social networking sites: Virtual migration for social networking sites. *Information Systems Journal*, *24*(4), 323–346. https://doi.org/10.1111/isj.12030

Changchit, C., Lonkani, R., & Sampet, J. (2017). Mobile banking: Exploring determinants of its adoption. *Journal of Organizational Computing and Electronic Commerce*, *27*(3), 239–261. https://doi.org/10.1080/10919392.2017.1332145

Changchit, C., Lonkani, R., & Sampet, J. (2018). Determinants of Mobile Banking Adoption: A Comparative Study Between U.S. and Thailand. *Journal of Global Information Management*, *26*(4), 158–184. https://doi.org/10.4018/JGIM.2018100109

Chapree, C. (2022, October 5). ShopeePay Malaysia To Discontinue Withdrawal To Bank Account Feature. *Lowyat.NET*. https://www.lowyat.net/2022/286126/shopeepay-malaysia-withdrawal-dc/

Chen, C.-C. B., Chen, H., & Wang, Y.-C. (2022). Cash, credit card, or mobile? Examining customer payment preferences at chain restaurants in Taiwan. *Journal of Foodservice Business Research*, *25*(2), 148–167. https://doi.org/10.1080/15378020.2021.1934251

Dynata, LLC. (2020). *Global consumer trends: The COVID-19 Edition.*

European Payments Council. (2017). *Mobile proximity payments*. European Payments Council. https://www.europeanpaymentscouncil.eu/what-we-do/other-sepa-payments/sepa-goes-mobile/mobile-proximity-payments

Faqih, K. M. S., & Jaradat, M.-I. R. M. (2021). Integrating TTF and UTAUT2 theories to investigate the adoption of augmented reality technology in education: Perspective from a developing country. *Technology in Society*, *67*, 101787. https://doi.org/10.1016/j.techsoc.2021.101787

Goswami, A., & Dutta, S. (2016). Gender Differences in Technology Usage—A Literature Review. *Open Journal of Business and Management*, *04*(01), 51–59. https://doi.org/10.4236/ojbm.2016.41006

Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, *1*(3), 100027. https://doi.org/10.1016/j.rmal.2022.100027
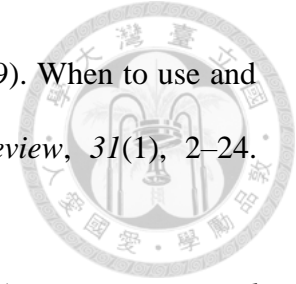
Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling*.

Hillingdon, A. Y., Flecther, J., & Prideaux, B. (2012). Tourism Development in a Difficult Environment: A Study of Consumer Attitudes, Travel Risk Perceptions and the Termination of Demand. *Tourism Economics*, *18*. https://doi.org/10.5367/te.2012.0162

Humbani, M., & Wiese, M. (2019). An integrated framework for the adoption and continuance intention to use mobile payment apps. *International Journal of Bank Marketing*, *37*(2), 646–664. https://doi.org/10.1108/IJBM-03-2018-0072

Imtiaz, S. (2018). The Studies of Unified Theory of Acceptance and Use of Technology (UTAUT) in M-Commerce Context. *International Journal of Information Communication Technology and Digital Convergence*, *3*, 42–56.

Intarot, P., & Beokhaimook, C. (2018). Influencing Factor in E-Wallet Acceptant and Use. *International Journal of Business and Administrative Studies*, *4*(4), 167–175.

Iqbal, J., & Idrees, M. (2022). Understanding the IOT Adoption for Home Automation in the Perspective of UTAUT2. *Global Business Review*, 097215092211320. https://doi.org/10.1177/09721509221132058

Izkair, A. S., & Lakulu, M. M. (2021). Experience moderator effect on the variables that influence intention to use mobile learning. *Bulletin of Electrical Engineering and Informatics*, *10*(5), 2875–2883. https://doi.org/10.11591/eei.v10i5.3109

Jayarathne, P. G. S. A., Chathuranga, B. T. K., Dewasiri, N. J., & Rana, S. (2022). Motives of mobile payment adoption during COVID-19 pandemic in Sri Lanka: A

47

holistic approach of both customers' and retailers' perspectives. *South Asian Journal of Marketing*, *4*(1), 51–73. https://doi.org/10.1108/SAJM-03-2022-0013

Kang, K., Wang, T., Chen, S., & Su, Y.-S. (2021). Push-Pull-Mooring Analysis of Massive Open Online Courses and College Students During the COVID-19 Pandemic. *Frontiers in Psychology*, *12*, 755137. https://doi.org/10.3389/fpsyg.2021.755137

Karjaluoto, H., Shaikh, A. A., Leppäniemi, M., & Luomala, R. (2019). Examining consumers' usage intention of contactless payment systems. *International Journal of Bank Marketing*, *38*(2), 332–351. https://doi.org/10.1108/IJBM-04-2019-0155

Kastrenakes, J. (2014, September 3). *ISIS mobile wallet changes name to Softcard to avoid association with militant group*. The Verge. https://www.theverge.com/2014/9/3/6101035/isis-rebrands-as-softcard-to-avoid-association-with-militant-group

Kim, M., Kim, S., & Kim, J. (2019). Can mobile and biometric payments replace cards in the Korean offline payments market? Consumer preference analysis for payment systems using a discrete choice model. *Telematics and Informatics*, *38*, 46–58. https://doi.org/10.1016/j.tele.2019.02.003

Koul, S., & Eydgahi, A. (2017). A systematic review of technology adoption frameworks and their applications. *Journal of Technology Management & Innovation*, *12*(4), 106–113. https://doi.org/10.4067/S0718-27242017000400011

Lake, L. (2019, January 14). *Learn About Perceived Risk and How to Overcome It With Messaging*. LiveAbout. https://www.liveabout.com/what-is-perceived-risk-2295541
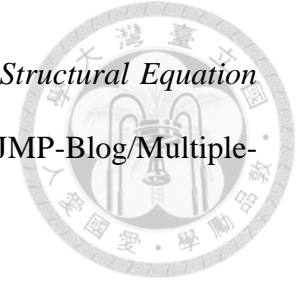
LauraCS. (2023, February 27). *Multiple-Group Analysis in Structural Equation Modeling*. JMP User Community. https://community.jmp.com/t5/JMP-Blog/Multiple-Group-Analysis-in-Structural-Equation-Modeling/ba-p/604714

Lee, E. S. (1966). *A Theory of Migration*.

Leesa-nguansuk, S. (2021, September 23). NCSA investigates two data leakage episodes. *Bangkok Post*. https://www.bangkokpost.com/business/2186279/ncsa-investigates-two-data-leakage-episodes

Limayem, Hirt, & Cheung. (2007). How Habit Limits the Predictive Power of Intention: The Case of Information Systems Continuance. *MIS Quarterly*, *31*(4), 705. https://doi.org/10.2307/25148817

Ma, Q., Chan, A. H. S., & Teh, P.-L. (2021). Insights into Older Adults' Technology Acceptance through Meta-Analysis. *International Journal of Human–Computer Interaction*, *37*(11), 1049–1062. https://doi.org/10.1080/10447318.2020.1865005

Macedo, I. M. (2017). Predicting the acceptance and use of information and communication technology by older adults: An empirical examination of the revised UTAUT2. *Computers in Human Behavior*, *75*, 935–948. https://doi.org/10.1016/j.chb.2017.06.013

MacKenzie, S. B., & Podsakoff, P. M. (2012). Common Method Bias in Marketing: Causes, Mechanisms, and Procedural Remedies. *Journal of Retailing*, *88*(4), 542–555. https://doi.org/10.1016/j.jretai.2012.08.001

Marikyan, D. (2021). *Unified Theory of Acceptance and Use of Technology*. https://open.ncl.ac.uk/

Martins, M., Farias, J. S., Albuquerque, P. H. M., & Pereira, D. S. (2018). Adoption of Technology for Reading Purposes: A Study of E-Books Acceptance. *BBR. Brazilian Business Review*, *15*(6), 568–588.

Mastercard. (2011, July 19). *Isis Forms Relationships with Visa, MasterCard, Discover and American Express*. MasterCard Social Newsroom. https://newsroom.mastercard.com/press-releases/isis-forms-relationships-with-visa-mastercard-discover-and-american-express/

Moon, B. (1995). Paradigms in migration research: Exploring "moorings" as a schema. *Progress in Human Geography*, *19*(4), 504–524. https://doi.org/10.1177/030913259501900404

Moorthy, K., Tzu Yee, T., Chun T'ing, L., & Vija Kumaran, V. (2019). Habit and hedonic motivation are the strongest influences in mobile learning behaviours among higher education students in Malaysia. *Australasian Journal of Educational Technology*, *35*(4). https://doi.org/10.14742/ajet.4432

Morosan, C., & DeFranco, A. (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. *International Journal of Hospitality Management*, *53*, 17–29. https://doi.org/10.1016/j.ijhm.2015.11.003

Mortimer, G., Neale, L., Hasan, S. F. E., & Dunphy, B. (2015). Investigating the factors influencing the adoption of m-banking: A cross cultural study. *International Journal of Bank Marketing*, *33*(4), 545–570. https://doi.org/10.1108/IJBM-07-2014-0100

Mu, H.-L., & Lee, Y.-C. (2022). Will proximity mobile payments substitute traditional payments? Examining factors influencing customers' switching intention

during the COVID-19 pandemic. *International Journal of Bank Marketing*, *40*(5), 1051–1070. https://doi.org/10.1108/IJBM-06-2021-0284

Namabira, J. (2022). Gender and Perceived Usefulness of e-HRM Technologies. A Case of the Bankers' Experience in Tanzania. *TEXILA INTERNATIONAL JOURNAL OF MANAGEMENT*, *8*(1), 132–138. https://doi.org/10.21522/TIJMG.2015.08.01.Art010

Ohman, S. (2017). Previous Experiences and Risk Perception: The Role of Transference. *Journal of Education, Society and Behavioural Science*, *23*, 1–10. https://doi.org/10.9734/JESBS/2017/35101

Oliveira, T., Faria, M., Thomas, M. A., & Popovič, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management*, *34*(5), 689–703. https://doi.org/10.1016/j.ijinfomgt.2014.06.004

Ong, C.-S., & Lai, J.-Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior*, *22*(5), 816–829. https://doi.org/10.1016/j.chb.2004.03.006

Owusu Kwateng, K., Osei Atiemo, K. A., & Appiah, C. (2019). Acceptance and use of mobile banking: An application of UTAUT2. *Journal of Enterprise Information Management*, *32*(1), 118–151. https://doi.org/10.1108/JEIM-03-2018-0055

PayPal Inc. (2020, September 1). *The rise of contactless payments for health and safety—Zettle Blog*. https://blog.zettle.com/gb/news-trends/rise-of-contactless-payments/

Prastiawan, D. I., Aisjah, S., & Rofiaty, R. (2021). The Effect of Perceived Usefulness, Perceived Ease of Use, and Social Influence on the Use of Mobile Banking

through the Mediation of Attitude Toward Use. *Asia Pacific Management and Business Application*, *009*(03), 243–260. https://doi.org/10.21776/ub.apmba.2021.009.03.4

PricewaterhouseCoopers. (2022, September 20). *Payments 2025 and Beyond*. PwC. https://www.pwc.com/gx/en/industries/financial-services/publications/financial-services-in-2025/payments-in-2025.html

Purohit, S., & Arora, R. (2021). Role of gender on Intention to adopt mobile payments among generation Z. *Transnational Marketing Journal*, *9*(1). https://doi.org/10.33182/tmj.v9i1.1011

Reibstein, D., Bradlow, E., & Zhang, Z. J. (2014, August 13). Why Consumers Aren't Buying the Idea of Mobile Wallets – Yet. *Knowledge at Wharton*. https://knowledge.wharton.upenn.edu/article/consumers-arent-buying-mobile-wallets-yet/

Sara, L. (2021, September 8). *Proximity mobile pay is on the rise worldwide—Insider Intelligence Trends, Forecasts & Statistics*. https://www.insiderintelligence.com/content/proximity-mobile-pay-on-rise-worldwide

Schmitz, A., Díaz-Martín, A. M., & Yagüe Guillén, M. J. (2022). Modifying UTAUT2 for a cross-country comparison of telemedicine adoption. *Computers in Human Behavior*, *130*, 107183. https://doi.org/10.1016/j.chb.2022.107183

Schomakers, E.-M., Lidynia, C., Vervier, L. S., Valdez, A. C., & Ziefle, M. (2022). Applying an Extended UTAUT2 Model to Explain User Acceptance of Lifestyle and Therapy Mobile Health Apps: Survey Study. *JMIR MHealth and UHealth*, *10*(1), e27095. https://doi.org/10.2196/27095

Souiden, N., Ladhari, R., & Chaouali, W. (2020). Mobile banking adoption: A systematic review. *International Journal of Bank Marketing*, *39*(2), 214–241. https://doi.org/10.1108/IJBM-04-2020-0182

Tamilmani, K., Rana, N. P., Wamba, S. F., & Dwivedi, R. (2021). The extended Unified Theory of Acceptance and Use of Technology (UTAUT2): A systematic literature review and theory evaluation. *International Journal of Information Management*, *57*, 102269. https://doi.org/10.1016/j.ijinfomgt.2020.102269

ThaiPublica. (2021, February 11). *คนไทยใช้โมบายแบงกิ้งอันดับ 1 ของโลก—ThaiPublica*. https://thaipublica.org/2021/02/thais-using-mobile-banking-is-the-worlds-highest/

The Nation Thailand. (2023, January 19). *Scale of Thai cybercrime revealed as almost 60,000 bank accounts frozen*. Nationthailand. https://www.nationthailand.com/thailand/general/40024161

Tseng, T. H., Lin, S., Wang, Y.-S., & Liu, H.-X. (2022). Investigating teachers' adoption of MOOCs: The perspective of UTAUT2. *Interactive Learning Environments*, *30*(4), 635–650. https://doi.org/10.1080/10494820.2019.1674888

Upadhyay, N., Upadhyay, S., Abed, S. S., & Dwivedi, Y. K. (2022). Consumer adoption of mobile payment services during COVID-19: Extending meta-UTAUT with perceived severity and self-efficacy. *International Journal of Bank Marketing*, *40*(5), 960–991. https://doi.org/10.1108/IJBM-06-2021-0262

Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425. https://doi.org/10.2307/30036540

53

Venkatesh, Thong, & Xu. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, *36*(1), 157. https://doi.org/10.2307/41410412

Venkatesh, V., & Morris, M. G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly*, *24*(1), 115. https://doi.org/10.2307/3250981

Venkatesh, V., Thong, J., Hong Kong University of Science and Technology, Xu, X., & The Hong Kong Polytechnic University. (2016). Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead. *Journal of the Association for Information Systems*, *17*(5), 328–376. https://doi.org/10.17705/1jais.00428

Verkijika, S. F. (2018). Factors influencing the adoption of mobile commerce applications in Cameroon. *Telematics and Informatics*, *35*(6), 1665–1674. https://doi.org/10.1016/j.tele.2018.04.012

Wang, G., & Shin, C. (2022). Influencing Factors of Usage Intention of Metaverse Education Application Platform: Empirical Evidence Based on PPM and TAM Models. *Sustainability*, *14*(24), 17037. https://doi.org/10.3390/su142417037

Warren, C. (2011, May 26). *Google Reveals Mobile Payment System: Google Wallet*. Mashable. https://mashable.com/archive/google-mobile-payment-system-liveblog

Windasari, N. A., Kusumawati, N., Larasati, N., & Amelia, R. P. (2022). Digital-only banking experience: Insights from gen Y and gen Z. *Journal of Innovation & Knowledge*, *7*(2), 100170. https://doi.org/10.1016/j.jik.2022.100170

Wu, J., Zeng, M., & Xie, K. L. (2017). Chinese travelers' behavioral intentions toward room-sharing platforms: The influence of motivations, perceived trust, and past

experience. *International Journal of Contemporary Hospitality Management*, *29*(10), 2688–2707. https://doi.org/10.1108/IJCHM-08-2016-0481

Yang, X., Yang, J., Hou, Y., Li, S., & Sun, S. (2023). Gamification of mobile wallet as an unconventional innovation for promoting Fintech: An fsQCA approach. *Journal of Business Research*, *155*, 113406. https://doi.org/10.1016/j.jbusres.2022.113406

Yu, S.-Y., & Chen, D. C. (2022). Consumers' Switching from Cash to Mobile Payment under the Fear of COVID-19 in Taiwan. *Sustainability*, *14*(14), 8489. https://doi.org/10.3390/su14148489

Appendixes

Measurement Item

Variable	Question	Reference
DIS1	I feel dissatisfied with my overall experience using cash payment.	
DIS2	I think the germs and virus can be transmitted to humans from cash coin, and cards	Yu et al. (2022)
DIS3	I feel dissatisfied to manage changes from cash payment.	
EEX1	It's easy for me to become skillful at using PMP in store	
EEX2	Learning how to use PMP in store is easy for me	
EEX4	I find PMP easy to use in store.	
FCO1	I have the mobile phone and that is capable to use PMP in store.	
FCO3	PMP is compatible with other technologies I use.	
FCO4	I can get help from staffs when I have difficulties using PMP in store.	
HAB1	The use of PMP in store has become a habit for me	Venkatesh et al. (2012)
HAB2	I am addicted to using PMP in store	
HAB4	Using PMP in store has become natural to me	
HMO1	Using PMP in store is fun	
HMO2	Using PMP in store is enjoyable	
HMO3	Using PMP in store is very entertaining	
PEX3	Using PMP help me complete payments more quickly	
PEX4	Overall, I find PMP is useful in managing personal finance.	
PRI1	The risk of abuse of usage information (e.g. payment detail) is low wihen using PMP system in physical store transaction	Handarkho, Y.D. et al. (2020)
PRI2	The risk of abuse of consumer information is low when using PMP	
PRI3	The risk of an unauthorized party intervening in the PMP process in a physical store is low	
SWI1	I prefer to consider using proximity mobile payment in physical stores within two months.	Mu, H.-L. et al. (2021)

SWI2	I am considering increasing the time spent on proximity mobile payment in physical stores within two months
SWI3	I think I will switch from cash to proximity mobile payment within two months in physical stores.