

**MOBILE COMMERCE ADOPTION OF MICRO RETAILERS  
IN EMERGING ECONOMIES**

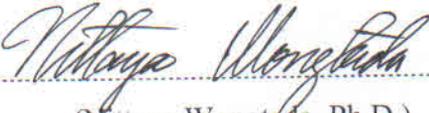
**Tanikan Pipitwanichakarn**

**A Dissertation Submitted in Partial  
Fulfillment of the Requirements for the Degree of  
Doctor of Philosophy (Business Administration)  
School of Business Administration  
National Institute of Development Administration  
2018**

**MOBILE COMMERCE ADOPTION OF MICRO RETAILERS IN  
EMERGING ECONOMIES**

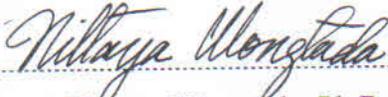
**Tanikan Pipitwanichakarn  
School of Business Administration**

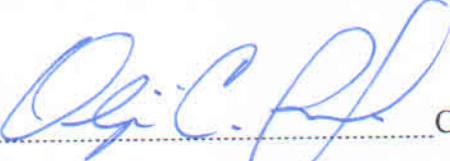
---

Professor  Major Advisor  
(Nittaya Wongtada, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Business Administration).

Associate Professor  Committee Chairperson  
(Danuvasin Charoen, Ph.D.)

Professor  Committee  
(Nittaya Wongtada, Ph.D.)

Assistant Professor  Committee  
(Olimpia C. Racela, D.B.A.)

Associate Professor  Dean  
(Tatchawan Kanitpong, Ph.D.)

July 2019

## **ABSTRACT**

<b>Title of Dissertation</b>	Mobile Commerce Adoption of Micro Retailers in Emerging Economies
<b>Author</b>	Miss Tanikan Pipitwanichakarn
<b>Degree</b>	Doctor of Philosophy (Business Administration)
<b>Year</b>	2018

---

In this dissertation, the original Technology Acceptance Model (TAM) has been employed as the core theory across three studies in an attempt to establish a theoretical framework for determining the intention of street vendors to adopt a mobile commerce (m-commerce) application. The model has two tenets: perceived usefulness and perceived ease of use. Although the classical TAM is well known and well respected as a robust predictive framework, it seems to be situation specific and must be modified to accommodate other factors affecting the behavioral intentions of particular groups. No empirical study has used the TAM to investigate the perceptions and behaviors of street vendors. Therefore, to enhance our understanding of m-commerce adoption among micro vendors, the three studies that form the basis of this dissertation have examined the impact of external and internal factors on vendors as they embrace a new form of technology.

The first study focused on the unique characteristics of vendors that affect their adoption of m-commerce. The features of trust in service providers, entrepreneurial orientation, and product differentiation were integrated into the TAM. Product differentiation was employed as a moderating variable on the effect of perceived usefulness on behavioral intention, whereas entrepreneurial orientation was assumed to affect a vendor's trust in a service provider directly and to influence m-commerce adoption indirectly. A pen-and-paper survey was administered to 370 street vendors in Bangkok; 356 of the usable surveys were analyzed. Structural equation modeling was

employed to analyze the data. This study contributes to the existing technology acceptance literature in the following ways: First, it shows that the predictive power of the TAM is strong and valid for street vendors. Second, it reveals that entrepreneurial orientation and technology adoption are related and that the connection continues throughout the decision-making process (i.e., these are trust and system characteristics that are otherwise known as usefulness and ease of use). Finally, it shows that the degree of product differentiation strengthens the positive relationship between perceived usefulness and the intention to use m-commerce.

The first study found that not all street vendors were ready to adopt this new trading method. Vendors at various stages of adoption weighed different factors as they made decisions. Based on these findings, the second study tested how vendors at different stages approached m-commerce adoption. The vendors were classified as being in either the initial stage of adoption or the advanced stage of adoption. The role of trust and the perceived enjoyment were added to the TAM in this study. Face-to-face interviews using a structured questionnaire were conducted with 430 street vendors in Bangkok; 415 usable surveys were analyzed. By applying K-means cluster analysis, two segments were found, one with 200 initial adopters and one with 215 advanced adopters. A multi-group analysis was employed to investigate the difference in relationships between the two groups, and the findings revealed significant similarities and dissimilarities between them. Both initial and advanced adopters emphasized trust in the service provider. The first group relied more on perceived ease of use and perceived enjoyment in choosing m-commerce adoption but depended less on perceived usefulness. In the second group, the influence of perceived ease of use and perceived enjoyment significantly decreased but the effect of perceived usefulness significantly increased.

In addition to perceived usefulness, perceived ease of use, and trust, online reviews are significant tools for promoting the adoption of a new technology. For instance, the integration of online reviews into the TAM can serve as an important predictor of the intention to use mobile banking. The impact of online reviews on behavioral intention and consumers' decisions has indicated complex relationship patterns and has been context specific, which suggests the possibility of an interaction effect. For this reason, in the final study, an experiment was conducted to investigate

the interaction of online reviews, perceived ease of use, and trust in enhancing the perceived usefulness and adoption of m-commerce. This study employed a 2 (perceived ease of use: high vs. low) x 2 (trust in the service provider: high vs. low) x 2 (online review: positive vs. negative) between-subjects design, resulting in eight experimental groups. A pen-and-paper survey was administered to street vendors in Bangkok. Of 280 cases, 16 cases were unusable and were deleted from the dataset; this left 264 cases for data analysis. The level of the online review was manipulated, whereas the degrees of perceived ease of use and trust were measured. The experiment revealed that the perceived usefulness was affected by online reviews when users found incongruent information in them (e.g., when reviewers reported that they found a high level of ease of use of the technology but had only a low level of trust in the service provider). In other words, users who read positive reviews were more likely to feel that m-commerce had a great deal of perceived usefulness. On the contrary, the perceived usefulness was not affected by online reviews if users found congruent information in them (e.g., when reviewers reported that they found a high level of ease of use and also had a high level of trust in the service provider).

This dissertation has attempted to offer an alternative to the inadequate theoretical and managerial understanding of factors that drive m-commerce adoption for micro businesses, and in that regard, it is crucial for identifying predictors of the adoption of m-commerce applications. The results of this research should enable service providers and policy makers to continue to delve into the world of contemporary digital technology business and tailor its marketing strategies towards vendors.

## ACKNOWLEDGEMENTS

This dissertation has not only fulfilled my requirements for graduation, but it has also been one of the most important endeavors of my doctoral journey, requiring intense effort, perseverance, and much support. My special thanks go to my advisor, Professor Nittaya Wongtada. Our relationship is rooted in our combined interests in conducting research. She is interested in the areas of international business, competitiveness, and street marketing, and I am interested in the field of human–computer interactions and technology adoption. By creatively blending our interests and motivations, we established a series of three studies on mobile commerce adoption among street vendors. I truly appreciate her benevolence, patience, and immense knowledge, which motivated me to put more effort into my research. Her trust and encouragement gave me the confidence to face every challenge I encountered in the course of my studies. I had the best advisor possible for my doctoral studies. I would also like to thank the dissertation committee members, Associate Professor Danuvasin Charoen and Assistant Professor Olimpia C. Racela, for their insightful comments and encouragement, which helped me to improve various aspects of this dissertation.

In addition to my advisor and the committee members, I would like to extend my gratitude toward Associate Professor Georgios Christopoulos (Nanyang Business School, Singapore) for giving me the opportunity to acquire knowledge about neuroscience from laboratories and research facilities. He also gave me a chance to join his team during the data collection phase in Bangkok, Thailand. I am grateful to Assistant Professor James Gaskin (Marriott School of Business, USA) for his time and valuable suggestions when I was beginning to learn about structural equation modeling.

I would like to express my deep gratitude for my beloved friend, Phimai Nuansi. Her hope and optimism generated an enjoyable work environment and kept me sane during difficult situations. Thanks to her for believing that I could meet the faculty's high expectations.

Last, but not least, I am always thankful to my parents, General Tanit Pipitwanichakarn and Kanchana Pipitwanichakarn, for their unconditional love, heartfelt encouragement, and absolute belief in me. Even when I was on the verge of losing hope, their presence in my life was enough to give me the strength to continue on this great journey. My parents have always been there for me, something that has given me greater motivation toward achieving my goals. I will never forget their kindness and continuous support.

Tanikan Pipitwanichakarn

July 2019

## TABLE OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b>	<b>vi</b>
<b>TABLE OF CONTENTS</b>	<b>viii</b>
<b>LIST OF TABLES</b>	<b>x</b>
<b>LIST OF FIGURES</b>	<b>xi</b>
<b>ABBREVIATIONS</b>	<b>xii</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
<b>CHAPTER 2 MOBILE COMMERCE ADOPTION AMONG THE BOTTOM OF THE PYRAMID: A CASE OF STREET VENDORS IN THAILAND</b>	<b>11</b>
2.1 Introduction	11
2.2 Literature Review	13
2.3 Hypothesis Development	17
2.4 Research Methodology	20
2.5 Data Analysis	24
2.6 Discussion	32
2.7 Implications	34
2.8 Limitations and Future Researches	36
<b>CHAPTER 3 LEVERAGING THE TECHNOLOGY ACCEPTANCE MODEL FOR MOBILE COMMERCE ADOPTION UNDER DISTINCT STAGES OF ADOPTION: A CASE OF MICRO BUSINESSES</b>	<b>37</b>
3.1 Introduction	37
3.2 Literature Review and Hypothesis Development	40
3.3 Research Methodology	47

3.4 Samples	48
3.5 Data Analysis	52
3.6 Discussion	60
3.7 Implications	62
3.8 Limitations and Future Researches	64
<b>CHAPTER 4 THE ROLE ONLINE REVIEWS ON MOBILE COMMERCE ADOPTION: AN INCLUSIVE GROWTH CONTEXT</b>	<b>66</b>
4.1 Introduction	66
4.2 Literature Review	69
4.3 Hypothesis Development	72
4.4 Research Methodology	75
4.5 Results of the Main Survey	79
4.6 Discussion	86
4.7 Implications	88
4.8 Limitations and Future Researches	90
<b>CHAPTER 5 CONCLUSION</b>	<b>92</b>
5.1 Conclusion	92
5.2 Directions for Future Research	95
<b>BIBLIOGRAPHY</b>	<b>99</b>
<b>APPENDICES</b>	<b>125</b>
Appendix A Results from Qualitative Survey for Chapter 2	126
Appendix B Questionnaire for Chapter 2	129
Appendix C Results from Pilot Test for Chapter 2	137
Appendix D Questionnaire for Chapter 3	138
Appendix E Results from Pilot Test for Chapter 3	147
Appendix F Stimulus: Positive Reviews for Chapter 4	148
Appendix G Stimulus: Negative Reviews for Chapter 4	149
Appendix H Questionnaire for Chapter 4	150
Appendix I Results from Pilot Test Chapter 4	158
<b>BIOGRAPHY</b>	<b>159</b>

## LIST OF TABLES

Tables	Page
2.1 Street Vendors' Profiles	23
2.2 Constructs and Indicators	25
2.3 Factor Pattern Matrix and Reliability	26
2.4 Model Fit Indices for Measurement Model and Structure Model	28
2.5 Reliability and Validity for Measurement Model	28
2.6 Results of Direct Effects	30
3.1 Street Vendors' Profiles	50
3.2 Constructs, Indicators, Mean, and Standard Deviation (SD)	51
3.3 Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and Correlations	54
3.4 Results of Direct Effects	57
3.5 Effect Sizes (Cohen's $F^2$ )	59
4.1 Street Vendors' Profiles	79
4.2 Reliability and Validity of Constructs	81
4.3 Results of MANCOVA	82
4.4 Results of ANCOVA	83

## LIST OF FIGURES

<b>Figures</b>	<b>Page</b>
1.1 Technology Acceptance Model (TAM), TAM 2, TAM 3	4
1.2 A Review of Recent Empirical Studies	7
2.1 The Research Model	17
2.2 Two-way Interaction Effect of PD and PU on ITU m-commerce	32
3.1 The Research Model	46
3.2 The 3D Cluster Plot	49
4.1 Interaction by Perceived Ease of Use, Trust, and Online Reviews on Perceived Usefulness	85
5.1 A Review of Recent Empirical Studies, Factors Investigating in this Dissertation, and Directions for Future Research	98

## ABBREVIATIONS

### Abbreviations

CFI

d.f.

E-Commerce

EO

ITU

M-Commerce

PCLOSE

PD

PE

PEOU

PU

RMSEA

SRMR

TAM

Trust

### Equivalence

Comparative Fit Index

Degrees of Freedom

Electronic Commerce

Entrepreneurial Orientation

Intention to Use

Mobile Commerce

P test for close fit

Product Differentiation

Perceived Enjoyment

Perceived Ease of Use

Perceived Usefulness

Root Mean Square Error of  
Approximation

Standardized Root Mean Residual

Technology Acceptance Model

Trust in Service Provider

# CHAPTER 1

## INTRODUCTION

Street vending is a globally prevalent phenomenon, especially in developing countries such as China, South Africa, Indonesia, and Thailand (Wongtada, 2014). It provides a significant source of income for unskilled and illiterate vendors, as well as inexpensive merchandise and services for urban residents (Nirathron, 2006). Because street vending incorporates attributes of the culture in which it takes place, it has a great attraction for tourists (Bhowmik, 2005). Vendors often sell foods that are found only in their neighborhood, town, or country; for instance, oscypek cheese, a popular traditional cheese made only in the mountains of southern Poland, is sold in the town of Zakopane in that region (Ren, 2011). In addition to providing services to the local population, street food vending in Bangkok has become a culinary attraction for the millions of tourists who visit Thailand's capital each year (CitiScope, 2018). Unfortunately, street vendors are involved in an insecure occupation and often face risks to their health and safety, as well as uncertainty about how much money they will earn (Ruchirawat, Navasumrit, Settachan, Tuntaviroon, Buthbumrung, and Sharma, 2005; Nirathron, 2006; Noomnual and Shendell, 2017). They may inhale fumes from passing vehicles, making them prone to respiratory tract diseases, and in the fray of traffic, they may be involved in accidents. They may have to pay bribes to local authorities or gangsters in order to secure a public space for selling their goods (Saha, 2011). They also confront other business challenges (Maneepong and Walsh, 2013), such as large fluctuations in sales volumes. For example, on a day of heavy rain, the sales volume is likely to decrease, and, therefore, the unit cost of a product may increase and the overall profitability may be lessened. Like street vendors in emerging countries, street vendors in Thailand face the possibility of being left behind as governmental economic development continues to expand (Bhowmik, 2005; 2012). Calls for an inclusive growth policy have been put forth so that this sector of society will have equal access

to all business opportunities (Rauniyar and Kanbur, 2010). A critical element of the country's economic policy should be to create an awareness of mobile commerce (m-commerce) among underprivileged groups and convince them to adopt this technology so they can become part of the technological revolution.

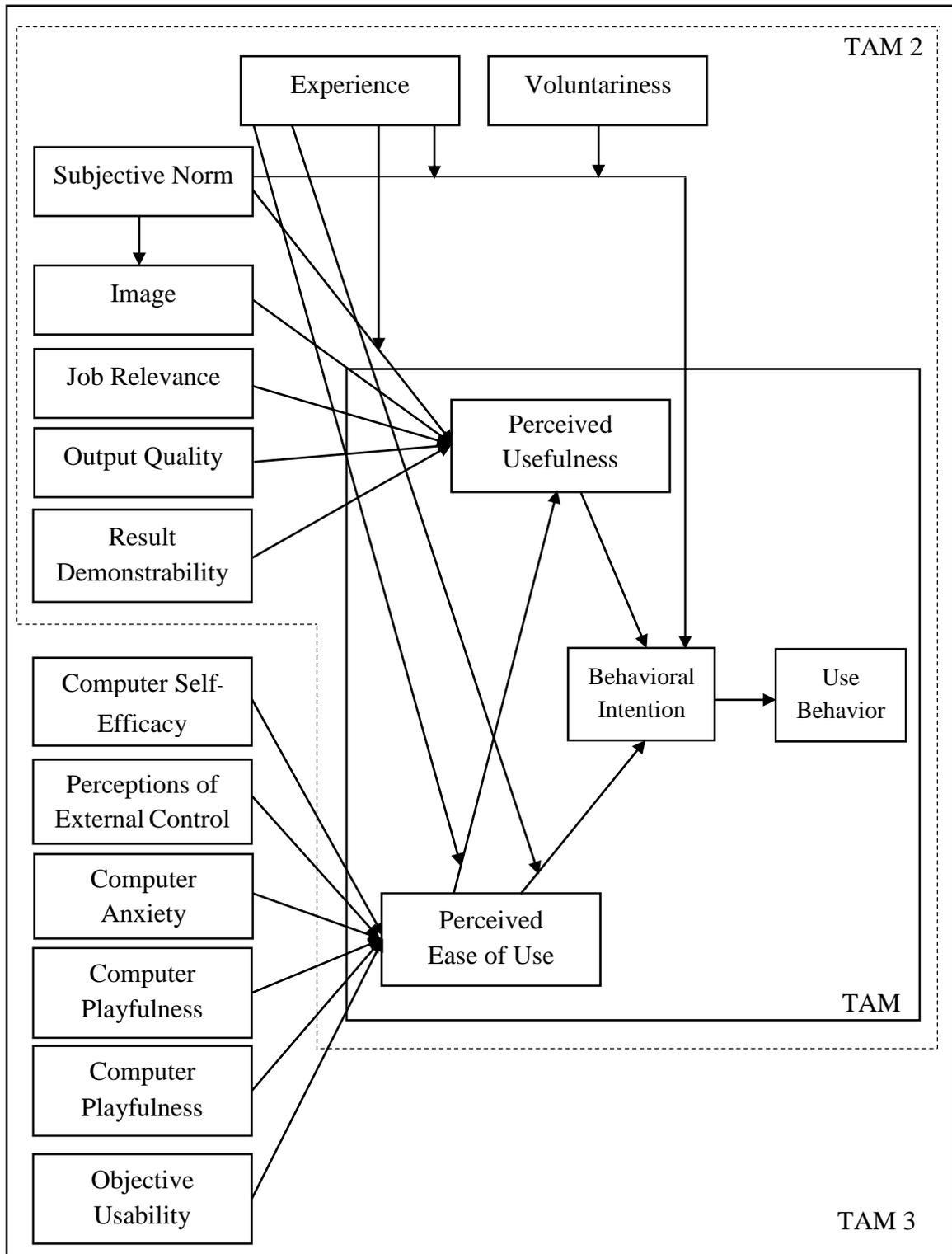
M-commerce refers to a newer global type of technology with which one can transact monetary exchanges and other processes, as well, such as delivering products, communicating with customers and suppliers, and offering locally based services (Yang, Chye, Fern, and Kang, 2015). In this dissertation, the focus has been on selling goods through m-commerce with mobile phones. The ultimate goal is to encourage this type of m-commerce so that street vendors can lower their costs, increase their incomes, and sustain their status as self-employed persons over a longer period of time.

To establish a theoretical framework for determining what causes a vendor to adopt an m-commerce application, the original Technology Acceptance Model (TAM) and its later versions, TAM 2 and TAM 3, were considered. They are shown in Figure 1.1. The original TAM has two belief constructs: perceived usefulness and perceived ease of use. Perceived usefulness is the degree to which a person believes that using a technology would enhance the person's job performance, whereas perceived ease of use is the degree to which a person believes that using a technology will be effortless (Davis, 1989). These constructs influence the intention to adopt any new technology. If users perceive that a particular technology is useful and easy to use, they tend to adopt it. Further, the perceived ease of use also affects the perceived usefulness; that is, if a technology is easy to use, it will be perceived as being a useful tool.

The TAM 2 was developed from the original TAM to identify the factors that influence the perceived usefulness (Venkatesh and Davis, 2000). In addition to the perceived ease of use, the perceived usefulness is determined by five factors: subjective norm, image, job relevance, output quality, and result demonstrability. A subjective norm refers to an individual's perceptions of how it would be best to behave, based on the opinions of people who are important to that individual. Image is defined as the perception of how the use of a technology will enhance a person's status in a social system (Moore and Benbasat, 1991). Job relevance represents the perception of how a technology is applicable to an individual's job, and output quality is an individual's perception of how well a technology performs a task (Venkatesh and Davis, 2000).

Finally, result demonstrability refers to the tangibility of the results of using a technology (Moore and Benbasat, 1991). Experience and voluntariness of use are also included in the model as moderating factors. The impact of a subjective norm on the perceived usefulness has been stronger for low-experience users, whereas the effect of a subjective norm on the intention to use has been greater for low-experience users and mandatory usage. That is, when users have more experience in using a technology and are using it in a less voluntary way, they rely less on social information in forming a behavioral intention.

The second modification of the TAM, the TAM 3, was introduced by Venkatesh and Bala (2008). It includes six factors to determine the perceived ease of use: computer self-efficacy, perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability. Computer self-efficacy is related to how an individual's ability to use a computer-related technology is viewed by that individual (Compeau and Higgins, 1995). Perceptions of external control involves an individual's belief that organizational and technical resources exist to support the use of the system (Venkatesh, Morris, Davis, and Davis, 2003). Computer anxiety represents the degree of an individual's apprehension or fear when confronted with the possibility of using a technology (Venkatesh, 2000b). Computer playfulness is an intrinsic motivation related to using a new technology (Webster and Martocchio, 1992). Finally, perceived enjoyment is defined as the enjoyment an individual experiences from using a technology, apart from its business benefits, and objective usability is a comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks (Venkatesh, 2000b).



**Figure 1.1** Technology Acceptance Model (TAM), TAM 2, TAM 3

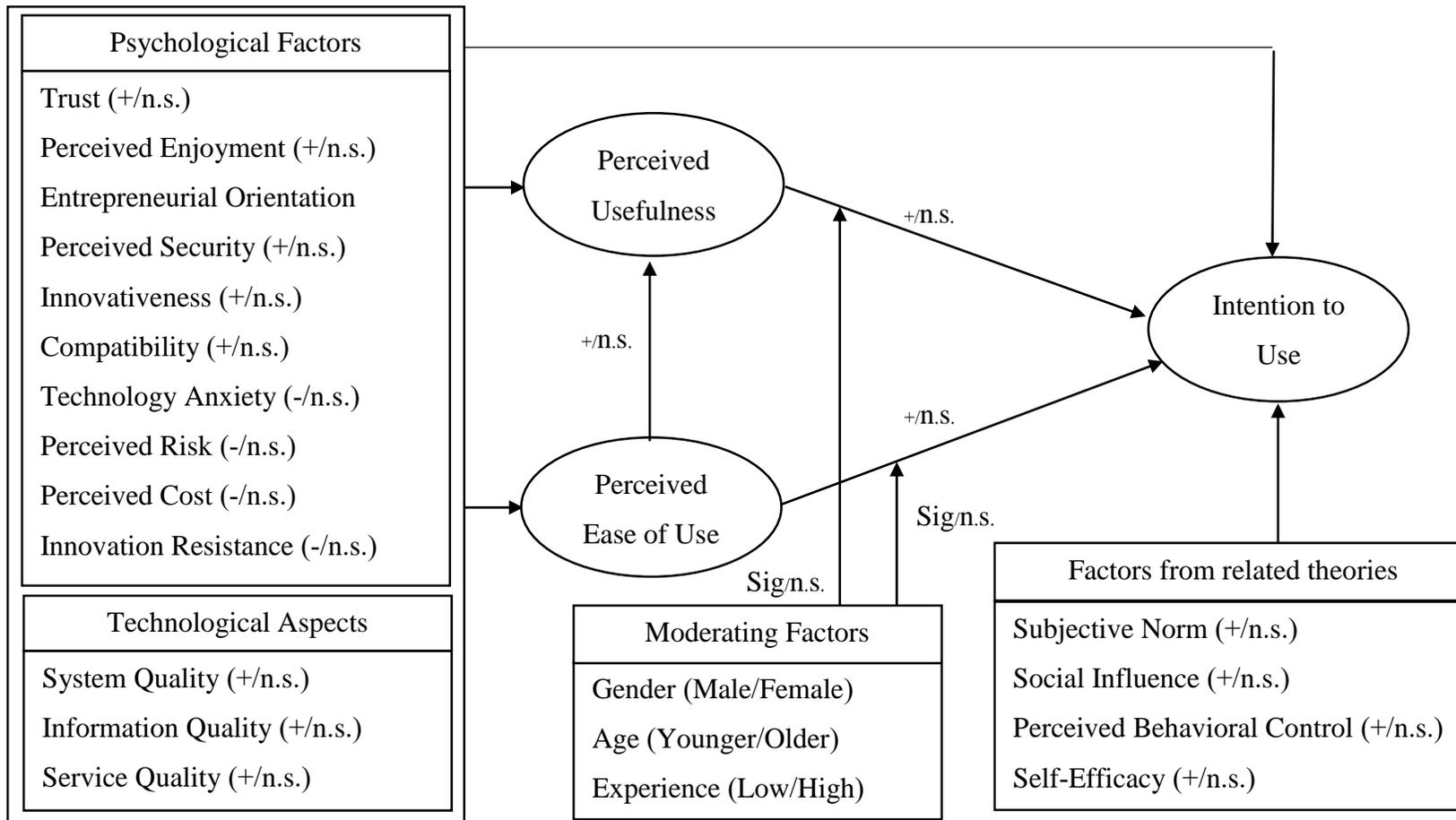
The above model posits that the effects of 1) perceived ease of use on perceived usefulness, 2) computer anxiety on perceived ease of use, and 3) perceived ease of use on behavioral intention are moderated by experience. With increasing experience, the effect of perceived ease of use on perceived usefulness will become stronger but the effect of computer anxiety on perceived ease of use and the effect of perceived ease of use on behavioral intention will become weaker. When users gain more experience during usage, they understand more about the system and place less importance on the perceived ease of use in forming their behavioral intention.

In this dissertation, the original TAM was employed as the core theory across three studies because it is more streamlined than the TAM 2 and TAM 3 models (Bakhsh, Mahmood, and Sangi, 2017). The model can be extended so that it provides a more extensive explanation of the theory but still remains an efficient model (Teo, 2009). It has been proven to be robust in describing the adoption of m-commerce in various contexts (Chan and Chong, 2013; Ghazali, Mutum, Chong, and Nguyen, 2018). In terms of explained variance (adjusted  $R^2$ ), the ability of the three TAM models to predict and explain individual behavior in the context of the acceptance and usage of technology is not much different (Tang and Chen, 2011). This dissertation integrated perceived enjoyment, which is a variable in TAM 3, into the conceptual framework of the dissertation's second study by linking it with perceived ease of use and behavioral intention.

Previous studies incorporated other predictive variables into their research frameworks to examine determinants of technology adoption and to improve their predictive power (Kalinic and Marinkovic, 2016; Marakarkandy, Yajnik and Dasgupta, 2017). However, their findings were mixed and inconclusive (see Figure 1.2). On the one hand, many studies supported relationships discussed in the TAM (Teo, Tan, Cheah, Ooi and Yew, 2012; Tan, Ooi, Leong, and Lin, 2014; Faqih and Jaradat, 2015). For instance, Shankar and Datta (2018) found that mobile payment adoption was significantly influenced by perceived usefulness and perceived ease of use. By incorporating the element of trust into their TAM, along with perceived usefulness, a vendor's behavioral intention was explained to a significant degree (Wei, Marthandan, Chong, Ooi, and Arumugam, 2009). On the other hand, several consumer studies did not find that perceived usefulness affected behavioral intention (Chiou and Shen, 2012)

or that perceived ease of use affected behavioral intention (Park, Nam, and Cha, 2012; Zampou, Saprikis, Markos, and Vlachopoulou, 2012; Abbad, 2013). Perceived usefulness and perceived ease of use had no significant effect on behavioral intention among Chinese and Malaysian vendors (Chong, Chan, and Ooi, 2012). Although many researchers attempted to extend the TAM by incorporating moderating factors, the results were still inconsistent. For example, the effects of perceived usefulness and perceived ease of use on behavioral intention varied across age groups of users. The effect of perceived usefulness was stronger for younger users, whereas the effect of perceived ease of use was stronger for older users (Tarhini, Hone, and Liu, 2014). Because younger users placed greater importance on the performance of a new technology, if they found that it was a beneficial and functional tool, this was likely to affect their decision to adopt it (Sun and Zhang, 2006). Older users tended to be less confident about their ability to assess and use a technology, so ease of use was a more salient predictor for them. In the context of online communities, even though age was negatively associated with behavioral intention, suggesting that older users were less willing to try out new technologies compared with younger users, the impact of perceived usefulness and perceived ease of use on behavioral intention was insignificant at different ages (Chung, Park, Wang, Fulk, and McLaughlin, 2010).

In some studies, the TAM was developed and modified to accommodate differences in users' characteristics in relation to large businesses (Amoako-Gyampah and Salam, 2004), small- and medium-sized enterprises (Pentina, Koh, and Le, 2012; Caniëls, Lenaerts, and Gelderman, 2015), small businesses (Pollard, 2003; Riemenschneider, Harrison and Mykytyn, 2003), and general consumers (Joo and Sang, 2013; Kim and Shin, 2015). There are no empirical studies applying the TAM to examine the perceptions and behaviors of street vendors. As described in an earlier discussion (Figure 1.2), researchers have not reached a consensus regarding technology acceptance and usage. Most of the previous findings were mixed. Therefore, this dissertation focused on the phenomenon of technology adoption among people at the base of the business "pyramid." To enhance the understanding of m-commerce adoption among micro vendors, three studies have been conducted to test the impact of various factors on a vendor's decision to embrace this technology.



**Figure 1.2** A Review of Recent Empirical Studies

**Source:** Adapted from Marangunić and Granić (2015) and Al-Emran, Mezhyuev and Kamaludin (2018)

**Note:** + (positive relationship), - (negative relationship), sig (significant), n.s. (not significant), Number in square bracket represents the study number, for example [1] refers to the first study, FR (Future Research)

To establish the conceptual framework and identify factors influencing m-commerce adoption by street vendors, recent literature on technology adoption has been extensively reviewed. The literature suggested that perceived usefulness, perceived ease of use, trust, perceived risk, and perceived enjoyment were important factors for improving the predictive validity of the TAM (Ingham, Cadieux, and Berrada, 2015; Marangunić and Granić, 2015). Trust and perceived risk were linked, but trust was more widely employed in explaining m-commerce adoption (Shaikh and Karjaluo, 2015). Therefore, perceived risk has been removed from the conceptual framework and perceived usefulness, perceived ease of use, and trust have been employed as the main constructs across the three studies for this dissertation. The overall research objectives and additional variables that have been integrated into each study are explained in the following paragraphs.

The first study, titled “Mobile Commerce Adoption among the Bottom of the Pyramid: A Case of Street Vendors in Thailand,” focused on the unique characteristics of vendors that affect m-commerce adoption. Based on the results of in-depth interviews and the existing literature, four factors influencing the intention to use m-commerce were integrated into the model of this study: 1) system characteristics, or usefulness and ease of use, 2) trust in the service provider, 3) entrepreneurial orientation, and 4) product differentiation. Product differentiation was employed as a moderating variable on the effect of perceived usefulness in behavioral intention, and entrepreneurial orientation was assumed to affect a vendor’s trust in the m-commerce provider directly and to influence m-commerce adoption indirectly.

In the first study the researcher found that although some vendors chose to adopt m-commerce, others decided to refrain from or postpone adoption. Vendors at various stages considered different factors in their decision making. This led to a question of whether technology adoption was similar across the two stages of adoption (as measured by the internet experience, the frequency of use, and the vendor’s aptitude). Consequently, it was crucial to investigate how each distinct stage of adoption affected the adoption of m-commerce. The second study, “Leveraging the Technology Acceptance Model for Mobile Commerce Adoption Under Distinct Stages of Adoption: A Case of Micro Businesses,” was conducted to incorporate the role of perceived enjoyment into the perceived ease of use and intention to use m-commerce. Because

m-commerce has been deemed an entertaining platform, users experience feelings of enjoyment when using the technology (Alalwan, Baabdullah, Rana, Tamilmani, and Dwivedi, 2018). This finding suggested that it would be important to investigate the role of perceived enjoyment in behavioral intention. In addition, vendors were classified into two groups: those who were starting to adopt the technology (i.e., initial adopters) and those who had used the technology extensively (i.e., advanced adopters).

According to the second study, the differences of relationships in the TAM resulted from the differences of the users' adoption stage. Another feature that made the effects inconsistent was the existence of an interaction effect, that is, the influence of an independent variable on a dependent variable was different depending on the degree of another variable (Malhotra, 2008). Online reviews were significant tools for increasing the adoption of a new technology. For example, the integration of online reviews into the TAM served as a significant predictor of the intention to use mobile banking (Mehrad and Mohammadi, 2017). The impact of online reviews on behavioral intention and consumers' decisions indicated complex relationship patterns and was context specific, which suggested the possibility of an interaction effect. Thus, in the final study, "The Role of Online Reviews on Mobile Commerce Adoption: An Inclusive Growth Context," an experiment was conducted to investigate the influence of perceived ease of use, trust in service provision, and online reviews on enhancing the perceived usefulness and adoption of m-commerce. This study employed a 2 (perceived ease of use: high vs. low) x 2 (trust: high vs. low) x 2 (online review: positive vs. negative) between-subjects design, resulting in eight experimental groups. The level of the online review was manipulated, whereas the degrees of perceived ease of use and trust were measured.

As stated previously, due to the inconsistent findings in the existing literature and the lack of theoretical and managerial understanding of factors that drive m-commerce adoption for micro businesses, the combined theoretical contribution of the three studies is expected to construct a framework for explaining the adoption of m-commerce among micro retailers in emerging economies. Similarly, the studies are expected to shed light on how managers in government agencies and privately owned companies can adjust their marketing strategies to target street vendors, who are very distinct from the consumers in developed markets.

The dissertation is organized as follows: Chapters 2, 3, and 4 discuss the first, second, and third studies, respectively. Each of these chapters has the same structure. The first section in each introduces the significance and purpose of the study. The second section presents a review of the existing literature, that is, the theory and all relevant factors in the theoretical model. The third section explains the hypotheses of development and illustrates the research model. The fourth section describes the research methodology, including the stimulus and questionnaire development with the relevant data collection approach. The fifth section reports on the data analysis, and the sixth section discusses the research findings. Finally, the theoretical and managerial implications, as well as the limitations of the studies and the directions for further research, are discussed. Chapter 5 presents the overall conclusions of the dissertation and suggests additional avenues for future work.

## **CHAPTER 2**

### **MOBILE COMMERCE ADOPTION AMONG THE BOTTOM OF THE PYRAMID: A CASE OF STREET VENDORS IN THAILAND**

#### **2.1 Introduction**

In the era of disruption, digital technology has played a crucial role in shaping business practices and improving productivity. It provides access to a wider market, helps save travel time by communicating online, and expands our knowledge through the mass of information available on the internet. As part of the digital development, mobile commerce or m-commerce is a more recent technological movement (Chong et al., 2012). It is not limited to any monetary transaction via a mobile device that is connected with a wireless network (Barnes, 2002), but includes content delivery, communication, and local-based services (Yang et al., 2015). In this study, m-commerce is defined as selling food of street vendors via mobile phone, excluding other services as mentioned above. The disruption of business practices caused by m-commerce is pervasive throughout developed and emerging economies. The proportion of global online commerce steadily rose from 7.4% in 2015 and is expected to reach 14.6% in 2020 (eMarketer, 2016). The share of m-commerce in the US e-commerce industry is forecasted to increase from 35% in 2017 to 54% to 2021 (Statista, 2017). Likewise, online retail sales in Europe are expected to double from 165 billion Euro in 2013 to 330 billion Euro in 2019 (Noorian, 2014).

M-commerce technology is not only adopted by large-scale enterprises, but also penetrates the operations of small- and medium-sized enterprises (SMEs). This technology adoption helps improve SME performance in terms of establishing and maintaining closer relationships with buyers and customers. By doing so, SMEs rely less on established channel intermediaries such as hypermarkets or department stores for their success (Lohrke, Franklin, and Frownfelter-Lohrke, 2006). The increased performance of SMEs is seen in higher annual sales, greater growth rates, and more

profits (Abebe, 2014). However, if small entrepreneurs neglect this evolution, they will miss the opportunity to improve their business performance and their livelihoods by employing this technology (Davis, 1993).

The Technology Acceptance Model (TAM) has been widely used to explain the adoption of new technology as well as in guiding governmental policy and implementation in promoting technology adoption (Hung, Chang, and Kuo, 2013). For instance, the Kenyan government launched M-PESA, a mobile money service, in March 2007 to mitigate people's fear of being robbed if they transferred money through traditional methods such as delivery by hand, post office money orders, and courier companies. M-PESA quickly became the most successful tool in Kenya with 2.7 million users (Camner, Pulver, and Sjöblom, 2009). As predicted in this model, the more a user perceives usefulness, the more likely they are to adopt new technologies.

The validity of TAM has been empirically assessed in various contexts. Users who are familiar with technology from using the internet to socialize are more likely to adopt m-commerce for business. When comparing small business owners, employees and general consumers, young students are more motivated by benefits of technology than its ease of use (Schepers and Wetzels, 2007) because they are already familiar with technology. In fact, the relative influence of perceived usefulness and perceived ease of use—the two major components of TAM—seems to vary across diffusion stages of technological advancement (Adams, Nelson, and Todd, 1992). In countries where technological adoption is advanced, such as Canada, the US, and in Europe, perceived usefulness is more important than perceived ease of use. On the other hand, in countries like Pakistan (Ashraf, Thongpapanl, and Auh, 2014) and Jordan (Jaradat and Al Rababaa, 2013) where technology is not widely adopted, perceived ease of use is more relevant to the adoption. Thus, the ability of TAM to explain the technology adoption seems to be context specific and must be modified to accommodate other factors influencing this behavior (Legris, Ingham, and Collerette, 2003).

The main objective of this research is to test the generalizability of TAM in explaining how lower income groups in an emerging economy adopt technology. Street vending was selected as the subject of this study because it is an important phenomenon especially in emerging economies. For instance, there are more than 20,000 street vendors in New York City (Shapiro, 2017). In 2015, there were an estimated 10 million

street vendors in India. Despite the significance of the street vending phenomenon and the emergence of disruption technology, there is no empirical study on the factors influencing the vendors' adoption of m-commerce or in utilizing the TAM model to explain this context. Street vendors in Thailand were chosen for this investigation because there were more than 380,000 street food vendors in the capital city (Higgs, 2017)

Thus, this article aims to investigate the applicability of TAM in explaining technology adoption among street vendors in Thailand as a representation of emerging economies. To accomplish this task, the article is organized as follows: The second section reviews the TAM theory and factors relevant to the entrepreneurship of street vendors. The third section demonstrates hypotheses development and illustrates the research model. The fourth section describes the research methodology, including questionnaire development and data collection. The fifth section covers data analysis and findings. The sixth section discusses the findings. Finally, the theoretical and managerial implications, as well as the limitations and directions for further research, are provided.

## **2.2 Literature Review**

### **2.2.1 Technology Acceptance Model**

The Technology Acceptance Model (TAM) is one of the most useful theories in explaining information system usage (Davis, 1989; Davis, Bagozzi and Warshaw, 1989) and is widely empirically validated in the context of e-commerce (Ashraf et al., 2014; Chiu, Wang, Fang and Huang, 2014; Awa, Ojiabo and Emecheta, 2015) and m-commerce (Wu and Wang, 2005; Kalinic and Marinkovic, 2016), including in emerging economies (Thakur and Srivastava, 2014; Roy and Moorthi, 2017). Perceived usefulness is defined as the degree to which an individual believes that using a particular technology would enhance his task performance. While perceived usefulness captures the perceived benefit dimension of technology, perceived ease of use is defined as the degree to which users believe that using a particular technology would be free of effort. In this model, perceived usefulness and perceived ease of use influence the

intention to adopt new technology. Furthermore, perceived ease of use affects the perceived usefulness.

In applying this model to street vendors, two additional constructs are added, which are trust in service provider and entrepreneurial orientation. Also, product differentiation is explored as a moderating variable. The rationale behind integrating trust, entrepreneurial orientation, and product differentiation with the Technology Acceptance Model has been empirically discussed in the questionnaire development (see section 2.4.1).

### **2.2.2 Trust in Service Provider**

Trust is an important factor in explaining m-commerce acceptance and has been integrated into the original TAM (Zhang, Zhu, and Liu, 2012). Trust is when one party is confident in an exchange because of his partner's reliability and integrity (Morgan and Hunt, 1994), which convinces him to trust and adopt e-commerce provided by his partner. Trust is of high significance in reducing environmental uncertainty (Pavlou, 2003), and generating a sense of safety (Gefen, Karahanna, and Straub, 2003b). Many people are afraid to adopt new technology because they see the potential for undesirable behaviors from services providers, for instance, transaction errors, inappropriate use of information, etc. Trust reduces social complexity and perceived risk because users enable the subjectively rule out of the undesirable behaviors of the service provider (Gefen, 2000). Trust plays a key role in determining the intention to use m-commerce (Chong et al., 2012; Chong, 2013b), which, in turn, affects its actual use (Lin, Wang, Wang and Lu, 2014). Furthermore, it helps extend the business relationship through m-commerce (Gefen et al., 2003b) and foster the growth and success of employing m-commerce in business (Siau and Shen, 2003). The use of m-commerce for executing business transactions in the informal sector in Ghana increased as users become more confident in a service provider (Amegbe, Hanu, and Nuwasiima, 2017). In contrast, a lack of trust in service provider indicated a significant obstruction of mobile-banking acceptance among users in Tanzania (Rumanyika, 2015).

### **2.2.3 Entrepreneurial Orientation**

Entrepreneurial orientation is defined as the methods and practices employed in acting entrepreneurially (Lumpkin and Dess, 1996). It demonstrates the mindset of a business engaged in pursuing new entry (e.g., the adoption of new technology). Entrepreneurial orientation is characterized by three elements: innovativeness, risk taking, and pro-activeness (Miller, 1983). Naturally, firms with a low degree of entrepreneurial orientation tend to be less innovative, highly risk averse, and are not market leaders (Matsuno, Mentzer, and Özsomer, 2002). Innovativeness refers to a willingness to search for novel ideas, experimentation and development in new products or services (Lumpkin and Dess, 2001). Risk-taking orientation is about a tendency to take business-related actions with uncertain outcomes such as venturing into unfamiliar markets (Jambulingam, Kathuria and Doucette, 2005). Pro-activeness is defined as the willingness of a firm to search for new business opportunities and response to changing business trends (Venkatraman, 1989). Entrepreneurs with this trait are forward-looking as they add new products or services before other firms in an anticipation of future market demand.

### **2.2.4 Product Differentiation**

A successful product differentiation strategy creates customer loyalty. Having one or more unique attributes or benefits is important in conveying a seller's value proposition to customers because product differentiation will distinguish his business from competitors' offerings. In street food vending, product differentiation can be seen in offering quality raw materials and foods, providing local cuisine, and delivering hygiene practices. In addition to these basic differentiations, sellers use various methods to create differentiation. For example, street vendors in Zakopane, Poland, differentiate oscypek, a smoked cheese, by presenting a bread-shaped sheep cheese with shades of yellow that depend on baking and smoking (Ren, 2011). Unique foods with proper hygiene practice in Bangladesh are a vendor's competitive advantage in influencing consumers' decisions (Saha and Roy, 2016).

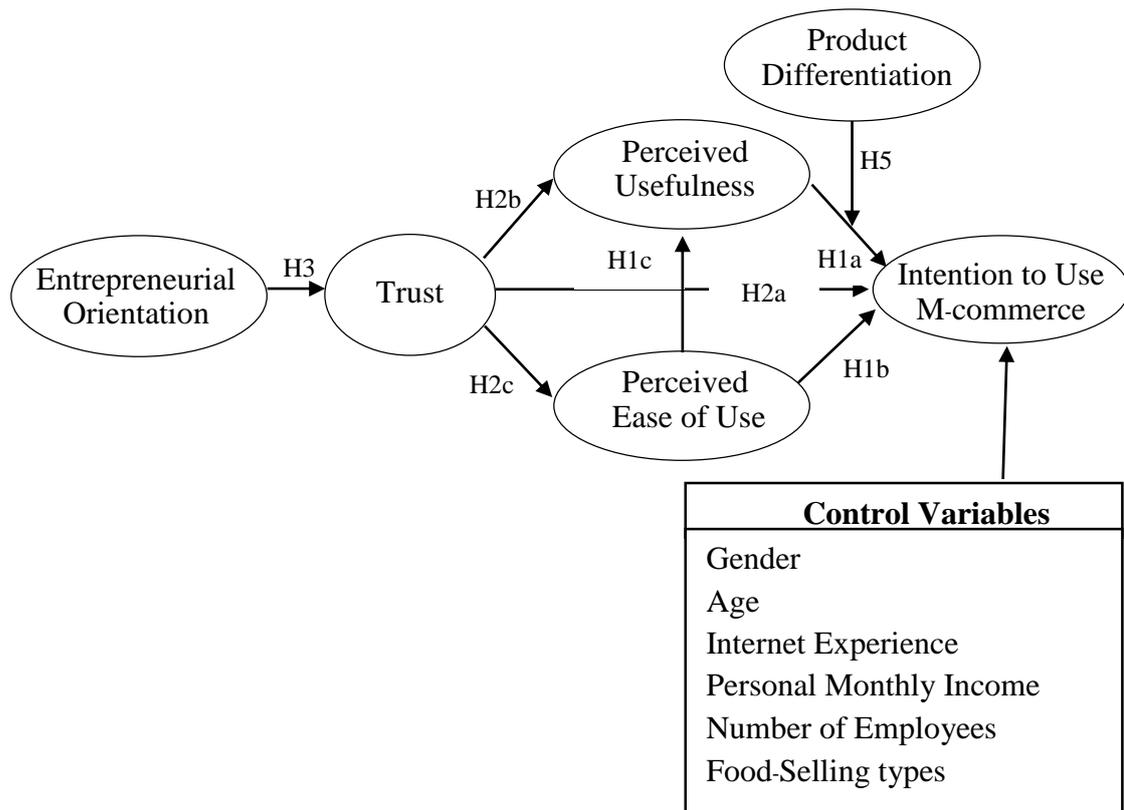
### **2.2.5 Street Vendor**

A street vendor is a person who sells merchandise and/or services without having a permanent premise, who can be stationary or mobile (Bhowmik, 2012). In this study, stationary vendors were focused as the target respondents. There are two reasons to support: First, street vendors in Thailand is dominated by stationary vendors (Nirathron, 2006). Second, they are more educated and have greater access to information regarding new technologies; thus they have a higher chance of adopting the technology than mobile vendors. Street vending contributes to economic activities (Bromley, 2000) by providing the employment opportunity for low-income people (Saha, 2009). Selling on a street serves as an entrepreneurial test of whether their products or services can serve consumer needs with a low capital investment. Street vending also benefits consumers by offering a variety of goods and services at a reasonable price. Consumers believe that street vending is convenient, reduces time and saves money when buying goods. Furthermore, street vending in a tourism destination attracts tourists who are interested in cultural traditions of an urban environment (Chuang, Hwang, Wong, and Chen, 2014).

Thai governments in various eras have allowed street vending in Thailand to operate with few lenient enforcement of regulations since it is viewed as a way to earn a living for the poor. Long-established Thai vendors in Bangkok are those emigrate from other regions especially the Northeast which has the lowest average household income in the country. They are more likely to belong to traditional vendors (Yasmeen and Nirathron, 2014). However, due to the Asian financial crisis in 1997, a large number of office workers lost their jobs from the company's downsizing or closure (Walsh and Maneepong, 2012). Many had to sell their valuable belongs in flea markets which were springing up in major cities in response to this new activities. Their businesses were so successful that they started to add other products in addition to their own. The trend has been catching up to become a career choice for the young generation. Naturally, this new group operates its business differently from the traditional one. That is, the traditional group operates in this sector because they do not have any better opportunity while the new group views street vending as a way to unleash their entrepreneurial ability

### 2.3 Hypothesis Development

Based on the literature, a research model is proposed to explain the adoption of m-commerce among street vendors (see Figure 2.1). The model shows that perceived usefulness, perceived ease of use, and trust directly influence intention to use m-commerce. Perceived ease of use also affects perceived usefulness. Then, trust has an impact on perceived usefulness and perceived ease of use, including trust is related to entrepreneurial orientation. The relationship of entrepreneurial orientation on m-commerce adoption is explained through trust and system characteristics (usefulness and ease of use). In addition, product differentiation moderates the relationship between perceived usefulness and m-commerce adoption. The hypotheses based on this research model are also described below.



**Figure 2.1** The Research Model

### **2.3.1 Perceived Usefulness and Perceived Ease of Use**

According to the TAM model, perceived usefulness and perceived ease of use are two main belief constructs in a decision-making process about technology adoption (Davis et al., 1989). In the context of m-commerce, perceived usefulness and perceived ease of use have a positive influence on intention to use (Chong, 2013b; Faqih and Jaradat, 2015). Perceived usefulness is expected to have a positive influence on the technology adoption, i.e., the more vendors perceive the benefits from using m-commerce, the more likely it is that they will accept this technology. Furthermore, if vendors believe that the technology is simple to understand, they are more willing to accept m-commerce.

The TAM model also posits that perceived ease of use is a predictor of perceived usefulness (Davis, 1989; Davis et al., 1989). Given other things being equal, users will see more benefit from a technology if it requires less effort to acquire this technology (Lu, 2014). If m-commerce is perceived as easier to use, vendors will see it as being useful and so are more willing to adopt the technology. Hence, the following hypotheses are proposed:

H1a. Perceived usefulness has a positive effect on the intention to use m-commerce.

H1b. Perceived ease of use has a positive effect on the intention to use m-commerce.

H1c. Perceived ease of use has a positive effect on the perceived usefulness of m-commerce.

### **2.3.2 Trust in Service Provider**

As previously stated, trust is a significant predictor in behavioral intentions. If the vendor trusts the service provider of m-commerce, he is more likely to adopt the technology. Lack of trust can be an obstacle in the adoption. Trust has a positive relationship with perceived usefulness (Kim and Peterson, 2017). In addition to influencing e-commerce adoption and perceived usefulness, trust is a significant predictor of perceived ease of use (Pavlou, 2003; Ashraf et al., 2014). Trust facilitates e-commerce activities by reducing users' need to understand, monitor, and control the technology since they believe that the service provider will represent them at their best.

Likewise, by trusting an application service provider, vendors are ready for learning and experiencing m-commerce, which leads to perception its ease of use. Thus, the following hypotheses relevant to trust in adopting m-commerce are proposed.

H2a. Trust has a positive effect on the intention to use m-commerce.

H2b. Trust has a positive effect on the perceived usefulness of m-commerce.

H2c. Trust has a positive effect on the perceived ease of use of m-commerce.

### **2.3.3 Entrepreneurial Orientation**

Entrepreneurial orientation is the vendor's readiness to accept technological changes in order to enhance his competitive advantages (Richard, Barnett, Dwyer, and Chadwick, 2004). The positive relationship between entrepreneurial orientation and business performance (e.g., firm's reputation, sales growth, profit growth) is moderated by trust; i.e., the relationship is stronger at a higher degree of trust (De Clercq, Dimov and Thongpapanl, 2010). This is because trust facilitates coordination and cooperation among parties, as well as knowledge transfer, by building a sense of security that the knowledge will not be exploited beyond what is intended (Easterby-Smith, Lyles, and Tsang, 2008). Vendors with high entrepreneurial orientation who are overwhelmed by innovativeness, risk taking, and pro-activeness will require high levels of trust in yielding quality knowledge exchange to respond to business demands. Hence, the following hypothesis is proposed:

H3. Entrepreneurial orientation has a positive effect on the trust of application service provider.

The entrepreneurial orientation is not directly related to technology adoption (Ratten, 2012) because trust, perceived usefulness, and perceived ease of use act as mediating factors in this relationship. In other words, entrepreneurial orientation only has an indirect effect on technology adoption. The decision-making process of a vendor regarding his adoption of new technology includes evaluating his trust of the service provider, the technology's usefulness and the ease in using this technology. In fact, trust is emerging as a crucial factor to the success of the adoption of online practices (Corritore, Kracher, and Wiedenbeck, 2003). It contributes to the perception in users' usefulness and the ease of use of e-commerce (Ashraf et al., 2014) and mobile payments

(Liébana-Cabanillas, Sánchez-Fernández, and Muñoz-Leiva, 2014). Based on these relationships, the following hypotheses are put forth on the mediating effects.

H4a. Trust mediates the relationship of entrepreneurial orientation and the intention to use m-commerce.

H4b. Entrepreneurial orientation affects the intention to use m-commerce through trust and perceived usefulness.

H4c. Entrepreneurial orientation affects the intention to use m-commerce through trust and perceived ease of use.

### **2.3.4 Product Differentiation**

Street vendors with unique products are more willing to adopt new technology to enhance their existing competitive advantage. Even though adopting m-commerce may help a vendor to reach more potential buyers, his lack of product differentiation prevents him from gaining the full benefit from his new outlet because other vendors also offer similar products through m-commerce. Thus, perceived usefulness is expected to be more salient for vendors with high product differentiation when compared to those with low product differentiation. This relationship is hypothesized below.

H5. Product differentiation strengthens the positive relationship between the perceived usefulness and the intention to use m-commerce.

## **2.4 Research Methodology**

### **2.4.1 Questionnaire Development**

To draft the questionnaire, two in-depth interviews with four subjects were conducted based on a sequential interview process where additional subjects were included and the questions were revised to integrate new information provided by previous subjects until new information was exhausted (Baker and Edwards, 2012). Our first participants were an application developer and expert in digital marketing with whom we discussed potential factors affecting Thai vendors' m-commerce adoption. These factors were identified and cross-checked with existing literature on consumer technology adoption to generate open-ended questions. In the next step, these questions

were used as a protocol for interviewing street vendors. Vendors were interviewed to test if these factors indeed impacted their adoption of m-commerce and if other factors should be included. As it turned out, only two vendors were needed because the information from these vendors rapidly converged and conformed to information found in the earlier stage. Thus, the following four factors were included in this study: 1) system characteristics—usefulness and ease of use, 2) trust in service provider, 3) entrepreneurial orientation—innovativeness, risk-taking, and pro-activeness, and 4) product differentiation.

All items used in this study were obtained from previously validated measurement scales (Table 2.2). The measurement for intention to use was from the studies of Venkatesh and Davis (2000) and Hong and Tam (2006), perceived usefulness and perceived ease of use was from Davis (1989), trust from Pavlou (2003), entrepreneurial orientation from Ratten (2012), and product differentiation from Santos-Vijande, López-Sánchez and Trespalacios (2012). These measures were designed with questions having a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The items were originally developed in English. The items were then translated into Thai by the researcher and then translated back into English by another translator. The two-way translation ensured that no loss of information occurred during the translation process. The draft version of the translated questionnaire was reviewed by two academics to assess the items' accuracy in representing the corresponding constructs. After that, a pilot test of 40 street vendors was conducted to evaluate the reliability of the measures. The respondents' feedback from the pilot test was used in adjusting the final version of the questionnaire.

#### **2.4.2 Data Collection**

Data was collected from street food vendors in Bangkok, Thailand. Bangkok is well-known for street food, which has different quality and variety. A pen-and-paper survey was administered to street vendors during 14 July to 5 August 2017. The Klongtoey and Dindaeng districts were selected as locations for data collection as recommended by Nirathron (2006). Prior to the data collection, we observed several locations and concluded that these sites were suitable because food street vendors congregate densely in these locations to cater to local residents and a more limited

number of international tourists who visit these locations. Furthermore, there were numerous affordable housing projects for low-income residents in these districts (Yen, 2015). Put differently, other locations had either too few food vendors or too many foreign tourists. Street vendors in tourist spots were more willing to adopt new technology in response to the needs of international tourists and government policies than vendors selling in other locations.

The subjects were filtered out by two screening questions. They were 1) the subjects who used a mobile phone that supported internet access and 2) the subjects who had experience with at least one of three general online applications (i.e., communications, banking, or shopping) during past six months. For those subjects who met these criteria, they listened to a brief explanation of the m-commerce application. Next, research assistants conducted personal interviews. The personal interviews with the street intercept were designed to reach the target samples effectively (i.e., indicating a high degree of sample control) (Malhotra, 2008).

A total of 370 street vendors were approached during the surveys. Fourteen subjects were screened out based on the above criteria. Overall, 356 responses were usable for the data analysis for a completion rate of 96.2%. This sample size was considered adequate for the structural equation modeling with six constructs and there was no construct measured with fewer than three indicators and no communalities lower than .45 as recommend by Hair et al. (2010). The street vendors' profiles are presented in Table 2.1. Of the 356 subjects, the gender split was 177 (49.7%) male and 179 (50.3%) female. Their ages varied from 18 to 58 years old, averaging 35.3 years old. The majority of subjects were married (59.6%) and graduated from high school (39.6%). There were two nearly equal personal monthly income ranges: 1) 18,001-24,000 Baht (33.1%) and 2) 24,001-35,000 Baht (37.1%). Food-selling types were categorized based on the on-site cooking methods: no on-site cooking (fresh food and dried food), prepared food (i.e., raw materials were prepared and cooked on site), and finished food (i.e., foods were cooked off site). Food-selling types were dominated by prepared food (50.8%). Approximately 91% of the respondents were self-employed, without employees, or had only one employee. On average, they spent 15.3 hours per week on the internet during the last six months.

**Table 2.1** Street Vendors' Profiles

<b>Profiles</b>	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	177	49.7
Female	179	50.3
<b>Age (years)</b>		
18-30	114	32.0
31-40	152	42.7
41-50	77	21.6
51-60	13	3.7
<b>Status</b>		
Single	143	40.2
Married	212	59.6
Others	1	.3
<b>Education</b>		
Primary school	36	10.1
High School	141	39.6
Vocational School	74	20.8
Bachelor Degree	104	29.2
Master Degree	1	.3
<b>Personal Monthly Income (Baht) (33.2 Baht = 1 USD)</b>		
<= 18,000	51	14.3
18,001-24,000	118	33.1
24,001-35,000	132	37.1
35,001-50,000	40	11.2
> 50,000	15	4.2
<b>Food-Selling Types</b>		
Fresh Food	51	14.3
Dried Food	15	4.2
Prepared Food	181	50.8
Finished Food	109	30.6
<b>No. of Employees</b>		
None	167	46.9
1	160	44.9
2	29	8.1

## **2.5 Data Analysis**

The Statistical Package for Social Science (SPSS) and the Analysis of Moment Structures (AMOS), version 22.0, were employed as the software for the analysis. The analysis was composed of five steps as recommended by Gaskin (2016a). First, Exploratory Factor Analysis and common method bias was performed. Then, Confirmatory Factor Analysis was run. Third, multivariate assumptions were tested. Fourth, control variables used in this study were indicated. Finally, hypothesis tests were investigated.

### **2.5.1 Exploratory Factor Analysis**

Exploratory Factor Analysis (EFA) was performed to discover the possible underlying factor structure of a set of indicators, without determining any preconceived structure on the outcome (Child, 1990). The results of EFA analysis supported the adequacy, reliability, and validity of the multi-item scales. Six factors were extracted (see Table 2.3 for the results). However, “I firmly believe that a change in market creates a positive opportunity for me” (Entrepreneurial orientation: EO4) had a high cross-loading across the two factors. Thus, EO4 was removed from the analysis. Given the above assessment, the final instrument consisted of 6 specific constructs, which are entrepreneurial orientation (EO) with 6 indicators, trust with 4 indicators, product differentiation (PD) with 3 indicators, perceived usefulness (PU) with 6 indicators, perceived ease of use (PEOU) with 5 indicators, and intention to use (ITU) with 5 indicators.

**Table 2.2** Constructs and Indicators

<b>Constructs (Source)</b>		<b>Indicators</b>
<b>Entrepreneurial Orientation (EO)</b> (Ratten, 2012)	EO1	When it comes to problem solving, I value creative new solutions more than conventional solutions.
	EO2	I encourage the development of innovative marketing strategies.
	EO3	I discuss opportunities more than problems.
	EO4	I firmly believe that a change in the market creates a positive opportunity for me.
	EO5	I value leadership initiatives for change much more than risk-reducing management processes.
	EO6	I like “play it safe.”
	EO7	I like to implement plans, even when they may not work.
<b>Trust</b> (Pavlou, 2003)	Trust1	The m-commerce’s service provider is trustworthy.
	Trust2	The m-commerce’s service provider keeps its promises and commitments.
	Trust3	I trust that the m-commerce’s service provider keeps my best interests in mind.
	Trust4	The m-commerce’s service provider meets my expectations.
<b>Product Differentiation (PD)</b> (Santos-Vijande, López-Sánchez and Trespalacios, 2012)	PD1	I offer distinct products.
	PD2	I offer a broad product line.
	PD3	
		I offer high quality products.
<b>Perceived Usefulness (PU)</b> (Davis, 1989)	PU1	Using m-commerce improves my job performance.
	PU2	Using m-commerce would enhance my effectiveness in my job
	PU3	Using m-commerce for my job increases my productivity.
	PU4	Using m-commerce enables me to accomplish tasks more quickly.
	PU5	Using m-commerce makes it easier for me to do my job.
	PU6	Overall, m-commerce is useful for me in my job.
<b>Perceived Ease of Use (PEOU)</b> (Davis, 1989)	PEOU1	I think it is easy to learn how to use m-commerce.
	PEOU2	I think it is easy to find what I want via m-commerce.
	PEOU3	I think it is easy to become skillful at using m-commerce.
	PEOU4	I think interacting with m-commerce is clear and understandable.
	PEOU5	Overall, I think it is easy to use m-commerce.
<b>Intention to Use M-commerce (ITU)</b> (Venkatesh and Davis, 2000; Hong and Tam, 2006)	ITU1	Given that I have access to the mobile application, I predict that I would use m-commerce.
	ITU2	Given that I have access to the mobile application, I intend to use m-commerce.
	ITU3	I intend to use m-commerce frequently.
	ITU4	I intend to use m-commerce in the near future.
	ITU5	Overall, I intend to use m-commerce.

**Table 2.3** Factor Pattern Matrix and Reliability

<b>Constructs</b>	<b>Indicator</b>	<b>EO</b>	<b>Trust</b>	<b>PD</b>	<b>PU</b>	<b>PEOU</b>	<b>ITU</b>
<b>Entrepreneurial Orientation (EO)</b>	EO1	<b>.855</b>	.014	.030	.058	.046	-.074
	EO2	<b>.825</b>	-.050	-.031	.034	-.012	.106
	EO3	<b>.811</b>	.032	-.022	-.054	-.023	.037
	EO5	<b>.814</b>	.047	-.012	-.020	-.035	.041
	EO6	<b>.795</b>	.021	.019	-.008	-.045	.021
	EO7	<b>.822</b>	-.060	.024	-.019	.059	-.143
	<b>Trust</b>	Trust1	.063	<b>.669</b>	-.045	.017	.017
Trust2		-.039	<b>.685</b>	-.024	.026	.043	.092
Trust3		-.009	<b>.840</b>	.015	-.014	-.014	-.076
Trust4		.004	<b>.914</b>	.025	-.015	-.007	-.053
<b>Product Differentiation (PD)</b>	PD1	-.004	-.015	<b>.951</b>	-.001	-.007	.047
	PD2	.021	-.009	<b>.983</b>	.006	-.006	.015
	PD3	-.008	.020	<b>.957</b>	-.006	.012	-.025
<b>Perceived Usefulness (PU)</b>	PU1	-.021	.042	.058	<b>.875</b>	.034	-.072
	PU2	-.005	-.014	.026	<b>.904</b>	-.036	-.034
	PU3	-.061	.043	.017	<b>.898</b>	-.089	-.005
	PU4	.016	-.032	-.058	<b>.879</b>	.035	.028
	PU5	.018	-.020	-.056	<b>.884</b>	.008	.008
	PU6	.055	-.025	.008	<b>.795</b>	.053	.093
<b>Perceived Ease of Use (PEOU)</b>	PEOU1	.015	.057	.031	.028	<b>.922</b>	-.112
	PEOU2	-.047	.035	.035	.022	<b>.912</b>	-.029
	PEOU3	.003	-.022	-.042	-.055	<b>.879</b>	.071
	PEOU4	-.016	-.049	-.018	.029	<b>.836</b>	.094
	PEOU5	.040	-.015	-.011	-.037	<b>.848</b>	.072
<b>Intention to Use M-commerce (ITU)</b>	ITU1	-.037	.003	.005	-.011	.072	<b>.856</b>
	ITU2	-.027	-.003	.011	-.036	.057	<b>.904</b>
	ITU3	.003	.003	.010	.043	.083	<b>.835</b>
	ITU4	-.006	.032	.033	.015	.040	<b>.850</b>
	ITU5	.044	-.013	-.013	.003	.017	<b>.892</b>
<b>Cronbach's Alpha</b>		.922	.874	.974	.950	.951	.959

### 2.5.2 Common Method Bias

The presence of the common method bias was assessed using Harman's single factor test. The common method bias is a phenomenon in research when subjects are asked to report their own perceptions on multiple constructs or items in the same survey. It is likely to produce spurious correlations because of the measurement instruments (e.g., response styles, social desirability) rather than to the constructs or items being measured (Kamakura, 2010). From 6 factors generated by the EFA procedure, the first

factor captured only 17.270% of the total variance explained (76.815%). Since a single factor did not emerge from the factor analysis (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003), common method bias was not evident in this research.

### **2.5.3 Confirmatory Factor Analysis**

In this step, Confirmatory Factor Analysis (CFA) was performed to verify the factor structure, which was extracted from EFA (Suhr, 2006). The CFA included 29 items, describing six latent constructs. To assess the model fit of the measurement model, the model fit indices were compared to appropriate model fit indices. As shown in Table 2.4, the normed chi-square and other fit indices ( $\chi^2/\text{d.f.} = 1.832$ , comparative fit index [CFI] = .974, root mean square error of approximation [RMSEA] = .048, P test for close fit [PCLOSE] = .687, standardized root mean residual [SRMR] = .041) are sufficient according to the guidelines of Hu and Bentler (1999), thus providing strong evidence of a fairly reasonable model fit.

To validate the measurement model, reliability, convergent validity, and discriminant validity were evaluated (Table 2.5). Convergent validity, representing indicators of a specific construct, converge or share a high proportion of variance in common. This was estimated by examining the composite reliability (CR), average variance extracted (AVE), and standardized loading estimates (Hair, Black, Babin and Anderson, 2010). Because the values of CR are greater than the recommended level of .7, ranging from .873 to .977, the reliability of the measures is assured. The values of the AVE scores varied from .634 to .935 and the values of the standardized loading estimates varied from .655 to .988, which exceeded the recommended value of .5. Hence, the convergent validity is fulfilled. Whether a construct is distinct from the other constructs is verified by the discriminant validity. The square roots of all the AVE values are larger than all the correlation coefficients, indicating the appropriate discriminant validity of these measures (Malhotra, 2008). In summary, the positive evidence supporting the reliability, convergent validity, and discriminant validity of these measures demonstrates the appropriateness of this measurement model for use in subsequent hypothesis testing.

**Table 2.4** Model Fit Indices for Measurement Model and Structure Model

Model fit Indices	Measurement Model	Structure Model	Threshold
Chi-Square	657.809	738.350	Not significant
d.f.	359	417	-
Chi-Square/d.f.	1.832	1.771	< 3
CFI	.974	.965	> .95
RMSEA	.048	.047	< .05
PCLOSE	.687	.845	> .05
SRMR	.041	.053	< .07

**Table 2.5** Reliability and Validity for Measurement Model

Construct	CR	AVE	Correlation Matrix					
			EO	Trust	PD	PU	PEOU	ITU
<b>EO (6)</b>	.940	.724	<b>.851</b>					
<b>Trust (4)</b>	.873	.634	.435	<b>.796</b>				
<b>PD (3)</b>	.977	.935	.122	.069	<b>.967</b>			
<b>PU (6)</b>	.951	.763	.285	.372	.142	<b>.873</b>		
<b>PEOU (5)</b>	.952	.799	.287	.543	.083	.326	<b>.894</b>	
<b>ITU (5)</b>	.962	.837	.268	.640	.254	.458	.753	<b>.915</b>

**Note:** The Diagonal Values Show the Square Roots of AVE. Numbers of Indicators are Shown in the Parentheses

#### 2.5.4 Control Variables

To minimize the threat of confounding variables which would lead to a spurious association, six variables relevant to the demographic of vendors were controlled in the structure model. They were gender, age, internet experience, personal monthly income, number of employees, and food-selling types.

### 2.5.5 Multivariate Assumption

Prior to employing the structural equation modeling, the assumption of the multivariate was tested to detect the outliers, and multicollinearity. The general rule of thumb is that observations with a Cook's Distance of more than three times the mean are a possible outlier. There are no values higher than three times the mean (mean = .004). Thus, the results indicated that no outliers existed. The multicollinearity arises from the correlation of two or more predictors (Hair et al., 2010). Moreover, the bivariate correlations between the independent variables varied from .543 to .753, which were lower than the threshold of .8 as suggested by (Mason and Perreault, 1991). Hence, multicollinearity was not a serious concern in this study.

### 2.5.6 Hypothesis Testing

Prior to investigate each hypothesis, the model fit of the overall structure model was tested. The results in Table 2.4 illustrate that the model fit indices were:  $\chi^2/d.f. = 1.771$  CFI = .965, RMSEA = .047, PCLOSE = .845, SRMR = .053. These values were highly sufficient according to the guidelines of Hu and Bentler (1999). Next the relationships among constructs in the above research model are observed at three effects, namely, the direct, mediating, and moderating effects.

#### 2.5.6.1 Tests of Direct Effects

As shown in Table 2.6, the variance explained ( $R^2$ ) by the intention to use (ITU) m-commerce, perceived usefulness (PU), perceived ease of use (PEOU), and trust were 64.2%, 13.1%, and 26.6%, 11.5% respectively. The direct effect is a pathway from an independent variable to a dependent variable. The results indicated that PU was related to the ITU m-commerce ( $\beta = .204$ ,  $p$ -value < .001), whereas PEOU was associated with the ITU m-commerce ( $\beta = .529$ ,  $p$ -value < .001). Thus, Hypotheses 1a and 1b, which examined the relationships between the PU and PEOU on the ITU m-commerce, were supported. Hypothesis 1c, which hypothesized that PEOU has a direct positive effect on PU, was also supported ( $\beta = .147$ ,  $p$ -value = .022).

As expected, trust significantly influenced the ITU m-commerce ( $\beta = .260$ ,  $p$ -value < .001), PU ( $\beta = .201$ ,  $p$ -value = .003), and PEOU ( $\beta = .411$ ,  $p$ -value < .001). Thus, H2a, H2b, and H2c were supported. The results further demonstrated that

the positive direct effect of EO on trust ( $\beta = .339$ ,  $p$ -value  $< .001$ ) was statistically significant. Therefore, H3 was supported.

**Table 2.6** Results of Direct Effects

Dependent Variable	Independent Variable	Hypothesis	Standardized Coefficients	t-statistic
ITU $R^2 = 64.2\%$	PU	H1a	.204	5.076***
	PEOU	H1b	.529	10.815***
	Trust	H2a	.260	5.498***
	Gender		-.002	-.050
	Age		-.033	-.874
	Internet Experience	Control Variables	.126	3.435***
	Personal Monthly Income		.048	1.262
	No. of Employees		.071	1.966*
	Food-Selling types		-.030	-.851
PU $R^2 = 13.1\%$	PEOU	H1c	.147	2.285*
	Trust	H2b	.201	2.972**
PEOU $R^2 = 26.6\%$	Trust	H2c	.411	6.989***
Trust $R^2 = 11.5\%$	EO	H3	.339	5.857***

**Note:** \* $p < .05$ ., \*\* $p < .01$ , \*\*\* $p < .001$

#### 2.5.6.2 Tests of Mediating Effects

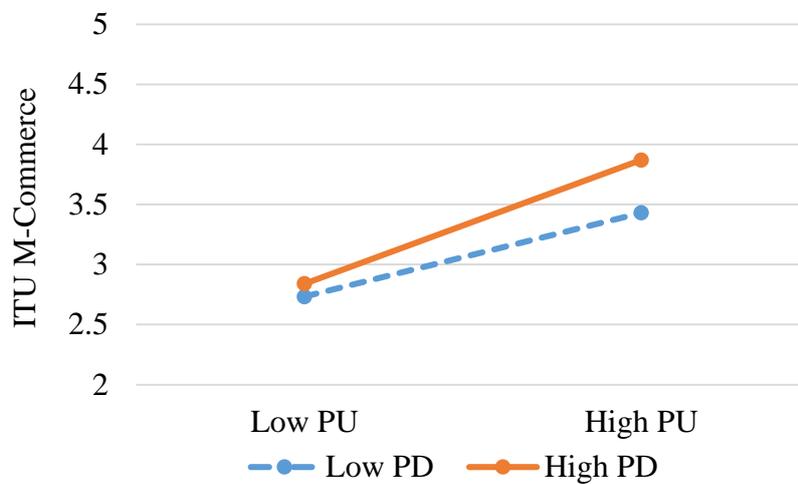
In addition to direct effects, mediating effects were also tested. A mediating effect is how an independent variable affects a mediator, which in turn affects a dependent variable. To test the mediating effects, the bootstrap method with bias-corrected confidence estimates was used by performing 2000 bootstrap samples with a 95% confidence interval (CI) of the indirect effects. To investigate the presence of a mediating effect between entrepreneurial orientation (EO) and the ITU m-commerce, an AMOS Estimand, developed by (Gaskin, 2016b), was used. H4a hypothesized that trust would mediate the relationship between (EO) and the ITU m-commerce

(EO→Trust→ITU). Since the relationship of EO and the ITU m-commerce shows an insignificant direct effect ( $\beta = -.111$ ,  $p$ -value = .109), the bootstrapping results confirmed the mediating role of trust in the relationship between EO and the ITU m-commerce ( $b = .143$ , 95% CI [.067, .245],  $p$ -value = .001). This indicated that the relationship was fully mediated by trust. Furthermore, serial mediations which existed between EO and the ITU m-commerce were explored through (1) trust and PU and (2) trust and PEOU, as hypothesized in H4b (EO→Trust→PU→ITU) and H4c (EO→Trust→PEOU→ITU), respectively. The results indicated that the serial mediations existed between EO and the ITU m-commerce through (1) trust and PU ( $b = .104$ , 95% CI [.022, .219],  $p$ -value = .012) and (2) trust and PEOU ( $b = .212$ , 95% CI [.130, .334],  $p$ -value < .001). Hence, H4b and H4c were supported.

#### 2.5.6.3 Tests of Moderating Effects

Here, the independent variable affects the dependent variable, but this effect is different at different degree of the moderator. Product differentiation (PD) is included in the above research model as a moderating variable.

Degree of Product Differentiation. An interaction term on PU and product differentiation (PD) was included in the model. The relationship between the PU and the ITU m-commerce was plotted based on the degrees of PD. The results indicated that the interaction term for PU and PD were significantly related to the ITU m-commerce ( $\beta = .088$ ,  $p$ -value = .018). As shown in Figure 2.2, vendors with a high level of product differentiation had a higher level of perceived usefulness and intention to use than those with a low level of product differentiation as seen in the steeper the slope of the solid line. In other words, the degree of PD strengthened the positive relationship between PU and the ITU m-commerce. Therefore, the results supported H5.



**Figure 2.2** Two-way Interaction Effect of PD and PU on ITU m-commerce

## 2.6 Discussion

The findings of this study indicate that TAM can be used to explain the m-commerce adoption of the informal sector (i.e., street vendors). The research model can explain 64.2% of the variance in the vendor's intention to adopt m-commerce. The results demonstrated that PEOU ( $\beta = .529$ ,  $p$ -value  $< .001$ , supported H1b), trust ( $\beta = .260$ ,  $p$ -value  $< .001$ , supported H2a), and PU ( $\beta = .204$ ,  $p$ -value  $< .001$ , supported H1a) and are identified as antecedents of the ITU m-commerce. This is consistent with several studies that indicated ITU m-commerce is determined by both PU and PEOU (Faqih and Jaradat, 2015) and trust (Oliveira, Alinho, Rita and Dhillon, 2017).

PEOU is the most significant factor in determining ITU m-commerce. A possible explanation is that m-commerce is a relatively new phenomenon in small businesses and vendors who are still in an early stage of diffusion. When a technology has recently emerged, it is possible users delay adopting it because they are concerned with the efforts in practicing using the technology and its complexity. Likewise, users are reluctant to welcome the new technology if they do not know how it works. This follows findings in previous empirical studies. For instance, Ashraf et al. (2014) explained that the stage of adoption plays a critical role in explaining the relationship of PEOU and PU on the intention to adopt e-commerce (i.e., PEOU has a stronger direct

effect on users' intentions for early-adopters, rather than post-adopters, while PU has a stronger direct effect on post-adopters, rather than early-adopters). Similarly, the relationship of PU and behavioral intentions remains strengthened, even when users gain more experience. The influence between PEOU on behavioral intentions diminishes over time (Venkatesh and Davis, 2000). The effect of PEOU was also found to have a significant influence on PU ( $\beta = .147$ ,  $p$ -value = .022, supported H1c). The degree of usefulness of technology is viewed depending on how much users perceive the ease of use. This study supports the findings of Agrebi and Jallais (2015). With other things being equal, users consider a technology as more beneficial when it is free of effort.

Trust is the second most important predictor in explaining the ITU m-commerce. The importance of trust in the technology adoption domain is in line with that of other research (Lin et al., 2014). As a society, Thailand has high uncertainty avoidance, where people feel uncomfortable in new or unknown situations (Hofstede, 2011). Adopting m-commerce is a risky venture. Building trust plays an important role in mitigating uncertainty, generating security, as well as delivering the product promised without opportunistic transactions (Gefen et al., 2003b; Pavlou, 2003). The result supports previous studies by highlighting the importance of trust in a high uncertainty avoidance society. For example, the effects of trust on m-commerce adoption is significantly stronger for users from a high uncertainty avoidance society (Kao, 2009). This shows that users with a high level of uncertainty avoidance tend to have higher intentions to adopt m-commerce with a well-known service vendor.

Since the dimension of EO consists of innovativeness, risk taking, and proactiveness in relation to the uncertainty of online technology adoption, vendors with a high level of EO require a higher level of trust than those with a low level of EO. The influence of EO is significantly related to trust ( $\beta = .339$ ,  $p$ -value < .001, supported H3). EO's influence on the ITU m-commerce was not significant ( $\beta = -.111$ ,  $p$ -value = .109).

Moreover, this study offered additional insights into the applicability and generalizability of the Technology Acceptance Model. That is, trust mediated the relationship between EO and intentions, which was not found in previous studies. Firms do not always adopt new technologies because the adoption process is dominated by trust and the system characteristics (i.e., usefulness and ease of use). This process

depends tremendously on the existing level of trust, because m-commerce involves the sharing of information activities between users and service providers. Without trust, the interactive online environment would not be possible (Corritore et al., 2003). Thus, some vendors tend to seek out opportunities and technologies. If they form closer relationships with service providers, they could leverage benefits (usefulness) and reduce the complexity of unnecessary transactions (ease of use), which leads to adoption. For these reasons, trust positively affects PU ( $\beta = .201$ ,  $p$ -value = .003, supported H2b) and PEOU ( $\beta = .411$ ,  $p$ -value < .001, supported H2c). These results concur with the work of Ashraf et al. (2014).

This study provided evidence of a moderating variable: product differentiation (PD), which past studies did not investigate. As shown in Figure 2.2, the findings showed that vendors who perceive higher usefulness exhibit greater ITU m-commerce than those perceiving lower usefulness. This result is similar to the high and low degree of PD. However, for vendors with a higher PD, the effect of PU and the intention was stronger than those with a lower PD. In other words, the level of PD strengthened the positive relationship between PU and the ITU m-commerce. The interaction term of PU and PD was significantly related to the ITU m-commerce ( $\beta = .088$ ,  $p$ -value = .018, supported H5). A possible explanation is that m-commerce adoption resulted from the congruence of its usefulness and the appropriateness of the products, which are profoundly evaluated simultaneously. The results are consistent with that of previous research. The online channel is more appropriate for high than low PD (Peterson, Balasubramanian and Bronnenberg, 1997; Phau and Poon, 2000).

## **2.7 Implications**

### **2.7.1 Theoretical Contributions**

There are three theoretical contributions from the study. First, this study advances the previous research on e-commerce adoption in settings outside the formal sector (Abebe, 2014; Kurnia, Choudrie, Mahbubur and Alzougool, 2015). More specifically, this study developed and validated the extended TAM in the smallest-scale of entrepreneurs, street vendors, to increase the understanding of the adoption of m-commerce. The predictive power of TAM is strong and holds true for street vendors. It

illustrates that perceived ease of use is the most significant predictor in adopting technology among street vendors (early adoption stage). In contrast, the study of Yadav, Sharma and Tarhini (2016) shows that the influence of perceived usefulness is stronger than that of perceived ease of use in determining technology adoption among student samples in India. This indicates that users have a high education level (post-adoption stage).

Second, according to the previous research, the influence of entrepreneurial orientation is not associated with new product innovation (Renko, Carsrud and Brännback, 2009) and technology adoption (Ratten, 2012), although the entrepreneurial orientation consists of innovativeness, risk-taking behaviors, and pro-activeness, showing a sense of technology readiness. This study found that the relationship of entrepreneurial orientation and technology adoption is completely connected through the decision-making process (i.e., trust and system characteristics, otherwise known as usefulness and ease of use). Trust alone and trust with system characteristics acts as the most important mechanism of m-commerce adoption among street vendors.

Finally, this study includes a new but crucial moderating variable: product differentiation. The results found that the degree of product differentiation strengthened the positive relationship between perceived usefulness and the intention to use m-commerce.

### **2.7.2 Managerial Contributions**

The study findings have important implications for people working in the areas of government, application service providers and developers, and marketers who intend to offer m-commerce applications to an informal section. Hence, developing directions for a set of strategies are recommended. This study has three main managerial contributions as follows.

First, since most vendors are inexperienced, the intention to use m-commerce is dominated by the ease of use. When making decisions regarding technology adoption, they are likely to be more concerned with their ability to learn and use the application, than with the advantages it provides. Application developers should keep in mind that it is essential to avoid serving complexity, and instead to focus on a user-friendly interface. For example, user manuals and application demonstration videos are supplementary tools in providing a better experience for newcomers.

Second, in a high uncertainty avoidance culture like Thailand, creating trust and familiarity facilitates communication effectiveness. Trust plays a pivotal role in building relationships and making vendors feel comfortable in using an application. Application service providers and marketers must highlight the importance of trust, delivering on the sense of security. Given that the building of trust works well, it could be reasonably explained that vendors could adopt the use of m-commerce technology to improve performance in the informal sectors.

Third, the adoption process seems to be a long decision process. As such, marketers should target vendors with a high product differentiation because they are more likely to adopt m-commerce. They are easier to convince to accept m-commerce because they are more likely to see it as useful as well as more willing to adapt and learn new technology.

## **2.8 Limitations and Future Researches**

Two limitations and directions for further research were identified. First, this study surveyed street vendors in Bangkok, Thailand. Although the purposive sampling may impede the generalization of the research findings, the subjects (vendors) were screened based on their use of mobile phones that support internet access and their experience with online applications. They tend to spend considerable time using new technology. The samples were relevant to the topic being researched. Since street vending is a universal prevalence in developing and developed countries, future researchers should replicate the findings of this study and extend the research into other countries.

Second, m-commerce has only recently been adopted among small enterprises, and so this phenomenon is in its infancy (Islam, Khan, Ramayah, and Hossain, 2011). Thus, the cross-sectional study is an appropriate methodology for this research stage. However, a cross-sectional study limits comparisons over time. Given the rapidly growing demand of m-commerce, tracking and detecting developments or changes in behavioral intentions and the behavior of the subjects a longitudinal study would be beneficial.

## **CHAPTER 3**

### **LEVERAGING THE TECHNOLOGY ACCEPTANCE MODEL FOR MOBILE COMMERCE ADOPTION UNDER DISTINCT STAGES OF ADOPTION: A CASE OF MICRO BUSINESSES**

#### **3.1 Introduction**

In the age of globalization, electronic commerce (e-commerce) is growing and playing a vital role in changing business trends worldwide (Oliveira et al., 2017). A newer global form of technology, mobile commerce (m-commerce), is not limited to monetary transactions, but includes other services as well, e.g., content delivery, communication, and local-based services (Yang et al., 2015). In this study, m-commerce focuses on selling goods through mobile phone. In 2017 m-commerce had an estimated \$1.357 trillion in sales, or 58.9% of the e-commerce market, and will likely reach 72.9% of the e-commerce market by 2021 (eMarketer, 2018). Although m-commerce has rapidly entered retail sales, street vendors risk being left behind. Many vendors already confront challenges in adopting new technologies because of their limited education, difficulty in obtaining capital and credit, and their obligation to work long hours for minimal profits (Mramba, Apiola, Kolog, and Sutinen, 2016). Street vendors are a large, very visible workforce in many cities; however, finding reliable data on their numbers has been a challenge, especially in emerging economies (WIEGO, 2019). When a population census or labor force survey is taken, vendors often fail to report their work as a full-time occupation; instead, they report it as temporary, seasonal, or part time. Using small and medium-sized enterprises (SMEs) as a proxy for street vendors, researchers have predicted that a low number of vendors will adopt an online retail method, except in countries such as China, Nigeria, Kenya, and South Africa (Kaplan, 2018). For example, a survey of 292 SMEs in Indonesia revealed that 7% do not use the internet and only 13% have ventured into e-commerce

(Rahayu and Day, 2017), whereas 27% of online SMEs in India engage in e-commerce (KPMG, 2015).

To prevent street vendors from falling into this economic disparity trap, governments are urged to adopt an inclusive policy to integrate them into the modern sector (Truong, 2018). Financial institutions and network providers are encouraged to offer technological procedures suitable for street vendors, and academic researchers are advised to investigate m-commerce adoption among street vendors to create a knowledge base that will help in shaping a more equitable society (Wongtada, 2014). Encouraging pavement vendors to adopt m-commerce could help to create equity.

Although there are numerous studies on modes of adoption by SMEs, street vendors are rarely used as specific subjects of investigation. Because street hawkers operate in a harsher environment, the findings from other SMEs may not be used directly to explain the hawkers' modes of adoption. By operating on the pavement, street hawkers have to deal with anti-street vending policies that aim to eradicate the illegal use of public space, which prompted some vendors to unite to protect their interests (Song, 2016). Public concerns regarding insufficient facilities for maintaining food sanitation, hygiene, and safety lead to frequent inspections. For the vendors, long-term exposure to traffic-related air pollution harms their health. Subsequently, only street vendors who offer unique products are likely to adopt m-commerce (Pipitwanichakarn and Wongtada, 2019). To reduce uncertainty, they trust the advice from their inner circle when deciding to accept any self-service technology such as m-banking services (Kaushik and Rahman, 2016).

The Technology Acceptance Model (TAM) is the foundation (Bakhsh et al., 2017) for later versions (TAM 2 and TAM 3) that extend TAM by adding many variables to explain perceived usefulness (e.g., image, job relevance, subjective norm) and perceived ease of use (e.g., computer anxiety, self-efficacy, playfulness), respectively. However, the TAM still remains an efficient model and has been shown to be robust in describing the adoption of m-commerce in various contexts (Chan and Chong, 2013; Ghazali et al., 2018). Therefore, to further our understanding of m-commerce adoption among street vendors, the TAM is sufficient for explaining and predicting a vendor's acceptance of m-commerce.

Recent literature on technology adoption suggests that perceived usefulness, perceived ease of use, trust, perceived risk, and perceived enjoyment are important factors for improving the predictive validity of the TAM (Ingham, Cadieux and Berrada, 2015; Marangunić and Granić, 2015). Trust and perceived risk are linked though trust is more widely employed in explaining m-commerce adoption (Shaikh and Karjaluoto, 2015). Thus, perceived risk was considered for removal from our conceptual framework. Because m-commerce has been deemed an entertaining platform, users experience feelings of enjoyment when using the technology (Alalwan, Baabdullah, Rana, Tamilmani, and Dwivedi, 2018). This suggests that it is necessary to examine the role of perceived enjoyment in behavioral intention. As such, these four factors should be included in this study.

Although many researchers call for the application of the TAM across different adoption stages (Marriott, Williams and Dwivedi, 2017; Chopdar, Korfiatis, Sivakumar and Lytras, 2018), empirical studies applying the TAM across different micro businesses' adoption stages are limited. This study aims to extend the current literature of the TAM for m-commerce to a potential market (street vendors) by distinguishing their adoption stages (i.e., initial and advanced stages). Moreover, this study investigates the role of trust and perceived enjoyment in the TAM across these two adoption stages. This study's central focus is to advance knowledge regarding street vendors' m-commerce adoption and usage from the initial to the advanced adoption stage and to guide support for technology adoption by street vendors on behalf of the people at the bottom of the pyramid.

The remainder of this article is organized as follows: The second section reviews the TAM, trust and perceived enjoyment, and interprets the development of our hypothesis; the third section describes the research methodology; the fourth section reports the data analysis and findings; the fifth section discusses the research findings; and the final section presents the theoretical and managerial contributions, limitations, and directions for future research.

## **3.2 Literature Review and Hypothesis Development**

### **3.2.1 Street Vendor**

A street vendor refers to a person who offers goods or services to the public without having a permanent structure (Bhowmik, 2005). Street vending is a ubiquitous phenomenon across the globe, particularly in emerging countries, e.g., China, India, and Thailand (Wongtada, 2014). It contributes to economic activity and is able to address consumers' demand. Vending activity is a source of income for people at the grassroots level in urban districts. In cities like Bangkok where residents consume street food on a regular basis, their expenditures will increase without vending businesses (Carrillo-Rodriguez and Reed, 2018). Furthermore, if street vendors are not able to operate their businesses, it is likely that some vendors may become criminals (Bromley, 2000). Thus, street vendor businesses deliver social safety and reduce government cost in the administration of policy, which relates to police, courts, and prison systems.

### **3.2.2 Technology Acceptance Model**

The Technology Acceptance Model is well known and well respected as a robust predictive framework (Turner, Kitchenham, Brereton, Charters, and Budgen, 2010). It can be used to explain why users adopt technology or to predict the use of a specific technology (Davis et al., 1989). The model consists of two beliefs (i.e., perceived usefulness and perceived ease of use) and theorizes that perceived usefulness and perceived ease of use affect behavioral intention. Perceived usefulness is defined as the degree to which a person believes that using technology would enhance job performance, while perceived ease of use is related to the degree to which a person believes that using technology would be relatively free of effort (Davis, 1989). Users who see a technology as having high usefulness and ease of use are likely to enjoy embracing technology (Tan et al., 2014). In other words, the greater the perceived usefulness and ease of use of a system, the greater likelihood of adoption (Nguyen and Cassidy, 2018). By contrast, if users evaluate it as having a low degree of usefulness and a low degree of ease of use, they tend to resist its adoption. Perceived usefulness is also determined by perceived ease of use (Park et al., 2012; Agrebi and Jallais, 2015), which means that a user who has greater ease of technology use has more opportunity

to benefit from the performance of technology. Thus, the following hypotheses are proposed:

H1a: Perceived usefulness has a direct positive effect on intention to use m-commerce.

H1b: Perceived ease of use has a direct positive effect on intention to use m-commerce.

H1c: Perceived ease of use has a direct positive effect on perceived usefulness.

### **3.2.3 Trust in Service Provider (Trust)**

Trust is an omnipresent phenomenon that has been argued through various disciplinary lenses such as philosophy, sociology, political science, economics, information systems, management, and marketing (Thaichon and Quach, 2015). Trust refers to users' belief that a provider will not behave in an opportunistic manner and to the advantage of their partners (Pavlou, 2003). Different from the traditional brick-and-mortar marketplace, online users are concerned with inherent uncertainties when engaging in digital relationship marketing, e.g., misuse of their personal information, theft of information by hackers, and transaction errors (Kesharwani and Bisht, 2012). Trust is a significant element affecting human behavior, particularly in a risky environment such as electronic commerce because trust is a recognized tool in reducing uncertainty and creating efficient exchange from the association (Kim, Ferrin and Rao, 2008). Trust is at the center of interpersonal relationships, hence establishing trust between partners serves as an effective strategy to enhance a high degree of confidence (McKnight and Chervany, 2001). Trust plays a crucial role in facilitating knowledge sharing (Park and Lee, 2014), building long-term relationships (Thaichon, Lobo, Prentice and Quach, 2014), and increasing perceived value, which, in turn, affects technology adoption (Jayashankar, Nilakanta, Johnston, Gill, and Bures, 2018). Therefore, creating trust makes users more willing to accommodate new technology (Lee, Eze and Ndubisi, 2011; Gong, Liu, Zheng, and Wu, 2018). Moreover, trust influences both perceived usefulness and perceived ease of use (Zampou et al., 2012; Hansen, Saridakis, and Benson, 2018). When users trust a service provider, they tend to pursue its benefits and spend less time monitoring and implementing online transactions. This leads to the hypotheses below:

H2a: Trust has a direct positive effect on intention to use m-commerce.

H2b: Trust has a direct positive effect on perceived usefulness.

H2c: Trust has a direct positive effect on perceived ease of use.

### **3.2.4 Perceived Enjoyment**

Perceived enjoyment refers to the extent to which using a particular technology is perceived to be enjoyable in its own right, in addition to any performance outcomes resulting from its usage (Venkatesh, 2000a). Positive feelings toward a system reduces resistance to change and can make people eager to try something new. With online shopping, shopping enjoyment is measured by using an adapted scale from intrinsic enjoyment (Koufaris, 2002). In line with this research, we measure perceived enjoyment with three items: enjoyable, exciting, and interesting.

Technology acceptance literature suggests that perceived enjoyment is a significant predictor of behavioral intention (Huang, 2015). Prior studies found that people have different motivations (i.e., utilitarian vs. hedonic motivation) (Ozturk, Nusair, Okumus, and Hua, 2016). Although the primary advantages of m-commerce for street vendors are related to utilitarian motivation (e.g., income increase and cost reduction), hedonic motivation (i.e., enjoyment) also influences behavioral intention (Khoi, Tuu, and Olsen, 2018; Madan and Yadav, 2018). Thus, when users find a technology enjoyable, they feel satisfied and continue their usage (Zhou, 2013).

Although perceived usefulness acts as a key determinant of behavioral intention, perceived enjoyment can explain a significant variance in behavioral intention beyond that accounted for by perceived usefulness alone (Davis, Bagozzi and Warshaw, 1992). In addition, perceived playfulness (as conceptualized by concentration, curiosity, and enjoyment) positively relates to intention to use websites for both work and entertainment purposes, while perceived usefulness influences behavioral intention only for work purposes (Moon and Kim, 2001). Since an aspect of mobile internet and related services (i.e., m-commerce) seems to be a joyful platform, they provide feeling of enjoyment when using a technology (Alalwan et al., 2018). An enjoyable technology enables users to underestimate complexity of its usage, which leads to technology adoption (Poong, Yamaguchi, and Takada, 2017). Prior researches reveal that perceived enjoyment influences perceived ease of use (Teo and Noyes, 2011;

Chen, 2019). That is, technology that is considered enjoyable to use is more likely to encourage technology adoption and generate an effortless task (Park, Kim, Kim and Kwon, 2018). Accordingly, the following hypotheses relevant to perceived enjoyment are proposed below:

H3a: Perceived enjoyment has a direct positive effect on intention to use m-commerce.

H3b: Perceived enjoyment has a direct positive effect on perceived ease of use.

### **3.2.5 Stage of Adoption**

Innovation adoption can be defined as the creation of change in a business to ensure adaptive behavior (Damanpour and Gopalakrishnan, 1998). The stage of adoption is important because users at various stages have different ways of evaluating technological platforms and interpreting their importance; users' views influence their behavior and decisions (Damanpour, 1991). The diffusion of innovation theory is one theory that explains the stages in technology adoption. This theory explains how products, ideas, or technologies gain momentum and spread through social systems, ultimately leading to adoption and new methods of operation and functionality (Rogers, 2010). Adoption of m-commerce technology, for instance, has occurred in phases where some choose to adopt, while others decide to refrain or postpone. Understanding the varying response of potential users to new innovations leads to their categorization into the five adopter classes depending on whether they encourage or discourage adoption of the new technology (Dibra, 2015). The first class is the innovator, which refers to individuals who aspire to be the first to try technologies. These persons are interested in the new idea, so the developers do not have to do a lot to cause change. Early adopters and early majority are next and refer to opinion leaders and non-leaders who adopt innovation before the everyman. Final categories are late majority and laggards, who are skeptical of change and very conservative, respectively. Large Thai retailers have adopted and currently used m-commerce, thus they could be categorized as innovators and early adopters, whereas most street vendors seem to be in the majority who just participate in online transactions. Based on Rogers' adoption theory, the majority of the market is classified into early majority and late majority groups. Naturally, some street vendors are more ready to adopt this upcoming technology than others. This phenomena aligns with studies on technology adoption that classified

people into adopter and non-adopter segments (Gerrard and Cunningham, 2003; Ozdemir and Trott, 2009). Adopters possess a higher level of personal computer proficiency than non-adopters. This is, skills and experiences lead to greater willingness to learn new technology, and thereby increase the likelihood of technology adoption.

While general mobile internet (m-internet) was quite widely adopted and implemented by mobile users, m-commerce is still in an initiation stage because it has more complicated features than m-internet. To motivate m-commerce adoption, it is helpful to seek users who are already familiar with m-internet. We argue that internet experience as a single measure is likely to oversimplify adoption stage identification, thus, this study focuses on users in the m-internet implementation stage by dividing them into low (known as initial adopters) and high (known as advanced adopters) according to their internet experience, frequency of use, and aptitude.

Prior research suggests that relationships in the TAM may yield inconsistent results for different stages of adoption (Taylor and Todd, 1995; Venkatesh and Bala, 2008). For instance, perceived usefulness has a stronger influence on behavior intention for users with high internet experience (Castañeda, Muñoz-Leiva and Luque, 2007). Furthermore, Ashraf et al. (2014) showed that perceived ease of use has a significant impact on behavioral intention in the initial adoption stage. That is, users at an advanced adoption stage rely more on the benefits of technology to motivate technology adoption, whereas the influence of perceived ease of use is diminished because they have gained mastery and are much more familiar with a technology (Adams et al., 1992). In addition, the influence of perceived ease of use on perceived usefulness is significantly higher for the high knowledge group (Kim, Kim, Kim, and Kim, 2016) because high knowledge users are able to form an assessment of usefulness based on information obtained from experience. Hence, the following hypotheses are formulated:

H4a: Perceived usefulness has a stronger direct positive effect on intention to use m-commerce for users who are at an advanced adoption stage than for users who are at an initial adoption stage.

H4b: Perceived ease of use has a stronger direct positive effect on intention to use m-commerce for users who are at an initial adoption stage than for users who are at an advanced adoption stage.

H4c: Perceived ease of use has a stronger direct positive effect on perceived usefulness for users who are at an advanced adoption stage than for users who are at an initial adoption stage.

Compared to users with high experience, users with low experience rely more on service provider trust in explaining intention to use a technology (Gefen, Benbasat and Pavlou, 2008). This suggests that the importance of trust on technology adoption may vary depending on the stage of adoption. Prior studies show that the effect of trust on behavioral intention is stronger for low experience customers (Gefen, Karahanna and Straub, 2003a). Since trust contributes to perceptions of usefulness and the ease of use of m-commerce (Pipitwanichakarn and Wongtada, 2019), users with low experience require a higher degree of trust to pursue benefits of a technology and mitigate effort in adopting a technology. Therefore, the following hypotheses are posited:

H5a: Trust has a stronger direct positive effect on intention to use m-commerce for users who are at an initial adoption stage than for users who are at an advanced adoption stage.

H5b: Trust has a stronger direct positive effect on perceived usefulness for users who are at an initial adoption stage than for users who are at an advanced adoption stage.

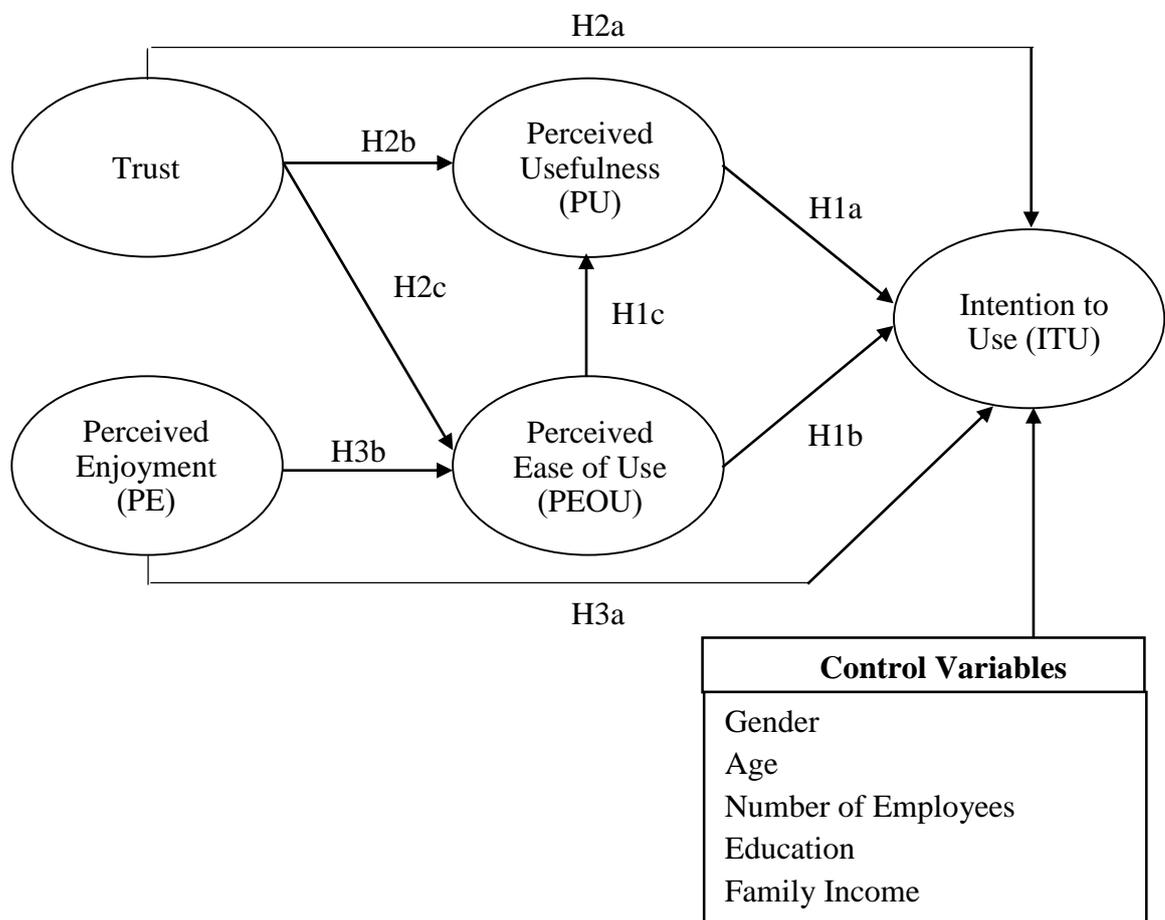
H5c: Trust has a stronger direct positive effect on perceived ease of use for users who are at an initial adoption stage than for users who are at an advanced adoption stage.

Researchers have previously argued that the influence of enjoyment on behavioral intention and perceived ease of use vary depending on different adoption stages. For instance, the effect of positive emotion (or enjoyment) on intention to use mobile payment service is stronger for users at the initial adoption stage than for those at the advanced adoption stage (Wu, Liu and Huang, 2016). Likewise, the importance of affect (conceptualized as interesting and fun) on computer utilization diminishes as users gain hands-on experience with technology (Thompson, Higgins, and Howell, 1994). When using a technology, users with low experience require a high degree of fun and enjoyment to make them overlook or underestimate its complicated features (Poong et al., 2017). When they gain experience, understandability, and technological

aptitude after a period of usage, they are likely to require less enjoyment in interacting with it. Consequently, the following hypotheses are proposed:

H6a: Perceived enjoyment has a stronger direct positive effect on intention to use m-commerce for users who are at an initial adoption stage than for users who are at an advanced adoption stage.

H6b: Perceived enjoyment has a stronger direct positive effect on perceived ease of use for users who are at an initial adoption stage than for users who are at an advanced adoption stage.



**Figure 3.1** The Research Model

### **3.3 Research Methodology**

#### **3.3.1 Questionnaire Development**

A questionnaire was developed by basing on a definition of m-commerce and followed by validated scales. M-commerce in this study refers to a selling of goods through mobile phone. The questionnaire was developed based on previously validated scales in English. Then, it was translated into Thai by researchers and back-translated into English by two independent bilinguals. Subsequently, the two English versions were compared and reconciled to ensure that there was no loss of information during translation.

All the indicators used in this study were derived from previously validated measurement scales; the subjects were asked to rate their perceptions with seven-point Likert scales (1 = “strongly disagree” to 7 = “strongly agree”). We adapted the scales of intention to use from Venkatesh and Davis (2000) and Hong and Tam (2006), perceived usefulness and perceived ease of use were adapted from Davis (1989), trust from Pavlou (2003), and perceived enjoyment from Koufaris (2002). We adapted three dimensions from Burkhardt and Brass (1990) and Thompson et al. (1994) to represent difference of vendors’ stage of adoption (initial vs. advanced stage): (1) experience in using mobile internet (years), (2) frequency in using mobile internet (hours/day), and (3) “I am effectively using mobile internet” (known as aptitude) with seven-point Likert scales (1 = “strongly disagree” to 7 = “strongly agree”).

#### **3.3.2 Data Collection**

Face-to-face interviews using a structured questionnaire were conducted with street food vendors in Bangkok. Bangkok was chosen because it is the largest vendors’ habitat and provides an attractive and promising market. The Klongtoey and Dindaeng districts were chosen as the data collection sites because they are local hotspots for district residents. The food segment was the focus because it occupies the largest proportion of vendors. Only street vendors who use a smartphone routinely and have experience in shopping online or using internet banking were allowed to participate this survey because they are basic transactions that are precursors to m-commerce transactions.

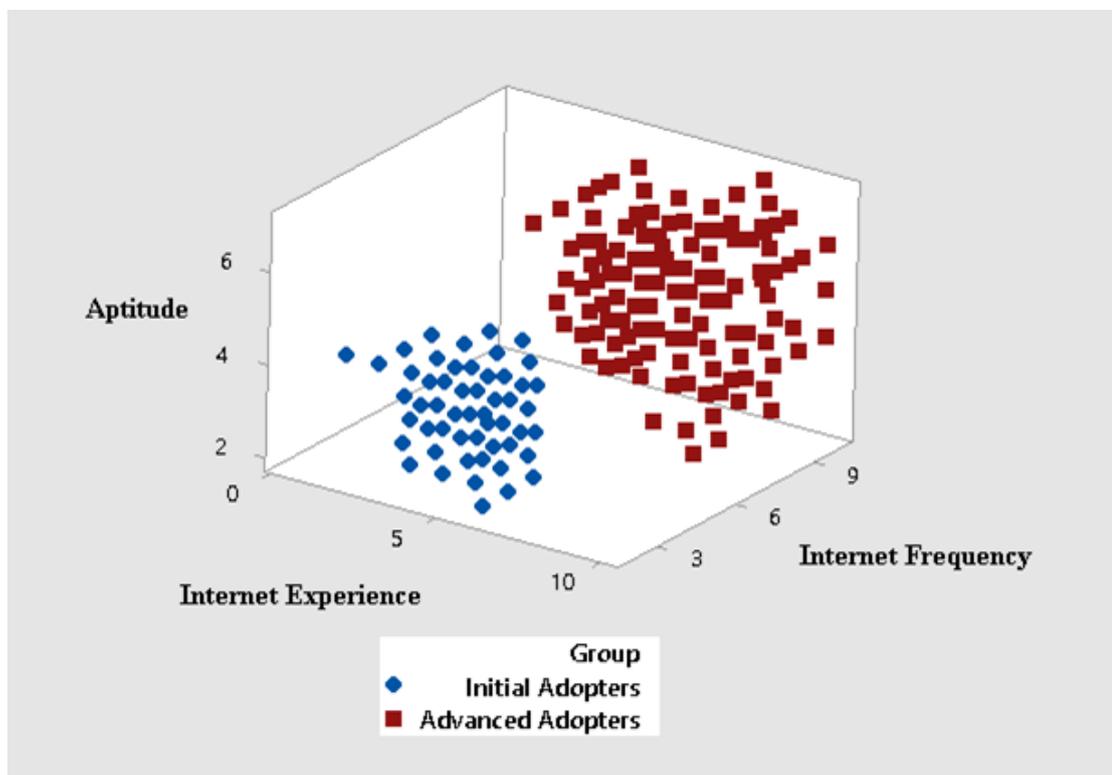
Six interviewers were trained on the questionnaire and supervised by the researchers to be able to completely understand the purpose of the interview and refrain from expressing their own views in during the interview. The data collection occurred in two stages: a pilot study and a main survey. The pilot study aims to assess the quality of content and reliability of the constructs. Forty-five vendors were interviewed during at the last week of February 2018. During the pilot test, vendors suggested that the indicators of perceived enjoyment (i.e., “I think that m-commerce is interesting” and “I think that m-commerce is exciting”) were unclear. Hence, they were revised by adding “using” into these statements, resulting in “I think using m-commerce is interesting” and “I think using m-commerce is exciting.” The Cronbach’s alpha of all constructs were greater than .7 as recommended by Hair et al. (2010). Thus, the reliability of the constructs are assured. Data from the pilot study were not included in the main survey to protect contamination from the questionnaire improvement.

Two weeks after the pilot study, a total of 430 vendors were recruited to participate in the main survey. After data screening, 15 responses were removed due to incomplete information in some constructs, leaving 415 usable sets of questionnaire with a completion rate of 96.5%. This was done because missing data may cause misleading results and decrease the accuracy of statistical results. On average, the participants spent 12 minutes completing the survey and they received a towel (35 Baht or approximately 1.06 USD) in return for their cooperation.

### 3.4 Samples

K-Means cluster analysis was employed to classify groups of street vendors into initial and advanced stages on the basis of standardized values of mobile internet experience, frequency of use, and aptitude; resulting in 200 and 215 for initial and advanced adopters. The demographic profiles of each cluster are shown in Table 3.1. The results showed there were no significant differences across groups; (1) gender distribution, Pearson  $\chi^2(1) = .007$ ,  $p$ -value = .932, not significant (n.s.); (2) age,  $t(413) = .974$ ,  $p$ -value = .330, n.s.; (3) education distribution, Pearson  $\chi^2(3) = 2.131$ ,  $p$ -value = .546, n.s.; (4) family monthly income distribution, Pearson  $\chi^2(3) = 2.308$ ,  $p$ -value = .511, n.s.; and (5) number of employees,  $t(413) = 1.613$ ,  $p$ -value = .107, n.s. However,

mobile internet experience [ $t(413) = 21.657, p\text{-value} < .001$ ], frequency of use [ $t(413) = 26.755, p\text{-value} < .001$ ], and aptitude [ $t(413) = 20.472, p\text{-value} < .001$ ] of advanced adopters were significantly higher than those of initial adopters. These analyses confirmed that differences of statistical results (shown in section 4.4.2) arose from only stages of adoption and did not result from other demographic profiles. The 3D cluster plot is displayed in Figure 3.2. According to Table 3.2, the average value of the indicator of behavioral intention varied from 4.285 to 4.725 for initial adopters and from 4.251 to 4.791 for advanced adopters. It indicated the likelihood of m-commerce adoption for both groups.



**Figure 3.2** The 3D Cluster Plot

**Table 3.1** Street Vendors' Profiles

	Overall Model		Initial Adopters		Advanced Adopters	
	n	%	n	%	n	%
<b>Gender</b>						
Male	225	54.2	108	54.0	117	54.4
Female	190	45.8	92	46.0	98	45.6
<b>Age (years)</b>						
18-30	115	27.7	58	29.0	57	26.5
31-40	192	46.3	92	46.0	100	46.5
41-50	96	23.1	45	22.5	51	23.7
51-55	12	2.9	5	2.5	7	3.3
<b>Education</b>						
Primary school	51	12.3	24	12.0	27	12.6
High School	176	42.4	79	39.5	97	45.1
Vocational School	106	25.5	57	28.5	49	22.8
Bachelor Degree	82	19.8	40	20.0	42	19.5
<b>Family Monthly Income (Baht) (1 USD = 33 Baht)</b>						
18,001-24,000	58	14.0	30	15.0	28	13.0
24,001-35,000	146	35.2	76	38.0	70	32.6
35,001-50,000	93	22.4	42	21.0	51	23.7
> 50,000	118	28.4	52	26.0	66	30.7
<b>Number of Employees</b>						
None	180	43.4	86	43.0	94	43.7
1	163	39.3	68	34.0	95	44.2
2	58	14.0	38	19.0	20	9.3
3	14	3.4	8	4.0	6	2.8
<b>Average internet experience (years) (s.d.)</b>						
	5.93 (2.17)		4.30 (1.22)		7.45 (1.69)	
<b>Average internet frequency (hour/day) (s.d.)</b>						
	5.99 (2.03)		4.32 (1.17)		7.55 (1.28)	
<b>Average aptitude score (s.d.)</b>						
	4.12 (1.45)		3.05 (.70)		5.11 (1.25)	

**Table 3.2** Constructs, Indicators, Mean, and Standard Deviation (SD)

Constructs (Source)	Overall Model		Initial Adopters		Advanced Adopters	
	Mean (sd)	Loadings	Mean (sd)	Loadings	Mean (sd)	Loadings
<b>Behavioral Intention (Intention to Use; ITU)</b> (Venkatesh and Davis, 2000; Hong and Tam, 2006)						
I intend to use m-commerce in the near future.	4.759 (1.328)	.933	4.725 (1.428)	.920	4.791 (1.23)	.947
I intend to use m-commerce frequently.	4.547 (1.483)	.951	4.510 (1.537)	.946	4.581 (1.434)	.958
Overall, I intend to use m-commerce.	4.267 (1.558)	.940	4.285 (1.664)	.937	4.251 (1.457)	.944
<b>Perceived Usefulness (PU)</b> (Davis, 1989)						
Using m-commerce improves my job performance.	4.624 (1.237)	.884	4.530 (1.276)	.891	4.712 (1.196)	.882
Using m-commerce would enhance my effectiveness in my job.	4.542 (1.296)	.876	4.485 (1.473)	.865	4.595 (1.106)	.891
Overall, m-commerce is useful for me in my job.	4.651 (1.272)	.884	4.655 (1.344)	.903	4.647 (1.206)	.860
<b>Perceived Ease of Use (PEOU)</b> (Davis, 1989)						
I think it is easy to learn how to use m-commerce.	4.682 (1.419)	.888	4.470 (1.517)	.891	4.879 (1.295)	.887
I think interacting with m-commerce is clear and understandable.	4.386 (1.455)	.834	4.210 (1.489)	.824	4.549 (1.406)	.842
Overall, I think it is easy to use m-commerce.	4.383 (1.392)	.885	4.285 (1.444)	.898	4.474 (1.339)	.862
<b>Trust</b> (Pavlou, 2003)						
The m-commerce's service provider is trustworthy.	4.619 (1.159)	.889	4.675 (1.19)	.870	4.567 (1.129)	.906
The m-commerce's service provider keeps its promises and commitments.	4.296 (1.176)	.867	4.480 (1.211)	.854	4.126 (1.118)	.879
I trust that the m-commerce's service provider keeps my best interests in mind.	4.487 (1.15)	.855	4.645 (1.143)	.862	4.34 (1.14)	.846

**Table 3.2** (Continued)

Constructs (Source)	Overall Model		Initial Adopters		Advanced Adopters	
	Mean (sd)	Loadings	Mean (sd)	Loadings	Mean (sd)	Loadings
<b>Perceived Enjoyment (PE)</b> (Koufaris, 2002)						
I think that using m-commerce is enjoyable.	3.602 (1.345)	.867	3.640 (1.315)	.856	3.567 (1.375)	.904
I think that using m-commerce is interesting.	3.723 (1.288)	.864	3.835 (1.322)	.862	3.619 (1.251)	.869
I think that using m-commerce is exciting.	3.687 (1.408)	.794	3.705 (1.459)	.807	3.67 (1.363)	.733

### 3.5 Data Analysis

The partial least squares structural equation modeling (PLS-SEM) was employed to test our models by SmartPLS version 3.0. This method was chosen for two reasons. First, the PLS-SEM is considered a robust method for addressing several relationships in the model simultaneously and these relationships can be compared across multiple groups (Lowry and Gaskin, 2014). Second, although the CB-SEM (covariance-based structural equation modeling) method is useful for theory testing and confirmation, the PLS-SEM method is optimal for the prediction and explanation of dependent variables, such as we have in this study (Hair, Ringle and Sarstedt, 2011).

This section consists of four sub-sections. First, the measurement model of overall model, initial and advanced adopters were assessed separately. Second, common method bias and measurement invariance were verified. Third, control variables were identified. Finally, the hypotheses were tested by comparing responses between initial and advanced adopters.

#### 3.5.1 Measurement Model Assessment

Prior to hypothesis testing, several tests were conducted to assess convergent validity, discriminant validity, and reliability of measures as recommended by Hair et al. (2010). Convergent validity is defined as the degree to which indicators converge to measure their specific construct. Discriminant validity refers to a considered construct

differing from the other constructs. Reliability is the degree of consistency between multiple indicators of a construct.

To assess convergent validity, we initially observed the loadings as recommended by Hair et al. (2010) (see Table 3.2). All of the loadings were greater than .7. Second, average variance extracted (AVE) (ranging from .710 to .886 for overall model, from .709 to .873 for initial adopters, and from .703 to .902 for advanced adopters, respectively) were greater than .5, as recommended by Hair et al. (2010) (see Table 3.3). Thus, convergent validity was fulfilled.

Next, to verify discriminant validity, the square root of the AVE for each construct was higher than the correlations between the considered construct and all other constructs (inter-construct correlations) (Hair et al., 2010), thus suggesting that the discriminant validity was satisfied.

Finally, reliability was evaluated by composite reliability (CR) and Cronbach's alpha. All CR values (ranging from .880 to .959 for overall model, from .880 to .954 for initial adopters, and from .876 to .965 for advanced adopters) and Cronbach's alpha values (ranging from .797 to .936 for overall model, from .796 to .927 for initial adopters, and from .799 to .946 for advanced adopters) for each construct were above the standard minimum threshold of .7, as recommended by Hair et al. (2010). These results indicated that the constructs in our research models well demonstrated a level of reliability.

**Table 3.3** Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and Correlations

Overall Model								
Constructs	Cronbach's Alpha	CR	AVE	Correlations				
				ITU	PU	PEOU	Trust	PE
ITU	.936	.959	.886	.941				
PU	.857	.913	.777	.479	.882			
PEOU	.839	.903	.756	.613	.325	.869		
Trust	.840	.904	.758	.512	.313	.290	.870	
PE	.797	.880	.710	.403	.133	.231	.174	.842

Initial Adopters								
Constructs	Cronbach's Alpha	CR	AVE	Correlations				
				ITU	PU	PEOU	Trust	PE
ITU	.927	.954	.873	.934				
PU	.865	.917	.786	.297	.887			
PEOU	.844	.905	.760	.678	.251	.872		
Trust	.827	.897	.743	.498	.238	.279	.862	
PE	.796	.880	.709	.639	.165	.417	.256	.842

Advanced Adopters								
Constructs	Cronbach's Alpha	CR	AVE	Correlations				
				ITU	PU	PEOU	Trust	PE
ITU	.946	.965	.902	.950				
PU	.851	.910	.770	.703	.878			
PEOU	.830	.898	.747	.546	.413	.864		
Trust	.851	.909	.770	.540	.422	.349	.878	
PE	.799	.876	.703	.159	.116	.057	.083	.839

**Note:** The Diagonal Values of Correlation Matrix Show the Square Roots of AVE.

### 3.5.2 Common Method Bias and Measurement Invariance

Common method bias involves a potential issue found in behavioral research. It represents error that is attributed to the measurement method rather than to the construct being measured, resulting in a distortion of accuracy of causal relationships (Podsakoff et al., 2003). It can occur in several ways; e.g., subjects may maintain

consistency in their responses or they attempt to answer to satisfy their need for social acceptance rather than indicating their real perceptions. For PLS-SEM, the common method bias has been detected through a full collinearity assessment approach (Kock, 2015). We first observed variance inflation factors for all of the latent variables in each model. Their values varied from 1.103 to 2.977 for the initial adopters' model and from 1.020 to 2.553 for the advanced adopters' model. All values were lower than the threshold of 3.3 as suggested by Kock (2015). Second, we conducted Harman's single-factor test using exploratory factor analysis (Podsakoff et al., 2003). The results revealed that no single factor accounted for the majority of the variance in the model (the first factor accounted for 27.809% of the 74.634% explained variance for initial adopters and for 29.711% of the 74.073% explained variance for advanced adopters). Consequently, the common method bias was not evident in this study.

Next, we verified the measurement invariance. The measurement invariance test is used to assess whether there is difference in the measures that form a measurement model between two groups (Hair et al., 2010). To verify the measurement invariance, we tested for factorial invariance using confirmatory factor analysis as recommended by Byrne (2010). The results revealed that  $\chi^2/\text{d.f.} = 1.416$ , comparative fit index (CFI) = .981, and root mean square error of approximation (RMSEA) = .046 for initial adopters and  $\chi^2/\text{d.f.} = 1.248$ , CFI = .989, RMSEA = .034 for advanced adopters which were highly sufficient according to the guidelines, hence providing evidence of the configural invariance. Then, we compared an unconstrained baseline model and a constrained model and found that  $\Delta\chi^2$  with  $\Delta\text{d.f.}$  was .729,  $p\text{-value} = .393$ , n.s. and the fit indices for the two models were not very different. Therefore, we concluded that the factor structure was equivalent across two groups.

### 3.5.3 Control Variables

To minimize the threat of confounding variables which could influence intention to use m-commerce, five control variables were incorporated into the structure model of both initial and advanced adopters: gender, age, number of employees, education, and family income.

### 3.5.4 Hypothesis Testing

In this section, we examined the direct effects of independent variables on the dependent variables in each model. Then, we compared differences in user-specific path estimates (initial vs. advanced adopters) by employing a multi-group analysis.

#### 3.5.4.1 Direct Effects of each Stage of Adoption

According to Table 3.4, the variance explained values ( $R^2$ ) of the intention to use m-commerce (61.7% for overall model, 70.7% for the initial stage, 63.8% for the advanced stage), perceived usefulness (15.9% for overall model, 20.6% for the initial stage, 12.3% for the advanced stage), and perceived ease of use (11.8% for overall model, 9.5% for the initial stage, 26.4% for the advanced stage) were presented. The Stone–Geisser  $Q^2$  values were calculated by using a blindfolding procedure. The Stone–Geisser  $Q^2$  value is a measure for the predictive relevance of the structural model (Henseler, Ringle and Sinkovics, 2009). All  $Q^2$  values were higher than zero; therefore, the model had predictive relevance as suggested by Hair et al. (2011).

The results of overall model showed that behavioral intention was significantly related to perceived usefulness ( $\beta = .209$ ,  $p$ -value  $< .001$ ), perceived ease of use ( $\beta = .383$ ,  $p$ -value  $< .001$ ), trust ( $\beta = .275$ ,  $p$ -value  $< .001$ ), and perceived enjoyment ( $\beta = .213$ ,  $p$ -value  $< .001$ ). Therefore, H1a, H1b, H2a, and H3a were supported respectively. Perceived usefulness was significantly influenced by perceived ease of use ( $\beta = .248$ ,  $p$ -value  $< .001$ ) and trust ( $\beta = .235$ ,  $p$ -value  $< .001$ ). Hence, H1c and H2b were supported. Moreover, perceived ease of use was significantly determined by trust ( $\beta = .258$ ,  $p$ -value  $< .001$ ), and perceived enjoyment ( $\beta = .186$ ,  $p$ -value  $< .001$ ). Thus, H2c and H3b were supported.

Although the relationships in the overall model demonstrated strong support for all hypotheses, our findings showed similarities and dissimilarities across two stages of adoption. The results indicated that behavioral intention was insignificantly related to perceived usefulness at the initial adoption stage ( $\beta = .069$ ,  $p$ -value = .133), whereas it was associated with perceived usefulness at the advanced adoption stage ( $\beta = .454$ ,  $p$ -value  $< .001$ ). Thus, H1a was supported only among advanced adopters. Perceived ease of use had a significant positive effect on intention to use for initial adopters ( $\beta = .426$ ,  $p$ -value  $< .001$ ) and advanced adopters ( $\beta = .250$ ,

$p$ -value < .001). Thus, H1b was supported across both stages of adoption. Perceived ease of use significantly and positively influenced perceived usefulness for initial adopters ( $\beta = .185$ ,  $p$ -value = .020) and advanced adopters ( $\beta = .300$ ,  $p$ -value < .001). Hence, H1c was supported across the two adoption stages.

**Table 3.4** Results of Direct Effects

Relationship	Direct Effects						Multi-group Comparisons of Stage of Adoption	
	Overall Model		Initial Adopters		Advanced Adopters		$\Delta\beta$	$t$ -value
	$\beta$	$t$ -value	$\beta$	$t$ -value	$\beta$	$t$ -value		
PU → ITU	.209	5.030***	.069	1.505 n.s.	.454	6.768***	.385	4.676***
PEOU → ITU	.383	9.046***	.426	8.867***	.250	3.977***	.175	2.197*
PEOU → PU	.248	4.559***	.185	2.323*	.300	3.954***	.115	1.052 n.s.
Trust → ITU	.275	7.418***	.270	5.745***	.211	4.089***	.059	.843 n.s.
Trust → PU	.235	4.570***	.176	2.545*	.311	4.169***	.135	1.331 n.s.
Trust → PEOU	.258	4.981***	.185	2.668**	.347	5.161***	.162	1.686 n.s.
PE → ITU	.213	6.831***	.353	8.460***	.064	1.474 n.s.	.289	4.804***
PE → PEOU	.186	4.055***	.370	6.211***	.028	0.404 n.s.	.342	3.697***
Gender → ITU	-	1.939	-.101	2.366*	-.012	.261 n.s.		
Age → ITU	-	.144	-.029	.672 n.s.	.012	.254 n.s.		
No. of employees → ITU	.031	.927	.007	.165 n.s.	.052	1.072 n.s.		
Education → ITU	.159	4.369***	.108	2.364*	.116	2.199*		
Family Income → ITU	-	1.228	-.064	1.610 n.s.	.029	.704 n.s.		
R <sup>2</sup> of ITU (%)	61.7		70.7		63.8			
R <sup>2</sup> of PU (%)	15.9		20.6		12.3			
R <sup>2</sup> of PEOU (%)	11.8		9.5		26.4			
Q <sup>2</sup> of ITU	.513		.578		.533			
Q <sup>2</sup> of PU	.113		.060		.185			
Q <sup>2</sup> of PEOU	.081		.144		.082			

**Note:** not significant (n.s.), \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Next, the effects of trust on behavioral intention, perceived usefulness, and perceived ease of use were investigated. The results demonstrated that trust significantly and positively influenced behavioral intention (initial adoption stage:  $\beta = .270$ ,  $p$ -value  $< .001$ ; advanced adoption stage:  $\beta = .211$ ,  $p$ -value  $< .001$ ), which supported H2a across two stages of adoption. Trust affected perceived usefulness at the initial adoption stage ( $\beta = .176$ ,  $p$ -value =  $.011$ ) and advanced adoption stage ( $\beta = .311$ ,  $p$ -value  $< .001$ ). Hence, H2b was supported across the two groups. In addition, trust had an impact on perceived ease of use in both stages (initial adoption stage:  $\beta = .185$ ,  $p$ -value =  $.008$ ; advanced adoption stage:  $\beta = .347$ ,  $p$ -value  $< .001$ ). Thus, H2c was supported.

Subsequently, the influence of perceived enjoyment on behavioral intention and perceived ease of use were examined. The results indicated that the direct effect of perceived enjoyment on behavioral intention was statistically significant for initial adopters ( $\beta = .353$ ,  $p$ -value  $< .001$ ), but was statistically insignificant for advanced ones ( $\beta = .064$ ,  $p$ -value =  $.141$ ). Consequently, H3a was supported only among initial adopters. Similarly, perceived enjoyment directly influenced perceived ease of use at the initial adoption stage ( $\beta = .370$ ,  $p$ -value  $< .001$ ), whereas it did not have an impact at the advanced adoption stage ( $\beta = .028$ ,  $p$ -value =  $.686$ ). Hence, H3b was supported only users at initial adoption stage.

#### 3.5.4.2 Comparative Results between Initial and Advanced adopters

According to H4a to H6b, four out of eight links in the research model differed across the two groups. As shown in Table 3.4 and 3.5, when investigating the effect of perceived usefulness on behavioral intention across groups, the results were numerically larger for advanced adopters (effect size =  $.390$ ) than initial adopters (effect size =  $.015$ ) and were significantly greater for advanced adopters than initial adopters ( $\Delta\beta = .385$ ,  $p$ -value  $< .001$ ); indicating that H4a was supported. The relationship of perceived ease of use on behavioral intention was greater for initial adopters (effect size =  $.413$ ) than advanced adopters (effect size =  $.131$ ) and was significantly stronger for initial adopters than for advanced adopters ( $\Delta\beta = .175$ ,  $p$ -value =  $.029$ ), thereby H4b was also supported. Contrary to our expectations, there was no significant difference between the two groups for the link of perceived ease of use and perceived usefulness

[effect size (initial adopters) = .030, effect size (advanced adopters) = .107,  $\Delta\beta = .115$ ,  $p$ -value = .293]. Accordingly, H4c was not supported.

**Table 3.5** Effect Sizes (Cohen's  $F^2$ )

Antecedents	Overall Model			Initial Adopters			Advanced Adopters		
	ITU	PU	PEOU	ITU	PU	PEOU	ITU	PU	PEOU
<b>PU</b>	.094 <sup>a</sup>			.015			.390 <sup>c</sup>		
<b>PEOU</b>	.287 <sup>b</sup>	.065 <sup>a</sup>		.413 <sup>c</sup>	.030 <sup>a</sup>		.131 <sup>a</sup>	.107 <sup>a</sup>	
<b>Trust</b>	.166 <sup>b</sup>	.059 <sup>a</sup>	.073 <sup>a</sup>	.213 <sup>b</sup>	.031 <sup>a</sup>	.040 <sup>a</sup>	.091 <sup>a</sup>	.115 <sup>a</sup>	.136 <sup>a</sup>
<b>PE</b>	.108 <sup>a</sup>	.001	.038 <sup>a</sup>	.324 <sup>b</sup>	.002	.161 <sup>b</sup>	.011	.007	.001

**Note:** <sup>a</sup>Small effect size ( $\geq .02$ ), <sup>b</sup>Medium effect size  $\geq .15$ , <sup>c</sup>Large effect size ( $\geq .35$ ).

Furthermore, the impact of trust on behavior intention [effect size (initial adopters) = .213, effect size (advanced adopters) = .091,  $\Delta\beta = .059$ ,  $p$ -value = .400], perceived usefulness [effect size (initial adopters) = .031, effect size (advanced adopters) = .115,  $\Delta\beta = .135$ ,  $p$ -value = .184], and perceived ease of use [effect size (initial adopters) = .040 and effect size (advanced adopters) = .136,  $\Delta\beta = .162$ ,  $p$ -value = .092] across groups was not significantly different for initial adopters compared to advanced adopters; indicating that H5a, H5b, and H5c were not supported.

The link between perceived enjoyment and behavioral intention was larger for initial adopters (effect size = .324) than advanced adopters (effect size = .011) and was significantly higher for initial adopters than advanced adopters ( $\Delta\beta = .289$ ,  $p$ -value < .001), thus H6a was supported. Moreover, the effect of perceived enjoyment and perceived ease of use was greater for initial adopters (effect size = .161) than advanced adopters (effect size = .001) and was significantly greater for users in the initial adoption stages than those at the advanced adoption stage adopters ( $\Delta\beta = .342$ ,  $p$ -value < .001), suggesting that H6b was supported.

### 3.6 Discussion

Since m-commerce is considered one of the most efficient tools for increasing competitive advantage and upgrading economic growth (Blaise, Halloran and Muchnick, 2018), it is worthy to investigate the drivers that influence m-commerce adoption to efficiently respond to heterogeneous business demands in each stage of adoption. Against this backdrop, the purpose of this study is to identify the model of intention to use m-commerce across the distinct adoption stage of micro retailers (initial and advanced adopters) by incorporating the influence of trust in provider and perceived enjoyment into the classical TAM. The variance explained ( $R^2$ ) of behavioral intention is 61.7% for overall model, 70.7% at the initial adoption stage and 63.8% at the advanced adoption stage.

Similar to our expectation, the direct effects of overall model support all hypotheses. However, our findings demonstrated both similarities and dissimilarities across groups. Four of eight relationships are equivalent across groups. First, the results demonstrated that perceived ease of use has a direct positive impact on perceived usefulness. Our findings are consistent with the extant literature. For instance, Castañeda et al. (2007) reported that the influence of perceived ease of use on perceived usefulness does not differ across users' internet experience. Further, the effect of perceived ease of use on perceived usefulness was insignificantly different across samples from Pakistan (initial adopters) and samples from Turkey (advanced adopters) (Abbasi, Tarhini, Elyas and Shah, 2015). That is, users consider a system to be more advantageous when it would be effortless, irrespective of diffusion stages.

The remainder of similar relationships across two stages of adoption found that trust has a significant influence on perceived usefulness, perceived ease of use, and intention to adopt m-commerce. The results are in line with prior studies. For example, El-Masri and Tarhini (2017) revealed that trust significantly influences behavioral intention both in sample from Qatar (initial adopters) and a sample from the U.S. (advanced adopters). Likewise, Fan, Shao, Li and Huang (2018) reported trust has a significant positive impact on users' attitude both in Chinese (initial adopters) and U.S. (advanced adopters) contexts. This is because a lack of trust decreases users' positive perceptions and their confidence, consequently producing a barrier to m-commerce

adoption. Establishing trust plays a crucial role in mitigating a risky environment, that is, m-commerce, offering a feeling of security and delivering the product promised without opportunistic transactions (Guo, Bao, Stuart and Le-Nguyen, 2018). Users' trust in the service provider is therefore important throughout the span of the business relationship.

On the other hand, four of the eight linkages revealed significant differences between the two groups of small retailers. First, the effect of perceived usefulness on intention to use m-commerce is significantly stronger for vendors who are advanced adopters. Second, behavioral intention of vendors who are at the initial stage are more likely to be influenced by ease of use than those who are at the advanced stage. This supports the findings of prior studies. For example, the effect of perceived usefulness on behavioral intention depended on users' online experience (Hsieh and Liao, 2011). Likewise, the influence of perceived usefulness on behavioral intention is stronger for people who are in the advanced adoption stage than those who are in the initial adoption stage (Wu et al., 2016). Moreover, perceived ease of use has more influence on behavioral intention for inexperienced users than experienced users (Ayeh, Au and Law, 2016; Celik, 2016). Finally, the influence of perceived enjoyment on perceived ease of use and intention to use. These relationships are also strengthened by initial adoption stage. These findings are similar to previous studies of Wu et al. (2016).

A plausible explanation is that at the initial stage, users have less experience and fewer technological trials. They tend to exhibit anxiety that they may make mistakes with transactions and hesitate in using m-commerce applications in daily activities. Because they may superficially assess benefits of technology, they require understandable functions and an enjoyable experience. Furthermore, if users perceive that a technology yields more enjoyment during usage, they will feel that that the technology is easy to use. Once the process shifts to an advanced stage, users are more accustomed to the use of m-commerce and gain more understanding including technological aptitude after a period of usage. Their anxiety in using m-commerce application gradually decreases, and users require less enjoyment when interacting with it. Furthermore, they also could profoundly evaluate functions of technology, thus behavioral intention would strongly be driven by its usefulness at the advanced stage.

## 3.7 Implications

### 3.7.1 Theoretical Contributions

This research contributes to the existing literature as follows: First, it increases the knowledge about how the TAM might relate to m-commerce adoption by potential buyers, street vendors. It does this by investigating how m-commerce had been adopted by micro businesses at different stages. We have divided street vendors into two groups, initial adopters and advanced adopters, by carefully measuring their internet experience, frequency of use, and aptitude.

Second, we have found that although there is no significant effect of perceived usefulness on behavioral intention at the initial adoption stage, it has a significant impact at the advanced adoption stage. Hence, researchers should consider the role of perceived usefulness in shaping users' intentions to engage in m-commerce at the two stages of adoption.

Third, perceived ease of use seems to impact intention to use only during the initial adoption stage. In previous m-commerce studies, the results regarding the effect of perceived ease of use on behavior intention have been mixed (e.g., Tan et al., 2014; Faqih and Jaradat, 2015; Yadav et al., 2016; Liébana-Cabanillas, Marinković and Kalinić, 2017). These previous studies did not consider the stages of adoption, and so the conflicting findings might have been caused by the impact of ease of use on different stages of adoption. Based on our findings the effect of perceived ease of use on intention to use is significantly stronger at the initial adoption stage than at the advanced adoption stage. Therefore, researchers should recognize that the development of m-commerce for advanced adopters cannot be modeled on that for initial adopters.

Fourth, the impact of perceived ease of use on perceived usefulness is significant regardless of adoption stage. Contrary to TAM 3 (Venkatesh and Bala, 2008), which suggests that the effect of perceived ease of use on perceived usefulness is stronger for experienced users than for inexperienced users. Our result reveals that perceived ease of use influences perceived usefulness among users at both initial and advanced adoption stages. This conclusion is consistent with the findings of Taylor and Todd (1995) and Abbasi et al. (2015); the effect of perceived ease of use on perceived usefulness was not significantly different across users' experience.

Fifth, our study highlights the importance of trust in service provider by the user at the adoption stage. Contrary to previous findings that revealed that the effect of trust on intention to transact is stronger for inexperienced users (Liao, Liu and Chen, 2011), our findings show that the effect of trust on behavioral intention, perceived usefulness, and perceived ease of use does not vary according to adoption stage. As our samples seem to have less internet experience, it may be that trust serves as significant factors in both stages of adoption. In other words, trust in service provider encourages vendors to adopt m-commerce regardless the stage of adoption.

Finally, we investigate the relationship of perceived enjoyment on perceived ease of use and behavioral intention at the stage of adoption. The results demonstrate the relationship of perceived enjoyment on perceived ease of use and behavioral intention as would be expected. Perceived enjoyment plays a critical role in determining the perceived ease of use and decision to adopt m-commerce only in the initial adoption stage; it loses its importance when users shift to the advanced stage.

### **3.7.2 Managerial Contributions**

The findings of the study make managerial contributions to marketers and communication team members and to policymakers who want to stimulate adoption and greater use of m-commerce by micro retailers. First, street vendors are a large group of individuals with differences in how they adopt new technology; therefore, marketers and communication team members must be aware of different segments of vendors and tailor their strategies to appeal to the specific needs of each group. Our findings reveal that a user's motives in adopting m-commerce vary according to the stage of adoption. To illustrate, at the initial stage, a vendor is attracted mainly by the ease in usage and perceived enjoyment of usage. For these vendors, the features of the m-commerce should be designed so that they are readily understandable and accessible and, thus, are convenient for the vendor to use. Moreover, establishing an enjoyable feature is encouraged to enhance interaction between users and m-commerce application. When vendors proceed to the advanced stage, they place less emphasis on ease in usage and enjoyment and become more driven by the business applications of the technology. Thus, to successfully convince advanced vendors to use m-commerce, service provider should concentrate on demonstrating the benefits of the innovation.

Second, policymakers need to periodically monitor how usage of the technology changes in the different segments of vendors, for example, the number of applications used, the technological aptitude acquired, and the level of knowledge needed for the new technology. When initial adopters gain more experience, they are likely to become advanced adopters. This leads to changes in the users' motives in using m-commerce. Thus, strategies need to adapt to and reflect current circumstances.

Finally, trust in the provider positively influences the behavioral intention in both initial and advanced adopters, and its effect does not change across the two adoption stages. This finding suggests that people consider confidence and security to be important throughout the stages of using the technology. Therefore, providers should consider offering a reliable security system, as well as periodically testing the system, to ensure that users' information and transactions are completely protected from threats and attacks posed by external entities, or even internal entities.

### **3.8 Limitations and Future Researches**

This research provides contributions to the marketing literature and offers new insights by drawing theoretical models for understanding vendors' m-commerce adoption in diverse diffusion stages. However, this study has shortcomings that should be addressed in future research. First, this sample is limited to Thai vendors. Street vending is a widespread occupation around the world, so our findings may not be generalizable to other sectors of the bottom of economic pyramid as well as other countries. Future studies should attempt to replicate the findings by grounding the research framework in other countries and business groups to extend the generalizability of our findings. We also call for cross-cultural studies to investigate whether the relationships between the TAM, trust, and perceived enjoyment differ in various cultural settings.

Second, although we conducted a cross-sectional survey, we were not able to delineate changing trends in m-commerce adoption by users or the influence of trust and perceived enjoyment in the TAM; these features need further examination and validation. A longitudinal study is needed for comparing changes in m-commerce

adoption and investigating the differences in the effects of trust and perceived enjoyment on m-commerce adoption at different time points.

Third, we reviewed the literature on trust by concentrating mainly on marketing, causing us to employ the unidimensional scale, which has been widely used in academic research in the area of marketing (Kassim and Abdullah, 2010; Ashraf et al., 2014). Even though our findings indicate that trust based on the unidimensional scale is crucial in explaining a micro enterprise's m-commerce adoption, defining trust as a multidimensional construct might improve the predictability of this model even more.

Finally, even though the research model incorporates few constructs, it is able to capture the adoption process of micro enterprises. Factors that would be included in the model are those found in several literature reviews to significantly influence the adoption process. The findings of our study suggest that such factors could adequately explain this process, as seen in the variance explained values ( $R^2$ ) of the intention to use m-commerce (70.7% for the initial stage, 63.8% for the advanced stage). Nevertheless, the predictability of this model could be increased, particularly, by incorporating external variables. Such variables could include, for example, innovativeness, perceived behavioral control, and social influence which have been found to influence adoption in previous studies (El-Masri and Tarhini, 2017; Ghazali et al., 2018).

## **CHAPTER 4**

### **THE ROLE ONLINE REVIEWS ON MOBILE COMMERCE ADOPTION: AN INCLUSIVE GROWTH CONTEXT**

#### **4.1 Introduction**

Developments in mobile internet, connectivity, the cloud, biotechnology, advanced materials, geographic information systems, and other technologies have brought industry disruption to the traditional way of doing business (Manyika, Chui, Bughin, Dobbs, Bisson, and Marrs, 2013; Wright and Ingilizian, 2017). The Internet of Things and blockchain technology, for instance, initiated microfinance and small-scale retail banking, which offer financial services at lower costs than brick-mortar operations. Business start-ups can find various sources for their capital and have more options to operate their businesses, thus lowering the cost of delivery of their goods and services (Deloitte, 2018). For emerging economies, these disruptions offer an opportunity to catch up with developed countries and the chance for more economic and social equality (Lele and Goswami, 2017). With a viable digital infrastructure, new opportunities are open for anyone—including the underprivileged—because access to technology, information, and other connections is easier and cheaper than in the past. However, if some sectors in the economy resist or are unable to capture the benefit of these new opportunities, this revolution could worsen unemployment and increase the concentration of economic power and wealth (Juma, 2017). In particular, those who are at the bottom of the economic pyramid in emerging economies face a greater risk of being left behind, and so there are calls for inclusive growth (Hamann, 2018).

A crucial element of this inclusive growth policy is to convince disadvantaged groups to adopt the new technology at the cusp of this revolution. The Technology Acceptance Model (TAM) is beneficial for understanding the conditions in which a new technology will be accepted, and so can be used in guiding the inclusive growth

policy. TAM has been widely utilized in predicting the use of technological adoption such as cloud computing (Eltayeb and Dawson, 2016; Arpaci, 2017), internet banking (Patel and Patel, 2017) and e-learning (Tarhini, Hone, Liu and Tarhini, 2017), as well as mobile commerce (Liébana-Cabanillas et al., 2017). This theory consists of two main constructs: perceived usefulness and perceived ease of use (Davis et al., 1989). Higher perceived usefulness and perceived ease of use seem to lead to a higher chance that potential users will be willing to adopt a new practice.

As m-commerce is still in its infancy stage and many users are not familiar with this novel commercial practice (Pantano and Priporas, 2016; Ashraf, Thongpapanl, Menguc, and Northey, 2017), they perceive risks in using the associated internet infrastructure (Thongpapanl and Ashraf, 2011). For example, they may be concerned about giving out personal information when engaging in transactions, which may lead to exploitation of the information and invasion of their privacy (Kim et al., 2008). Unlike traditional commerce, m-commerce limits the face-to-face interaction between a service provider and users (Chong, 2013a). Therefore, trust between these two parties must be formed to reduce these risks (Pavlou, 2003). Having trust in the other party offers a sense of safety which, in turn, facilitates business relationships (Gefen et al., 2003b) and increases the willingness to adopt new practices such as m-commerce (Siau and Shen, 2003). Therefore, integrating trust into TAM should enhance our understanding of technology acceptance behavior (Dahlberg, Mallat and Öörni, 2003).

Online reviews are an integral part of m-commerce where users provide feedback about their usage experience, which allows others to assess the quality of the product or service. Online reviews allow potential users to evaluate product features by evaluating the opinions and experiences of anonymous individuals (Hernández-Ortega, 2018), which can influence customer attitudes in terms of adoption or purchasing (Cheung, Luo, Sia and Chen, 2009). Therefore, in addition to perceived usefulness, perceived ease of use, and trust, online reviews are a significant tool in increasing the adoption of new technology (Lee, Shi, Cheung, Lim and Sia, 2011). For example, the integration of online reviews into TAM serves as a significant predictor of intention to use mobile banking (Mehrad and Mohammadi, 2017). The impact of online reviews on behavioral intention and consumers' decision-making indicates complex relationship patterns and is context specific, which suggests the possibility of an interaction effect.

For instance, the quality and quantity of online reviews may affect hotel booking intention but only in specific situations. When there are few reviews, hotel booking intention does not vary across positive or negative review. However, when there are many reviews, positive reviews significantly increase booking intention whereas negative reviews do the opposite (Tsao, Hsieh, Shih, and Lin, 2015). Online reviews are significantly related to intention to purchase various products or services from a single brand but insignificantly affects the intention to select a competing brand (Hu, Gao, and Wang, 2017). In addition to the context specific conditions, user characteristics influence the relationship between online reviews and purchase intention. A large number of negative online reviews significantly decreases booking intention for conformist consumers but not for non-conformist ones (Tsao et al., 2015). The attitude of those consumers who are unfamiliar with products are more likely to be influenced by online reviews than those who are more familiar (Vermeulen and Seegers, 2009). These findings suggest that the influence of online reviews on behavioral intention is complex and that there is a potential interaction effect in specific situations.

Although TAM, trust in provider, and user online reviews have been shown to be crucial in explaining the adoption of m-commerce, there is no empirical research exploring the simultaneous relative influence of online reviews, trust in provider, and ease of use of m-commerce technology. Their interactive effect needs to be observed (See-To and Ho, 2014; Blaise et al., 2018). To fill in the research gap, this study investigates the influence of perceived ease of use, trust, online reviews, and their interactions on perceived usefulness and behavioral intention to adopt m-commerce in a specific context, i.e., an underprivileged sector. The outline of this article is organized as follows: The second section reviews TAM, trust, and online reviews. The third section describes the hypotheses development. Then, the fourth explains the research methodology. The fifth section provides data analysis and findings. The sixth section discusses the research findings. Finally, the theoretical and managerial implications, as well as the limitations and directions for future research, are identified.

## 4.2 Literature Review

We investigate the individual and interactive effects of perceived ease of use, trust, and online reviews on perceived usefulness and behavioral intention among street vendors. The purpose of conducting the investigation is to lay the groundwork of the model in motivating perception of the efficacy of m-commerce service and explaining the intention to adopt m-commerce. Examining the direct effect of perceived ease of use may not be enlightening as to how perceived ease of use, trust, and online reviews relate. Nevertheless, an interaction between perceived ease of use, trust, and online reviews can provide a better understanding of the intricate relationship among these three variables.

### 4.2.1 Technology Acceptance Model

The Technology Acceptance Model (TAM) is one of the most beneficial theories in describing adoption of a new technology (Davis et al., 1989). This model consists of two belief constructs: perceived usefulness and perceived ease of use; these constructs affect intention to adopt any new technology. Perceived usefulness refers to the degree to which people believe that using a particular technology would improve their task performance (Davis, 1989). Perceived usefulness captures the perceived benefit of the technology, whereas perceived ease of use is the degree to which people believe that using a technology would be effortless (Davis, 1989). Furthermore, perceived ease of use also influences perceived usefulness, suggesting that users perceive a technology as more useful when it is free of high effort.

Several studies incorporate other predictive variables into their research frameworks to examine determinants of technology adoption and to improve its predictive power (Kalinic and Marinkovic, 2016; Marakarkandy et al., 2017). However, their findings are inconclusive regarding m-commerce adoption among consumers in emerging economies (e.g., India, China, Malaysia, and Thailand). On the one hand, many studies support this relationship (Teo et al., 2012; Tan et al., 2014; Faqih and Jaradat, 2015). For instance, Shankar and Datta (2018) found that mobile payment adoption among Indian consumers is significantly influenced by perceived usefulness and perceived ease of use. By adding trust to TAM, in the evaluation of m-commerce

adoption among Malaysian consumers, their behavioral intention is significantly explained by perceived usefulness and trust (Wei et al., 2009). On the other hand, there are several consumer studies that have not found the effect of perceived usefulness on behavioral intention (Chiou and Shen, 2012) or the influence of perceived ease of use on behavioral intention (Park et al., 2012; Zampou et al., 2012; Abbad, 2013). Furthermore, perceived usefulness and perceived ease of use had no significant effect on behavioral intention among Chinese and Malaysian consumers (Chong et al., 2012).

Several studies found that technology adoption among small businesses more often resembles those employing consumer samples. Similar to the mobile technology adoption of consumers, Tanzania street vendors who strongly perceived usefulness and ease of use are more likely to adopt the technology (Mramba, Sutinen, Haule, and Msami, 2014). Likewise, perceived usefulness, perceived ease of use, and trust, which significantly influence m-commerce adoption among consumers, also encourage the adoption among Thai street vendors (Pipitwanichakarn and Wongtada, 2019).

While perceived usefulness, perceived ease of use, and trust are likely to influence technology adoption among consumers and small retailers, these factors exhibit different relationship patterns for large companies. For instance, in a sample from large organizations, perceived usefulness does not affect intention to use enterprise resource planning (ERP) among large firms, and perceived ease of use does not directly influence attitude in adopting this technology (Amoako-Gyampah and Salam, 2004). Likewise, Calantone, Griffith, and Yalcinkaya (2006) found that among Chinese business professionals perceived usefulness does not have a direct effect on new technology adoption. They rationalized that when assessing a new technology for multinational corporations, the assigned person's perceptions about the usefulness is irrelevant because his/her role in the organization is to implement the decisions of top management. Since that person has to meet the demands of top management, the perceived ease of use as postulated in TAM does not influence his or her personal attitude toward the technology.

#### **4.2.2 Trust in Service Provider**

Trust is a universal concept that has been discussed in fields such as economics, political sciences, marketing, and information systems (Bishr and Janowicz, 2010;

Ashraf et al., 2014). It is defined as users' expectation that a service provider will not engage in opportunistic behavior in taking advantage of his clients (Pavlou, 2003). Trust is a key root of the social relationship, which involves association among people. When trust exists, people are willing to depend on another party to obtain benefits (Fang and Chiu, 2010). Social relationships can generate novel ideas, knowledge exchange, and reinforce opportunities (De Clercq et al., 2010). Trust also decreases the potential user's concerns when engaging in a risky situation (e.g., m-commerce adoption) and facilitates knowledge sharing through decreasing fear of losing individual, unique value (Renzl, 2008).

For these reasons, the concept of trust is important in the technology adoption domain. Because m-commerce involves an interaction between service providers and users, trust is necessary to facilitate the relationship (Pavlou, 2003; Kim et al., 2008). Previous studies demonstrate that trust is a crucial driver in motivating technology adoption, perceived usefulness, and perceived ease of use (Zarpou et al., 2012; Groß, 2015). Whereas, a lack of trust results in ineffective information exchange between partners and can lead to a desire for increased control, e.g., more time and effort in verification, inspections, and certifications (Inkpen and Currall, 2004; Kwon and Suh, 2004), which, in turn, influences a delay of technology adoption (Bélanger and Carter, 2008; Jahanshahi, Zhang and Brem, 2013).

### **4.2.3 Online Review**

Word-of-mouth (WOM) involves the process of sharing one's attitudes, opinions, information about products or services with other people (Jansen, Zhang, Sobel and Chowdury, 2009). Because of the internet, electronic word-of-mouth (eWOM) has developed as a new form of communication (Kasabov, 2016) that allows potential, actual, or former consumers to share positive or negative information through online channels and facilitates consumers in gathering information from other consumers (Hennig-Thurau, Gwinner, Walsh, and Gremler, 2004). Online reviews are a form of eWOM that vary not only in content (e.g., functional attributes or services) but also in valence (positive vs. negative review). Positive reviews are likely to be vivid, pleasant, or novel experiences, whereas negative reviews are likely to be complaints,

or unpleasant or denigrating descriptions (Sparks and Browning, 2011). Online reviews play a crucial role in consumers' decision-making processes (De Bruyn and Lilien, 2008), and attitude toward products (Lee, Park, and Han, 2008). For instance, positive emotions elicited by comments lead to an increase in positive attitude and online travel community loyalty, whereas negative emotions spur unfavorable attitudes, which decrease loyalty (Ruiz-Mafe, Tronch and Sanz-Blas, 2016). Similarly, a number of negative online reviews brings about unfavorable attitudes and lessens the willingness to recommend a product to friends (Lee and Youn, 2009).

#### **4.2.4 Street vendor and M-Commerce**

A street vendor is a person who sells merchandise or offers services to the public without having a permanent location (Bhowmik, 2012). Street vending is a global and urban phenomenon, especially in emerging economies. For instance, according to a report of WIEGO (2018), the total number of street vendors in India reached 10 million, and they constitute about 2 percent of the population of a metropolis. The number of street vendors in Bangkok (Thailand) is approximately 380,000 (Yasmeen and Nirathron, 2014). In general, street vending plays an important role in offering cheaper and more affordable goods and services than retail stores, and so it becomes a solution for communities, particularly poor, urban residents (Saha, 2009). Furthermore, it represents a value of culture and satisfies tourists' destination demands. For instance, street vending in Bangkok is a tourism icon that helps attract well over 10 million tourists each year (CitiScope, 2018).

### **4.3 Hypothesis Development**

This section develops the research hypotheses for testing the effect of each independent variable (perceived ease of use, trust, and online reviews as main effect) and the effect of their combination (interaction effect) on two dependent variables (perceived usefulness and intention to use).

### **4.3.1 Perceived Ease of Use**

According to TAM, perceived ease of use serves is vital in determining perceived usefulness and technology adoption (Davis, 1989). Perceived ease of use represents a measure of the cognitive effort related to learning and utilizing the new technology (Gefen et al., 2003b). Users who evaluate m-commerce with high ease of use tend to perceive the usefulness of technology and to enjoy adopting technology (Teo et al., 2012; Tan et al., 2014; Faqih and Jaradat, 2015). Conversely, if users assess m-commerce as having a high level of difficulty to use (complexity), they are likely to be skeptical about its benefits and to resist its adoption (Rogers, 2010). Therefore, the following hypothesis is posited:

H1. Users who evaluate m-commerce with a high level of ease of use are more likely to express greater (H1a) perceived usefulness and (H1b) intention to adopt m-commerce than those who evaluate m-commerce with a low level of ease of use.

### **4.3.2 Trust in Service Provider**

In addition to perceived ease of use, trust plays a critical role in determining perceived usefulness (Zarmpou et al., 2012; Liébana-Cabanillas et al., 2017) and intention to use technology (Groß, 2015; Ooi and Tan, 2016). Trust facilitates m-commerce activities by reducing users' need to understand, monitor, and control the technology (Chircu, Davis, and Kauffman, 2000). Likewise, by trusting an application service provider, users are more ready to learn and experience m-commerce (Gefen et al., 2003b; Kim et al., 2008). Consequently, the following hypothesis is proposed:

H2. Users who evaluate service provider as having a high level of trust are more likely to express greater (H2a) perceived usefulness and (H2b) intention to adopt m-commerce than those who evaluate service provider as having a low level of trust.

### **4.3.3 Online Review**

Online reviews are a considerable source of information in changing attitudes and behaviors (Chu and Kim, 2011). Online reviews have been shown to have a positive direct effect on perceived usefulness which, in turn, influences continued intention to use technology (Yang and Lin, 2015). In fact, positive and negative reviews influence decision-making in different directions. On the one hand, users who see positive

reviews tend to display a favorable attitude and intention to adopt online commerce. On the other hand, bad reviews significantly negatively influence behavioral intention (Trenz, Huntgeburth, and Veit, 2015). The consumers who see a low volume of negative online reviews had more favorable attitudes than those who saw more negative online reviews (Lee et al., 2008). Hence, the following hypothesis is proposed:

H3. Users who are exposed to positive reviews are more likely to express greater (H3a) perceived usefulness and (H3b) intention to adopt m-commerce than those who are exposed to negative reviews.

#### **4.3.4 Interaction Effect of Perceived Ease of Use, Trust, and Online**

##### **Review**

Perceived ease of use, trust, and online reviews are likely to have an interaction effect, i.e., the influence of an independent variable on a dependent variable varies depending on the degree of another variable (Malhotra, 2008). Consumers tend to respond to perceptions of similar (congruent) and dissimilar (incongruent) information in distinct ways. If they are exposed to congruent information, the search for information will be discontinued because searching for information adds little benefit for making a decision relative to its cost (Ozanne, Brucks and Grewal, 1992). Under congruent information perception—low ease of use and low trust or high ease of use and high trust—perceived usefulness and intention to use should not shift across levels of online reviews. However, since users prefer congruity, when they perceive incongruent information, they seek more information and use product attribute information to resolve ambiguity (Heckler and Childers, 1992; Aaker and Sengupta, 2000). Thus, if users perceive incongruent information conditions—low ease of use but high trust or high ease of use and low trust—users tend to express higher anxiety and are less confident in their ability in evaluating product features. They will seek information from other consumers to effectively reach decision making. Perceived usefulness and intention to adopt m-commerce are expected to be greater for users who see positive reviews than those who see negative ones under incongruent information perceptions. Therefore, these hypotheses are proposed:

H4. Under congruent information perceptions, perceived usefulness (H4a) and intention to adopt m-commerce (H4b) do not vary between users who are exposed to positive reviews and users who are exposed to negative reviews.

H5. Under incongruent information perceptions, perceived usefulness (H5a) and intention to adopt m-commerce (H5b) are stronger for users who are exposed to positive reviews than those who are exposed to negative reviews.

## **4.4 Research Methodology**

### **4.4.1 Research Design**

This study employed a 2 (perceived ease of use: high vs. low) x 2 (trust in service provider: high vs. low) x 2 (online review: positive vs. negative) between-subjects factorial design. A factorial design was employed to measure the effects of independent variables at multiple levels and investigate interactions between variables (Malhotra, 2008). A level of perceived ease of use and trust were measured, whereas the level of online review was manipulated. Online reviews were selected as the manipulated variable because its different conditions (positive vs. negative) can be systematically determined, which allows the researchers to control how it influences the dependent variable (Leary, 2004).

### **4.4.2 Stimulus Development**

To develop two stimulus materials (i.e., positive vs. negative review), three steps were taken: First, to extract product/service attributes relating to m-commerce applications from real customer reviews, we observed and gathered information from the social network site pantip.com January 2016 to October 2017. Pantip.com was selected because it is the largest online discussion platform and is the most frequent source of information for Thai people. Second, the content was coded and ranked based on most frequently mentioned on Pantip.com. Six reviews are considered ideal for most readers (Tsao et al., 2015), so the top six comments were mocked up as positive and negative reviews. The contents of positive reviews included 1) an increase of income and new customers, 2) benefits offered by service provider, 3) opportunities to promote the store, 4) user-friendly application, 5) serviceability/ supportability of service

provider, and 6) benefits from knowledge sharing among partners. The content of negative reviews was shown in the opposite direction. In addition to the equivalent of the number of reviews and sequence of contents, the length of content, font, and font size of the stimulus were made similar across conditions to eliminate confounding variables as recommended by Park, Lee and Han (2007). For the layout and format, a replica of the site was employed to create a realistic feeling for respondents when viewing the stimulus and to enhance the accuracy of findings (Tsao et al., 2015). Finally, the stimulus materials were refined by the researchers and were tested with respondents in a pilot test. During the pilot test, feedback from vendors was received, i.e., the discussion topic used in the stimulus was difficult to understand. Therefore, the first word of the topic was revised from “Attitudes” to “Opinions” resulting in “Opinions toward using the mobile commerce application.” “Attitude” seems to be more abstract word and is hardly used in colloquial language. Anecdotally, comments and reviews on the Pantip online discussion platform often use casual rather than formal language. The final stimulus is presented in appendix G and H.

#### **4.4.3 Questionnaire Development**

A questionnaire that was originally developed in English was translated into Thai language by the researchers and translated back into English by an independent researcher who was blind to the original questions. The back-translation reduces any discrepancies in the original measures during the translation process. In this study, the questions included: 1) a realism check, 2) manipulation checks, and 3) indicators.

Whether the subjects found the stimulus to be realistic was measured by asking the question, “How the situation described was realistic” using a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree) as recommended by Dabholkar and Bagozzi (2002). The manipulation checks aim to ensure that the subjects can understand the stimulus (positive and negative review) in the way that the researchers intended (Straub, Boudreau, and Gefen, 2004). To achieve this point, the subjects were asked to evaluate the online reviews with two statements: “Reviewers positively evaluate the m-commerce application” and “Overall, reviewers recommend the m-commerce application” on a scale ranging from 1 (strongly disagree) to 7 (strongly agree) as suggested by Park et al. (2007). All the indicators used in this study

are operationalized based on previously validated measures. The subjects were asked to indicate their responses via a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). We adapted measures for intention to use from Venkatesh and Davis (2000) and Hong and Tam (2006), measures for perceived usefulness and perceived ease of use from Davis (1989), and measures for trust from Pavlou (2003).

#### **4.4.4 Data Collection**

A pen-and-paper survey was administered to street vendors in Bangkok because it was estimated to have the largest number of vendors in Thailand. Klongtoey and Dindaeng districts was selected as centers for data collection because of the many street vendors who offer services to the local members of the society and a limited number of tourists visiting the regions. Moreover, the cost of living is affordable to those who earn a low income. Other parts of the country had many tourists or a small number of vendors. Finally, street vendors found in tourist-prone areas easily adopt the new technology more than those in other locations due to the requirements of government policies and international tourists. The food sector was emphasized in investigating m-commerce adoption among vendors because it is the largest vendor segment. Prior to conducting data collection, three research assistants were trained by the researchers to ensure precise research procedures and to minimize bias during data collection. Data collection consisted of two steps: a pilot test and a main survey. In the first step, data were collected from 40 vendors during the first week of November 2017 for a pilot test. The pilot test was conducted in order to assess the validity and reliability of the research instruments (i.e., the stimulus materials and questionnaire). The analysis of the pilot test showed that the scenarios were manipulated as intended and scales used exhibited acceptable properties in terms of both validity and reliability. To eliminate contamination arising from the previously discussed revision of the stimulus (see section 4.4.2), the data from pilot test was not included in the main survey as recommended by Leon, Davis, and Kraemer (2011).

The process of data collection was conducted by using the following process: First, each street vendor was greeted by a research assistant, given information about the nature of the experiment and the general instructions. Second, two screening

questions were used to ensure that 1) all subjects used a mobile phone that supported internet access and that 2) subjects had related internet experience either shopping online or internet banking during past six months. Third, they were randomly assigned to read one of two scenarios (i.e., positive vs. negative reviews) for 30 seconds. Fourth, the respondents were asked to evaluate realism check and manipulation checks. Fifth, they were asked to indicate their perceptions toward intention to use m-commerce, perceived usefulness, perceived ease of use, and trust respectively including demographic profiles were recorded. At the end of survey, the respondents were debriefed.

#### **4.4.5 Samples**

From 280 cases, 16 cases were unusable, thus they were deleted from the dataset, resulting 264 cases for data analysis with 94.3% completion rate. According to Hair et al. (2010), the minimum sample size requirement is 20 per groups, while the sample size of this study varied from 30 to 37 per group, thus our samples of 264 cases for 8 groups were adequate for analysis. The characteristics of the opportunistic group reflect the demographic profiles of vendors, especially in their education and income levels, are presented in Table 4.1. Of the 264 subjects, half were male. Their ages ranged from 18 to 50 years old, with an average age of 33.3 years old. In terms of marital status, 53.4% were single and 46.6% were married. Education level was nearly equally distributed among high school (30.7%), vocational school (29.2%), and bachelor's degree (40.1%). Approximately 88.2% of the respondents were self-employed, without employees, or had only one employee. In addition, the majority were familiar with online shopping and internet banking. On average, they had experience with the internet of about 7.2 years and spent 4.5 hours a day on the internet.

**Table 4.1** Street Vendors' Profiles

<b>Profiles</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	132	50.0
Female	132	50.0
<b>Age (years)</b>		
18-30	103	39.0
31-40	116	43.9
41-50	45	17.1
<b>Status</b>		
Single	141	53.4
Married	123	46.6
<b>Education</b>		
High School	81	30.7
Vocational School	77	29.2
Bachelor Degree	106	40.1
<b>Related Internet Experience</b>		
Has only Shopping Online Experience	73	27.6
Has only Internet Banking Experience	114	43.2
Has both Shopping Online and Internet Banking Experience	77	29.2

## 4.5 Results of the Main Survey

### 4.5.1 Reality Check and Manipulation Checks

The average reality score was high ( $M = 5.515$ ,  $SD = .975$ ) suggesting that subjects found the scenarios credible. There were differences of subjects' perception between positive ( $M = 4.773$ ,  $SD = 1.928$ ) and negative reviews ( $M = 3.689$ ,  $SD = 1.862$ ),  $t(262) = 4.126$ ,  $p < .001$ ), indicating that the manipulation was perceived as intended. In this study, the subjects were classified as having either high or low perceived ease of use and either high or low trust in the service provider, using median score of perceived ease of use (4.178) and trust (4.410) as a cutting point as recommended by Leary (2004). The subjects whose median perceived ease of use was

above 4.178 were allocated as the high perceived ease of use group, and those whose median of perceived ease of use was below 4.178 were allocated as the low perceived ease of use group. Similarly, the subjects whose median of trust scores were above 4.410 were allocated as the high-trust group, and those whose median of trust was below 4.410 were allocated as the low-trust group.

#### **4.5.2 Check for Covariates**

Covariate is a control variable incorporating into the model (Malhotra, 2008). To check for potential covariates, the subjects were classified into eight groups based on perceived ease of use (high vs. low), trust (high vs. low), and review (positive vs. negative). The results indicated no significant differences across groups in these covariates; 1) gender distribution, Pearson  $\chi^2(7) = 1.977$ , not significant (n.s.); 2) age,  $F(7, 256) = .123$ , n.s.; 3) monthly household income distribution, Pearson  $\chi^2(21) = 24.782$ , n.s.; 4) internet experience,  $F(7, 256) = .901$ , n.s.; 5) online shopping experience distribution, Pearson  $\chi^2(7) = 8.090$ , n.s.; and 6) internet banking experience distribution, Pearson  $\chi^2(7) = 7.775$ , n.s. However, subjects across groups differed significantly in internet time spending  $F(7, 256) = 3.272$ ,  $p < .01$ . Moreover, internet time spending significantly correlated with dependent variable (perceived usefulness) ( $r = .133$ ,  $p < .05$ ). Therefore, internet time spending was used as covariate in the data analysis.

#### **4.5.3 Reliability, Convergent Validity and Discriminant Validity**

Reliability, convergent validity and discriminant validity of constructs were evaluated. Reliability is defined as the degree of consistency between multiple items of a construct. Convergent validity refers to the degree to which items converge to measure their specific construct. Discriminant validity is defined as a considered construct differing from the other constructs. Reliability was evaluated by Cronbach's alpha and composite reliability (CR). According to Table 4.2, the Cronbach's alpha values (ranging from .861 to .979) and the values of CR (ranging from .739 to .980) for each construct were above the standard minimum threshold of .7, as recommended by Hair et al. (2010). Therefore, the reliability of the construct was confirmed. The values of the average variance extracted (AVE) scores varied from .575 to .901 which

exceeded the recommended value of .5. Therefore, the convergent validity was satisfied. Furthermore, the square root of the AVE for each construct was greater than the inter-construct correlations (Hair et al., 2010), thus suggesting that the discriminant validity was fulfilled. In summary, these evidences demonstrated that reliability and validity of constructs were satisfied.

**Table 4.2** Reliability and Validity of Constructs

Constructs	Cronbach's Alpha	CR	AVE	Correlation					
				PEOU	Trust	Review	PU	ITU	
Perceived ease of use (PEOU)	.976	.960	.859	.927					
Trust	.861	.800	.575	.172	.758				
Review	.875	.739	.586	.156	.032	.766			
Perceived Usefulness (PU)	.979	.980	.889	.844	.242	.427	.943		
Intention to Use (ITU)	.977	.979	.901	.043	.353	.582	.136	.949	

**Note:** The diagonal values show the square roots of AVE.

#### 4.5.4 Hypothesis Testing

The Multivariate Analysis of Covariance (MANCOVA) extends the capability of the Analysis of Covariance Variance (ANCOVA) by investigating multiple dependent variables at the same time; this method protects against type I error (the chance of rejection of a true null hypothesis) that might occur if conducting multiple ANCOVAs (Hair et al., 2010). The MANCOVA test was employed to examine the main effects of the independent variables and interaction effects on perceived usefulness and behavioral intention with internet time spending as a covariate. The results of MANCOVA in Table 4.3 indicate that the main effects of two dependent variables (perceived usefulness and intention to use m-commerce) on perceived ease of use (PEOU), trust, and review were significant. The dependent variables were different for the two levels of PEOU [PT = .853;  $F(2, 254) = .739.890$ ,  $p < .001$ ], trust [PT = .064;  $F(2, 254) = 8.646$ ,  $p < .001$ ], and review [PT = .425;  $F(2, 254) = 93.894$ ,  $p <$

.001]. Also, the three-way MANCOVA by PEOU, trust, and review [PT = .021;  $F(2, 254) = 2.774$ ,  $p = .064$ ] were significantly related to the dependent variables.

**Table 4.3** Results of MANCOVA

Effect	Pillai's Trace (PT)	F	<i>p</i>
<b>Main Effect</b>			
Perceived ease of use (PEOU)	.853	739.890***	<.001
Trust	.064	8.646***	<.001
Review	.425	93.894***	<.001
<b>Interaction Effect</b>			
PEOU x Trust x Review	.021	2.774 <sup>†</sup>	.064

**Note:** <sup>†</sup>  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Since the results from the MANCOVA are inconclusive as to which independent variable affects each dependent variable, the ANCOVA with a post-hoc test was used to explore each dependent variable at different levels of the independent variable (Hair et al., 2010). The results of ANCOVA were performed on each dependent variable (see Table 4.4). With respect to H1, the one-way ANCOVA by PEOU showed that PEOU was associated with perceived usefulness [ $F(1, 255) = 1485.595$ ,  $p < .001$ ]. The usefulness of m-commerce of subjects who perceived high ease of use (adjusted  $M = 5.677$ ,  $SE = .057$ ) was significantly different compared to those who perceived low ease of use (adjusted  $M = 2.517$ ,  $SE = .059$ ). Therefore, H1a was supported. However, intention to use m-commerce was not related to PEOU [ $F(1, 255) = .588$ ,  $p = .444$ ]; thus, H1b was not supported.

**Table 4.4** Results of ANCOVA

<b>Effect</b>	<b>F</b>	<b>p</b>
<b>Main Effect</b>		
On perceived usefulness		
Perceived ease of use (PEOU)	1485.595***	<.001
Trust	6.651*	.010
Review	11.927***	<.001
On intention to use		
Perceived ease of use (PEOU)	.588	.444
Trust	10.999**	.001
Review	178.136***	<.001
<b>Interaction Effect</b>		
On perceived usefulness		
PEOU x Trust x Review	5.450*	.020
On intention to use		
PEOU x Trust x Review	.093	.761

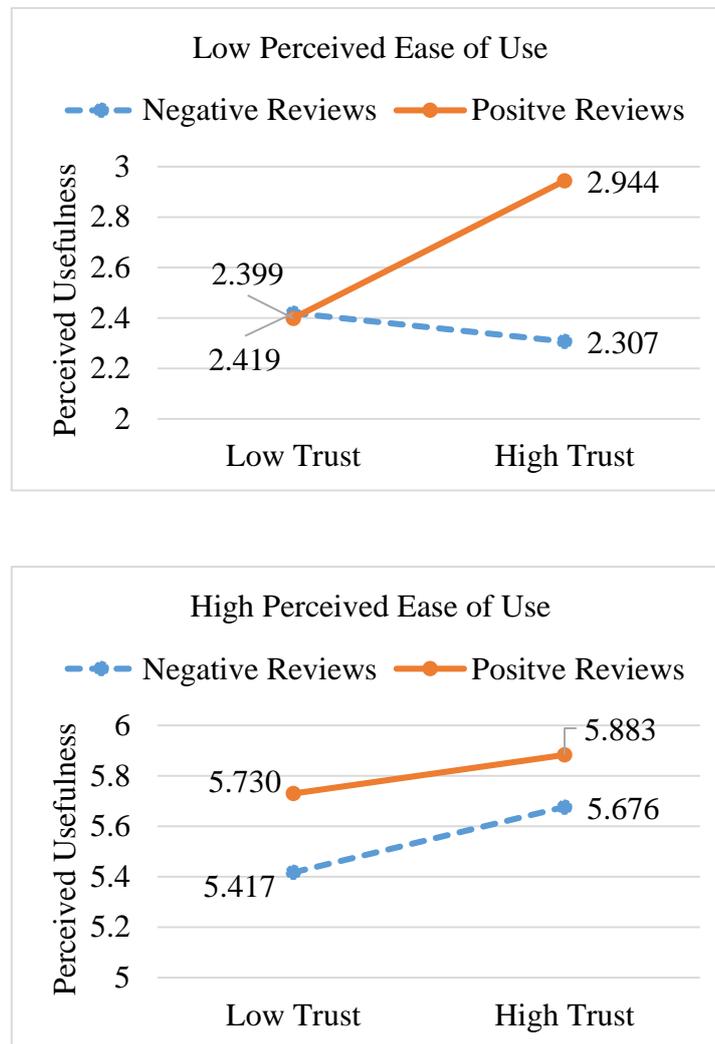
**Note:** \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

For H2, the one-way ANCOVA by trust revealed that trust affects perceived usefulness [ $F(1, 255) = 6.651, p = .010$ ] and intention to use m-commerce [ $F(1, 255) = 10.999, p = .001$ ]. The usefulness of m-commerce to subjects who had high trust (adjusted  $M = 4.203, SE = .058$ ) was significantly higher than those who had low trust (adjusted  $M = 3.991, SE = .057$ ). Moreover, the mean of intention to use m-commerce of subjects with higher trust (adjusted  $M = 4.352, SE = .121$ ) was significantly greater than those who had a lower level of trust (adjusted  $M = 3.786, SE = 4.352$ ). Hence, H2a and H2b were supported.

In accordance with H3, the one-way ANCOVA of review indicated that review influences perceived usefulness [ $F(1, 255) = 11.927, p < .001$ ] and intention to use m-commerce [ $F(1, 255) = 178.136, p < .001$ ]. The mean of perceived usefulness among subjects who viewed positive reviews (adjusted  $M = 4.239, SE = .058$ ) was significantly higher than those who viewed negative reviews (adjusted  $M = 3.955, SE = .058$ ). Also,

the mean of intention to use m-commerce among subjects who viewed positive reviews (adjusted  $M = 5.212$ ,  $SE = .121$ ) was significantly greater than those who viewed negative reviews (adjusted  $M = 2.926$ ,  $SE = .121$ ). Thus, H3a and H3b were supported.

Besides, the three-way ANCOVA by PEOU, trust, and review did not influence intention to use, [ $F(1, 255) = .093$ ,  $p = .761$ ]; hence H4b and H5b were not supported. Nevertheless, the three-way ANCOVA exhibits a positive impact to perceived usefulness [ $F(1, 255) = 5.450$ ,  $p = .020$ ]. According to Figure 4.1, under congruent information—the (1) high PEOU and high trust group and the (2) low PEOU and low trust group—the mean of perceived usefulness among subjects who viewed positive reviews was insignificantly different compared to those who viewed negative reviews, thus H4a was supported. Among the subjects who perceived m-commerce was easy to use and highly trusted the service provider, the mean of perceived usefulness of the subjects who viewed positive reviews (adjusted  $M = 5.883$ ,  $SE = .113$ ) was insignificantly different compared to those who viewed negative reviews (adjusted  $M = 5.676$ ,  $SE = .112$ ) with [ $F(1, 255) = 1.683$ ,  $p = .196$ ]. Likewise, among the subjects who perceived that m-commerce was not easy to use and had less trust in the service provider, the mean of perceived usefulness of the subjects who viewed positive reviews (adjusted  $M = 2.399$ ,  $SE = .122$ ) was insignificantly different compared to those who viewed negative reviews (adjusted  $M = 2.419$ ,  $SE = .110$ ) with [ $F(1, 255) = .014$ ,  $p = .907$ ]. This indicates that when users perceive congruent information, positive or negative reviews do not affect perceived usefulness of m-commerce.



**Figure 4.1** Interaction by Perceived Ease of Use, Trust, and Online Reviews on Perceived Usefulness

Among the subjects who perceived m-commerce as not easy to use but highly trusted the service provider, the mean of perceived usefulness among subjects who viewed positive reviews (adjusted  $M = 2.944$ ,  $SE = .121$ ) was significantly greater than those who viewed negative reviews (adjusted  $M = 2.307$ ,  $SE = .119$ ) with [ $F(1, 255) = 14.127$ ,  $p < .001$ ]. Likewise, among the subjects who perceived m-commerce as easy to use but had less trust in the service provider, the mean of perceived usefulness of the subjects who viewed positive reviews (adjusted  $M = 5.730$ ,  $SE = .109$ ) was significantly greater than those who viewed negative reviews (adjusted  $M = 5.417$ ,  $SE = .122$ ) with

[ $F(1, 255) = 3.688, p = .056$ ]. Therefore, under incongruent information perception both low perceived ease of use but high trust and high perceived ease of use but low trust, the mean of perceived usefulness among subjects who viewed positive reviews was significantly higher than those who viewed negative reviews; thus, H5a was supported. In other words, in this case, the level of perceived usefulness was varied based on online review; positive reviews increasingly became perceived usefulness, while negative reviews could diminish the perceived usefulness.

#### **4.6 Discussion**

This research aims to examine the influence of online reviews and relevant factors in TAM on the perceived usefulness and adoption of m-commerce among street enterprises. When considering the influence of each independent variable, the results indicate that perceived usefulness is strongly explained by perceived ease of use. However, ease of use is not associated with intention to use m-commerce. This is consistent with several empirical studies. For example, perceived ease of use affects perceived usefulness but does not influence intention to use m-commerce (Lu, 2014), mobile services (Zarmpou et al., 2012), and smartphone credit card (Ooi and Tan, 2016). That is, users will consider a technology as more beneficial (useful) when a technology is viewed as easy to use. Further, the influence of relevant factors (trust and online reviews) is stronger than that of ease of use on intention to use, whereas ease of use insignificantly influenced intention to use.

Trust significantly influences perceived usefulness and intention to use m-commerce. This is also consistent with previous studies (Kim and Peterson, 2017; Oliveira et al., 2017). In the online commerce situation, users require trust in service providers to reduce uncertainties and reliability concerns, e.g., financial transaction errors, inappropriate use of personal information. Consequently, trust serves as a significant driver in generating the confidence of users when engaging in such transactions (Kim et al., 2008).

Online reviews also act as a significant determinant toward perceived usefulness and m-commerce acceptance. This supports findings of past research. For example, perceived usefulness is strongly described by online reviews (Cheung, Chiu and Lee,

2011; Cheung and Thadani, 2012). Furthermore, perceived usefulness and intention to use mobile banking are affected by online reviews (Mehrad and Mohammadi, 2017). Likewise, positive reviews significantly increase behavioral intention, while negative reviews significantly reduce behavioral intention (Trenz et al., 2015). Therefore, when users perceive positive reviews posted by others, they will have more confidence in the usefulness of technology, which leads to technology adoption.

While the above findings are consistent with previous research, this study offers additional theoretical and managerial insights into the adoption of technology by considering the impact of the interaction among independent factors (PEOU x trust x review on perceived usefulness). The relative impact of online reviews, trust, and perceived ease of use in influencing users' perceived usefulness becomes apparent. Under the situations of congruent information perception—i.e., a high PEOU and high trust group or a low PEOU and low trust group—the level of perceived usefulness does not shift based on online reviews. In other words, the level of perceived usefulness is insignificantly different regardless of positive or negative reviews. A possible explanation is that when users perceive congruent information between ease of use and service provider trust, they are more confident and have greater technology aptitude in accomplishing m-commerce activities. Thus, they place less emphasis on others' opinion. Online reviews do not influence their perceptions of m-commerce usefulness.

In contrast, in a situation where incongruent information perceptions exists—i.e., high PEOU but low trust group or low PEOU but high trust group—the level of perceived usefulness varies based on the online reviews. That is, perceived usefulness is higher for users who see positive reviews than those who see negative ones. When users perceive inconsistent information concerning ease of use and trust in the service provider, they experience higher anxiety and are less confident in their ability to assess product features. Viewing positive reviews from other users and reviewers assures them of the usefulness of the technology, whereas negative reviews from these sources lower their perceived usefulness.

## **4.7 Implications**

### **4.7.1 Theoretical Contributions**

The objective of this study was to explain m-commerce adoption among an underprivileged group in an emerging economy by investigating the interaction of factors in TAM as well as the influence of online reviews and provider trust. Generally, we find that factors influencing vendors' perceived usefulness and intention to use are somewhat similar to those of consumers' adoption rather than larger retailers. When observing them individually, all independent factors impact the vendor's perceived usefulness in a way that is similar to consumers. However, there are some deviated patterns from consumers' TAM; ease of use has no significant influence on intention to use. When using consumer samples, intention to use is positively explained by perceived ease of use (Kesharwani and Tripathy, 2012; Teo et al., 2012) and trust (Wei et al., 2009). Also, online reviews act as an important predictor of perceived usefulness, which leads to intention to use (Yang and Lin, 2015).

While the vendor's TAM is relatively similar to the consumers' model, it differs from the model of more established retailers. This could be due to the ability of large retailers to rapidly adopt m-commerce as soon as the market opportunity arises. They also could rely on their organizational and technical infrastructure to encourage users to overcome obstacles in acquiring new technologies (Venkatesh et al., 2003). Conversely, micro retailers are less able to depend on these internal resources to facilitate their adoption because of their limited resources. Based on the comparison of these findings, the model for m-commerce adoption is likely to adjust to accommodate the behavioral process of different groups.

As there are many calls to investigate the role of online reviews and trust in TAM (Ashraf et al., 2014; See-To and Ho, 2014), the more salient contribution of this study is in incorporating these factors and observing their interaction with other constructs in the model. Their interactions are found to significantly affect only perceived usefulness but not intention to use. Furthermore, online reviews play a significant role only in a specific situation. In the congruent condition where the vendor perceives "strong ease of use and high trust in provider" or "poor ease of use and low

trust in provider,” neither positive nor negative online reviews alter the vendor’s perception in the usefulness of m-commerce. Online reviews contribute to the adoption significantly only under the incongruent situation. That is, when vendors have to tradeoff between ease of use and trust in service provider, positive online reviews will boost their perceived usefulness.

#### **4.7.2 Managerial Contributions**

To achieve an inclusive growth objective by implementing an m-commerce program among small vendors in an emerging economy is a long journey because rapid behavioral changes among these vendors are unlikely to occur. Generally, ease of use, trust in provider, and positive online reviews can convince street vendors to see the benefit of using m-commerce while strong provider trust and online reviews could lead to their willingness to adopt. Yet, achieving vendors’ favourable attitude toward the application does not guarantee their willingness to adopt the practice because vendors face several barriers preventing them from accepting this practice. Thus, convincing vendors to view the m-commerce program positively is more realistic as a short-term goal than convincing them to implement the program quickly.

To convince vendors that the program is useful, the provider, who could be a private or government agency, should rely on the program’s ease of use, trust in the provider, and online customer reviews. Though, compared to online reviews, ease of use and trust in provider are more likely to be under the control of the provider and can be more effective in persuading vendors to believe in the benefit of the application to their businesses. Ease of use is accomplished by designing the application to be user friendly making it feel effortless to acquire this technology. Establishing trust in provider makes users believe that their transactions can be implemented without errors, and their information is protected from unauthorized use and disclosure.

Both positive and negative online reviews are often beyond the control of the provider. By designing the program to be easy to use and building strong trust of the provider, the impact of online reviews will be lessened. Particularly, these two elements can help the company to overcome negative online reviews. With strong trust in providers and an affinity toward the application due to its ease of use, small retailers

will overlook both positive and negative online reviews. The underlying reason for the lesser role of online reviews is that the source of a typical online review is anonymous, which makes it so vendors are unable to evaluate the creditability of the information, and so vendors place their trust in service providers and prefer ease of use. However, when the provider cannot achieve both trust and ease of use at the same time, positive reviews will boost retailers' belief in the usefulness of the service.

#### **4.8 Limitations and Future Researches**

Further studies on this topic should be conducted in several areas. First, while numerous studies have investigated the relative importance of factors affecting technology adoption and their causal relationships, few studies examine the interaction of these factors (See-To and Ho, 2014; Blaise et al., 2018). The stimulus used in this study is limited to positive or negative reviews. Therefore, instead of this dichotomous variable, future studies should use online reviews that mimic the situation in real life where users are likely to receive mixed signals, i.e., both positive and negative reviews, when considering whether to adopt new technology.

Second, in our finding, the influence of online reviews on perceived usefulness is highlighted only in the incongruity situation where the vendor experiences high trust in provider but low on ease of use or low trust but high ease of use. In other words, the level of perceived usefulness is significantly greater for vendors who earn positive reviews than those who earn negative ones. For other situations, the level of perceived usefulness does not vary across positive and negative reviews. Thus, future experiments should examine the interaction of other factors that are not included in this study, such as the source creditability of service provider. For example, source creditability in m-commerce adoption could be categorized into high versus low level of creditability, government versus private providers, or well-established versus new providers.

Third, previous studies have demonstrated that there are numerous external factors acting as facilitators (e.g., competitive pressure, government support) or inhibitors (e.g., risk perception) in technology adoption. A company experiences competitive pressure when its competitors implement new technology and force it to follow the same path to maintain its competitive capability. The firm is also more

willing to accept a new practice if it receives some assistance from the government through training or an incentive. While these factors encourage the firm to embrace new technology, various perceived risks such as financial loss, loss of time in implementation, and the possibility of information security can cause the firm's resistance. Since there are many variables that might affect the m-commerce adoption, they should be included in future studies to improve our understanding of this adoption among the underprivileged.

Finally, the generalizability of this study could be enhanced if other groups of sidewalk sellers were investigated. Street vendors are composed of various groups, and each possesses unique characteristics (Wongtada, 2014) that could influence their technology acceptance (Kaushik and Rahman, 2016). The sample of this study was from more educated and opportunity-oriented vendors. Those who are less educated and necessity-based vendors were excluded by the research design. Hence, to obtain a more complete understanding on how to integrate the underprivileged into inclusive growth policy, future studies on this subject should collect data from this necessity-oriented group.

## CHAPTER 5

### CONCLUSION

#### 5.1 Conclusion

A deeper look at the existing literature provides some insight regarding the lack of theoretical and managerial understanding of several factors in motivating m-commerce adoption for micro retailers. Because m-commerce is considered one of the most efficient tools for increasing a competitive advantage, alleviating poverty, and upgrading economic growth, it is worthwhile to investigate the factors that influence m-commerce adoption. Against this backdrop, a series of three studies aimed to establish theoretical frameworks by investigating the influence of several factors on predicting the intention to adopt m-commerce applications by street vendors. The Technology Acceptance Model (TAM) was employed as the core theory. The model has two belief constructs: perceived usefulness and perceived ease of use. Figure 5.1 presents a review of recent empirical studies, factors investigated in this dissertation, and directions for future research. Number in square bracket represents the study number, for example [1] refers to the first study.

The first study (discussed in Chapter 2) focused on the unique characteristics of vendors that influence m-commerce adoption. The factors of trust in the service provider, entrepreneurial orientation, and product differentiation are integrated into the TAM. This study contributes to the existing technology acceptance literature as follows: First, the predictive power of the TAM is strong and holds true for street vendors. Second, the intention to use m-commerce is mediated by trust ( $EO \rightarrow \text{trust} \rightarrow \text{ITU}$ ) and a series of factors ( $EO \rightarrow \text{trust} \rightarrow \text{PU} \rightarrow \text{ITU}$ ) and ( $EO \rightarrow \text{trust} \rightarrow \text{PEOU} \rightarrow \text{ITU}$ ), where EO represents entrepreneurial orientation; PU, perceived usefulness; PEOU, perceived ease of use; and ITU, the intention to use m-commerce. This is because m-commerce involves the sharing of

information between users and the service provider. Without trust, the interactive online environment would not be possible. Hence, if vendors form a closer relationship with a service provider, they can leverage benefits (usefulness) and reduce the complexity of unnecessary transactions (ease of use), which leads to adoption. Finally, the degree of product differentiation strengthens the positive relationship between perceived usefulness and the intention to use m-commerce. That is, micro retailers with a high degree of product differentiation show a greater direct effect of perceived usefulness on behavioral intention than those with a low degree of product differentiation.

According to the first study, although almost all of the vendors were familiar with the mobile internet, some were more willing to adopt than others; hence, the second study (discussed in Chapter 3) was performed. This study explored the role of trust and enjoyment in using m-commerce in stimulating adoption by two groups of vendors, based on their mobile internet experience, frequency of use, and aptitude for use: The two groups were designated as low users (known as initial adopters) and high users (known as advanced adopters). The findings revealed significant similarities and dissimilarities. Both the initial and advanced adopters emphasized trust in the service provider. The first group relied more on perceived ease of use and perceived enjoyment in motivating m-commerce adoption but depended less on perceived usefulness. In contrast, for the latter group, the influence of perceived ease of use and perceived enjoyment significantly decreased but the effect of perceived usefulness significantly increased. An explanation for this is that at the initial stage, users have less experience and have tried the technology fewer times. They tend to be anxious about making mistakes in their transactions and hesitate to use m-commerce applications in daily activities. Therefore, they need to be able to understand the functions of the technology and have an enjoyable experience with it. Once the process shifts to an advanced stage, users are more accustomed to using m-commerce and gain more understanding, including acquiring technological aptitude after a period of usage. The vendors' anxiety about using the m-commerce application gradually decreases and their need for enjoyment lessens when interacting with it. They also are able to evaluate the functions of the technology to

a significant degree, and therefore, their behavioral intentions are strongly driven by usefulness.

Most studies have shown that the TAM, user online reviews, and trust in a provider play a vital role in determining the adoption of m-commerce. There was lack of an empirical study investigating the simultaneous relative influence of trust, online reviews, and ease of use of the m-commerce application. Therefore, the final study (discussed in Chapter 4) investigated the influence of perceived ease of use, trust, online reviews, and their interactions on perceived usefulness and the behavioral intention to adopt m-commerce. The findings demonstrated that perceived usefulness does not vary based on online reviews if users perceive congruent information (i.e., high ease of use and high level of trust). In contrast, the perceived usefulness depended on online reviews when users perceive incongruent information (i.e., low ease of use and high level of trust). That is, users who read positive reviews perceived a higher degree of usefulness of the m-commerce compared with those who read negative reviews. Positive reviews from other users stressed the benefits of the technology, whereas negative reviews caused readers to feel that the perceived benefits were not as plentiful. When users receive inconsistent information concerning ease of use and trust in the service provider, they are likely to feel more anxiety and are less self-confident about their ability to assess product features.

The combined contribution of the three studies presented many theoretical frameworks for explaining the adoption of m-commerce by micro businesses in emerging economies. Trust in service provider was selected as the factor in the models throughout three studies. Although prior researches revealed that trust insignificantly affected intention to use (Ayeh, Au and Law, 2016; Ahmed, Alhadi and Seliaman, 2015), the results of these studies showed that trust significantly positively influenced intention to use. This is consistent with prior studies of Groß, (2015) and Ooi and Tan (2016). Since street vendors are low experience users and limited in their ability in evaluating reliability of service providers, trust acts as a significant factor in driving their m-commerce adoption. Compared with users with a high level of experience, users with a low level of experience explain their intention to use a technology based more on trust in the service provider (Gefen,

Benbasat, and Pavlou, 2008). Therefore, when investigating users with high experience, it is likely that the importance of trust in service provider will diminish and become less important predictor. Furthermore, this research clarifies inconsistent findings of the relationship of perceived enjoyment on behavioral intention—namely, when and why perceived enjoyment is critical and how it affects intention to use m-commerce. Perceived enjoyment is more important in motivating users to embrace m-commerce for inexperienced users, and its importance diminishes when users become experienced users. This rationale behind this is that, users with a low level of experience require a high degree of fun and enjoyment to make them overlook or underestimate its complicated features when using a technology (Poong et al., 2017). When they gain experience, understandability, and technological aptitude after a period of usage, they are likely to require less enjoyment in interacting with it. Thus, the impact of perceived enjoyment on intention to use is found to become insignificant. In addition, this dissertation shed light on the managerial implications for government agencies and service providers so they could tailor their marketing strategies to target vendors with various realistic business demands.

The goal of this research was to reveal the crucial role of micro retailers in the development of a nation's economy. It also aimed to identify factors that could promote and challenge m-commerce adoption by micro retailers. The findings are paramount in enabling micro retailers to continue utilizing the electronic technology that dominates today's business environment. The research also offers practical suggestions that can be used by government agencies, vendors, and policy makers to promote the adoption of m-commerce by micro retailers.

## **5.2 Directions for Future Research**

Although this dissertation makes an additional contribution to the marketing literature and is served as a stepping stone toward better understanding the intricate relationships in the TAM, it is only a beginning step in the development of a theoretical framework that can explain m-commerce adoption. This dissertation addresses the limitations encountered and opens the avenue for future researchers.

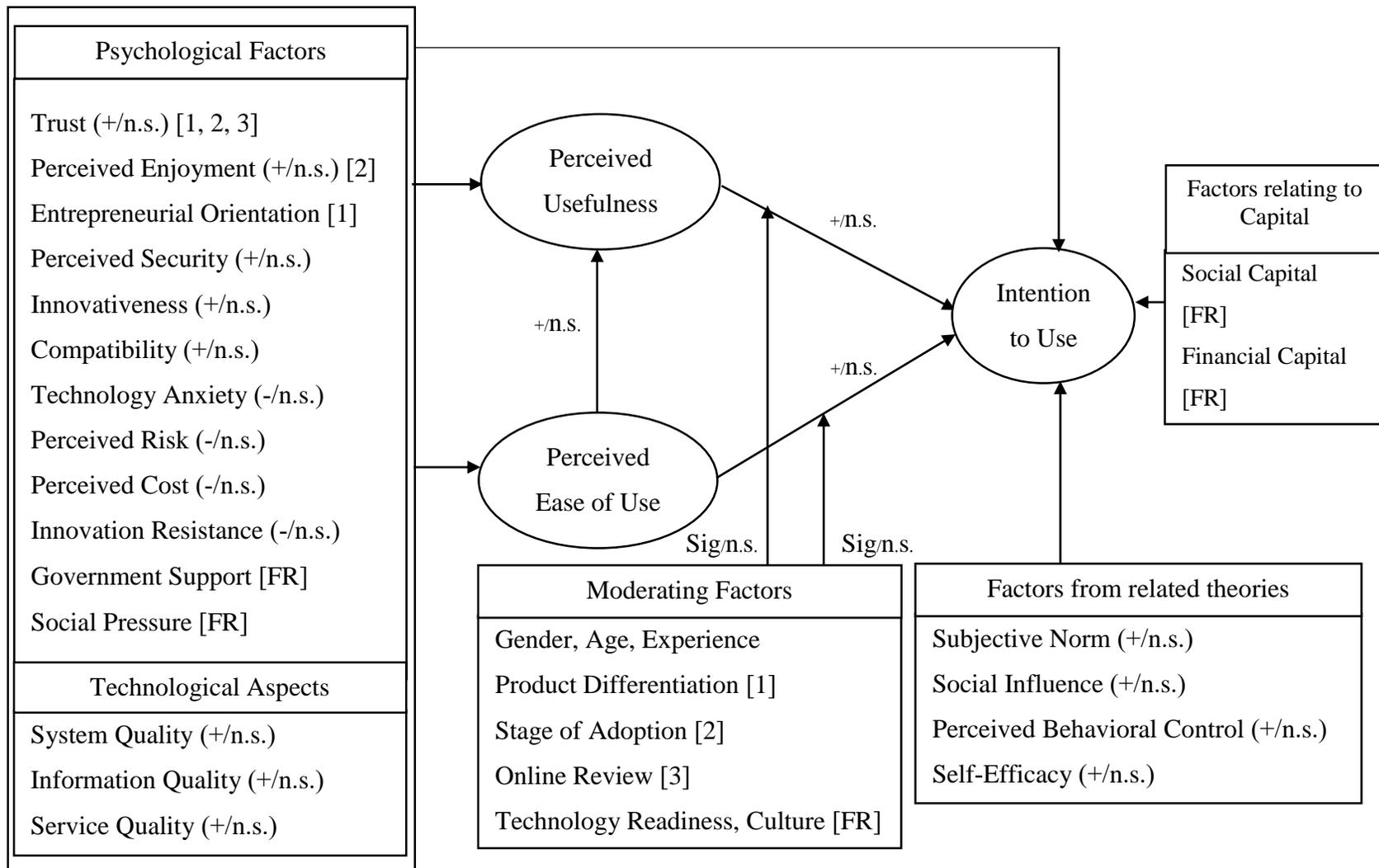
First, although our three studies incorporated few constructs, we were able to capture the adoption process of micro retailers. Factors included in our theoretical frameworks were extracted from the literature review and the results of in-depth interviews. Prior studies have demonstrated that there are potentially numerous determinants (e.g., social pressure, government support, social capital and financial capital) in technology adoption. Social pressure is defined as an individual's perception which receive from their families, friends, including customers (Lim, 2003). A firm experiences social pressure when its customers change their pattern of buying behavior (e.g., they shift from offline to online channels) or its competitors adopt a new technology. Social pressure will force the firm to follow the same direction to maintain its competitive advantage. The firm is also more willing to adopt a new technology if it obtains some assistance from the government through training. Furthermore, the firm gains benefits from their connections in social networks (social capital) and possess financial capital is likely to embrace new technology (Wongtada, 2014). Social capital is a source of useful information, personal experience, and emotional support. In future research, the many variables that might affect m-commerce adoption should be examined to improve our understanding of adoption by micro retailers.

Second, the readiness of a person to use a technology is conceptualized as incorporating optimism and innovativeness but also discomfort and insecurity. All of these factors are crucial in determining whether a person will adopt a technology (Parasuraman and Colby, 2015). Having low or high levels of these factors may influence the adoption of m-commerce in different ways, depending on which factors have a significant influence on a vendor at one time and which are not so important. Therefore, future studies could classify micro retailers in terms of technology readiness and explore the influence of perceived usefulness, perceived ease of use, and other factors on behavioral intention and actual usage behavior across different levels of technology readiness.

Third, this dissertation used a cross-sectional study approach that investigated m-commerce adoption by street vendors at the same point of time and could not detect any changes caused by time. Previous research showed that before implementation, users rely more on social information when deciding whether to adopt a technology, but when shifting from the preimplementation to the postimplementation phase, the

influence of social information becomes weaker (Venkatesh and Davis, 2000). In other words, users place more importance on certain factors at different points of time. Therefore, we have called for a longitudinal study to investigate whether the relationships of perceived usefulness, perceived ease of use, trust, perceived enjoyment, and other factors to behavioral intention differ in various time periods.

Finally, members of a particular culture share characteristics that make them behave in more similar ways than members of other various cultures. People in country with high uncertainty avoidance feel uncomfortable in new or unknown situations (Hofstede, 2011). Compared with people in low uncertainty avoidance (e.g., the United States, United Kingdom, and Canada), people in high uncertainty avoidance (e.g., Thailand, Brazil, and Bangladesh) tend to have higher intentions to adopt m-commerce with a well-known service provider. To enhance the understanding of m-commerce adoption in diverse cultures, a cross-cultural analysis needs to be made.



**Figure 5.1** A Review of Recent Empirical Studies, Factors Investigating in This Dissertation, and Directions for Future Research

**Note:** + (positive relationship), - (negative relationship), sig (significant), n.s. (not significant), Number in square bracket represents the study number, for example [1] refers to the first study, FR (Future Research)

## BIBLIOGRAPHY

- Aaker, J. L. and Sengupta, J. 2000. Additivity Versus Attenuation: The Role of Culture in the Resolution of Information Incongruity. **Journal of Consumer Psychology**. 9(2): 67-82.
- Abbad, M. M. 2013. E-banking in Jordan. **Behaviour & Information Technology**. 32(7): 681-694.
- Abbasi, M. S., Tarhini, A., Elyas, T. and Shah, F. 2015. Impact of Individualism and Collectivism over the Individual's Technology Acceptance Behaviour: A Multi-group Analysis between Pakistan and Turkey. **Journal of Enterprise Information Management**. 28(6): 747-768.
- Abebe, M. 2014. Electronic Commerce Adoption, Entrepreneurial Orientation and Small-and Medium-sized Enterprise (SME) Performance. **Journal of Small Business and Enterprise Development**. 21(1): 100-116.
- Adams, D. A., Nelson, R. R. and Todd, P. A. 1992. Perceived Usefulness, Ease of Use, and Usage of Information Technology: A Replication. **MIS Quarterly**. 16(2): 227-247.
- Agrebi, S. and Jallais, J. 2015. Explain the Intention to Use Smartphones for Mobile Shopping. **Journal of Retailing and Consumer Services**. 22: 16-23.
- Ahmed, T., Alhadi, N. and Seliaman, M. E. 2015. Acceptance of e-government Services in Sudan: an Empirical Investigation, in **2015 International Conference on Cloud Computing (ICCC)**. IEEE. Pp. 1-4.
- Al-Emran, M., Mezhuyev, V. and Kamaludin, A. 2018. Technology Acceptance Model in M-learning Context: A Systematic Review. **Computers & Education**. 125: 389-412.
- Alalwan, A. A., Baabdullah, A. M., Rana, N. P., Tamilmani, K. and Dwivedi, Y. K. 2018. Examining Adoption of Mobile Internet in Saudi Arabia: Extending TAM with Perceived Enjoyment, Innovativeness and Trust. **Technology in Society**. 55: 100-110.

- Amegbe, H., Hanu, C. and Nuwasiima, A. 2017. Small-scale Individual Entrepreneurs (SIEs) and the Usage of Mobile Money (M-money) and Mobile Commerce (M-commerce) in Facilitating Business Growth in Ghana. **Management Science Letters**. 7(8): 373-384.
- Amoako-Gyampah, K. and Salam, A. F. 2004. An Extension of the Technology Acceptance Model in an ERP Implementation Environment. **Information & management**. 41(6): 731-745.
- Arpaci, I. 2017. Antecedents and Consequences of Cloud Computing Adoption in Education to Achieve Knowledge Management. **Computers in Human Behavior**. 70: 382-390.
- Ashraf, A. R., Thongpapanl, N. and Auh, S. 2014. The Application of the Technology Acceptance Model under Different Cultural Contexts: The Case of Online Shopping Adoption. **Journal of International Marketing**. 22(3): 68-93.
- Ashraf, A. R., Thongpapanl, N., Menguc, B. and Northey, G. 2017. The Role of m-commerce Readiness in Emerging and Developed Markets. **Journal of International Marketing**. 25(2): 25-51.
- Awa, H. O., Ojiabo, O. U. and Emecheta, B. C. 2015. Integrating TAM, TPB and TOE Frameworks and Expanding their Characteristic Constructs for e-commerce Adoption by SMEs. **Journal of Science & Technology Policy Management**. 6(1): 76-94.
- Ayeh, J. K., Au, N. and Law, R. 2016. Investigating Cross-national Heterogeneity in the Adoption of Online Hotel Reviews. **International Journal of Hospitality Management**. 55: 142-153.
- Baker, S. E. and Edwards, R. 2012. **How many qualitative interviews is enough?** Retrieved from [http://eprints.ncrm.ac.uk/2273/4/how\\_many\\_interviews.pdf](http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf)
- Bakhsh, M., Mahmood, A. and Sangi, N. A. 2017. Examination of Factors Influencing Students and Faculty Behavior Towards m-learning Acceptance: An Empirical Study. **The International Journal of Information and Learning Technology**. 34(3): 166-188.

- Barnes, S. J. 2002. The Mobile Commerce Value Chain: Analysis and Future Developments. **International Journal of Information Management**. 22(2): 91-108.
- Bélanger, F. and Carter, L. 2008. Trust and Risk in e-government Adoption. **The Journal of Strategic Information Systems**. 17(2): 165-176.
- Bhowmik, S. K. 2005. Street Vendors in Asia: A Review. **Economic and Political Weekly**. 40(22): 2256-2264.
- Bhowmik, S. K. 2012. **Street Vendors in the Global Urban Economy**. New Delhi: Taylor & Francis.
- Bishr, M. and Janowicz, K. 2010. Can We Trust Information? The Case of Volunteered Geographic Information. In **Towards Digital Earth Search Discover and Share Geospatial Data Workshop at Future Internet Symposium**, Berlin, Germany.
- Blaise, R., Halloran, M. and Muchnick, M. 2018. Mobile Commerce Competitive Advantage: A Quantitative Study of Variables that Predict m-commerce Purchase Intentions. **Journal of Internet Commerce**. 17(2): 96-114.
- Bromley, R. 2000. Street Vending and Public Policy: A Global Review. **International Journal of Sociology and Social Policy**. 20(1/2): 1-28.
- Burkhardt, M. E. and Brass, D. J. 1990. Changing Patterns or Patterns of Change: The Effects of a Change in Technology on Social Network Structure and Power. **Administrative Science Quarterly**. 35(1): 104-127.
- Byrne, B. M. 2010. **Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming (Multivariate Applications Series)**. New York: Taylor and Francis Group.
- Calantone, R. J., Griffith, D. A. and Yalcinkaya, G. 2006. An Empirical Examination of a Technology Adoption Model for the Context of China. **Journal of International Marketing**. 14(4): 1-27.
- Camner, G., Pulver, C. and Sjöblom, E. 2009. **What Makes a Successful Mobile Money Implementation? Learnings from M-PESA in Kenya and Tanzania**. Retrieved November 12, 2017 from <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/03/What-makes-a-successful-mobile-money-implementation.pdf>

- Caniëls, M. C., Lenaerts, H. K. and Gelderman, C. J. 2015. Explaining the Internet Usage of SMEs: The Impact of Market Orientation, Behavioural Norms, Motivation and Technology Acceptance. **Internet Research**. 25(3): 358-377.
- Carrillo-Rodriguez, J. and Reed, S. O. 2018. **If Street Food Disappears — Projecting the Cost for Consumers in Bangkok**. Retrieved October 11, 2018 from <http://www.wiego.org/sites/default/files/publications/files/Carrillo-Rodriguez-Reed-Bangkok-Street-Vendor-WIEGO-Resource-Document-9.pdf>
- Castañeda, J. A., Muñoz-Leiva, F. and Luque, T. 2007. Web Acceptance Model (WAM): Moderating Effects of User Experience. **Information & management**. 44(4): 384-396.
- Celik, H. 2016. Customer Online Shopping Anxiety within the Unified Theory of Acceptance and Use Technology (UTAUT) framework. **Asia Pacific Journal of Marketing and Logistics**. 28(2): 278-307.
- Chan, F. T. S. and Chong, A. Y. L. 2013. Analysis of the Determinants of Consumers' m-commerce Usage Activities. **Online Information Review**. 37(3): 443-461.
- Chen, N. H. 2019. Extending a TAM–TTF Model with Perceptions Toward Telematics Adoption. **Asia Pacific Journal of Marketing and Logistics**. 31(1): 37-54.
- Cheung, C. M., Chiu, P. Y. and Lee, M. K. 2011. Online Social Networks: Why do Students Use Facebook? **Computers in Human Behavior**. 27(4): 1337-1343.
- Cheung, C. M. and Thadani, D. R. 2012. The Impact of Electronic Word-of-mouth Communication: A Literature Analysis and Integrative Model. **Decision Support Systems**. 54(1): 461-470.
- Cheung, M. Y., Luo, C., Sia, C. L. and Chen, H. 2009. Credibility of Electronic Word-of-mouth: Informational and Normative Determinants of On-line Consumer Recommendations. **International Journal of Electronic Commerce**. 13(4): 9-38.
- Child, D. 1990. **The Essentials of Factor Analysis**. Cassell Educational.

- Chiou, J. S. and Shen, C. C. 2012. The Antecedents of Online Financial Service Adoption: The Impact of Physical Banking Services on Internet Banking Acceptance. **Behaviour and Information Technology**. 31(9): 859-871.
- Chircu, A. M., Davis, G. B. and Kauffman, R. J. 2000. Trust, Expertise, and e-commerce Intermediary Adoption. In **Proceedings of the 6th Americas Conference on Information System**. New York: Association for Computing Machinery. Pp. 710–716.
- Chiu, C. M., Wang, E. T., Fang, Y. H. and Huang, H. Y. 2014. Understanding Customers' Repeat Purchase Intentions in B2C e-commerce: The Roles of Utilitarian Value, Hedonic Value and Perceived Risk. **Information Systems Journal**. 24(1): 85-114.
- Chong, A. Y. L. 2013a. Predicting M-commerce Adoption Determinants: A Neural Network Approach. **Expert Systems with Applications**. 40(2): 523-530.
- Chong, A. Y. L. 2013b. Understanding Mobile Commerce Continuance Intentions: an Empirical Analysis of Chinese Consumers. **Journal of Computer Information Systems**. 53(4): 22-30.
- Chong, A. Y. L., Chan, F. T. and Ooi, K. B. 2012. Predicting Consumer Decisions to Adopt Mobile Commerce: Cross Country Empirical Examination between China and Malaysia. **Decision Support Systems**. 53(1): 34-43.
- Chopdar, P. K., Korfiatis, N., Sivakumar, V. and Lytras, M. D. 2018. Mobile Shopping Apps Adoption and Perceived Risks: A Cross-country Perspective Utilizing the Unified Theory of Acceptance and Use of Technology. **Computers in Human Behavior**. 86: 109-128.
- Chu, S. C. and Kim, Y. 2011. Determinants of Consumer Engagement in Electronic Word-of-mouth (eWOM) in Social Networking Sites. **International journal of Advertising**. 30(1): 47-75.
- Chuang, Y. F., Hwang, S. N., Wong, J. Y. and Chen, C. D. 2014. The Attractiveness of Tourist Night Markets in Taiwan—a Supply-side View. **International Journal of Culture, Tourism and Hospitality Research**. 8(3): 333-344.

- Chung, J. E., Park, N., Wang, H., Fulk, J. and McLaughlin, M. 2010. Age Differences in Perceptions of Online Community Participation Among Non-users: An Extension of the Technology Acceptance Model. **Computers in Human Behavior**. 26(6): 1674-1684.
- CitiScope. 2018. **What Bangkok's Crackdown Tells us about the Multiple Roles of Street Vendors Everywhere**. Retrieved May 24, 2018 from <https://asiancorrespondent.com/2018/01/bangkoks-crackdown-tells-us-multiple-roles-street-vendors-everywhere/#EjqwJvTjBeTStQ2b.97>
- Compeau, D. R. and Higgins, C. A. 1995. Application of Social Cognitive Theory to Training for Computer Skills. **Information Systems Research**. 6(2): 118-143.
- Corritore, C. L., Kracher, B. and Wiedenbeck, S. 2003. On-line Trust: Concepts, Evolving Themes, a Model. **International Journal of Human-computer Studies**. 58(6): 737-758.
- Dabholkar, P. A. and Bagozzi, R. P. 2002. An Attitudinal Model of Technology-based Self-service: Moderating Effects of Consumer Traits and Situational Factors. **Journal of the Academy of Marketing Science**. 30(3): 184-201.
- Dahlberg, T., Mallat, N. and Öörni, A. 2003. Trust Enhanced Technology Acceptance Model Consumer Acceptance of Mobile Payment Solutions: Tentative Evidence. In **Stockholm Mobility Roundtable**, Sweden: Stockholm. p. 5.
- Damanpour, F. 1991. Organizational Innovation: A Meta-analysis of Effects of Determinants and Moderators. **Academy of Management Journal**. 34(3): 555-590.
- Damanpour, F. and Gopalakrishnan, S. 1998. Theories of Organizational Structure and Innovation Adoption: The Role of Environmental Change. **Journal of Engineering and Technology Management**. 15(1): 1-24.
- Davis, F. D. 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. **MIS Quarterly**. 13(3): 319-340.
- Davis, F. D. 1993. User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioral Impacts. **International Journal of Man-machine Studies**. 38(3): 475-487.

- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. 1989. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. **Management Science**. 35(8): 982-1003.
- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. 1992. Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. **Journal of Applied Social Psychology**. 22(14): 1111-1132.
- De Bruyn, A. and Lilien, G. L. 2008. A Multi-stage Model of Word-of-mouth Influence Through Viral Marketing. **International Journal of Research in Marketing**. 25(3): 151-163.
- De Clercq, D., Dimov, D. and Thongpapanl, N. T. 2010. The Moderating Impact of Internal Social Exchange Processes on the Entrepreneurial Orientation–performance Relationship. **Journal of Business Venturing**. 25(1): 87-103.
- Deloitte. 2018. **The Fourth Industrial Revolution is Here—are You Ready?** Retrieved May 8, 2018 from [https://www2.deloitte.com/content/dam/insights/us/articles/4364\\_Industry4-0\\_Are-you-ready/4364\\_Industry4-0\\_Are-you-ready\\_Report.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/4364_Industry4-0_Are-you-ready/4364_Industry4-0_Are-you-ready_Report.pdf)
- Dibra, M. 2015. Rogers Theory on Diffusion of Innovation-the Most Appropriate Theoretical Model in the Study of Factors Influencing the Integration of Sustainability in Tourism Businesses. **Procedia-Social and Behavioral Sciences**. 195: 1453-1462.
- Easterby-Smith, M., Lyles, M. A. and Tsang, E. W. 2008. Inter-organizational Knowledge Transfer: Current Themes and Future Prospects. **Journal of Management Studies**. 45(4): 677-690.
- El-Masri, M. and Tarhini, A. 2017. Factors Affecting the Adoption of e-learning Systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). **Educational Technology Research and Development**. 65(3): 743-763.
- Eltayeb, M. and Dawson, M. 2016. Understanding User's Acceptance of Personal Cloud Computing: Using the Technology Acceptance Model. In **Information Technology: New Generations**. Springer. Pp. 3-12.

- eMarketer. 2016. **Worldwide Retail Ecommerce Sales will Reach \$1.915 Trillion this Year**. Retrieved November 12, 2017 from <https://www.emarketer.com/Article/Worldwide-Retail-Ecommerce-Sales-Will-Reach-1915-Trillion-This-Year/1014369>
- eMarketer. 2018. **Worldwide Retail and Ecommerce Sales: eMarketer's Updated Forecast and New Mcommerce Estimates for 2016—2021**. Retrieved 24 December 2018 from <https://www.emarketer.com/Report/Worldwide-Retail-Ecommerce-Sales-eMarketers-Updated-Forecast-New-Mcommerce-Estimates-20162021/2002182>
- Fan, J., Shao, M., Li, Y. and Huang, X. 2018. Understanding Users' Attitude Toward Mobile Payment Use: A Comparative Study between China and the US. **Industrial Management & Data Systems**. 118(3): 524-540.
- Fang, Y. H. and Chiu, C. M. 2010. In Justice we Trust: Exploring Knowledge-Sharing Continuance Intentions in Virtual Communities of Practice. **Computers in Human Behavior**. 26(2): 235-246.
- Faqih, K. M. and Jaradat, M. I. R. M. 2015. Assessing the Moderating Effect of Gender Differences and Individualism-collectivism at Individual-level on the Adoption of Mobile Commerce Technology: TAM3 Perspective. **Journal of Retailing and Consumer Services**. 22: 37-52.
- Gaskin, J. 2016a. **Confirmatory Factor Analysis, Stats Tools Package**. Retrieved October 10, 2017 from <http://statwiki.kolobkreations.com>
- Gaskin, J. 2016b. **MyIndirectEffects Estimand**. Retrieved October 10, 2017 from <http://statwiki.kolobkreations.com>
- Gefen, D. 2000. E-commerce: The Role of Familiarity and Trust. **Omega**. 28(6): 725-737.
- Gefen, D., Benbasat, I. and Pavlou, P. 2008. A Research Agenda for Trust in Online Environments. **Journal of Management Information Systems**. 24(4): 275-286.
- Gefen, D., Karahanna, E. and Straub, D. W. 2003a. Inexperience and Experience with Online Stores: The Importance of TAM and Trust. **IEEE Transactions on Engineering Management**. 50(3): 307-321.

- Gefen, D., Karahanna, E. and Straub, D. W. 2003b. Trust and TAM in Online Shopping: An Integrated Model. **MIS Quarterly**. 27(1): 51-90.
- Gerrard, P. and Cunningham, J. B. 2003. The Diffusion of Internet Banking Among Singapore Consumers. **International Journal of Bank Marketing**. 21(1): 16-28.
- Ghazali, E. M., Mutum, D. S., Chong, J. H. and Nguyen, B. 2018. Do Consumers want Mobile Commerce? A Closer Look at M-shopping and Technology Adoption in Malaysia. **Asia Pacific Journal of Marketing and Logistics**. 30(4): 1064-1086.
- Gong, X., Liu, Z., Zheng, X. and Wu, T. 2018. Why are Experienced Users of WeChat likely to Continue Using the App? **Asia Pacific Journal of Marketing and Logistics**. 30(4): 1013-1039.
- Groß, M. 2015. Exploring the Acceptance of Technology for Mobile Shopping: An Empirical Investigation Among Smartphone Users. **International Review of Retail, Distribution and Consumer Research**. 25(3): 215-235.
- Guo, Y., Bao, Y., Stuart, B. J. and Le-Nguyen, K. 2018. To Sell or not to Sell: Exploring Sellers' Trust and Risk of Chargeback Fraud in Cross-border Electronic Commerce. **Information Systems Journal**. 28(2): 359-383.
- Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. E. 2010. **Multivariate Data Analysis: A Global Perspective**. Upper Saddle River, NJ: Pearson.
- Hair, J. F., Ringle, C. M. and Sarstedt, M. 2011. PLS-SEM: Indeed a Silver Bullet. **Journal of Marketing Theory and Practice**. 19(2): 139-152.
- Hamann, R. 2018. **Developing Countries Need to Act on the Risks Posed by New Technologies**. Retrieved August 10, 2018 from <https://www.weforum.org/agenda/2018/01/developing-countries-need-to-act-on-the-risks-posed-by-new-technologies>
- Hansen, J. M., Saridakis, G. and Benson, V. 2018. Risk, Trust, and the Interaction of Perceived Ease of Use and Behavioral Control in Predicting Consumers' Use of Social Media for Transactions. **Computers in Human Behavior**. 80: 197-206.

- Heckler, S. E. and Childers, T. L. 1992. The Role of Expectancy and Relevancy in Memory for Verbal and Visual Information: What is Incongruity? **Journal of Consumer Research**. 18(4): 475-492.
- Hennig-Thurau, T., Gwinner, K. P., Walsh, G. and Gremler, D. D. 2004. Electronic Word-of-mouth Via Consumer-opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet? **Journal of Interactive Marketing**. 18(1): 38-52.
- Henseler, J., Ringle, C. M. and Sinkovics, R. R. 2009. The Use of Partial Least Squares Path Modeling in International Marketing. **Advances in International Marketing**. 20(1): 277-319.
- Hernández-Ortega, B. 2018. Don't Believe Strangers: Online Consumer Reviews and the Role of Social Psychological Distance. **Information & Management**. 55(1): 31-50.
- Higgs, M. M. 2017. **Bangkok's Street Food Vendors are Going Cashless (and That's a Big Deal)**. Retrieved December 12, 2017 from <https://www.eater.com/2017/11/14/16644620/bangkok-street-food-vendors-thailand-mobile-pay-cashless>
- Hofstede, G. 2011. Dimensionalizing Cultures: The Hofstede Model in Context. **Online Readings in Psychology and Culture**. 2(1).
- Hong, S. J. and Tam, K. Y. 2006. Understanding the Adoption of Multipurpose Information Appliances: The Case of Mobile Data Services. **Information Systems Research**. 17(2): 162-179.
- Hsieh, J. Y. and Liao, P. W. 2011. Antecedents and Moderators of Online Shopping Behavior in Undergraduate Students. **Social Behavior and Personality**. 39(9): 1271-1280.
- Hu, L. T. and Bentler, P. M. 1999. Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. **Structural Equation Modeling: A Multidisciplinary Journal**. 6(1): 1-55.
- Hu, M., Gao, J. and Wang, S. 2017. How Do Consumers Make Online Brand Decision?. In **Service Systems and Service Management (ICSSSM), 2017 International Conference on**. IEEE. Pp. 1-6.

- Huang, T. K. 2015. Exploring the Antecedents of Screenshot-based Interactions in the Context of Advanced Computer Software Learning. **Computers & Education**. 80: 95-107.
- Hung, S. Y., Chang, C. M. and Kuo, S. R. 2013. User Acceptance of Mobile e-government Services: An Empirical Study. **Government Information Quarterly**. 30(1): 33-44.
- Ingham, J., Cadieux, J. and Berrada, A. M. 2015. e-Shopping Acceptance: A Qualitative and Meta-analytic Review. **Information & Management**. 52(1): 44-60.
- Inkpen, A. C. and Currall, S. C. 2004. The Coevolution of Trust, Control, and Learning in Joint Ventures. **Organization Science**. 15(5): 586-599.
- Islam, M. A., Khan, M. A., Ramayah, T. and Hossain, M. M. 2011. The Adoption of Mobile Commerce Service Among Employed Mobile Phone Users in Bangladesh: Self-efficacy as a Moderator. **International Business Research**. 4(2): 80-89.
- Jahanshahi, A. A., Zhang, S. X. and Brem, A. 2013. E-commerce for SMEs: Empirical Insights from Three Countries. **Journal of Small Business and Enterprise Development**. 20(4): 849-865.
- Jambulingam, T., Kathuria, R. and Doucette, W. R. 2005. Entrepreneurial Orientation as a Basis for Classification within a Service Industry: The Case of Retail Pharmacy Industry. **Journal of Operations Management**. 23(1): 23-42.
- Jansen, B. J., Zhang, M., Sobel, K. and Chowdury, A. 2009. Twitter Power: Tweets as Electronic Word of Mouth. **Journal of the Association for Information Science and Technology**. 60(11): 2169-2188.
- Jaradat, M. I. R. M. and Al Rababaa, M. S. 2013. Assessing Key Factor that Influence on the Acceptance of Mobile Commerce Based on Modified UTAUT. **International Journal of Business and Management**. 8(23): 102-112.
- Jayashankar, P., Nilakanta, S., Johnston, W. J., Gill, P. and Burres, R. 2018. IoT Adoption in Agriculture: The Role of Trust, Perceived Value and Risk. **Journal of Business & Industrial Marketing**. 33(6): 804-821.

- Joo, J. and Sang, Y. 2013. Exploring Koreans' Smartphone Usage: An Integrated Model of the Technology Acceptance Model and Uses and Gratifications Theory. **Computers in Human Behavior**. 29(6): 2512-2518.
- Juma, C. 2017. **What Innovation and Technological Disruption Really Means for Africa**. Retrieved May 8, 2018 from <https://qz.com/africa/972157/what-innovation-and-technological-disruption-really-means-for-africa/>
- Kalinic, Z. and Marinkovic, V. 2016. Determinants of Users' Intention to Adopt m-commerce: An Empirical Analysis. **Information Systems and e-Business Management**. 14(2): 367-387.
- Kao, D. T. 2009. The Impact of Transaction Trust on Consumers' Intentions to Adopt M-commerce: A Cross-cultural Investigation. **CyberPsychology & Behavior**. 12(2): 225-229.
- Kaplan, M. 2018. **Africa: An Emerging Ecommerce Market with Many Challenges**. Retrieved 16 December 2018 from <https://www.practicalecommerce.com/africa-emerging-ecommerce-market-many-challenges>
- Kasabov, E. 2016. Unknown, Surprising, and Economically Significant: The Realities of Electronic Word of Mouth in Chinese Social Networking Sites. **Journal of Business Research**. 69(2): 642-652.
- Kassim, N. and Abdullah, N. A. 2010. The Effect of Perceived Service Quality Dimensions on Customer Satisfaction, Trust, and Loyalty in E-commerce Settings: A Cross Cultural Analysis. **Asia Pacific Journal of Marketing and Logistics**. 22(3): 351-371.
- Kaushik, A. K. and Rahman, Z. 2016. Are Street Vendors Really Innovative Toward Self-service Technology? **Information Technology for Development**. 22(2): 334-356.
- Kesharwani, A. and Bisht, S. S. 2012. The Impact of Trust and Perceived Risk on Internet Banking Adoption in India: An Extension of Technology Acceptance Model. **International Journal of Bank Marketing**. 30(4): 303-322.

- Kesharwani, A. and Tripathy, T. 2012. Dimensionality of Perceived Risk and Its Impact on Internet Banking Adoption: An Empirical Investigation. **Services Marketing Quarterly**. 33(2): 177-193.
- Khoi, N. H., Tuu, H. H. and Olsen, S. O. 2018. The Role of Perceived Values in Explaining Vietnamese Consumers' Attitude and Intention to Adopt Mobile Commerce. **Asia Pacific Journal of Marketing and Logistics**. 30(4): 1112-1134.
- Kim, D. J., Ferrin, D. L. and Rao, H. R. 2008. A Trust-based Consumer Decision-Making Model in Electronic Commerce: The Role of Trust, Perceived Risk, and Their Antecedents. **Decision Support Systems**. 44(2): 544-564.
- Kim, K. J. and Shin, D. H. 2015. An Acceptance Model for Smart Watches: Implications for the Adoption of Future Wearable Technology. **Internet Research**. 25(4): 527-541.
- Kim, M. J., Kim, W. G., Kim, J. M. and Kim, C. 2016. Does Knowledge Matter to Seniors' Usage of Mobile Devices? Focusing on Motivation and Attachment. **International Journal of Contemporary Hospitality Management**. 28(8): 1702-1727.
- Kim, Y. and Peterson, R. A. 2017. A Meta-analysis of Online Trust Relationships in E-commerce. **Journal of Interactive Marketing**. 38: 44-54.
- Kock, N. 2015. Common Method Bias in PLS-SEM: A Full Collinearity Assessment Approach. **International Journal of e-Collaboration**. 11(4): 1-10.
- Koufaris, M. 2002. Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior. **Information Systems Research**. 13(2): 205-223.
- KPMG. 2015. **Impact of E-commerce on SMEs in India**. Retrieved 16 December 2018 from [https://assets.kpmg/content/dam/kpmg/pdf/2015/10/Snapdeal-Report\\_-Impact-of-e-Commerce-on-Indian-SMEs.pdf](https://assets.kpmg/content/dam/kpmg/pdf/2015/10/Snapdeal-Report_-Impact-of-e-Commerce-on-Indian-SMEs.pdf)
- Kurnia, S., Choudrie, J., Mahbubur, R. M. and Alzougool, B. 2015. E-commerce Technology Adoption: A Malaysian Grocery SME Retail Sector Study. **Journal of Business Research**. 68(9): 1906-1918.

- Kwon, I. W. G. and Suh, T. 2004. Factors Affecting the Level of Trust and Commitment in Supply Chain Relationships. **Journal of Supply Chain Management**. 40(1): 4-14.
- Leary, M. R. 2004. **Introduction to Behavioral Research Methods**. Pearson Education New Zealand.
- Lee, C. H., Eze, U. C. and Ndubisi, N. 2011. Analyzing Key Determinants of Online Repurchase Intentions. **Asia Pacific Journal of Marketing and Logistics**. 23(2): 200-221.
- Lee, J., Park, D. H. and Han, I. 2008. The Effect of Negative Online Consumer Reviews on Product Attitude: An Information Processing View. **Electronic Commerce Research and Applications**. 7(3): 341-352.
- Lee, M. and Youn, S. 2009. Electronic Word of Mouth (eWOM): How eWOM Platforms Influence Consumer Product Judgement. **International Journal of Advertising**. 28(3): 473-499.
- Lee, M. K., Shi, N., Cheung, C. M., Lim, K. H. and Sia, C. L. 2011. Consumer's Decision to Shop Online: The Moderating Role of Positive Informational Social Influence. **Information & Management**. 48(6): 185-191.
- Legris, P., Ingham, J. and Collerette, P. 2003. Why Do People Use Information Technology? A Critical Review of the Technology Acceptance Model. **Information & Management**. 40(3): 191-204.
- Lele, U. and Goswami, S. 2017. **The Fourth Industrial Revolution and Rural Transformation in India**. Retrieved May 8, 2018 from <https://www.brookings.edu/blog/future-development/2017/09/28/the-fourth-industrial-revolution-and-rural-transformation-in-india/>
- Leon, A. C., Davis, L. L. and Kraemer, H. C. 2011. The Role and Interpretation of Pilot Studies in Clinical Research. **Journal of Psychiatric Research**. 45(5): 626-629.
- Liao, C., Liu, C.-C. and Chen, K. 2011. Examining the Impact of Privacy, Trust and Risk Perceptions Beyond Monetary Transactions: An Integrated Model. **Electronic Commerce Research and Applications**. 10(6): 702-715.

- Liébana-Cabanillas, F., Marinković, V. and Kalinić, Z. 2017. A SEM-neural Network Approach for Predicting Antecedents of M-commerce Acceptance. **International Journal of Information Management**. 37(2): 14-24.
- Liébana-Cabanillas, F., Sánchez-Fernández, J. and Muñoz-Leiva, F. 2014. Role of Gender on Acceptance of Mobile Payment. **Industrial Management & Data Systems**. 114(2): 220-240.
- Lim, N. 2003. Consumers' Perceived Risk: Sources Versus Consequences. **Electronic Commerce Research and Applications**. 2(3): 216-228.
- Lin, J., Wang, B., Wang, N. and Lu, Y. 2014. Understanding the Evolution of Consumer Trust in Mobile Commerce: a Longitudinal Study. **Information Technology and Management**. 15(1): 37-49.
- Lohrke, F. T., Franklin, G. M. and Frownfelter-Lohrke, C. 2006. The Internet as an Information Conduit: A Transaction Cost Analysis Model of US SME Internet Use. **International Small Business Journal**. 24(2): 159-178.
- Lowry, P. B. and Gaskin, J. 2014. Partial Least Squares (PLS) Structural Equation Modeling (SEM) for Building and Testing Behavioral Causal Theory: When to Choose it and How to Use It. **IEEE Transactions on Professional Communication**. 57(2): 123-146.
- Lu, J. 2014. Are Personal Innovativeness and Social Influence Critical to Continue with Mobile Commerce? **Internet Research**. 24(2): 134-159.
- Lumpkin, G. T. and Dess, G. G. 1996. Clarifying the Entrepreneurial Orientation Construct and Linking it to Performance. **Academy of Management Review**. 21(1): 135-172.
- Lumpkin, G. T. and Dess, G. G. 2001. Linking Two Dimensions of Entrepreneurial Orientation to Firm Performance: The Moderating Role of Environment and Industry Life Cycle. **Journal of Business Venturing**. 16(5): 429-451.
- Madan, K. and Yadav, R. 2018. Understanding and Predicting Antecedents of Mobile Shopping Adoption: A Developing Country Perspective. **Asia Pacific Journal of Marketing and Logistics**. 30(1): 139-162.
- Malhotra, N. K. 2008. **Marketing research: An Applied Orientation**. Pearson Education India.

- Maneepong, C. and Walsh, J. C. 2013. A New Generation of Bangkok Street Vendors: Economic Crisis as Opportunity and Threat. **Cities**. 3437-43.
- Manyika, J., Chui, M., Bughin, J., Dobbs, R., Bisson, P. and Marrs, A. 2013. **Disruptive Technologies: Advances that will Transform Life, Business, and the Global Economy**. Retrieved August 10, 2018 from [https://www.mckinsey.com/~media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Disruptive%20technologies/MGI\\_Disruptive\\_technologies\\_Full\\_report\\_May2013.ashx](https://www.mckinsey.com/~media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Disruptive%20technologies/MGI_Disruptive_technologies_Full_report_May2013.ashx)
- Marakarkandy, B., Yajnik, N. and Dasgupta, C. 2017. Enabling Internet Banking Adoption: An Empirical Examination with an Augmented Technology Acceptance Model (TAM). **Journal of Enterprise Information Management**. 30(2): 263-294.
- Marangunić, N. and Granić, A. 2015. Technology Acceptance Model: A Literature Review from 1986 to 2013. **Universal Access in the Information Society**. 14(1): 81-95.
- Marriott, H. R., Williams, M. D. and Dwivedi, Y. K. 2017. What Do We Know about Consumer M-shopping Behaviour? **International Journal of Retail & Distribution Management**. 45(6): 568-586.
- Mason, C. H. and Perreault, W. D. 1991. Collinearity, Power, and Interpretation of Multiple Regression Analysis. **Journal of Marketing Research**. 28(3): 268-280.
- Matsuno, K., Mentzer, J. T. and Özsomer, A. 2002. The Effects of Entrepreneurial Proclivity and Market Orientation on Business Performance. **Journal of Marketing**. 66(3): 18-32.
- McKnight, D. H. and Chervany, N. L. 2001. What Trust Means in E-commerce Customer Relationships: An Interdisciplinary Conceptual Typology. **International Journal of Electronic Commerce**. 6(2): 35-59.
- Mehrad, D. and Mohammadi, S. 2017. Word of Mouth Impact on the Adoption of Mobile Banking in Iran. **Telematics and Informatics**. 34(7): 1351-1363.
- Miller, D. 1983. The Correlates of Entrepreneurship in Three Types of Firms. **Management Science**. 29(7): 770-791.

- Moon, J. W. and Kim, Y. G. 2001. Extending the TAM for a World-Wide-Web Context. **Information & Management**. 38(4): 217-230.
- Moore, G. C. and Benbasat, I. 1991. Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. **Information Systems Research**. 2(3): 192-222.
- Morgan, R. M. and Hunt, S. D. 1994. The Commitment-trust Theory of Relationship Marketing. **The Journal of Marketing**. 58(July): 20-38.
- Mramba, N., Apiola, M., Kolog, E. A. and Sutinen, E. 2016. Technology for Street Traders in Tanzania: A Design Science Research Approach. **African Journal of Science, Technology, Innovation and Development**. 8(1): 121-133.
- Mramba, N., Sutinen, E., Haule, M. and Msami, P. 2014. Survey of Mobile Phone Usage Patterns Among Street Vendors in dar es Salaam City-tanzania. **International Journal of Information Technology and Business Management**. 8(1): 1-10.
- Nguyen, O. D. Y. and Cassidy, J. F. 2018. Consumer Intention and Credit card Adoption in Vietnam. **Asia Pacific Journal of Marketing and Logistics**. 30(4): 779-796.
- Nirathron, N. 2006. Fighting Poverty from the Street: **A Survey of Street Food Vendors in Bangkok**. Retrieved May 8, 2018 from [https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms\\_bk\\_pb\\_128\\_en.pdf](https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_bk_pb_128_en.pdf)
- Noomnual, S. and Shendell, D. G. 2017. Young Adult Street Vendors and Adverse Respiratory Health Outcomes in Bangkok, Thailand. **Safety and Health at Work**. 8(4): 407-409.
- Noorian, Y. 2014. **European Online Retail Sales Forecast to Double by 2019 with M-commerce Driving Growth**. Retrieved November 12, 2017 from <https://www.wgsn.com/blogs/european-online-retail-sales-forecast-to-double-by-2019-with-m-commerce-driving-growth/#>
- Oliveira, T., Alinho, M., Rita, P. and Dhillon, G. 2017. Modelling and Testing Consumer Trust Dimensions in E-commerce. **Computers in Human Behavior**. 71:153-164.

- Ooi, K. B. and Tan, G. W. H. 2016. Mobile Technology Acceptance Model: An Investigation Using Mobile Users to Explore Smartphone Credit Card. **Expert Systems with Applications**. 59: 33-46.
- Ozanne, J. L., Brucks, M. and Grewal, D. 1992. A Study of Information Search Behavior During the Categorization of New Products. **Journal of Consumer Research**. 18(4): 452-463.
- Ozdemir, S. and Trott, P. 2009. Exploring the Adoption of a Service Innovation: A Study of Internet Banking Adopters and Non-adopters. **Journal of Financial Services Marketing**. 13(4): 284-299.
- Ozturk, A. B., Nusair, K., Okumus, F. and Hua, N. 2016. The Role of Utilitarian and Hedonic Values on Users' Continued Usage Intention in a Mobile Hotel Booking Environment. **International Journal of Hospitality Management**. 57: 106-115.
- Pantano, E. and Priporas, C. V. 2016. The Effect of Mobile Retailing on Consumers' Purchasing Experiences: A Dynamic Perspective. **Computers in Human Behavior**. 61: 548-555.
- Park, D. H., Lee, J. and Han, I. 2007. The Effect of On-line Consumer Reviews on Consumer Purchasing Intention: The Moderating Role of Involvement. **International Journal of Electronic Commerce**. 11(4): 125-148.
- Park, E., Kim, S., Kim, Y. and Kwon, S. J. 2018. Smart Home Services as the Next Mainstream of the ICT Industry: Determinants of the Adoption of Smart Home Services. **Universal Access in the Information Society**. 17(1): 175-190.
- Park, J. G. and Lee, J. 2014. Knowledge Sharing in Information Systems Development Projects: Explicating the Role of Dependence and Trust. **International Journal of Project Management**. 32(1): 153-165.
- Park, S. Y., Nam, M. W. and Cha, S. B. 2012. University Students' Behavioral Intention to Use Mobile Learning: Evaluating the Technology Acceptance Model. **British Journal of Educational Technology**. 43(4): 592-605.
- Patel, K. J. and Patel, H. J. 2017. Adoption of Internet Banking Services in Gujarat: an Extension of TAM with Perceived Security and Social Influence. **International Journal of Bank Marketing**. 36(1): 147-169.

- Pavlou, P. A. 2003. Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. **International Journal of Electronic Commerce**. 7(3): 101-134.
- Pentina, I., Koh, A. C. and Le, T. T. 2012. Adoption of Social Networks Marketing by SMEs: Exploring the Role of Social Influences and Experience in Technology Acceptance. **International Journal of Internet Marketing and Advertising**. 7(1): 65-82.
- Peterson, R. A., Balasubramanian, S. and Bronnenberg, B. J. 1997. Exploring the Implications of the Internet for Consumer Marketing. **Journal of the Academy of Marketing Science**. 25(4): 329-346.
- Phau, I. and Poon, S. M. 2000. Factors Influencing the Types of Products and Services Purchased Over the Internet. **Internet Research**. 10(2): 102-113.
- Pipitwanichakarn, T. and Wongtada, N. 2019. Mobile Commerce Adoption Among the Bottom of the Pyramid: A Case of Street Vendors in Thailand. **Journal of Science and Technology Policy Management**. 10(1): 193-213.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. and Podsakoff, N. P. 2003. Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. **Journal of Applied Psychology**. 88(5): 879-903.
- Pollard, C. 2003. E-service Adoption and Use in Small Farms in Australia: Lessons Learned from a Government-sponsored Programme. **Journal of Global Information Technology Management**. 6(2): 45-63.
- Poong, Y. S., Yamaguchi, S. and Takada, J. I. 2017. Investigating the Drivers of Mobile Learning Acceptance Among Young Adults in the World Heritage Town of Luang Prabang, Laos. **Information Development**. 33(1): 57-71.
- Rahayu, R. and Day, J. 2017. E-commerce Adoption by SMEs in Developing Countries: Evidence from Indonesia. **Eurasian Business Review**. 7(1): 25-41.
- Rauniyar, G. and Kanbur, R. 2010. Inclusive Growth and Inclusive Development: A Review and Synthesis of Asian Development Bank Literature. **Journal of the Asia Pacific Economy**. 15(4): 455-469.

- Ratten, V. 2012. Entrepreneurial and Ethical Adoption Behaviour of Cloud Computing. **The Journal of High Technology Management Research**. 23(2): 155-164.
- Ren, C. 2011. Non-human Agency, Radical Ontology and Tourism Realities. **Annals of Tourism Research**. 38(3): 858-881.
- Renko, M., Carsrud, A. and Brännback, M. 2009. The Effect of a Market Orientation, Entrepreneurial Orientation, and Technological Capability on Innovativeness: A Study of Young Biotechnology Ventures in the United States and in Scandinavia. **Journal of Small Business Management**. 47(3): 331-369.
- Renzl, B. 2008. Trust in Management and Knowledge Sharing: The Mediating Effects of Fear and Knowledge Documentation. **Omega**. 36(2): 206-220.
- Richard, O. C., Barnett, T., Dwyer, S. and Chadwick, K. 2004. Cultural Diversity in Management, Firm Performance, and the Moderating Role of Entrepreneurial Orientation Dimensions. **Academy of Management Journal**. 47(2): 255-266.
- Riemenschneider, C. K., Harrison, D. A. and Mykytyn, P. P. J. 2003. Understanding IT Adoption Decisions in Small Business: Integrating Current Theories. **Information & Management**. 40(4): 269-285.
- Rogers, E. M. 2010. **Diffusion of Innovations**. New York, USA: Simon and Schuster.
- Roy, S. and Moorthi, Y. 2017. Technology Readiness, Perceived Ubiquity and M-Commerce Adoption: The Moderating Role of Privacy. **Journal of Research in Interactive Marketing**. 11(3): 268-295.
- Ruchirawat, M., Navasumrit, P., Settachan, D., Tuntaviroon, J., Buthbumrung, N. and Sharma, S. 2005. Measurement of Genotoxic Air Pollutant Exposures in Street Vendors and School Children in and Near Bangkok. **Toxicology and Applied Pharmacology**. 206(2): 207-214.
- Ruiz-Mafe, C., Tronch, J. and Sanz-Blas, S. 2016. The Role of Emotions and Social Influences on Consumer Loyalty Towards Online Travel Communities. **Journal of Service Theory and Practice**. 26(5): 534-558.

- Rumanyika, J. D. 2015. Obstacles Towards Adoption of Mobile Banking in Tanzania: a Review. **International Journal of Information**. 35(1).
- Saha, D. 2009. Decent Work for the Street Vendors in Mumbai, India—a Distant Vision! **Journal of Workplace Rights**. 14(2): 229-250.
- Saha, D. 2011. Working Life of Street Vendors in Mumbai. **The Indian Journal of Labour Economics**. 54(2): 301-325.
- Saha, P. and Roy, B. 2016. Indicators Influencing the Consumer Preferences in Buying from Street Vendors: A Study on Cox's Bazar, Bangladesh. **Journal of Business**. 37(1).
- Santos-Vijande, M. L., López-Sánchez, J. Á. and Trespalacios, J. A. 2012. How Organizational Learning Affects a Firm's Flexibility, Competitive Strategy, and Performance. **Journal of Business Research**. 65(8): 1079-1089.
- Schepers, J. and Wetzels, M. 2007. A Meta-analysis of the Technology Acceptance Model: Investigating Subjective Norm and Moderation Effects. **Information & Management**. 44(1): 90-103.
- See-To, E. W. and Ho, K. K. 2014. Value Co-creation and Purchase Intention in Social Network Sites: The Role of Electronic Word-of-Mouth and Trust—A Theoretical Analysis. **Computers in Human Behavior**. 31: 182-189.
- Shaikh, A. A. and Karjaluoto, H. 2015. Mobile Banking Adoption: A Literature Review. **Telematics and Informatics**. 32(1): 129-142.
- Shankar, A. and Datta, B. 2018. Factors Affecting Mobile Payment Adoption Intention: An Indian Perspective. **Global Business Review**. 19(3): 72S-89S.
- Shapiro, M. 2017. **Legislating New York's Street Food Vendors**. Retrieved December 18, 2017 from <https://explorepartsunknown.com/queens/legislating-new-yorks-street-food-vendors/>
- Siau, K. and Shen, Z. 2003. Building Customer Trust in Mobile Commerce. **Communications of the ACM**. 46(4): 91-94.
- Song, L. K. 2016. Planning with Urban Informality: A Case for Inclusion, Co-Production and Reiteration. **International Development Planning Review**. 38(4): 359-381.

- Sparks, B. A. and Browning, V. 2011. The Impact of Online Reviews on Hotel Booking Intentions and Perception of Trust. **Tourism Management**. 32(6): 1310-1323.
- Statista. 2017. **U.S. Mobile Retail Commerce Sales as Percentage of Retail E-commerce Sales from 2017 to 2021**. Retrieved November 12, 2017 from <https://www.statista.com/statistics/249863/us-mobile-retail-commerce-sales-as-percentage-of-e-commerce-sales/>
- Straub, D., Boudreau, M. C. and Gefen, D. 2004. Validation Guidelines for IS Positivist Research. **The Communications of the Association for Information Systems**. 13(1): 63.
- Suhr, D. D. 2006. **Exploratory or Confirmatory Factor Analysis?** Cary: SAS Institute.
- Sun, H. and Zhang, P. 2006. The Role of Moderating Factors in User Technology Acceptance. **International Journal of Human Computer Studies**. 64(2): 53-78.
- Tan, G. W. H., Ooi, K. B., Leong, L. Y. and Lin, B. 2014. Predicting the Drivers of Behavioral Intention to Use Mobile Learning: A Hybrid SEM-Neural Networks Approach. **Computers in Human Behavior**. 36: 198-213.
- Tang, D. and Chen, L. 2011. A Review of the Evolution of Research on Information Technology Acceptance Model. In **2011 International Conference on Business Management and Electronic Information**. IEEE. Pp. 588-591.
- Tarhini, A., Hone, K. and Liu, X. 2014. Measuring the Moderating Effect of Gender and Age on E-learning Acceptance in England: A Structural Equation Modeling Approach for an Extended Technology Acceptance Model. **Journal of Educational Computing Research**. 51(2): 163-184.
- Tarhini, A., Hone, K., Liu, X. and Tarhini, T. 2017. Examining the Moderating Effect of Individual-level Cultural Values on Users' Acceptance of E-learning in Developing Countries: A Structural Equation Modeling of an Extended Technology Acceptance Model. **Interactive Learning Environments**. 25(3): 306-328.
- Taylor, S. and Todd, P. 1995. Assessing IT Usage: The Role of Prior Experience. **MIS Quarterly**. 19(4): 561-570.

- Teo, A. C., Tan, G. W. H., Cheah, C. M., Ooi, K. B. and Yew, K. T. 2012. Can the Demographic and Subjective Norms Influence the Adoption of Mobile Banking? **International Journal of Mobile Communications**. 10(6): 578-597.
- Teo, T. 2009. The Impact of Subjective Norm and Facilitating Conditions on Pre-service Teachers' Attitude Toward Computer Use: A Structural Equation Modeling of an Extended Technology Acceptance Model. **Journal of Educational Computing Research**. 40(1): 89-109.
- Teo, T. and Noyes, J. 2011. An Assessment of the Influence of Perceived Enjoyment and Attitude on the Intention to Use Technology Among Pre-service Teachers: A Structural Equation Modeling Approach. **Computers & Education**. 57(2): 1645-1653.
- Thaichon, P., Lobo, A., Prentice, C. and Quach, T. N. 2014. The Development of Service Quality Dimensions for Internet Service Providers: Retaining Customers of Different Usage Patterns. **Journal of Retailing and Consumer Services**. 21(6): 1047-1058.
- Thaichon, P. and Quach, T. N. 2015. The Relationship between Service Quality, Satisfaction, Trust, Value, Commitment and Loyalty of Internet Service Providers' Customers. **Journal of Global Scholars of Marketing Science**. 25(4): 295-313.
- Thakur, R. and Srivastava, M. 2014. Adoption Readiness, Personal Innovativeness, Perceived risk and Usage Intention Across Customer Groups for Mobile Payment Services in India. **Internet Research**. 24(3): 369-392.
- Thompson, R. L., Higgins, C. A. and Howell, J. M. 1994. Influence of Experience on Personal Computer Utilization: Testing a Conceptual Model. **Journal of Management Information Systems**. 11(1): 167-187.
- Thongpapanl, N. and Ashraf, A. R. 2011. Enhancing Online Performance Through Website Content and Personalization. **Journal of Computer Information Systems**. 52(1): 3-13.

- Trenz, M., Huntgeburth, J. and Veit, D. 2015. The Flock in the Cloud-How Social Influence Processes Shape Cloud Service Relationships. In **Proceedings of the 36th International Conference on Information Systems (ICIS)**, Fort Worth, Texas, USA.
- Truong, V. D. 2018. Tourism, Poverty Alleviation, and the Informal Economy: The Street Vendors of Hanoi, Vietnam. **Tourism Recreation Research**. 43(1): 52-67.
- Tsao, W. C., Hsieh, M. T., Shih, L. W. and Lin, T. M. 2015. Compliance with eWOM: The Influence of Hotel Reviews on Booking Intention from the Perspective of Consumer Conformity. **International Journal of Hospitality Management**. 46:99-111.
- Turner, M., Kitchenham, B., Brereton, P., Charters, S. and Budgen, D. 2010. Does the Technology Acceptance Model Predict Actual Use? A Systematic Literature Review. **Information and Software Technology**. 52(5): 463-479.
- Venkatesh, V. 2000a. Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. **Information Systems Research**. 11(4): 342-365.
- Venkatesh, V. 2000b. Determinants of Perceived Ease of Use: Integrating Perceived Behavioral Control, Computer Anxiety and Enjoyment into the Technology Acceptance Model. **Information Systems Research**. 11(4): 342-365.
- Venkatesh, V. and Bala, H. 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. **Decision Sciences**. 39(2): 273-315.
- Venkatesh, V. and Davis, F. D. 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. **Management Science**. 46(2): 186-204.
- Venkatesh, V., Morris, M. G., Davis, G. B. and Davis, F. D. 2003. User Acceptance of Information Technology: Toward a Unified View. **MIS Quarterly**. 27(3): 425-478.

- Venkatraman, N. 1989. Strategic Orientation of Business Enterprises: The Construct, Dimensionality, and Measurement. **Management Science**. 35(8): 942-962.
- Vermeulen, I. E. and Seegers, D. 2009. Tried and Tested: The Impact of Online Hotel Reviews on Consumer Consideration. **Tourism Management**. 30(1): 123-127.
- Walsh, J. and Maneepong, C. 2012. After the 1997 Financial Crisis in Bangkok: The Behaviour and Implications of a New Cohort of Street Vendors. **Singapore Journal of Tropical Geography**. 33(2): 255-269.
- Webster, J. and Martocchio, J. J. 1992. Microcomputer Playfulness: Development of a Measure with Workplace Implications. **MIS Quarterly**. 16(2): 201-226.
- Wei, T. T., Marthandan, G., Chong, A. Y. L., Ooi, K. B. and Arumugam, S. 2009. What Drives Malaysian M-commerce Adoption? An Empirical Analysis. **Industrial Management & Data Systems**. 109(3): 370-388.
- WIEGO. 2018. **Street Vendors in India**. Retrieved June 2, 2018 from [http://www.wiego.org/informal\\_economy\\_law/street-vendors-india](http://www.wiego.org/informal_economy_law/street-vendors-india)
- WIEGO. 2019. **Street Vendors**. Retrieved 10 February 2019 from <http://www.wiego.org/informal-economy/occupational-groups/street-vendors>
- Wongtada, N. 2014. Street Vending Phenomena: A Literature Review and Research Agenda. **Thunderbird International Business Review**. 56(1): 55-75.
- Wright, O. and Ingilizian, Z. 2017. **Disruption in Consumer Industries: How the Traditional Operating Model will be Turned Inside Out**. Retrieved 10 August 2018 from <https://www.weforum.org/agenda/2017/08/disruption-in-consumer-industries-turning-the-operating-model-inside-out/>
- Wu, J., Liu, L. and Huang, L. 2016. Exploring User Acceptance of Innovative Mobile Payment Service in Emerging Market: the Moderating effect of diffusion stages of WeChat Payment in China. in **PACIS**. Pp. 238-254.
- Wu, J. H. and Wang, S. C. 2005. What Drives Mobile Commerce?: An Empirical Evaluation of the Revised Technology Acceptance Model. **Information & Management**. 42(5): 719-729.

- Yadav, R., Sharma, S. K. and Tarhini, A. 2016. A Multi-analytical Approach to Understand and Predict the Mobile Commerce Adoption. **Journal of Enterprise Information Management**. 29(2): 222-237.
- Yang, H. L. and Lin, S. L. 2015. User Continuance Intention to Use Cloud Storage Service. **Computers in Human Behavior**. 52: 219-232.
- Yang, K. C., Chye, G. N. S., Fern, J. C. S. and Kang, Y. 2015. Understanding the Adoption of Mobile Commerce in Singapore with the Technology Acceptance Model (TAM). In **Assessing the Different Roles of Marketing Theory and Practice in the Jaws of Economic Uncertainty**. Springer. Pp. 211-215.
- Yasmeen, G. and Nirathron, N. 2014. Vending in Public Space: The Case of Bangkok. **WIEGO Policy Brief (Urban Policies)**. 16: 1-18.
- Yen, L. 2015. **Lessons from the Allocation of Food Vendors in Bangkok, Thailand**. Master's thesis, University of Cincinnati.
- Zarpou, T., Saprikis, V., Markos, A. and Vlachopoulou, M. 2012. Modeling Users' Acceptance of Mobile Services. **Electronic Commerce Research**. 12(2): 225-248.
- Zhang, L., Zhu, J. and Liu, Q. 2012. A Meta-analysis of Mobile Commerce Adoption and the Moderating Effect of Culture. **Computers in Human Behavior**. 28(5): 1902-1911.
- Zhou, T. 2013. Understanding Continuance Usage of Mobile Sites. **Industrial Management & Data Systems**. 113(9): 1286-1299.

## **APPENDICES**

## APPENDIX A

### RESULTS FROM QUALITATIVE SURVEY FOR CHAPTER 2

**Table A** Respondents' Profile

Respondent	Gender	Age	Career	Education	Internet Experience (years)
1	Female	40	Marketer	Master Degree	14
2	Male	31	Programmer	Bachelor Degree	16
3	Female	42	Street Vendor	High School	7
4	Male	39	Street Vendor	Bachelor Degree	9

**Question 1:** What are the important attributes of m-commerce for street vendors?

**Respondent 1:** First, the usefulness of the platform. In order to convince street vendors to use technology for their businesses, it is important to let them know what the benefits are and what they can gain from the system. Second is the safety concern, so they can make sure the platform is safe and reliable to use for monetary transactions. This can be achieved by collaborating with established banks for an e-payment system because they have strong security for avoiding fraud. Last, the ease of use of the platform, because most of the street vendors are not tech-savvy people and they prefer to deal in cash. Ease of use of the platform will encourage them to take the first step in adopting the m-commerce.

**Respondent 2:** The usefulness of the m-commerce. It gives vendors data about their customer base (e.g., age, gender, nationality) so they can understand their target audience. During transactions, the application records and shows the demographic profiles of the customers. This information is critical and beneficial for customer relationship development because the vendors know who their target customers are and

what products they prefer. Thus, they can achieve more customer satisfaction when participating in online commerce compared with selling offline.

**Respondent 3:** In terms of the usefulness of m-commerce, vendors must see benefits from their participation in it. For example, m-commerce can increase their income and reduce their costs. It can help vendors to encourage existing customers to purchase more and gain potential new customers. Moreover, it can be a tool for improving the relationship with customers. For example, after customers order food online, they can rate their satisfaction and provide comments relating to the advantages and disadvantages of their online store. This can help vendors to maintain a good relationship with customers and improve customer service.

**Respondent 4:** In terms of ease of use, m-commerce is a novel platform for street vendors, and not all vendors are familiar with it. Despite the numerous benefits of m-commerce usage, it is likely that vendors may postpone adopting an innovation until they can learn and understand more about it. Therefore, the system is expected to be less complicated for inexperienced users (such as street vendors) compared with other consumer group.

**Question 2:** What are the important characteristics that might cause some street vendors to be more likely to adopt m-commerce than others?

**Respondent 1:** Opportunities: This group of people may be seeing opportunities where others see obstacles or challenges. Because street vendors run their businesses in a conventional way, their business models are pretty much standard and their revenue becomes mostly stagnant after a period of time. Only the opportunist will seek other possible ways to improve their business models (i.e., by adopting m-commerce). Of course, an opportunist is often perceived to be a risk taker because of trying to adopt a new idea for their business.

**Respondent 2:** Street vendors who use product differentiation as their business strategy are likely to use m-commerce because they sell unique products that are different from the products sold by their competitors. The vendors can, therefore, have the opportunity to offer products that meet the demands of specific consumers. For example, competitors may sell cakes made with eggs but one vendor may decide to bake and sell eggless cakes and thus attract new customers.

**Respondent 3:** Proactive vendors are likely to use m-commerce because they can study what the customers prefer and incorporate the preferences into the services they offer. Because their businesses are highly flexible, street vendors can efficiently review changes in taste and preferences of their customers and offer them precisely what they want. The m-commerce can help street vendors to make such quick changes. An example of such a move may be selling coffee: If the conventional method was to sell coffee on the street, the vendor could also offer coffee to customers of other businesses along the street. This could work perfectly if the vendor and the owners of the other businesses were in agreement on the delivery schedules.

**Respondent 4:** Street vendors with a great deal of innovativeness are likely to adopt and use m-commerce before others. This is because they do not feel anxious when trying new things. It is possible that they would attempt to find the best option to improve their business performance.

**Question 3:** What are the important characteristics of a service provider that would help street vendors to adopt a technology?

**Respondent 1:** Service providers must ensure the safety of service, build trust, and subsequently maintain a good relationship with the street vendors. It is vital for street vendors to feel safe about using m-commerce for business transactions; the service provider can give them free training on how to use the platform, as well as follow up with them periodically to make them feel “safe.” This process indirectly builds trust and a good relationship between a service provider and street vendors.

**Respondent 2:** Service providers with strong security are likely to be consulted about technology adoption. Because the m-commerce application is related to monetary transactions, street vendors do not want to be exposed to risk. They must be confident that their personal and monetary information will be protected.

## **APPENDIX B**

### **QUESTIONNAIRE FOR CHAPTER 2**

#### **Introduction**

Good Morning/afternoon, my name is \_\_\_\_\_. We are conducting a survey regarding the using m-commerce for street vendors. The purpose of this study is to investigate the factors on the vendors' embrace of technology. This survey will take no more than fifteen minutes to complete, and all responses will be kept strictly confidential and anonymous. Please know there is no right or wrong answers so feel free to provide honest responses.

For further questions regarding this survey, feel free to contact:

Miss Tanikan Pipitwanichakarn, Ph.D. Candidate at NIDA Business School.

Phone: +66-81-816-4246

Email: p.tanikan@gmail.com

---

**Part 1: Screener****A1. Gender (Single Answer)**

	Code
Male	1
Female	2

**A2. Recode type of Food (Single Answer)**

	Code	Please specify....
Fresh food e.g., fruit, pork, fish	1	
Fried food e.g., dried food	2	
finished food (i.e., foods were cooked off site)	3	
prepared food (i.e., raw materials were prepared and cooked on site)	4	

**A3. Decision toward your business (Single Answer)**

	Code	Route
Main decision maker	1	Continue
Co-decision maker	2	
None of above	3	Terminate

**A4. Do you use the mobile phone with an internet connection? (Single Answer)**

	Code	Route
Yes	1	Continue
No	2	Terminate

**A5. Age (years) (Single Answer)**

	Record	Code	Route
18-35		1	Continue
35-60		2	
>60		3	Terminate

A6. **[Showcard]** Which types of mobile application have you used within last six months (**Multiple Answers**)

Social Network e.g., Facebook, Line	1	If the vendors answer code 1, 10, or 11 → go to the main questionnaire. If not, terminate
Searching information e.g., Google, Calendar, Dictionary, Calculator	2	
Travel e.g., Map, Grab	3	
Entertainment e.g., Video, Music, Camera/Photo	4	
Lifestyle e.g. Food and Beverage	5	
News	6	
Sport	7	
Game	8	
Health	9	
Finance	10	
Shopping	11	
Others (Please specify.....)	99	

## Part 2: Main Questionnaire

### Interviewer: Read the Statement Below

M-commerce is defined as the application for selling your products.

-----

B1. **[Showcard]** Please indicate your perceptions towards these statements with seven-point scales (1 = “strongly disagree” to 7 = “strongly agree”) (**Single Answer**)

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Mostly Agree	Strongly Agree

	Intention to Use (ITU)	Strongly Disagree ----- Strongly Agree						
1	Given that I have access to the mobile application, I predict that I would use m-commerce.	1	2	3	4	5	6	7
2	Given that I have access to the mobile application, I intend to use m-commerce.	1	2	3	4	5	6	7
3	I intend to use m-commerce frequently.	1	2	3	4	5	6	7
4	I intend to use m-commerce in the near future.	1	2	3	4	5	6	7
5	Overall, I intend to use m-commerce.	1	2	3	4	5	6	7

	Perceived Ease of Use (PEOU)	Strongly Disagree ----- Strongly Agree						
1	I think it is easy to learn how to use m-commerce.	1	2	3	4	5	6	7
2	I think it is easy to find what I want via m-commerce.	1	2	3	4	5	6	7
3	I think it is easy to become skillful at using m-commerce.	1	2	3	4	5	6	7
4	I think interacting with m-commerce is clear and understandable.	1	2	3	4	5	6	7

	Perceived Ease of Use (PEOU)	Strongly Disagree ----- Strongly Agree						
5	Overall, I think it is easy to use m-commerce.	1	2	3	4	5	6	7

	Perceived Usefulness (PU)	Strongly Disagree ----- Strongly Agree						
1	Using m-commerce improves my job performance.	1	2	3	4	5	6	7
2	Using m-commerce would enhance my effectiveness in my job	1	2	3	4	5	6	7
3	Using m-commerce for my job increases my productivity.	1	2	3	4	5	6	7
4	Using m-commerce enables me to accomplish tasks more quickly.	1	2	3	4	5	6	7
5	Using m-commerce makes it easier for me to do my job.	1	2	3	4	5	6	7
6	Overall, m-commerce is useful for me in my job.	1	2	3	4	5	6	7

	Trust	Strongly Disagree -----Strongly Agree						
1	The m-commerce's service provider is trustworthy.	1	2	3	4	5	6	7
2	The m-commerce's service provider keeps its	1	2	3	4	5	6	7

	Trust	Strongly Disagree -----Strongly Agree						
	promises and commitments.							
3	I trust that the m-commerce's service provider keeps my best interests in mind.	1	2	3	4	5	6	7
4	The m-commerce's service provider meets my expectations.	1	2	3	4	5	6	7

	Entrepreneurial Orientation (EO)	Strongly Disagree ----- Strongly Agree						
1	When it comes to problem solving, I value creative new solutions more than conventional solutions.	1	2	3	4	5	6	7
2	I encourage the development of innovative marketing strategies.	1	2	3	4	5	6	7
3	I discuss opportunities more than problems.	1	2	3	4	5	6	7
4	I firmly believe that a change in the market creates a positive opportunity for me.	1	2	3	4	5	6	7
5	I value leadership initiatives for change much more than risk-	1	2	3	4	5	6	7

Entrepreneurial Orientation (EO)		Strongly Disagree ----- Strongly Agree						
	reducing management processes.							
6	I like “play it safe.”	1	2	3	4	5	6	7
7	I like to implement plans, even when they may not work.	1	2	3	4	5	6	7

Product Differentiation (PD)		Strongly Disagree ----- Strongly Agree						
1	I offer distinct products.	1	2	3	4	5	6	7
2	I offer a broad product line.	1	2	3	4	5	6	7
3	I offer high quality products.	1	2	3	4	5	6	7

### Part 3: Profiles

C1. How long have you used the mobile internet? **(Integer)**

	years
--	-------

C2. On average, how long have you used mobile internet a day? **(Integer)**

	hours
--	-------

C3. Highest Education **(Single Answer)**

Primary School	1
High School	2
Vocational School	3
Bachelor Degree	4
Master Degree	5
Doctoral Degree	6

C4. Status (**Single Answer**)

Single	1	
Married	2	
Others	3	Please specify:

## C5. Number of Employees

	Person(s)
--	-----------

C6. Personal Income (Baht/month) (**Single Answer**)

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8

C7. Family Income (Baht/month) (**Single Answer**)

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8

## APPENDIX C

### RESULTS FROM PILOT TEST FOR CHAPTER 2

**Table C** Constructs and Cronbach's Alpha of the Pilot Test

<b>Constructs</b>	<b>Cronbach's alpha</b>
Intention to Use (Venkatesh and Davis, 2000; Hong and Tam, 2006)	.955
Perceived Usefulness (Davis, 1989)	.973
Perceived Ease of Use (Davis, 1989)	.895
Trust (Pavlou, 2003)	.825
Entrepreneurial Orientation (Ratten, 2012)	.845
Product Differentiation (Santos-Vijande, López-Sánchez and Trespalacios, 2012)	.902

## **APPENDIX D**

### **QUESTIONNAIRE FOR CHAPTER 3**

#### **Introduction**

Good Morning/afternoon, my name is\_\_\_\_\_. We are conducting a survey regarding the using m-commerce for street vendors. The purpose of this study is to investigate the factors on the vendors' embrace of technology. This survey will take no more than fifteen minutes to complete, and all responses will be kept strictly confidential and anonymous. Please know there is no right or wrong answers so feel free to provide honest responses.

For further questions regarding this survey, feel free to contact:

Miss Tanikan Pipitwanichakarn, Ph.D. Candidate at NIDA Business School.

Phone: +66-81-816-4246

Email: p.tanikan@gmail.com

---

**Part 1: Screener****A1. Gender (Single Answer)**

	Code
Male	1
Female	2

**A2. Recode type of Food (Single Answer)**

	Code	Please specify....
Fresh food e.g., fruit, pork, fish	1	
Fried food e.g., dried food	2	
finished food (i.e., foods were cooked off site)	3	
prepared food (i.e., raw materials were prepared and cooked on site)	4	

**A3. Decision toward your business (Single Answer)**

	Code	Route
Main decision maker	1	Continue
Co-decision maker	2	
None of above	3	Terminate

**A4. Do you use the mobile phone with an internet connection? (Single Answer)**

	Code	Route
Yes	1	Continue
No	2	Terminate

**A5. Age (years) (Single Answer)**

	Record	Code	Route
18-35		1	Go to main questionnaire
35-60		2	
>60		3	Terminate

**Part 2: Main Questionnaire**

**Interviewer: Read the statement below**

M-commerce is defined as the application for selling your products.

-----

**B1. [Showcard]** Please indicate your perceptions towards these statements with seven-point scales (1 = “strongly disagree” to 7 = “strongly agree”) **(Single Answer)**

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Mostly Agree	Strongly Agree

	Intention to Use (ITU)	Strongly Disagree ----- Strongly Agree						
1	Given that I have access to the mobile application, I predict that I would use m-commerce.	1	2	3	4	5	6	7
2	Given that I have access to the mobile application, I intend to use m-commerce.	1	2	3	4	5	6	7
3	I intend to use m-commerce frequently.	1	2	3	4	5	6	7
4	I intend to use m-commerce in the near future.	1	2	3	4	5	6	7
5	Overall, I intend to use m-commerce.	1	2	3	4	5	6	7

	Perceived Ease of Use (PEOU)	Strongly Disagree ----- Strongly Agree						
1	I think it is easy to learn how to use m-commerce.	1	2	3	4	5	6	7
2	I think it is easy to find what I want via m-commerce.	1	2	3	4	5	6	7
3	I think it is easy to become skillful at using m-commerce.	1	2	3	4	5	6	7
4	I think interacting with m-commerce is clear and understandable.	1	2	3	4	5	6	7
5	Overall, I think it is easy to use m-commerce.	1	2	3	4	5	6	7

	Perceived Usefulness (PU)	Strongly Disagree ----- Strongly Agree						
1	Using m-commerce improves my job performance.	1	2	3	4	5	6	7
2	Using m-commerce would enhance my effectiveness in my job	1	2	3	4	5	6	7
3	Using m-commerce for my job increases my productivity.	1	2	3	4	5	6	7
4	Using m-commerce enables me to accomplish tasks more quickly.	1	2	3	4	5	6	7

	Perceived Usefulness (PU)	Strongly Disagree ----- Strongly Agree						
5	Using m-commerce makes it easier for me to do my job.	1	2	3	4	5	6	7
6	Overall, m-commerce is useful for me in my job.	1	2	3	4	5	6	7

	Trust	Strongly Disagree ----- Strongly Agree						
1	The m-commerce's service provider is trustworthy.	1	2	3	4	5	6	7
2	The m-commerce's service provider keeps its promises and commitments.	1	2	3	4	5	6	7
3	I trust that the m-commerce's service provider keeps my best interests in mind.	1	2	3	4	5	6	7
4	The m-commerce's service provider meets my expectations.	1	2	3	4	5	6	7

	Perceived Enjoyment (PE)	Strongly Disagree ----- Strongly Agree						
1	I think that using m-commerce is enjoyable.	1	2	3	4	5	6	7
2	I think that using m-commerce is interesting.	1	2	3	4	5	6	7
3	I think that using m-commerce is exciting.	1	2	3	4	5	6	7

### Part 3: Internet Usage

C1. How long have you used the mobile internet? **(Integer)**

	years
--	-------

C2. On average, how long have you used mobile internet a day? **(Integer)**

	hours
--	-------

C3. **[Showcard]** Please indicate your opinion towards the statement

“I am effectively using mobile internet” where 1 = strongly disagree and 7 = strongly agree **(Single Answer)**

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Mostly Agree	Strongly Agree

C4. Have you ever sold your products through the internet? **(Single Answer)**

Yes	1	Go to C5
No	2	Go to C7

C5. How long have you sold your products through the internet? **(Single Answer)**

	years
--	-------

C6. On average, how often do you sell products through the internet?

**(Single Answer)**

Everyday	1
2-3 times a week	2
2-3 times a month	3
Once a month	4
Less than once a month	5

C7. **[Showcard]** Which types of mobile application have you used within three months **(Multiple Answers)**

Social Network e.g., Facebook, Line	1
Searching information e.g., Google, Calendar, Dictionary, Calculator	2
Travel e.g., Map, Grab	3
Entertainment e.g., Video, Music, Camera/Photo	4
Lifestyle e.g. Food and Beverage	5
News	6
Sport	7
Game	8
Health	9
Finance	10
Shopping	11
Others (Please specify.....)	99

**Part 4: Demographic Profiles****D1. Highest Education (Single Answer)**

Primary School	1
High School	2
Vocational School	3
Bachelor Degree	4
Master Degree	5
Doctoral Degree	6

**D2. Status (Single Answer)**

Single	1	
Married	2	
Others	3	Please specify:

**D3. Number of Employees**

	Person(s)
--	-----------

**D4. Personal Income (Baht/month) (Single Answer)**

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8

**D5. Family Income (Baht/month) (Single Answer)**

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8

## APPENDIX E

### RESULTS FROM PILOT TEST FOR CHAPTER 3

**Table E** Constructs and Cronbach's Alpha of the Pilot Test

<b>Constructs</b>	<b>Cronbach's alpha</b>
Intention to Use (Venkatesh and Davis, 2000; Hong and Tam, 2006)	.951
Perceived Usefulness (Davis, 1989)	.932
Perceived Ease of Use (Davis, 1989)	.902
Trust (Pavlou, 2003)	.794
Perceived Enjoyment (Koufaris, 2002)	.895

## APPENDIX F

### STIMULUS: POSITIVE REVIEWS FOR CHAPTER 4

The screenshot shows a forum post on the Pantip website. The post title is "Opinions toward using the mobile commerce (m-commerce) application" and it asks for feedback on the application's usefulness for business improvement. Below the post are six comments, each with a unique positive review and a "Reply" button.

**Pantip** Forums Hashtag Activities Others Search Log in / Sign up

#### Opinions toward using the mobile commerce (m-commerce) application

How do you feel about m-commerce application?  
Can it help you in improving your business?  
Could you please share your experience?

Member ID: 400016  
11 October 2017 11:00 am

6 Comments

**Comment 1**  
I earn additional income and new customers from using it.  
Member ID: 457896  
11 October 2017 02:00 pm Reply

**Comment 2**  
I receive benefits from the service provider, e.g., money.  
Member ID: 337954  
12 October 2017 08:00 am Reply

**Comment 3**  
It offers a great opportunity to promote the store through online channels since many customers are visiting.  
Member ID: 102177  
14 October 2017 10:00 pm Reply

**Comment 4**  
It is a user-friendly application; easy to learn and use it.  
Member ID: 215256  
15 October 2017 11:00 am Reply

**Comment 5**  
Serviceability/supportability of the service provider is great.  
Member ID: 674852  
17 October 2017 03:00 pm Reply

**Comment 6**  
I receive benefits from knowledge sharing among partners.  
Member ID: 335641  
18 October 2017 05:00 pm Reply

## APPENDIX G

### STIMULUS: NEGATIVE REVIEWS FOR CHAPTER 4

**Pantip** Forums Hashtag Activities Others Search Log in / Sign up

#### Opinions toward using the mobile commerce (m-commerce) application

How do you feel about m-commerce application?  
Can it help you in improving your business?  
Could you please share your experience?

Member ID: 400016  
11 October 2017, 11:00 am

6 Comments

**Comment 1**  
I do not earn more income or new customers from using it.  
Member ID: 457896  
11 October 2017, 02:00 pm

**Comment 2**  
I do not receive any benefits from the service provider.  
Member ID: 337954  
12 October 2017, 08:00 am

**Comment 3**  
It may not be a great opportunity to promote the store through online channels since no more customers are visiting.  
Member ID: 102177  
14 October 2017, 10:00 pm

**Comment 4**  
It is not a user-friendly application; hard to learn and use it.  
Member ID: 215256  
15 October 2017, 11:00 am

**Comment 5**  
Serviceability/supportability of the service provider is poor.  
Member ID: 674852  
17 October 2017, 03:00 pm

**Comment 6**  
I do not receive any benefits from partners (e.g., knowledge sharing)  
Member ID: 335641  
18 October 2017, 05:00 pm

## **APPENDIX H**

### **QUESTIONNAIRE FOR CHAPTER 4**

#### **Introduction**

Good Morning/afternoon, my name is\_\_\_\_\_. We are conducting a survey regarding the using m-commerce for street vendors. The purpose of this study is to investigate the factors on the vendors' embrace of technology. This survey will take no more than fifteen minutes to complete, and all responses will be kept strictly confidential and anonymous. Please know there is no right or wrong answers so feel free to provide honest responses.

For further questions regarding this survey, feel free to contact:

Miss Tanikan Pipitwanichakarn, Ph.D. Candidate at NIDA Business School.

Phone: +66-81-816-4246

Email: p.tanikan@gmail.com

---

**Part 1: Screener****A1. Gender (Single Answer)**

	Code
Male	1
Female	2

**A2. Recode type of Food (Single Answer)**

	Code	Please specify....
Fresh food e.g., fruit, pork, fish	1	
Fried food e.g., dried food	2	
finished food (i.e., foods were cooked off site)	3	
prepared food (i.e., raw materials were prepared and cooked on site)	4	

**A3. Decision toward your business (Single Answer)**

	Code	Route
Main decision maker	1	Continue
Co-decision maker	2	
None of above	3	Terminate

**A4. Do you use the mobile phone with an internet connection? (Single Answer)**

	Code	Route
Yes	1	Continue
No	2	Terminate

**A5. Age (years) (Single Answer)**

	Record	Code	Route
18-35		1	Continue
35-60		2	
>60		3	Terminate

A6. **[Showcard]** Which types of mobile application have you used within last six months (**Multiple Answers**)

Social Network e.g., Facebook, Line	1	If the vendors answer code 1, 10, or 11 → go to the main questionnaire. If not, terminate
Searching information e.g., Google, Calendar, Dictionary, Calculator	2	
Travel e.g., Map, Grab	3	
Entertainment e.g., Video, Music, Camera/Photo	4	
Lifestyle e.g. Food and Beverage	5	
News	6	
Sport	7	
Game	8	
Health	9	
Finance	10	
Shopping	11	
Others (Please specify.....)	99	

A7. **For Interviewer:** Record stimulus

Positive Reviews	1
Negative Reviews	2

**Part 2: Main Questionnaire**

**Interviewer: Read the statement below**

M-commerce is defined as the application for selling your products. Then, I will give you a situation, please read through it carefully.

-----

**B1. [Showcard]** Based on the situation that you have read, please indicate your perceptions towards these statements with seven-point scales (1 = “strongly disagree” to 7 = “strongly agree”) **(Single Answer)**

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Mostly Agree	Strongly Agree

	Stimulus Evaluation	Strongly Disagree ----- Strongly Agree						
1	How the situation described was realistic	1	2	3	4	5	6	7
2	Reviewers positively evaluate the m-commerce application	1	2	3	4	5	6	7
3	Overall, reviewers recommend the m-commerce application	1	2	3	4	5	6	7

**B2. [Showcard]** Please indicate your perceptions towards these statements with seven-point scales (1 = “strongly disagree” to 7 = “strongly agree”) **(Single Answer)**

	Intention to Use (ITU)	Strongly Disagree ----- Strongly Agree						
1	Given that I have access to the mobile application, I predict that I would use m-commerce.	1	2	3	4	5	6	7

	Intention to Use (ITU)	Strongly Disagree ----- Strongly Agree						
2	Given that I have access to the mobile application, I intend to use m-commerce.	1	2	3	4	5	6	7
3	I intend to use m-commerce frequently.	1	2	3	4	5	6	7
4	I intend to use m-commerce in the near future.	1	2	3	4	5	6	7
5	Overall, I intend to use m-commerce.	1	2	3	4	5	6	7

	Perceived Ease of Use (PEOU)	Strongly Disagree ----- Strongly Agree						
1	I think it is easy to learn how to use m-commerce.	1	2	3	4	5	6	7
2	I think it is easy to find what I want via m-commerce.	1	2	3	4	5	6	7
3	I think it is easy to become skillful at using m-commerce.	1	2	3	4	5	6	7
4	I think interacting with m-commerce is clear and understandable.	1	2	3	4	5	6	7
5	Overall, I think it is easy to use m-commerce.	1	2	3	4	5	6	7

	Perceived Usefulness (PU)	Strongly Disagree ----- Strongly Agree						
1	Using m-commerce improves my job performance.	1	2	3	4	5	6	7
2	Using m-commerce would enhance my effectiveness in my job	1	2	3	4	5	6	7
3	Using m-commerce for my job increases my productivity.	1	2	3	4	5	6	7
4	Using m-commerce enables me to accomplish tasks more quickly.	1	2	3	4	5	6	7
5	Using m-commerce makes it easier for me to do my job.	1	2	3	4	5	6	7
6	Overall, m-commerce is useful for me in my job.	1	2	3	4	5	6	7

	Trust	Strongly Disagree ----- Strongly Agree						
1	The m-commerce's service provider is trustworthy.	1	2	3	4	5	6	7
2	The m-commerce's service provider keeps its promises and commitments.	1	2	3	4	5	6	7
3	I trust that the m-commerce's service	1	2	3	4	5	6	7

	Trust	Strongly Disagree ----- Strongly Agree						
	provider keeps my best interests in mind.							
4	The m-commerce's service provider meets my expectations.	1	2	3	4	5	6	7

**Part 3: Profiles**

C1. How long have you used the mobile internet? **(Integer)**

	years
--	-------

C2. On average, how long have you used mobile internet a day? **(Integer)**

	hours
--	-------

C3. Highest Education **(Single Answer)**

Primary School	1
High School	2
Vocational School	3
Bachelor Degree	4
Master Degree	5
Doctoral Degree	6

C4. Status **(Single Answer)**

Single	1	
Married	2	
Others	3	Please specify:

C5. Number of Employees

	Person(s)
--	-----------

**C4. Personal Income (Baht/month) (Single Answer)**

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8
Reject	99

**C5. Family Income (Baht/month) (Single Answer)**

< 7,500	1
7,501-18,000	2
18,001-24,000	3
24,001-35,000	4
35,001-50,000	5
50,001-85,000	6
85,001-160,000	7
> 160,000	8
Reject	99

## APPENDIX I

### RESULTS FROM PILOT TEST FOR CHAPTER 4

**Table I1** Realism and Manipulation Checks

Questions	The subjects who received positive reviews		The subjects who received positive reviews		Comparison t-test
	Mean	SD	Mean	SD	
<b>Realism Check</b>					
How the situation described was realistic (Dabholkar and Bagozzi, 2002)	5.450	1.317	5.150	1.461	-
<b>Manipulation Checks</b>					
Reviewers positively evaluate the m-commerce application (Park et al., 2007)	5.500	1.051	1.850	.875	t = 11.933, p < .001
Overall, reviewers recommend the m-commerce application (Park et al., 2007)	5.600	1.188	2.200	.833	t = 10.480, p < .001

**Table I2** Constructs and Cronbach's Alpha of the Pilot Test

Constructs	Cronbach's alpha
Intention to Use (Venkatesh and Davis, 2000; Hong and Tam, 2006)	.923
Perceived Usefulness (Davis, 1989)	.914
Perceived Ease of Use (Davis, 1989)	.886
Trust (Pavlou, 2003)	.896
Online Review (Park et al., 2007)	.853

## **BIOGRAPHY**

**NAME**

Miss Tanikan Pipitwanichakarn

**ACADEMIC BACKGROUND**

Bachelor of Accountancy,  
Major: Accounting (Second Class Honors),  
Chulalongkorn University in 2010

Master of Science in Marketing  
and Financial Services (Merit),  
University of Exeter,  
United Kingdom in 2011