RESISTANCE BEHAVIOURS TOWARDS MOBILE COMMERCE APPLICATIONS: A STUDY AMONG MOBILE USERS

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FACULTY OF BUSINESS AND FINANCE
UNIVERSITI TUNKU ABDUL RAHMAN
MARCH 2024

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By

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A dissertation submitted to
Faculty of Business and Finance,
Universiti Tunku Abdul Rahman,
in partial fulfilment of the requirements for the degree of
Doctor of Philosophy
March 2024

DEDICATION

This thesis is especially dedicated to my lovely wife, who would always be there with me no matter good or bad times. Also not forgetting my beloved family members, who offer their unconditional love and support throughout my life. Lastly, to my father who now rests in heaven, I hope I have made you proud.

ABSTRACT

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Hew Jun Jie

Ever since its emergence, mobile commerce (m-commerce) has disrupted many business industries via various types of m-commerce applications. However, a significant portion of Malaysian mobile users still does not accept or adopt m-commerce applications. Moreover, the same phenomenon is also reported across different nations, which strongly suggests that the resistance to m-commerce applications is a contemporary worldwide issue that deserves immediate attention.

To explain the complicated resistance behaviours of mobile users (i.e., rejection, postponement, or opposition) towards m-commerce applications, this study builds a holistic framework named the M-Commerce Applications Resistance Theory (MOCART) by integrating mobile users' information privacy concerns (MUIPC) and mobile technostress, which are derived from the Communication Privacy Management Theory and Technostress Theory respectively, into the Innovation Resistance Theory (comprises passive innovation resistance and active innovation resistance).

Subsequently, the MOCART is empirically verified with 1,050 responses that were collected through a quota sampling technique. The empirical results are supportive of the rigorously established MOCART, suggesting that MUIPC, mobile technostress, and passive innovation resistance are the antecedents of active innovation resistance, which consequently drives all three types of resistance behaviour towards m-commerce applications.

Given these outcomes, it is confident that the MOCART could explain three distinct forms of resistance behaviour exhibited by mobile users who do not adopt m-commerce applications. Besides, the MOCART could serve as a universal theory to explain the resistance behaviours towards any m-commerce applications. Accordingly, and broadly speaking, the MOCART has successfully advanced the current state of knowledge in the research disciplines of innovation resistance and m-commerce applications. Besides, the MOCART offers several practical implications. Generally, to inhibit the resistance behaviours towards m-commerce applications, practitioners and government policymakers should strive to minimise the resistant mobile users' active innovation resistance by reducing its drivers namely MUIPC, mobile technostress, and passive innovation resistance.

ACKNOWLEDGEMENT

I would like to express my heartfelt gratitude and appreciation to both of my supervisors, Dr. Lee Voon Hsien and Dr. Leong Lai Ying, for their guidance and support throughout my PhD journey. This thesis would not have been completed without their guidance and supports.

Besides, it is my pleasure to remark that part of this thesis has been published as journal articles in *Journal of Retailing and Consumer Services* and *Computers in Human Behavior*, with the title of "*Why do mobile consumers resist mobile commerce applications? A hybrid fsQCA-ANN analysis*" and "*Deciphering the resistance behaviours towards mobile commerce applications: A Mobile Commerce Applications Resistance Theory (MOCART)*".

APPROVAL SHEET

This thesis entitled "**RESISTANCE BEHAVIOURS TOWARDS MOBILE COMMERCE APPLICATIONS: A STUDY AMONG MOBILE USERS**" was prepared by HEW JUN JIE and submitted as partial fulfilment of the requirements for the degree of Doctor of Philosophy at Universiti Tunku Abdul Rahman.

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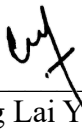

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SUBMISSION OF THESIS

It is hereby certified that ***Hew Jun Jie*** (ID No: ***19ABD02770***) has completed this thesis entitled "*RESISTANCE BEHAVIOURS TOWARDS MOBILE COMMERCE APPLICATIONS: A STUDY AMONG MOBILE USERS*" under the supervision of Dr. Lee Voon Hsien (Supervisor) from the Department of Marketing, Faculty of Business and Finance, and Dr. Leong Lai Ying (Co-Supervisor) from the Department of Commerce & Accountancy, Faculty of Business and Finance.

I understand that University will upload softcopy of my thesis in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

(*Hew Jun Jie*)

DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

(HEW JUN JIE)

Date 14/03/2024

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LIST OF ABBREVIATIONS

AVE	Average variance extracted
CB-SEM	Covariance-based structural equation modelling
CMB	Common method bias
e-commerce	Electronic commerce
GDP	Gross domestic product
HTMT	Heterotrait-monotrait ratio of correlations
ICT	Information communication technology
m-commerce	Mobile commerce
Mobile apps	Mobile applications
MOCART	M-Commerce Applications Resistance Theory
MUIPC	Mobile users' information privacy concerns
NFC	Near field communication
PLS-SEM	Partial least squares structural equation modelling
QR	Quick response
R^2	Coefficient of determination
SEM	Structural equation modelling
VIF	Variance inflation factor

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter first details the research background and problem statement that motivates the conduct of this study. Following these, research questions and objectives are formed accordingly. Afterwards, this study's significance is discussed from theoretical, practical, and policy perspectives, followed by the scope of study.

1.2 Research Background

The relevant details of research background are elaborated in this sub-section. The evolution of mobile commerce (m-commerce) is first elaborated, followed by a detailed discussion on m-commerce applications. Moreover, other important concepts associated with this study, namely privacy concerns, technostress, and innovation resistance behaviours are introduced next.

1.2.1 The Evolution of M-Commerce

In recent years, the advent of information communication technology (ICT) such as the Internet has led to the rapid development of electronic

commerce (e-commerce) in Malaysia (G. H. Y. Lee & Zubir, 2022). As defined by Brusch and Rappel (2020, p.2), e-commerce refers to "the use of the Internet to facilitate, carry out, and process business transactions". There are many opportunities in the Malaysian e-commerce environment as the nation continues its push towards a digital economy, a sector that is expected to make up 20% of the Malaysian Gross Domestic Product (GDP) values by 2025 (Australian Trade and Investment Commission, 2020). Thus far, the Malaysian government has implemented the National E-Commerce Strategic Plan (Malaysia Digital Economy Corporation, 2017; New Straits Times, 2018; The Star Online, 2018a) and several other initiatives such as the Digital Free Trade Zone and National E-Commerce Council to promote the growth of e-commerce (The Star Online, 2018b). With these, and aided by the pandemic that has abruptly increased the need for a digital economy, it is expected that the e-commerce revenue will show an annual growth rate of 16.7% from 2020 to 2025 (Consultancy.asia, 2020; International Trade Administration, 2020; Statista, 2020).

Moreover, it is interesting to note that Malaysia is now a mobile-oriented society, given that smartphones are the most used device for accessing the Internet among Malaysians (Malaysian Communications and Multimedia Commission, 2020a). It was reported that the mobile penetration rate in Malaysia reached 144% in the fourth quarter of 2021 (Malaysian Communications and Multimedia Commission, 2022), while the smartphone penetration rate is expected to rise from 87.46% in 2019 to 89.48% in 2025 (Statista, 2022c). The proliferation of smart mobile devices, especially smartphones, has improved communication between humans and hence established a brand new channel for

e-commerce activities among mobile users (Rudy et al., 2022). As such, a subset of e-commerce, which is termed m-commerce, has emerged (A. Gupta et al., 2022). From the definition provided by Akroush et al. (2020, p.152), m-commerce is a broad concept that includes “all activities related to a (potential) commercial transaction conducted through communication networks that interface with wireless devices”.

Although being regarded as a subgroup of e-commerce, m-commerce is distinct from e-commerce in two ways. Firstly, m-commerce can offer novel business opportunities due to its unique characteristics, namely mobility and reachability (Ettis & El Abidine, 2017; K. Gao & Shao, 2018). Unlike in the e-commerce environment, m-commerce users are not subjected to geographical constraints and, therefore, they can perform m-commerce transactions anytime, anywhere (Burman & Aggrawal, 2017). Secondly, m-commerce offers additional benefits and unique services to the users, owing to its ability to determine the location of users (J. J. Hew, 2017). In contrast to the e-commerce that is conducted over desktop computers, m-commerce provides personalised services and information to the users based on their current locations, satisfying the unique needs of every user (Al-Adwan et al., 2019).

Interestingly, the global m-commerce sales volume has increased by USD0.65 trillion and recorded a new height of USD3.56 trillion in 2021 (Zielonka, 2022). In the future, it is foreseen that m-commerce would remain the preferred channel for consumers as it was optimistically anticipated that the global m-commerce sales volume would reach up to USD4.5 trillion in 2024,

occupying 69.9% of total e-commerce sales volume (Insider Intelligence, 2022). Moreover, according to the global e-commerce trends report published by JP Morgan (2021), Malaysia's m-commerce market is following the global trend and expanding rapidly. The report stated that in the year 2020, the m-commerce sales volume in Malaysia occupied 59% of the total e-commerce sales volume, translating to USD5 billion accordingly. The report has also expected that the m-commerce market in Malaysia would outperform overall e-commerce in the future, growing at a compound annual growth rate of 14% to the year 2024.

1.2.2 M-Commerce Applications

Due to its distinctive features, m-commerce has introduced new business models that could disrupt existing industries (Safieddine & Nakhoul, 2018) via various m-commerce applications (Du & Li, 2019; Varshney & Vetter, 2002). As noted by Al Janabi and Hussein (2020), m-commerce applications are novel applications of m-commerce in performing certain tasks that require mobility, for example, mobile payment. Turban et al. (2018) and J. J. Hew (2017) concurred on this and identified several other emerging m-commerce applications, such as mobile entertainment, mobile payment, mobile ride-hailing, mobile shopping, etc. Presently, some disruptive and booming m-commerce applications in Southeast Asia are mobile ride-hailing and mobile food delivery (Suruga, 2022), including Malaysia (Celcom, 2021; J. F. Chung & Al-Khaled, 2020).

In the recent Malaysian Annual Budget 2023, the government has allocated several resources to cultivate e-commerce, fortifying the nation's digital economy (IDC Corporate, 2022; Media Selangor, 2022). Besides, the COVID-19 pandemic has somehow managed to stimulate the progress of the digital economy in Malaysia as digital technologies have proven to be practical solutions in battling the pandemic (Mohammed, 2020). As Malaysia is moving towards achieving a smart nation status (Huawei, 2019; Malaysian Communications and Multimedia Commission, 2016; Singh, 2019), m-commerce applications are deemed to play a crucial role.

For instance, mobile payment, which involves making payment for purchases with convenience (Teo et al., 2015), is vital for the nation to shift towards a cashless society (Loh et al., 2022) and battling the pandemic by allowing consumers to make payments at a social distance (Lew et al., 2020; Yan et al., 2021). Henceforth, the Malaysian government has been implementing several initiatives to promote the use of mobile payment (Abas, 2020). For example, the Malaysian government has given qualified Malaysians a one-off RM50 mobile payment credit to encourage contactless payment during the pandemic with the Penjana Economic Recovery Plan (New Straits Times, 2020). Furthermore, mobile shopping, another m-commerce application that permits users to shop through smart mobile devices (C. H. Wong et al., 2015), has successfully promoted the growth of both e-commerce and m-commerce in Malaysia (Malaysian Communications and Multimedia Commission, 2017) and assisting consumers to shop while staying indoors (Kang, 2020). Undeniably, the proliferation of m-commerce applications shall contribute further to the

growth of m-commerce sales volume in Malaysia, on top of helping the nation recover from the pandemic.

Ever since the outbreak of COVID-19 pandemic in December 2019 (Q. Chen et al., 2020), it was opined that m-commerce applications such as mobile payment, mobile health, and mobile food delivery would play a crucial role in battling the pandemic (De' et al., 2020; Nguyen & Vu, 2020). This is especially true as everyone is encouraged to adapt to the "new normal" that poses a certain degree of constraints in human interactions (Hart, 2020). For instance, it was reported that mobile payment has been an efficient m-commerce application that reduces physical contact between humans when making transactions during the pandemic (Zhao & Bacao, 2021). In addition, mobile food delivery is another m-commerce application that contributes to helping mobile users to adapt to the "new normal" by ordering food through smart mobile devices instead of physically visiting restaurants (Al Amin et al., 2020). Even if the world is entering the post-pandemic era, the public would still prefer to maintain social distancing (P. Kumari, 2022). Since m-commerce applications could certainly reduce unnecessary physical human interactions, they are still important and relevant in the post-pandemic era.

For users to access the m-commerce applications, S. Choi (2018) asserted that they have to install dedicated mobile applications (mobile app / mobile apps hereinafter) on their smart mobile devices. It is important to note that m-commerce applications differ completely from mobile apps. M-commerce applications refer to the novel applications of m-commerce in performing

different tasks that require mobility (Al Janabi & Hussein, 2020), while mobile apps are “software or a set of programme that could be executed to perform certain tasks for users on mobile devices” (J. J. Hew et al., 2015, p.1270). That is, m-commerce applications refer the innovative ways of performing tasks (e.g., mobile payment), while mobile apps are the software that is necessary to facilitate the conduct of m-commerce applications (e.g., Boost).

1.2.3 Privacy Concerns

Considering the distinct features of m-commerce, users might show a higher level of privacy concerns as the data is transferred wirelessly through mobile Internet, rendering interception of data much easier (L. Gao & Waechter, 2017). Xu et al. (2012) and Degirmenci (2020) supported this notion and further opined that mobile apps often transmit a large quantity of personal private information and data of users in real-time, leading to privacy intrusion. Owing to some mobile app providers are utilising personal information and data unethically (T. Wang et al., 2016), privacy concerns regarding the use of personal private information and data arise among users under the m-commerce setting (Morosan & DeFranco, 2016). As suggested by Papadopoulou (2017), m-commerce users have different privacy concerns compared to the e-commerce users. Piao et al. (2016) observed that the differences are mainly due to the unique components that are equipped within smart mobile devices, such as GPS, camera, etc., which could easily diffuse the privacy-sensitive data of users.

Peddinti et al. (2019) found that many mobile apps request permission to access user data, some of which are unnecessary for the mobile apps' functionality. Some examples of private data are browser history, calendar events, pictures, and contacts (Pentina et al., 2016). The permission to access usually comes in the form of permission requests, which the users must grant before using the mobile apps (Harris et al., 2016). Accordingly, mobile users with high privacy concerns might be cautious in making their mobile apps adoption and usage decisions (Galetsi et al., 2022; J. K. Hsieh & Li, 2022). Specifically, Gu et al. (2017) concluded that the privacy concerns of mobile users would restrain them from downloading and using mobile apps. Given that mobile apps are one of the two necessary means (other than smart mobile devices) for mobile users to utilise m-commerce applications, the resistance to mobile apps would directly result in the resistance to m-commerce applications.

1.2.4 Technostress

Other than mobile apps, smart mobile devices are another necessary means for the use of m-commerce applications. Being an integral part of human beings in this modern era, smart mobile devices have been advancing at a fast pace in recent years with the continuous introduction of beneficial functions to mobile users (Fernandes et al., 2021), for instance, the m-commerce applications (J. J. Hew, 2017). In connection with that, it was reported that smart mobile device users are over-relying on their smart mobile devices, which results in overuse that leads to stress among the users (Cesareo et al., 2021; Gökçearslan et al., 2018). Vahedi and Saiphoo (2018) described that stress could be grouped

into different categories depending on the domain of the stress. One of them is technostress, a specific type of stress related to using ICTs (Schmidt et al., 2021).

As defined by Atanasoff and Venable (2017, p.330), technostress refers to the "negative psychological state associated with the use of technology as well as the threat of technology use in the future". It is also agreed that technostress is mainly caused by the fast-changing and sophisticated technology advancement that compels users to continuously adapt to it (Ioannou & Papazafeiropoulou, 2017; Zainun et al., 2020). Technostress could cause harm to mobile users (J. V. Chen et al., 2019), making them resist or avoid ICTs such as computers (Agogo & Hess, 2018). This implies that mobile users who have developed technostress within themselves would subsequently resist or avoid m-commerce applications normally seen on smart mobile devices.

1.2.5 Innovation Resistance Behaviours

Understanding the innovation resistance behaviour among non-adopters in the business world is crucial in reducing innovation failures (L. Ma & Lee, 2020). Nevertheless, despite efforts to understand the barriers to innovations, innovation failure rates are still reported at approximately 40% (Reinhardt et al., 2019). Heidenreich et al. (2016) argued that the case of innovation failure brings major impacts to businesses as the funds invested by them could not generate future revenues as per expectation. Innovation failures could happen in any companies, including Microsoft (Brown, 2019). Some innovation failure cases

in well-known companies, as identified by Dalman et al. (2020), include Samsung's Galaxy Note, Amazon's Fire Phone, Microsoft Zune, etc.

As cited by Natarajan et al. (2017), innovation is regarded as "an idea, practice, or object perceived as new by an individual or other unit of adoption" (Rogers, 2010, p.11). Accordingly, m-commerce applications are considered an innovation (Chhonker et al., 2018; Natarajan et al., 2017) whose success or failure greatly depends upon the resistance behaviour of mobile users who do not adopt m-commerce applications. According to innovation resistance scholars, these non-adopters could reject, postpone, or oppose an innovation (Luo et al., 2012; S. Talwar et al., 2020). Generally, non-adoption of innovation is considered resistance to innovation (Kaur et al., 2021), which is defined as "the resistance offered by consumers to an innovation" (S. Ram & Sheth, 1989, p.6).

1.3 Problem Statement

It was reported that Malaysia has encouraging mobile and smartphone penetration rates (Malaysian Communications and Multimedia Commission, 2022; Statista, 2022c), indicating that Malaysian mobile users have access to m-commerce applications (Weng et al., 2017). Nonetheless, despite these promising figures, a significant portion of Malaysian mobile users still do not accept or adopt m-commerce applications such as mobile food delivery (Statista, 2022a), mobile learning (Ooi et al., 2018), mobile payment (Leong et al., 2020; Loh et al., 2022), mobile ride-hailing (Ooi et al., 2021; Sipalan & Davies, 2019), mobile shopping (J. J. Hew et al., 2019; Malaysian Communications and

Multimedia Commission, 2021), mobile tourism (Tan & Ooi, 2018), etc. Conventionally, scholars have widely agreed that when consumers are confronted with innovations, either adoption or non-adoption (also known as resistance) would occur provided that the adoption is not compulsory (Huang et al., 2021; Talke & Heidenreich, 2014). As seen in Table 1.1, the same phenomenon has also been reported across the world for different m-commerce applications, which strongly suggests that the resistance to m-commerce applications is a contemporary worldwide issue that deserves urgent attention.

Table 1.1: Resistance to M-Commerce Applications Across Nations

M-commerce applications	Nations
Mobile advertising	Singapore (Shin & Lin, 2016)
Mobile banking	Finland (T. Laukkanen, 2016) French (Chaouali & Souiden, 2019) Iran (Mohammadi, 2015a, 2015b) Taiwan and Thailand (Yu & Chantatub, 2016)
Mobile learning	South Korea (H. J. Kim et al., 2017; S. Y. Park et al., 2018)
Mobile marketing	South Africa (Maduku, 2020)
Mobile payment	China (Gong, Zhang, et al., 2020; J. Wu et al., 2017) Thailand (Zhu et al., 2022) France (de Kerviler et al., 2016)
Mobile ride-hailing	Indonesia (Inan et al., 2022) Colombia (Sánchez-Torres et al., 2021)
Mobile sales assistants	German (Spreer & Rauschnabel, 2016)
Mobile shopping	India (A. Gupta & Arora, 2017) South Africa (Nel & Boshoff, 2019)
Mobile tourism	India (A. Gupta et al., 2018) South Korea (Yi et al., 2020)

Specifically, as reported by Statista (2022a), a leading market and consumer data provider, the total penetration rate for online food delivery was only 27.5% at the end of 2022 in Malaysia. It should be noted that this penetration includes both online (i.e., orders made via non-mobile devices such as desktops) and mobile food delivery. For the case of mobile ride-hailing, Statista (2022b) also reported that the user penetration rate stayed at 22.6% in Malaysia at the end of 2022. Furthermore, in the Hand Phone Users Survey 2021, Malaysian Communications and Multimedia Commission (2021) revealed that less than half of the smartphone users in Malaysia were using their smartphones for payment, banking, and shopping. Therefore, the adoption rates of mobile payment, mobile banking, and mobile shopping are not ideal too. It is crucial to note that low innovation adoption rates, by and large, indicate the presence of innovation resistance or non-adoption (Moorthy et al., 2017; Sadiq et al., 2021). In other words, Malaysian mobile users resist m-commerce applications as they are unwilling to accept or adopt. Accordingly, the resistance or non-adoption of m-commerce applications remains strong among Malaysian resistant mobile users, which makes it an interesting phenomenon that needs urgent attention.

As highlighted by T. Laukkanen (2016), it is crucial to shed light on the innovation resistance drivers of consumers to reduce innovation failure and develop measures to boost innovation adoption rates. In this study, m-commerce applications are the innovation that is being considered, given their imminent role in promoting the future growth of m-commerce and e-commerce sales worldwide (SME Corporation Malaysia, 2018; Wen et al., 2022). Likewise, m-commerce applications matter for Malaysia owing to their potential

contributions towards the nation's GDP values (X. Y. Chan et al., 2022; Malaysia Digital Economy Corporation, 2017).

Thus far, notwithstanding the much effort spent by scholars to tackle the said problem, resistance to m-commerce applications remains strong among resistant mobile users. Currently, there are two main streams of research that endeavour to address the problem (Yener & Taşçıoğlu, 2020). The first stream stresses the drivers and inhibitors that could enhance and suppress the adoption rate or acceptance of m-commerce applications (such as the ones listed in Table 1.2), whereas the second stream seeks to understand the non-adoption of or resistance to m-commerce applications (see Table 1.3).

Based on a search conducted in the Scopus database, Table 1.2 identifies some of the most cited studies on the adoption of m-commerce applications. During the search, "acceptance", "adoption", and "mobile commerce" were used as the searching words. Only the top 100 most cited articles (the search returned 381 document results) written in English were reviewed. Studies that focused on m-commerce in general, engaged a qualitative approach, or investigated the post-adoption stage and issues other than adoption were excluded, resulting in 29 selected studies covering seven m-commerce applications.

Table 1.2 suggests that scholars were mainly working on the adoption drivers of m-commerce applications and in some rare cases, the inhibitors. It is, therefore, believed that the first stream of efforts is extensive. Nonetheless, these studies suffer from the pro-change bias (Heidenreich & Handrich, 2015; T.

Laukkanen et al., 2007; Talke & Heidenreich, 2014) as they mainly stressed the positive outcomes of the adoption process by assuming that consumers are always open to innovations and would eventually adopt innovations.

Recognising the pro-change bias, the second stream (as shown in Table 1.3) attempted to clarify the non-adoption of or resistance to m-commerce applications. Similarly, a search was conducted in the Scopus database using the search words “innovation resistance” and “mobile” to look for relevant articles written in English and focused on m-commerce applications. The search returned a total of 28 articles. After a careful review and elimination of irrelevant articles (i.e., studies that focused on m-commerce in general, engaged a qualitative approach, or investigated adoption as well as other issues instead of resistance), there are 14 studies covering six m-commerce applications in total. Comparatively, this stream seems to be outnumbered. Moreover, although the scholars have made several attempts to explain the non-adoption of or resistance to m-commerce applications, their studies are still incomprehensive enough to provide a holistic view towards the resistance behaviours of mobile users who do not adopt m-commerce applications.

Table 1.2: Selected Studies on the Adoption of M-Commerce Applications

M-commerce applications	Studies	Nations	Major adoption drivers examined	Inhibitors examined	Key endogenous constructs
Mobile advertising	Tan et al. (2018)	Malaysia.	Mobile self-efficacy, technology self-efficacy, mobile usefulness, mobile ease of use, and interactivity.	Nil.	Intention to adopt / use.
	K. C. C. Yang (2007)	Taiwan.	Subjective norm, image, past adoption behaviour, knowledge index, cell phone usage experience, technology cluster, innovativeness, attitudes, enjoyment of mobile advertising, non-intrusiveness of mobile advertising, and utility of mobile advertising.	Nil.	Intention to adopt / use.
Mobile banking	Jebarajakirthy and Shankar (2021)	India.	Access convenience, search convenience, evaluation convenience, transaction convenience, benefit convenience, post-benefit convenience, perceived utilitarian values, and perceived hedonic values.	Perceived security concern.	Intention to adopt / use.
	G. Kim et al. (2009)	South Korea.	Relative benefits, personal propensity to trust, structural assurances in mobile banking, firm reputation, and initial trust.	Nil.	Intention to adopt / use.
	Lin (2011)	Taiwan.	Perceived relative advantage, perceived ease of use, perceived compatibility, attitude toward adopting, perceived competence, perceived benevolence, and perceived integrity.	Nil.	Intention to adopt / use.
	Luarn and Lin (2005)	Taiwan.	Perceived usefulness, perceived ease of use, perceived credibility, perceived self-efficacy, and perceived financial cost.	Nil.	Intention to adopt / use.
	Sulaiman et al. (2007)	Malaysia.	Age, gender, income, educational background, and personal innovativeness.	Nil.	Intention to adopt / use.

Table 1.2 continued: Selected Studies on Adoption of M-Commerce Applications

M-commerce applications	Studies	Nations	Major adoption drivers examined	Inhibitors examined	Key endogenous constructs
Mobile entertainment	T. S. Hew et al. (2016)	Malaysia.	Trust, quality of service, perceived usefulness, and perceived ease of use.	Perceived financial cost	Intention to adopt / use.
	C. H. Wong et al. (2014)	Malaysia.	Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit.	Nil.	Intention to adopt / use.
Mobile payment	Amoroso and Magnier-Watanabe (2012)	Japan.	Perceived ease of use, perceived usefulness, attitude, facilitating conditions, perceived value, perceived security and privacy, social influence, trust, and attractiveness of alternatives.	Perceived risk.	Intention to adopt / use.
	L. Chen (2008)	USA.	Perceived transaction convenience, perceived transaction speed, perceived ease of use, perceived usefulness, and compatibility.	Security concerns, privacy concerns, and perceived risk.	Intention to adopt / use.
	Khalilzadeh et al. (2017)	USA.	Social influence, effort expectancy, self-efficacy, facilitating conditions, security, trust, utilitarian performance expectancy, hedonic performance expectancy, and attitude.	Risk.	Intention to adopt / use.
	C. Kim et al. (2010)	South Korea.	Innovativeness, mobile payment knowledge, mobility, reachability, compatibility, convenience, perceived usefulness, and perceived ease of use.	Nil.	Intention to adopt / use.
	Leong, Hew, et al. (2013)	Malaysia.	Perceived usefulness, perceived ease of use, perceived financial cost, trust, social influence, and personal innovativeness in information technology.	Nil.	Intention to adopt / use.

Table 1.2 continued: Selected Studies on Adoption of M-Commerce Applications

M-commerce applications	Studies	Nations	Major adoption drivers examined	Inhibitors examined	Key endogenous constructs
Mobile payment	Liébana-Cabanillas et al. (2014)	Spain.	Social image, subjective norms, ease of use, usefulness, attitude, and trust.	Perceived risk.	Intention to adopt / use.
	Liébana-Cabanillas et al. (2018)	Spain.	Social influences, subjective norms, ease of use, usefulness, attitude, and trust.	Perceived risk.	Intention to adopt / use.
	Musa et al. (2015)	Qatar.	Performance expectancy, effort expectancy, social influence, and perceived information security.	Nil.	Intention to adopt / use.
	Slade et al. (2015)	United Kingdom.	Performance expectancy, effort expectancy, social influence, innovativeness, perceived risk, and trust in system.	Nil.	Intention to adopt / use.
	Teo et al. (2015)	Malaysia.	Performance expectancy, effort expectancy, social influence, facilitating conditions, and trust.	Perceived financial cost.	Intention to adopt / use.
	Yan et al. (2021)	Malaysia.	Perceived transaction convenience, perceived transaction speed, mobile usefulness, mobile ease of use, optimism, and personal innovativeness.	Nil.	Intention to adopt / use.
	S. Yang et al. (2012)	China.	Subjective norms and image, personal innovativeness in information technology, compatibility, and relative advantage.	Perceived risk and perceived fee.	Intention to adopt / use.

Table 1.2 continued: Selected Studies on Adoption of M-Commerce Applications

M-commerce applications	Studies	Nations	Major adoption drivers examined	Inhibitors examined	Key endogenous constructs
Mobile shopping	Chopdar et al. (2018)	India and USA.	Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit.	Privacy risk and security risk.	Intention to adopt / use.
	Jihyun et al. (2009)	USA.	Subjective norm, perceived ease of use, perceived usefulness, perceived enjoyment, and attitude.	Nil.	Intention to adopt / use.
	Ko et al. (2009)	South Korea.	Usefulness, ease of use, instant connectivity, enjoyment, and perceived value.	Nil.	Intention to adopt / use.
	H. P. Lu and Su (2009)	Taiwan.	Mobile skilfulness, enjoyment, ease of access, usefulness, and compatibility.	Anxiety.	Intention to adopt / use.
	Newman et al. (2018)	USA.	Ease of use and connection.	Nil.	Intention to adopt / use.
Mobile ticketing	Mallat et al. (2009)	Finland.	Ease of use, usefulness, compatibility, mobility, and use context.	Nil.	Intention to adopt / use.
Mobile tourism	Morosan and DeFranco (2016)	USA.	Perceived personalisation, personal innovativeness, and involvement.	General privacy concerns and system-related privacy concerns.	Intention to adopt / use.
	Tan and Ooi (2018)	Malaysia.	Personal innovativeness in information technology, mobile perceived compatibility, perceived critical mass, performance expectancy, effort expectancy, social influence, facilitating conditions, perceived enjoyment, and wireless trust.	Perceived risk.	Intention to adopt / use.

Table 1.3: Relevant Studies on Non-Adoption of or Resistance to M-Commerce Applications

M-commerce applications	Studies	Nations	Non-adoption or resistance drivers examined			Key endogenous constructs
			Active innovation resistance	Passive innovation resistance	Situation-specific	
Mobile banking	T. Laukkanen et al. (2007)	Finland.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Adoption.
	T. Laukkanen (2016)	Finland.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Intention to adopt.
	Ridwan and Sfenrianto (2022)	Indonesia.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Resistance.
	Yu and Chantatub (2016)	Taiwan and Thailand.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Resistance.
Mobile e-book	S. Lee (2013)	South Korea.	Nil.	Nil.	Perceived risk.	Resistance and usage intention.
Mobile learning	H. J. Kim et al. (2017)	South Korea.	Nil.	Inertia.	Complexity.	Resistance and usage intention.
	H. J. Kim and Rha (2018)	South Korea.	Nil.	Resistance to change and status quo bias.	Complexity.	Usage intention.

Table 1.3 continued: Relevant Studies on Non-Adoption of or Resistance to M-Commerce Applications

M-commerce applications	Studies	Nations	Non-adoption or resistance drivers examined			Key endogenous constructs
			Active innovation resistance	Passive innovation resistance	Situation-specific	
Mobile payment	K. C. Chung and Liang (2020)	Taiwan.	Complexity barrier, image barrier, and risk barrier.	Nil.	Nil.	Usage intention.
	Leong et al. (2020)	Malaysia.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Age, education, income, and perceived novelty.	Resistance.
	Y. L. Liu et al. (2021)	China.	Nil.	Nil.	Effectiveness of privacy policy, privacy control, privacy concerns, and privacy risk.	Resistance.
	Kaur et al. (2020)	India.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Usage intention.
	Khanra et al. (2021)	India.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Privacy concerns and visibility.	Postponement.

Table 1.3 continued: Relevant Studies on Non-Adoption of or Resistance to M-Commerce Applications

M-commerce applications	Studies	Nations	Non-adoption or resistance drivers examined			Key endogenous constructs
			Active innovation resistance	Passive innovation resistance	Situation-specific	
Mobile shopping	J. J. Hew et al. (2019)	Malaysia.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Privacy concern.	Usage intention.
Mobile ticketing	C. C. Chen et al. (2022)	Taiwan.	Usage barrier, value barrier, risk barrier, tradition barrier, and image barrier.	Nil.	Nil.	Usage intention.

Firstly, all the studies shown in Table 1.3 have mainly applied active innovation resistance barriers to explain the resistance behaviours of mobile users who do not adopt m-commerce applications, neglecting their passive innovation resistance. It is believed that the active innovation resistance barriers alone were insufficient to fully explain the behaviours of mobile users in resisting m-commerce applications as innovation resistance scholars in recent years have discovered that innovation resistance should be further classified into two types, namely passive and active (Heidenreich, Freisinger, et al., 2022; Heidenreich, Millemann, et al., 2022; Heidenreich & Kraemer, 2015, 2016).

Secondly, given that the complicated resistance behaviours of mobile users towards m-commerce applications are usually manifested in three distinct forms, namely rejection, postponement, or opposition (Joachim et al., 2018; P. Laukkanen et al., 2008; Szmigin & Foxall, 1998; S. Talwar et al., 2020), it is insufficient to measure the behaviours of mobile users who are resistant to m-commerce applications with a single construct.

Thirdly, majority of the past studies were mainly adapting the active innovation resistance barriers without incorporating any situation-specific constructs that are relevant to the context of m-commerce applications (for e.g., Kaur et al., 2020; T. Laukkanen et al., 2007; T. Laukkanen, 2016; Yu & Chantatub, 2016). Incorporating situation-specific constructs that are pertinent to mobile apps and smart mobile devices is necessary in order to develop a holistic framework that could further explain the behaviours of mobile users who

are resistant to m-commerce applications, as mobile apps and smart mobile devices are two necessary means for the conduct of m-commerce applications.

Owing to the present research problem and literature gaps, it is vital to straighten out the distinct forms of resistance behaviour (which are rejection, postponement, or opposition) exhibited by mobile users who do not adopt m-commerce applications through a holistic framework that is mainly composed of active and passive innovation resistance, which are derived from the Innovation Resistance Theory (Heidenreich, Millemann, et al., 2022; Heidenreich & Kraemer, 2016; Heidenreich & Spieth, 2013; T. Laukkanen et al., 2009; T. Laukkanen & Kiviniemi, 2010; S. Ram & Sheth, 1989; Sivathanu, 2019). Moreover, given the essential roles of mobile apps and smart mobile devices in the conduct of m-commerce applications, two relevant situation-specific constructs are incorporated into the framework. Following Communication Privacy Management Theory (Petronio, 2002) and Technostress Theory (Hung et al., 2015; Tarafdar et al., 2007), mobile users' information privacy concerns (MUIPC) (Xu et al., 2012) and mobile technostress (Mak et al., 2018) are added to the holistic framework in order to better comprehend the resistance behaviours exhibited by the resistant mobile users towards any m-commerce applications. Hereinafter, the holistic framework will be addressed as the M-Commerce Applications Resistance Theory (MOCART).

It is believed that the MOCART, which is motivated by the present research problem of m-commerce applications resistance, could bridge the identified literature gaps in the existing literature on m-commerce applications

resistance by (i) investigating the impacts of both active innovation resistance and passive innovation resistance over the behaviours of mobile users in resisting m-commerce applications, (ii) explaining three distinct forms of resistance behaviour (which are rejection, postponement, or opposition) exhibited by the mobile users who do not adopt m-commerce applications, and (iii) integrating MUIPC and mobile technostress as situation-specific constructs that are relevant to the context of m-commerce applications. Given these, the MOCART proposed in this study is considered to be a novelty that offers contributions towards the existing body of knowledge.

1.4 Research Questions and Objectives

Based on the status quo of m-commerce applications and deficiencies in past studies as identified earlier, this study is motivated to answer one general research question and five specific research questions. Acting on the general and specific research questions, one general research objective and five specific research objectives are developed accordingly. Table 1.4 details the general research question and general research objective, while Table 1.5 itemises the specific research questions and associates them with the respective research objectives.

Table 1.4: General Research Question and Research Objective

General research question	General research objective
1. Why do mobile users resist m-commerce applications?	1. To develop a holistic framework that could explain the behaviours of mobile users who are resistant to m-commerce applications.

Table 1.5: Specific Research Questions and Research Objectives

Specific research questions	Specific research objectives
1. What is the role of active innovation resistance on the distinct forms of resistance behaviour among resistant mobile users?	1. To ascertain the role of active innovation resistance on the distinct forms of resistance behaviour among resistant mobile users.
2. What is the effect of MUIPC on active innovation resistance among resistant mobile users based on their resistance behaviours?	2. To assess the effect of MUIPC on active innovation resistance among resistant mobile users based on their resistance behaviours.
3. What is the effect of mobile technostress on active innovation resistance among resistant mobile users based on their resistance behaviours?	3. To assess the effect of mobile technostress on active innovation resistance among resistant mobile users based on their resistance behaviours.
4. What is the effect of passive innovation resistance on active innovation resistance among resistant mobile users based on their resistance behaviours?	4. To assess the effect of passive innovation resistance on active innovation resistance among resistant mobile users based on their resistance behaviours
5. What are the confounding effects of demographic variables, namely gender, age, education level, income level, and experience on the distinct forms of resistance behaviour among resistant mobile users?	5. To assess the confounding effects of demographic variables, namely gender, age, education level, income level, and experience on the distinct forms of resistance behaviour among resistant mobile users.

1.5 Significance of the Study

It is believed that the MOCART proposed in this study could make relevant contributions towards the existing state of knowledge, besides providing implications to practitioners and government policymakers. In the following sub-sections, the significance of study would be discussed accordingly.

1.5.1 Theoretical Significance

Thus far, the literature on m-commerce applications resistance is outnumbered by the literature that studies the adoption of m-commerce applications. Both streams of literature endeavour to understand the behaviour of mobile users towards m-commerce applications; however, the adoption stream of the literature assumes mobile users are always open to m-commerce applications and would eventually adopt new m-commerce applications. Acknowledging the pro-change bias, the resistance stream of literature intends to understand the non-adoption of or resistance to m-commerce applications with active innovation resistance barriers. Despite the on-going efforts in the resistance stream of literature, several identified deficiencies have yet to be addressed.

Firstly, the resistance stream of literature has mainly applied active innovation resistance barriers and neglected the passive innovation resistance possessed by mobile users who are resistant to m-commerce applications. Secondly, the resistance stream of literature over-simplified the resistance behaviours of mobile users towards m-commerce applications. Thirdly, most of the past studies under the resistance stream were mainly adapting the active innovation resistance barriers without incorporating any situation-specific constructs relevant to m-commerce applications.

Acting on these deficiencies, this study proposes MOCART and dedicates it to the resistance stream based on the Innovation Resistance Theory,

Communication Privacy Management Theory, and Technostress Theory. Theoretically, the holistic MOCART is, therefore, supposed to enhance the current state of knowledge in the research disciplines of m-commerce applications and innovation resistance.

1.5.2 Practical Significance

All things considered, m-commerce applications are supposed to impact society positively; therefore, the use of m-commerce applications should be greatly promoted. One of the ways to promote the use of m-commerce applications would be to understand the resistance behaviours towards m-commerce applications among the resistant mobile users (Kaur et al., 2020), which this study is about the deliver.

Practically, this study endeavours to contribute towards the practitioners by discovering the causes of resistance behaviours towards m-commerce applications among resistant mobile users. Practitioners, such as the businesses that are keen to embed m-commerce applications into their operations, would benefit from the findings as they could learn the barriers that lead to the resistance behaviours of mobile users. Subsequently, they could formulate a better strategy for persuading the resistant mobile users who have developed resistance behaviours towards m-commerce applications.

This study also seeks to inspire m-commerce application developers to design future generations of m-commerce applications. With a clearer picture of

the reasons that cause the resistance behaviours of mobile users, the developers could figure out the potential approaches in persuading the resistant mobile users to embrace m-commerce applications.

1.5.3 Policy Significance

Moreover, this study attempts to enlighten government policymakers on the formation of relevant policies to foster the m-commerce growth rate. With the right policies in place, the growth of m-commerce shall thrive and would eventually contribute a sizeable GDP value to the nation in the long run. By scrutinising the decision-making process of resistant mobile users when confronted with m-commerce applications, this study shall provide sufficient information to the government policymakers as to which aspects are crucial in tackling the resistance behaviours of mobile users while forming new long-term policies. Besides, given that there could be some existing policies that have existed for some time, this study aspires to evoke some policy changes, hence addressing the barriers faced by mobile users who are resistant to m-commerce applications and subsequently fostering their usage intentions.

1.6 Scope of Study

Notwithstanding the impressive mobile and smartphone penetration rates in Malaysia, it was reported that the adoption rate of m-commerce applications, such as mobile food delivery, mobile ride-hailing, etc., is not encouraging. This indicates the presence of innovation resistance towards m-commerce

applications among Malaysian resistant mobile users. Correspondingly, this study presents a holistic framework, namely the MOCART, to comprehend the resistance behaviours exhibited by mobile users towards any m-commerce applications. In four months, quantitative data was gathered from Malaysian mobile users who are resistant to any of the 14 classes of m-commerce applications identified in a single wave. The online survey questionnaire covered all regions in Malaysia during the data collection stage. Although the scope of study is limited to the resistant mobile users in Malaysia, the proposed MOCART shall serve as a universal theory to explain the resistance behaviours towards any m-commerce applications, at least in Malaysia.

1.7 Organisation of the Study

This study will be organised into six chapters that progressively build the MOCART and detail the study outcomes. After the introduction section, Chapter 2 would review the relevant literature and theories that guide the development of the MOCART, whereas Chapter 3 would develop the relevant hypotheses in light of the extant literature. Afterward, the research methodology and data analysis strategies would be presented in Chapter 4, while the results yielded from the data analysis methods will be showcased in Chapter 5. Then, Chapter 6 offers a general discussion of the results obtained, together with the study's implications, limitations, future recommendations, and conclusion. Last but not least, references and appendices follow after that.

1.8 Conclusion

M-commerce applications are essential nowadays in boosting the m-commerce sales volume, be it globally or in Malaysia. Nonetheless, resistance towards m-commerce applications has been reported globally and in Malaysia. Recognising this problem and the literature gaps, this study strives to extensively explain the resistance behaviours towards m-commerce applications among resistant mobile users through the newly proposed MOCART and dedicates it to the current state of knowledge and relevant practitioners. In the next chapter, a comprehensive literature review would be conducted to illustrate the structure of MOCART, on top of thoroughly discussing the elements contained inside MOCART.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, before discussing relevant theories applied in MOCART, a brief review of m-commerce applications would first be provided. Moreover, a detailed elaboration of the constructs involved in the MOCART will be made, on top of illustrating the overarching theories that structure the MOCART.

2.2 M-Commerce Applications

While the applications of e-commerce such as electronic banking are already widespread; m-commerce applications do not only cover the existing e-commerce applications (e.g., mobile banking) but also encompass new ones to achieve tasks that could not be achieved by e-commerce applications, for instance, mobile map navigation (B. P. V. Tonder & Wesson, 2012; Turban et al., 2015; Willis et al., 2009).

Jaz et al. (2018) consented to the significant roles played by m-commerce applications and further suggested that businesses could, therefore, offer various types of easily accessible mobile-based services to consumers anytime and anywhere through m-commerce applications. M-commerce applications could

offer services to consumers wherever and whenever the needs arise as consumers could engage in various activities, for example, meeting people while conducting transactions or receiving information simultaneously in m-commerce applications (Turban et al., 2018). As such, distinct from e-commerce applications, ubiquitous communication and content delivery serve the uniqueness of m-commerce applications (D. Liu & Li, 2019).

The extant literature has also agreed that m-commerce applications could offer value-added features such as mobility, broad reach, ubiquity, convenience, instant connectivity, and personalisation to consumers (Dastane et al., 2020; Eze & Poong, 2013; Ghazali et al., 2018; J. J. Hew, 2017). These features allow businesses to provide customisable products or services to consumers based on their preferences, current location, and time (Abu-Shanab & Ghaleb, 2012), which can be seen in mobile food delivery that presents a list of available food and beverages located nearby to the consumers based on their current location and time. Accordingly, K. C. Chung and Holdsworth (2012) opined that m-commerce applications afford businesses unprecedented market potential.

Moreover, m-commerce applications have been evolving to better support business processes in an efficient manner (Chhonker et al., 2017; Hadiana, 2016), especially when the features of smart mobile devices have advanced significantly in recent years (Oliveira et al., 2014). For instance, the thumbprint scanner on smart mobile devices accelerates the speed of making payments through mobile payment as consumers do not need to key in the pin

code. As such, processing transactions through m-commerce applications should take less time than e-commerce applications (Desmal et al., 2019).

Other than assisting consumers in performing certain tasks that require mobility (Al Janabi & Hussein, 2020), m-commerce applications aim to facilitate the realisation of commercial transactions, or potential ones, under the m-commerce environment (Benou et al., 2012; Benou & Vassilakis, 2010). Therefore, this study regards m-commerce applications as a means for consumers to perform tasks that require mobility, which would subsequently introduce potential transactions to businesses and perhaps facilitate businesses to realise the transactions eventually.

Thus far, many m-commerce applications already accommodate a wide range of business functions and processes (Naicker & Merwe, 2018). Because of this, the resistance to m-commerce applications would be disastrous to businesses that have embraced m-commerce applications in their operations (Moorthy et al., 2017). Also, for this reason, it is impossible to cover the whole range of m-commerce applications (Hao et al., 2007). Accordingly, this study attempts to identify several popular classes of m-commerce applications based on the top 100 free mobile apps in both App Store and Google Play (Turban et al., 2015, 2018). Derived from App Annie (2020), the top 100 free mobile apps on both platforms are organised and explained according to their classes in Table 2.1. In total, there are 14 classes of m-commerce applications identified with reference to the extant literature.

Table 2.1: The Popular Classes of M-Commerce Applications

M-commerce applications	Examples of mobile apps	Descriptions	References
Mobile banking	PB engage MY and Maybank MY	An m-commerce application that financial institutions use to enable their customers to perform banking activities via smart mobile devices. This class of m-commerce application includes mobile accounting (e.g., money transfers), mobile brokerage (e.g., dealing with financial instruments), and mobile financial information services (e.g., statement requests).	T. Laukkanen (2017), Çallı (2023), and Oliveira et al. (2014),
Mobile customer relationship management	Sushi King MY and MyDigi	A platform that is used by businesses to engage with customers for the purpose of enhancing and maintaining mutually profitable and long-lasting customer-company relationships. This class of m-commerce application is often seen as a technological tool used by businesses in their marketing programmes in order to reduce costs and increase information processing efficiency among consumers.	Antão et al. (2022), Negahban et al. (2016), and San-Martín et al. (2016).
Mobile dating	Omi and Tantan	A location-based real-time dating system that provides new ways for users to initiate romantic connections. This class of m-commerce applications would suggest matches that are suitable to the users' preferences and current locations.	Sobieraj and Humphreys (2022) and Tanner (2023).
Mobile entertainment	YouTube and Subway Surfers	This class of m-commerce application is considered the fusion between mobile telecommunications and entertainment industry that covers mobile-related leisure activities, products, or services. Specifically, there are three main components within this class of m-commerce application, namely mobile games, mobile music, and mobile movie/broadcasting.	Leong, Ooi, et al. (2013), T. S. Hew et al. (2016), and Y. Zhang et al. (2023).
Mobile food delivery	Foodpanda and dahmakan	Provides a convenient channel for smart mobile device users to access restaurants, view menus, place orders, and make payments without any physical interaction with the restaurant staff. Thereafter, the users shall get the orders delivered to their homes.	Alalwan (2020) and Shahzad et al. (2023).

Table 2.1 continued: The Popular Classes of M-Commerce Applications

M-commerce applications	Examples of mobile apps	Descriptions	References
Mobile health	Pulse by Prudential and Health Mate	Provides health-related services through smart mobile devices and wearable monitoring devices by gathering information about users through the use of sensors in wearable monitoring devices.	Amagai et al. (2022) and Hussain et al. (2018).
Mobile instant messaging	WhatsApp Messenger and Messenger	An inexpensive alternative to the operator-based text messaging service. It allows users to send and receive messages and multimedia content (e.g., pictures, videos, and audio) ubiquitously at a relatively low cost or for free.	Cremades et al. (2021) and S. H. Hsieh and Tseng (2017).
Mobile map navigation	Waze and Google Maps	A class of m-commerce application that allows users to obtain local information about their desired destinations, on top of showing the ways to the destinations. Typically, users could access a wide range of services, for instance, browsing maps and planning routes, with the assistance of the sensors (e.g., GPS) equipped in smart mobile devices.	B. P. V. Tonder and Wesson (2012) and M. Zhang et al. (2022).
Mobile payment	Touch ‘n Go eWallet and Boost	A payment method in which users could perform any economic transactions in a safer, faster, and more convenient manner with their smart mobile devices at any time and anywhere.	Al-Qudah et al. (2022) and Teo et al. (2015).
Mobile ride-hailing	Grab and MyCar	An advanced m-commerce application that directs the requests for transportation services from passengers to ride-sharing drivers through smart mobile devices. It serves as a convenient alternative to traditional taxi services by reducing the searching time and easing the payment of taxi fares among drivers and passengers.	Inan et al. (2022) and Joia and Altieri (2018).
Mobile shopping	Shopee MY and Lazada	Involving the use of smart mobile devices to conduct shopping activities online regardless of place and time.	A. Gupta and Arora (2017) and Jain et al. (2022).

Table 2.1 continued: The Popular Classes of M-Commerce Applications

M-commerce applications	Examples of mobile apps	Descriptions	References
Mobile social networking	Facebook and Instagram	A class of m-commerce application that is designed for social networking site users to access the site with smart mobile devices. With this, users could share real-time and location-based information with friends and family members wherever they are and whenever they want.	Qin et al. (2018) and Ying et al. (2023).
Mobile tourism	Agoda and OYO	An application of m-commerce in the tourism industry that allows travellers to communicate and perform transactions with practitioners in the tourism industry with smart mobile devices during travel.	S. E. Chang et al. (2016) and Wan et al. (2022).
Mobile utilities	Google Drive and SHAREit	This class of m-commerce application enhances the productivity of users by enabling them to continually access information and perform tasks whenever and wherever they want with smart mobile devices. Examples include making a personal schedule, sharing files instantly, and so on.	Concepcion and Sison (2017), Nastas and Ghetmancenco (2020), and G. Wang and Suh (2018).

2.3 Innovation Resistance Theory

One of the main reasons many innovations fail in the market is the resistance they encounter from consumers (Hughes et al., 2024). As argued by Heidenreich, Killmer, et al. (2022), the adoption of innovation could only begin after the consumers have overcome the innovation resistance. In other words, there is always some innovation resistance prior to the adoption decision (Ghosh, 2024). In this regard, innovation resistance is defined as the "resistance offered by consumers to changes imposed by innovations" (T. Laukkanen, 2016, p.2432).

In view of the possibility that innovations impose changes on consumers who might respond negatively by resisting the changes, S. Ram (1987) crafted a theory to explain the resistance behaviour of consumers. S. Ram and Sheth (1989) then refined the theory and posited that during the innovation resistance phase, consumers are usually facing several barriers that directly inhibit their adoption intentions, and these barriers could be categorised into functional barriers and psychological barriers. Recently, innovation resistance scholars further distinguished active innovation resistance from passive innovation resistance, with functional barriers and psychological barriers falling under the former category (Komulainen & Nätti, 2023).

2.3.1 Active Innovation Resistance

According to several innovation resistance scholars (Ghosh, 2024; T. Laukkanen, 2016; Lian & Yen, 2013), functional barriers comprise usage barrier,

value barrier, and risk barrier, while psychological barriers are made up of tradition barrier and image barrier. Usage barrier would arise if an innovation causes inconvenience to the existing practices or workflows, which subsequently leads to usage problems instead of convenience (Leong et al., 2020). Value barrier, on the other hand, arises if consumers opine that an innovation does not offer a relative advantage after they have compared it with existent alternatives, as consumers will not accept an innovation unless it offers relative advantages that could not be offered by the alternatives (Leong et al., 2021). Moreover, during the evaluation of an innovation, consumers are often unsure if the innovation is mature and functional as promised. This subsequently gives rise to the risk barrier, which refers to the degree of risks an innovation entails (M. Talwar et al., 2023).

While functional barriers mainly concern the functions of innovation, psychological barriers are mainly dealing with the psychological conflicts that develop from a consumer's beliefs (Komulainen & Nätti, 2023). Tradition barrier comes into play when an innovation is perceived to be conflicting with the consumers' family values, social norms, or entrenched traditions (Joachim et al., 2018), whereas image barrier emerges from the consumers' negative or bad impressions of the side effects of an innovation (J. J. Hew et al., 2019).

Although some scholars opined that the innovation-specific functional barriers and psychological barriers should encompass a broader range of barriers, for example, visibility barrier and information barrier (Heidenreich, Killmer, et al., 2022; Joachim et al., 2018), this study adopts only usage barrier, value barrier,

risk barrier, tradition barrier, and image barrier as these barriers have been consistently employed to study the resistance to different m-commerce applications (see Table 1.3). In this manner, these barriers have proven their applicability and suitability for the context of m-commerce applications.

2.3.2 Passive Innovation Resistance

Passive innovation resistance, which is also dubbed as initial resistance, represents a consumer's initial response to the changes imposed by innovation without any consideration of the innovation's specific features (Heidenreich et al., 2016). As opined by Koch et al. (2021), passive innovation resistance mainly comprises resistance to change and status quo satisfaction that are manifested within consumers, whereas active innovation resistance is principally the barriers that a consumer affixes to an innovation based on its attributes.

In a more specific manner, passive innovation resistance illustrates a generic predisposition to resist an innovation before a proper evaluation of that innovation by consumers due to their unconsciously formed inclination to resist change and status quo satisfaction, whereas active innovation resistance reflects the consumers' negative attitudes that are usually caused by the functional and psychological barriers towards an innovation subsequent to a deliberate evaluation of that innovation (Heidenreich & Kraemer, 2015; Huang et al., 2021). Hence, it is posited that passive innovation resistance occurs in the light of changes an innovation imposes on consumers instead of its features or functions

(Heidenreich et al., 2016). Nonetheless, both active and passive innovation resistances are developed before the adoption stage (Castro et al., 2020).

The concept of passive innovation resistance could be traced back to S. Ram and Sheth (1989), who asserted that innovation resistance could occur to consumers as the adoption of innovation might require consumers to make significant changes from a satisfactory status quo and it may conflict with the belief structure of consumers.

Generally, consumers are likely to preserve their status quo, causing them to possess an intrinsic desire for psychological equilibrium (Huang et al., 2022); hence, any change imposed on their behaviours tends to disturb the psychological equilibrium and this motivates them to resist the changes required by innovation rather than undergoing the disturbing readjustment process (Ghazali et al., 2020). Any innovation perceived to be different or completely new will impose changes on consumers and endanger their status quo, thus provoking initial resistance (i.e., passive innovation resistance) among consumers (Heidenreich & Kraemer, 2015). There are two facets of passive innovation resistance: resistance to change or inclination to resist changes and status quo satisfaction (Heidenreich & Handrich, 2015; Koch et al., 2021).

Based upon the work of Al-Ghamdi et al. (2020) and Koch et al. (2021), resistance to change, which is also known as inclination to resist changes, is usually conceptualised through four distinct dimensions, namely routine seeking, emotional reaction to imposed change, short-term focus, and cognitive rigidity.

This study adopts the comprehensive definitions provided by Heidenreich and Handrich (2015) in defining the dimensions. Firstly, routine seeking indicates the tendency to resist change due to the fear of losing control over a certain life situation. Secondly, emotional reaction to imposed change is defined as a consumer's limited ability to handle change as a stressor. Thirdly, short-term focus describes the extent to which the short-term inconveniences involved in the change are distracting consumers even if the change is beneficial in the long run. Fourthly, cognitive rigidity represents the trait of dogmatism, which refers to a form of stubbornness and a reluctance to deliberate alternative ideas or perspectives.

As argued by Heidenreich and Handrich (2015) and Heidenreich and Kraemer (2016), given that the adoption of an innovation exposes consumers to a high level of stimulation, those with a high degree of routine seeking would find themselves reluctant to adopt the innovation as they generally desire for a low level of stimulation. Similarly, consumers who would be emotionally responding to an imposed change intensively are unlikely to adopt an innovation to avoid the changes entailed. The same applies to consumers who are highly short-term focused as they are unwilling to devote time to adjust themselves to suit an innovation despite the potential benefits offered by the innovation being considered. Furthermore, consumers will be reluctant to adopt an innovation if they possess a high level of cognitive rigidity because dogmatism diminishes their openness to innovations.

On another note, the work of Heidenreich, Killmer, et al. (2022) and Koch et al. (2021) further suggested that status quo satisfaction is mainly composed of two distinct dimensions, namely satisfaction with the extent of innovation and satisfaction with existing products, which respectively measures the degree to which consumers are contented with the current amount of innovations and the degree to which consumers are emotionally attached to the technological products that they use repeatedly over time (Heidenreich & Kraemer, 2016).

Consumers who show a high satisfaction level with existing technological products tend to develop a habit of using them and, therefore, prefer tried and proven technological products when exposed to innovations (Greene & Riel, 2021). The same applies to those highly satisfied with the extant innovation when it comes to innovation exposure as they perceive that the current benefits offered by existing technological products are sufficient and, therefore, do not need further innovations (Heidenreich & Handrich, 2015). Overall, consumers with a great degree of status quo satisfaction are highly satisfied with their status quo, which causes them to repeat current product or service usage and demonstrate an intense resistance to alternatives. Ultimately, the probability of new innovation adoption is significantly reduced (Ghazali et al., 2020).

2.3.3 Five-Stage Decision-Making Process

As claimed by Talke and Heidenreich (2014), the connection between passive innovation resistance and active innovation resistance and their related outcomes could be illustrated with a five-stage decision-making process (see Figure 2.1). These five stages are (i) knowledge stage, (ii) persuasion stage, (iii) decision stage, (iv) implementation stage, and (v) confirmation stage.

Stage (i) is where consumers become aware of innovation; depending on their passive innovation resistance levels, they will decide if further information processing is needed in making a judgement (Millemann et al., 2022). If the level of passive innovation resistance is lower than an adopter-specific threshold, consumers shall engage themselves in further information processing; otherwise, they will not and subsequently develop passive resistance (Heidenreich & Talke, 2020). It should be noted that passive innovation resistance is likely to influence the innovation evaluation in stage (ii), where consumers evaluate the innovation's specific features and subsequently develop an attitude towards it (Huang et al., 2022). If the attitude towards the innovation is positive, consumers will accept the innovation; otherwise, they shall develop active innovation resistance barriers which would eventually lead to active resistance (Heidenreich & Talke, 2020).

Consequently, in stage (iii), consumers shall finalise their decisions and develop the relevant intentions, which guide their actual behaviour implementation in stage (iv) (Yuen et al., 2018). Lastly, in stage (v), as

consumers confront additional information and experiences, they seek to confirm their decisions in order to determine if they should remain with their initial decisions of accepting or resisting the innovation (Talke & Heidenreich, 2014).

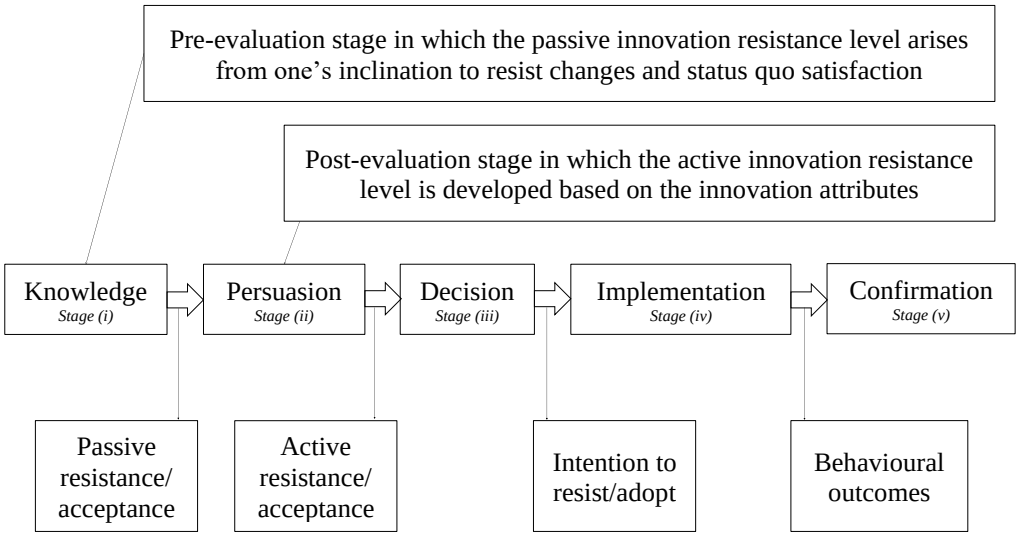

Figure 2.1: The Innovation Resistance Theory

Adapted from: Salari et al. (2018)

In this manner, it is posited that the passive innovation resistance emerges even before the consumers have deliberately evaluated the innovation, and this predisposition of consumers shall foster the development of their functional and psychological barriers (i.e., the active innovation resistance) during the new product evaluation (Y. Sun, 2021). Specifically, consumers with a high level of passive innovation resistance are likely to form a less favourable view of the innovation during the deliberate evaluation process (Heidenreich & Spieth, 2013). Ultimately, the active innovation resistance manifested within consumers shall lead to three distinct forms of resistance behaviour: rejection,

postponement, or opposition (Joachim et al., 2018). It should be noted that these forms of resistance behaviour fall under the category of active resistance and they vary in degree (Huang et al., 2022; Mzoughi & M'Sallem, 2013).

2.3.4 Forms of Resistance Behaviour

Some consumers would directly reject an innovation, some might postpone the adoption decision, and some may be convinced that the innovation is unsuitable for them right now and subsequently launch an attack against its adoption (S. Ram & Sheth, 1989). These non-adopters, according to several innovation resistance scholars (P. Laukkanen et al., 2008; Lian & Yen, 2013; Mou & Meng, 2024; Szmigin & Foxall, 1998), are classified as rejecters, postponers, or opponents accordingly based on their intentions.

Rejection is not triggered by ignorance about the innovation; but emerges when a consumer has deliberately evaluated the innovation (Kleijnen et al., 2009). Among the distinct forms of active resistance, rejection is the most extreme form (Mou & Meng, 2024; Mzoughi & M'Sallem, 2013; Szmigin & Foxall, 1998), as rejecters do not plan to adopt the innovation at all (Q. Chen et al., 2019). On the other hand, postponers intend to postpone the adoption decision until the right time (K. Park & Koh, 2017), which is usually within a year (P. Laukkanen et al., 2008). Although postponers find that the innovation is acceptable at the moment, they prefer to wait for further enhancements to be available before adopting it (Q. Chen et al., 2019).

Unlike rejecters and postponers, opponents would engage themselves in an active attack against the innovation, for example, spreading negative word-of-mouth to prevent the innovation's success, as they are not convinced about the innovation right now (Kleijnen et al., 2009; Mzoughi & M'Sallem, 2013; Prakash & Das, 2022). Nevertheless, opponents are still willing to seek further information about the innovation before making their final decisions, and in some cases, they will jump straight to acceptance if they are convinced by the latest information gathered (Cornescu & Adam, 2013; T. Laukkanen et al., 2009). In this manner, it was posited that opponents intend to adopt an innovation, but they have not yet decided when and certainly not within a year (J. J. Hew et al., 2019).

2.4 Communication Privacy Management Theory

As cited in Kennedy-Lightsey et al. (2012), the Communication Privacy Management Theory (Petronio, 2002) explains the management of individual private information through metaphorical boundaries. As put forth by Petronio (2007, p.218), this theory seeks to "understand the tension between revealing and concealing private information". According to Colaner et al. (2022), the central arguments in this theory are that individuals are free to decide the information they want to disclose to or conceal from others. In this manner, this theory assumes that individuals have sole ownership over their private information (Petronio & Child, 2020); hence they could selectively grant or deny others access to their private information (Petronio, 2010).

As posited by Xie and Karan (2019), the Communication Privacy Management Theory (Figure 2.2) theorises three steps of private information boundary management: boundary rule formation, boundary coordination, and boundary turbulence. In the first step, individuals would define the boundary rules that determine and regulate their sharing of private information. Subsequently, in the second step, they would implement numerous approaches to control and safeguard their private information. Lastly, in the case of privacy rule violation, they would readjust or recalibrate their privacy management.

When individuals set boundary rules in the first step, they draw implicit lines (i.e., the boundaries) to determine and regulate their sharing of private information (Balapour et al., 2020). When they decide to share a piece of private information with others who are known as the co-owners, they are transitioning that private information from an individual privacy boundary into a collectively-owned privacy boundary that is shared among the authorised co-owners (Child & Westermann, 2013).

Ngcongo (2022) asserted that a rule-based system is used to determine the privacy rules for co-owners, and it is based on five criteria, namely culture, gendered criteria, motivations, contextual factors, and risk-benefit ratio. The culture criteria acknowledge the effects of cultural differences, while the gendered criteria consider the roles of gender differences during the setting of privacy rules (McNealy & Mullis, 2019). Also, during the formation of privacy rules, individuals would have different levels of inherent needs in maintaining their boundaries and disclosures; hence their motivational factors should

determine the privacy rules (Z. Liu & Wang, 2018). Besides, owing to the establishment of privacy rules differs according to the situations and domains in which the disclosures are deemed acceptable or unacceptable, contextual factors are crucial too (Y. Chang et al., 2018). Last but not least, the disclosures of private information often involve the trade-off between risks and benefits that entail, privacy rules are contingent on the calculation of risk-benefit ratio (Hammonds & Ribarsky, 2018).

Once the privacy rules are determined, in the boundary coordination step, the private information owners would negotiate the privacy rules with co-owners, for example, whether the disclosed information could be further revealed to others (Petronio & Child, 2020). As worded by Balapour et al. (2020), the owners and co-owners together coordinate the use of disclosed information in this step. During the coordination process, the private information owners would moderate boundary linkages, boundary ownership rights, and boundary permeability (McNealy & Mullis, 2019; Metzger, 2007). Boundary linkages specify any other extended co-owners who are allowed to know the private information (Pomfret et al., 2020), boundary ownership rights determine the independent control a co-owner has in deciding if the private information is to be further disseminated to the extended co-owners (Thompson et al., 2012), and boundary permeability decides the degree of sharing for the private information when it is further disseminated (McNealy & Mullis, 2019).

Sometimes, boundary turbulence happens when the co-owners are left to judge whether the disclosed information is to be disseminated with other

extended co-owners (Kennedy-Lightsey et al., 2012). After all, privacy coordination is often unpredictable and can result in breakdowns and disruptions in the privacy management system (Petronio, 2013, 2016). Balapour et al. (2020) argued that turbulence occurs due to the complexity of the coordination process and when the co-owners have violated the ownership expectations. For example, turbulence happens when an unwanted extended co-owner gains access to private information from co-owners (Kennedy-Lightsey et al., 2012; Meng, 2024). To address privacy turbulence, the private information owners would update, correct, and recalibrate the privacy rules set (Child & Westermann, 2013). With this, Barth and de Jong (2017) considered the decision-making process presented by the Communication Privacy Management Theory is a continuous process, depending on the situation, context, and co-owners.

Notwithstanding that the Communication Privacy Management Theory was initially developed to understand and explain privacy management under the offline face-to-face communication environment (Xie & Karan, 2019), scholars in recent years have endeavoured to apply it to different contexts such as online communication (McNealy & Mullis, 2019) and social networking sites (Child & Westermann, 2013; Frampton & Child, 2013; Z. Liu & Wang, 2018). For the context of mobile communication, Xu et al. (2012) applied the three boundary coordination rules to shed light on the information privacy concerns among mobile users.

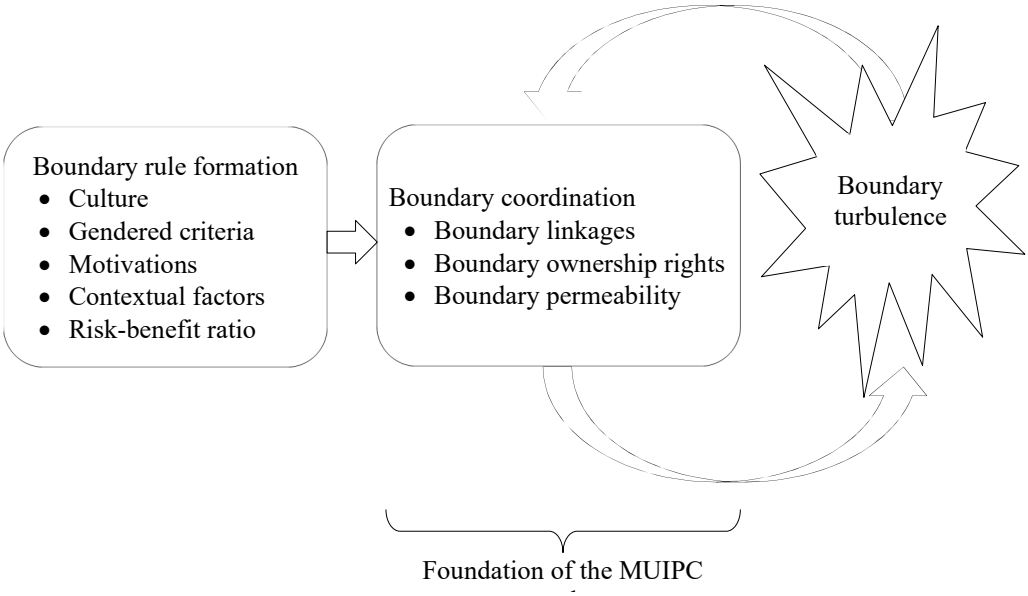

Figure 2.2: The Communication Privacy Management Theory

Adapted from: Xu et al. (2012)

2.4.1 Information Privacy Concerns among Mobile Users

The advanced development in smart mobile devices has shaped a whole new mobile environment over the last decade; however, it was suggested that some of the well-known mobile apps installed in the devices contain some vulnerabilities that raise security concerns (Elsantil, 2020; Hayes et al., 2020). In recent years, Appel et al. (2020) reported that the mobile apps industry has expanded exponentially, and Statista (2024) reported that more than five million mobile apps are available in both App Store and Google Play as of third quarter of 2022. Thurm and Kane (2010) disclosed that many mobile apps do not keep secrets and share the user's personal data, for instance, age, gender, location, and phone's unique device identification number, to other companies including advertising companies. These involuntary disclosures could have exposed mobile users to significant privacy risks as their real-time location could be

precisely identified (Cheng et al., 2021; Keith et al., 2013). Henceforth, it is more challenging than ever to protect consumers' information privacy in the mobile environment due to the unique features of smart mobile devices, for instance, ubiquity (Y. Wang et al., 2020).

As noticed by Gu et al. (2017), many privacy-invasive mobile apps collect personal information that is unnecessary for functionality from the users and subsequently use for unauthorised purposes. It is expected that throughout their usage of smart mobile devices, mobile users have certainly used some mobile apps and, therefore, they should have developed a certain degree of information privacy concerns pertaining to their use of mobile apps.

The proliferation of smart mobile devices has not only offered real-time ubiquitous communications but also raised concerns over privacy issues in such a context (Xu et al., 2012). As explicitly explained by Degirmenci (2020), surveillance happens in the mobile environment given that the sensors equipped within the smart mobile devices, for instance, proximity sensors and GPS, are constantly collecting data about the users' movement and location to ensure user experience. For example, Google Maps (i.e., mobile map navigation) would request access to the user's location to provide its functions, and this will subsequently lead to privacy intrusion and malicious secondary use of personal information. One recent case of secondary use is the Facebook privacy scandal in which the users' data was shared with an analytical company without the users' awareness (Martínez et al., 2020).

In view of this phenomenon, Xu et al. (2012) developed the MUIPC scale through the theoretical lens of Communication Privacy Management Theory. Different from the well-known scale of concern for information privacy that reflects an individual's concern about organisational privacy practices (H. J. Smith et al., 1996) and the scale of Internet users' information privacy concerns that measures one's information privacy concerns resulted from the use of the Internet (Malhotra et al., 2004), MUIPC was proposed to reflect mobile users' concerns about information privacy under the mobile environment.

As identified by Xu et al. (2012) based upon the three boundary coordination rules of Communication Privacy Management Theory (Petronio, 2010), there are three distinct facets of MUIPC: perceived surveillance, perceived intrusion, and secondary use of information. Perceived surveillance concerns the extent to which mobile users believe that their personal data is collected by the mobile apps in use; perceived intrusion conveys the degree to which mobile users are concerned that both their physical and informational spaces are interrupted by the mobile apps in use; and secondary use of information reflects the mobile users' perceptions on the extent to which the personal data collected by mobile apps is being used for unauthorised purposes (Xu et al., 2012). This particular scale has been well-adapted by several studies to measure mobile users' privacy concerns while using mobile apps (Bol et al., 2018; Degirmenci, 2020; Dogruel et al., 2017; Henke et al., 2018).

This study integrates MUIPC in the MOCART based on two arguments. Firstly, as mobile apps are one of the necessary means to enjoy m-commerce

applications, the privacy concerns accumulated by mobile users throughout their usage of mobile apps shall be relevant in shaping their resistance behaviours towards m-commerce applications. Secondly, since a handful of studies suggest that privacy concerns are related to the development of innovation resistance (J. J. Hew et al., 2019; Mani & Chouk, 2017, 2019; Oh et al., 2019; Thakur & Srivastava, 2013), it is expected that MUIPC could further explain the resistance behaviours towards m-commerce applications.

2.5 Technostress Theory

In this modern society, stress has been an integral part of life (Gökçearslan et al., 2018). As described by Vahedi and Saiphoo (2018), stress is the inability to cope with external demands that are normally referred to as stressors, which could be biological (e.g., sickness), environmental (e.g., extreme weather), or psychological (e.g., taking a difficult exam). Lately, due to the rapid changes of innovations, some consumers may suffer from innovation overload, a term that refers to the difficulty of a consumer to manage multiple simultaneous innovations as the rapid changes of innovations may render a consumer impervious to anything novel (Dangelo & Magnusson, 2021; Kuisma et al., 2007).

In view of this, founded upon the Transaction Theory of Stress (Lazarus, 1966), Tarafdar et al. (2007) proposed the Technostress Theory to indicate the inability to adapt to new ICTs after an individual's recurring attempts to cope

with the ever-evolving ICTs and the changing physical, social, and cognitive requirements that are associated with their use.

Under the organisational context, the technostress of ICT users could lead to their dissatisfaction resulted from the system use and poorer job performance (Tarafdar et al., 2010). Tarafdar et al. (2011) further shared that the pervasive use of ICTs such as mobile computing in the workplace creates several adverse outcomes that would eventually constitute technostress among the organisational users. According to Gabr et al. (2021) and Shu et al. (2011), the clear symptoms of technostress include increased irritability and the feeling of loss of control over the ICTs, which may eventually inhibit one's further usage of ICTs.

Technostress is considered a stressor attributable to ICTs (C. F. Liu et al., 2019) and has been categorised as a modern disease that arises due to the inability to cope with new ICTs (Hung et al., 2015). The theoretical lens of Transaction Theory of Stress views the emergence of technostress as a linear process that consists of stressors, strain, and outcomes (X. Wang & Li, 2019).

Generally, stressors symbolise elements that induce stress (Tarafdar et al., 2010). In the context of ICTs, stressors are technology-induced stimuli, events, or demands experienced by individuals (S. B. Lee et al., 2016). There are many conditions and factors that could lead to technostress, for example, the pace of technology change (Tarafdar et al., 2015). After being exposed to the stressors, individuals would experience strain (Yuan et al., 2023), which denotes

the adverse or negative reaction of individuals (Koeske & Koeske, 1993; Tarafdar et al., 2015). During the strain stage, individuals would perform cognitive appraisal towards the use of ICTs that determine their adaption behaviour (i.e., outcome) (Sharma & Gupta, 2023).

Other than being widely applied in the organisational context to understand its consequences on workers' productivity and quality of life (Hung et al., 2015; S. B. Lee et al., 2016), the Technostress Theory has been employed in different contexts. For example, Cataldo et al. (2023) examined the impact of technostress on academic performance among university students when they are attending remote classes, whereas Joo et al. (2016) researched the adverse effects of technostress on technology usage among secondary school teachers. Furthermore, C. F. Liu et al. (2019) investigated the contributing factors of technostress that arise from using mobile electronic medical records among physicians.

Recently, due to the advanced development of smart mobile devices, scholars have started to pay attention to the rise of mobile technostress (Mak et al., 2018; Yin et al., 2014). As observed by Hsiao et al. (2017), the drastic growth of mobile services and technologies has aggravated technostress. Mobile technologies, as argued by Doargajudhur and Hosanoo (2023), are a double-edged sword and, therefore, constitute a form of technostress. Hsiao (2017) further asserted that over-reliance on smart mobile devices could increase the chance of technostress occurrence.

Several studies have demonstrated the existence of technostress in the mobile environment. For instance, Boonjing and Chanvarasuth (2017), together with Yao and Wang (2023), discovered that the excessive and compulsive use of smartphones can cause significant technostress among smartphone users. Hsiao (2017) observed that the compulsive use of mobile apps is associated with technostress too. A similar finding was also reported by Hsiao et al. (2017). S. B. Lee et al. (2016) further shared that technostress arises due to the use of mobile instant messenger for work purposes after working time. In connection with these findings, Yin et al. (2014) emphasised mobile technostress as a specific type of technostress experienced by users of mobile ICTs. Particularly, mobile technostress could be defined as a modern disease of adaptation caused by an inability to cope with the new smart mobile device technologies in a healthy manner (Mak et al., 2018).

Mobile technostress that arises due to the fast pace of change in smart mobile device technologies can potentially explain resistance to innovation, in particular the resistance to smart services (Anand et al., 2014; C. T. Lee & Pan, 2023; Mani & Chouk, 2018). Given that the m-commerce applications rely on smart mobile devices as the terminal, it is believed that incorporating mobile technostress into the MOCART could contribute further explanation towards the resistance behaviours of mobile users towards m-commerce applications.

2.6 Overarching Theories

As opined by Cortina (2016), the use of overarching theories to tie a research model is necessary in order to defend the linkages within the research model. Therefore, to establish the MOCART rigorously, this study associates Innovation Resistance Theory, Communication Privacy Management Theory, and Technostress Theory, by adopting two prominent overarching theories. The first overarching theory, namely Belief-Attitude-Behaviour Theoretical Chain (Fazio et al., 1978), guides the integration of MUIPC as the antecedent of active innovation resistance, whereas the second overarching theory, namely Stress-Strain-Outcome Model (Koeske & Koeske, 1993), advocates mobile technostress as a driver of active innovation resistance.

2.6.1 Belief-Attitude-Behaviour Theoretical Chain

The Belief-Attitude-Behaviour Theoretical Chain (Fazio et al., 1978) has been the theoretical underpinning for many behavioural theories and studies (J. J. Chang & Yang, 2012; Dunn et al., 2011; Y. Wang, 2008), for instance, the renowned Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behaviour (Ajzen, 1985, 1991) and Technology Acceptance Model (Davis, 1989).

As discovered by Hossain et al. (2022) and Y. S. Wang et al. (2018), the Belief-Attitude-Behaviour Theoretical Chain has been widely employed in the information systems research to predict the behaviours of users when confronted

with technologies, hence making it a robust overarching framework (Sampat et al., 2023) that perfectly suits the purpose of this study, which is to explain the resistance behaviours of mobile users towards m-commerce applications. In the simplest terms, the Belief-Attitude-Behaviour Theoretical Chain (Figure 2.3) suggests that individuals' beliefs would predict their subsequent behaviours through attitudes (S. Gupta & Kim, 2004; Heo & Muralidharan, 2019; Ooi et al., 2018).

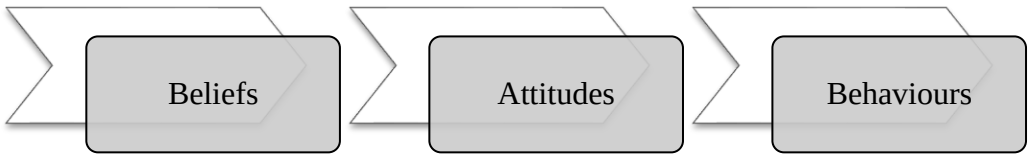

Figure 2.3: The Belief-Attitude-Behaviour Theoretical Chain

Consistent with the past literature, MUIPC is regarded as a form of belief possessed by mobile users in the context of this study (Bansal et al., 2016; Pagani & Malacarne, 2017). Moreover, scholars considered active innovation resistance as the attitudes towards m-commerce applications (Heidenreich & Kraemer, 2015; Joachim et al., 2018; T. Laukkanen et al., 2007; E. V. Tonder, 2017). Based upon the theoretical chain, MUIPC, a form of belief possessed by mobile users, shall be crucial in shaping their attitudes towards m-commerce applications (i.e., active innovation resistance), which would subsequently determine their resistance behaviours towards m-commerce applications.

2.6.2 Stress-Strain-Outcome Model Paradigm

The Stress-Strain-Outcome Model (Koeske & Koeske, 1993) has been a fundamental model in illustrating the process of stress (Cheung & Tang, 2010) in different contexts. For example, workplace (Boonjing & Chanvarasuth, 2017), hospitality (C. H. Choi et al., 2014), and social networking sites (Cao, Masood, et al., 2018). The three layers Stress-Strain-Outcome Model (as shown in Figure 2.4) suggests that individuals would develop strain if they experience stress, and the strain developed shall lead to outcomes that are normally manifested in the form of behaviour (Cheung & Tang, 2010; Koeske & Koeske, 1993; Lim & Yang, 2015).

It is also interesting to note that the notion of the Stress-Strain-Outcome Model is similar to the Transaction Theory of Stress, which views the emergence of technostress as a linear process that consists of stressors, strain, and outcomes (X. Wang & Li, 2019). Strain has been regarded as an attitudinal state (Rubino et al., 2012) that refers to the adverse or negative reaction of individuals after experiencing stress (Islam et al., 2018), and negative reaction of consumers could lead to their innovation resistance (Mani & Chouk, 2018).

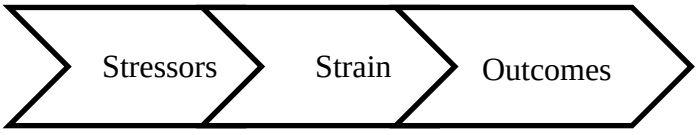

Figure 2.4: The Stress-Strain-Outcome Model

Based upon these arguments, strain, an attitudinal state, is manifested as active innovation resistance (which is also regarded as a form of attitude under the Belief-Attitude-Behaviour Theoretical Chain) in the context of this study. Thus, it is posited that the stress (i.e., mobile technostress) experienced by mobile users due to the fast pace of change in smart mobile device technologies is causing the development of strain (i.e., active innovation resistance) pertaining to m-commerce applications, which would ultimately provoke unfavourable outcomes (i.e., resistance behaviours towards m-commerce applications).

Because the Stress-Strain-Outcome Model offers a generic perspective to explain the effects of stressors on behavioural outcomes at the individual level, this overarching theory has been widely applied in the information systems literature to research the dark side or negative consequences of information systems use (X. Ma et al., 2022; Wenninger et al., 2021). In view of this, it is believed that the Stress-Strain-Outcome Model is highly relevant and suitable for the purpose of this study as the main objective of this study is to explain the resistance behaviours of mobile users towards m-commerce applications after they have encountered mobile technostress.

2.7 The Proposed MOCART

Drawing upon the Belief-Attitude-Behaviour Theoretical Chain and Stress-Strain-Outcome Model, this study proposes the MOCART by integrating MUIPC and mobile technostress with the passive and active innovation resistances from Innovation Resistance Theory. With the integration of MUIPC

and mobile technostress as situation-specific constructs, it is believed that the rigorously developed MOCART, as depicted in Figure 2.5, could adequately explain the resistance behaviours of mobile users who do not adopt m-commerce applications. Furthermore, the potential confounding roles of demographic variables, namely gender, age, education, income, and usage experience are controlled in the model (Gong, Cheung, et al., 2020).

In the MOCART, MUIPC is modelled as a second-order formatively measured construct (Xu et al., 2012), with three formative indicators that are reflectively measured (i.e., perceived surveillance, perceived intrusion, and secondary use of personal information). Another main construct, mobile technostress, is conceptualised as a reflectively measured first-order construct (Mak et al., 2018).

For both passive innovation resistance and active innovation resistance, this study follows the notion of Heidenreich and Handrich (2015) by modelling them as third-order formatively measured constructs. In this manner, this study could ascertain the relative influences of both passive innovation resistance and active innovation resistance, on top of making MOCART more parsimonious and interpretable (Claudy et al., 2015).

Passive innovation resistance consists of two second-order formatively measured dimensions, namely inclination to resist changes and status quo satisfaction. There are four and two formative indicators that are reflectively measured for inclination to resist changes (i.e., routine seeking, emotional

reaction to imposed change, short-term focus, and cognitive rigidity) and status quo satisfaction (i.e., satisfaction with the extent of innovation and satisfaction with existing products) respectively.

On the other hand, active innovation resistance comprises two second-order formatively measured facets (i.e., psychological barriers and functional barriers), both of which are made up of first-order reflectively measured constructs. Tradition barrier and image barrier together serve as the first-order dimensions of psychological barriers, while usage barrier, value barrier, and risk barrier act as the first-order dimensions of functional barriers.

Last but not least, the three forms of resistance behaviour (i.e., rejection, postponement, and opposition) are all modelled as first-order reflectively measured constructs.

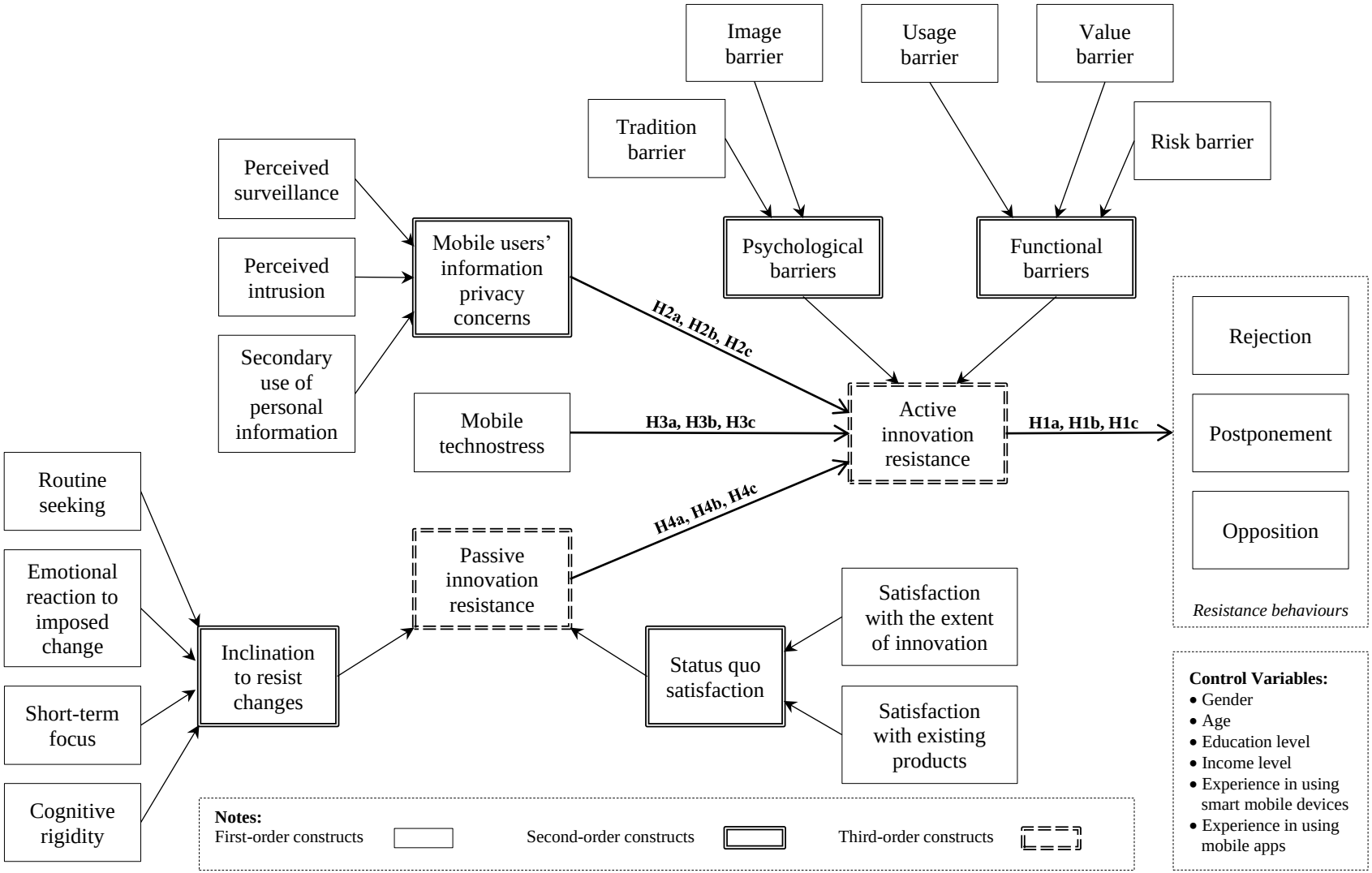

Figure 2.5: The MOCART

2.8 Conclusion

Overall, this chapter provides a comprehensive literature review of the structure of MOCART and all the elements contained within. Relevant arguments have also been provided to support the rigorous development of MOCART. In the next chapter, based upon the relevant literature, the hypotheses that describe the relationships among the major constructs within MOCART would be developed accordingly.

CHAPTER 3

HYPOTHESES DEVELOPMENT

3.1 Introduction

Based upon the relevant literature, this chapter aims to develop hypotheses that detail the relationships among the key constructs (i.e., MUIPC, mobile technostress, passive innovation resistance, active innovation resistance, rejection, postponement, and opposition) residing within MOCART.

3.2 Active Innovation Resistance and Resistance Behaviours

Active innovation resistance reflects the consumers' negative attitudes that are usually caused by the functional and psychological barriers towards an innovation subsequent to a deliberate evaluation of that innovation (Heidenreich, Millemann, et al., 2022; Heidenreich & Kraemer, 2015). As noted earlier, this study operationalises active innovation resistance as a higher-order construct that encompasses five lower-order constructs (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier).

In the Innovation Resistance Theory, these barriers have been identified by S. Ram and Sheth (1989) as the creators of innovation resistance among consumers. In addition, these barriers resemble the negative attitudes towards

innovation, which are affixed by the consumers based on its attributes (van Klyton et al., 2021). Ultimately, the active innovation resistance manifested within consumers shall lead to three distinct behavioural outcomes, namely rejection, postponement, or opposition (Huang et al., 2021).

Empirically, the relationship between active innovation resistance and resistance behaviour has received confirmation in the study of Chaouali and Souiden (2019). In their study, Chaouali and Souiden (2019) attempted to explain mobile banking resistance in French through five barriers faced by the non-users, namely usage barrier, value barrier, risk barrier, tradition barrier, and image barrier, which were subsequently found to be significantly and positively related to the resistance behaviour of non-users.

Also, identical results were reported in a study of digital payment systems by Sivathanu (2019), who posited that mobile banking and mobile payment are categorised under digital payment systems. All barriers were found to have positive and significant effects on the resistance behaviour of digital payment systems in India under the cross-sectional setting. Other than shaping the resistance behaviour among non-users, both psychological and functional barriers were reported to have significant and negative associations with the usage intention of mobile service innovations in Germany, which supports the notion that active innovation resistance decreases the intention to adopt an innovation (Joachim et al., 2018). In the same vein, it was reported that the usage intention of mobile financial services could be reduced by the tradition barrier among consumers in Tunisia (Chemingui & Lallouna, 2013).

The barriers within the domain of active innovation resistance are identical to several other widely known constructs in technology adoption studies (Q. Chen et al., 2019; P. Laukkanen et al., 2008; T. Laukkanen & Kiviniemi, 2010; Molesworth, 2002). Usage barrier is identical to the concepts of complexity and perceived ease of use, while value barrier resembles the concepts of relative advantage and perceived usefulness. Complexity and relative advantage are originated from the Diffusion of Innovation Theory (Rogers, 1995), whereas perceived ease of use and perceived usefulness are two central constructs of the Technology Acceptance Model (Davis, 1989). Besides, risk barrier that refers to the degree of risks inherent in innovation is similar to perceived risks. Moreover, compatibility from the Diffusion of Innovation Theory (Rogers, 1995), along with technology readiness (Parasuraman, 2000) and trust (Gefen et al., 2003), are all corresponded to both tradition barrier and image barrier. Last but not least, technology anxiety (Meuter et al., 2003) is equivalent to image barrier.

In technology adoption studies, it was ascertained that complexity, perceived ease of use, relative advantage, perceived usefulness, compatibility, technology readiness, and trust are showing positive and significant effects on m-commerce adoption or usage intention (K. C. Chung, 2019; Eastin et al., 2016; Ng, 2016; J. Sun & Chi, 2018, 2019; Yadav et al., 2016), which suggests that these drivers are increasing adoption or usage intention. Likewise, studies on adoption of m-commerce applications, for example, mobile banking (Stephan et al., 2017) and mobile shopping (Ghazali et al., 2018), are suggesting that relative advantage, compatibility, and trust are important adoption drivers. Following

these supports, the opposite of these adoption drivers (i.e., the barriers) shall diminish the adoption or usage intention of mobile users and promote their resistance behaviour instead (Arif et al., 2020; Cruz et al., 2010; Ha et al., 2012).

Apart from relating to resistance behaviour as a whole, all the barriers in the domain of active innovation resistance are theoretically associated with the three distinct forms of resistance behaviour, namely rejection, postponement, or opposition, among the resistant mobile users.

For instance, in a study conducted by Q. Chen et al. (2019) to understand the widespread resistance to brand mobile apps among consumers in China, it was discovered that both usage barrier and image barrier are significantly and positively related to rejection, while value barrier is significantly and positively associated with postponement. In their study, brand mobile apps are developed by business organisations to expand their service channels to consumers. As argued by them, usage barrier arises in the context of brand mobile apps as typing data into a mobile app often requires more effort than typing into a computer with a keyboard. Moreover, given the limited screen size of smart mobile devices, it is rather difficult to interpret the information displayed. Besides, owing to some consumers might feel uncomfortable and frustrated in using self-service technology, they might face image barrier in brand mobile apps as these apps could be considered as a type of self-service technology. Lastly, considering the optional nature of mobile brand apps and, therefore, offering limited relative advantage, consumers might face value barrier as they are not obliged to adopt.

On the other hand, Gurtner (2014) learnt that usage barrier, value barrier, and risk barrier are all positively associated with rejection and opposition in a significant manner. Although mobile health apps could provide health-related suggestions such as nutrition information, Gurtner (2014) reasoned that the usage barrier would still arise among rejecters and opponents as they are required to use the apps during cooking and eating for weighting food and ingredients, which leads to an impression that mobile health apps are difficult to use. Further, even if some mobile health apps provide tracking functions during sports activities, such value might not be seen by rejecters and opponents who do not devote themselves to regular sporting activities. In addition, risk barrier is facing by rejecters and opponents as sometimes the health information could be misinterpreted and, therefore, leads to negative health outcomes.

Besides, in a study of innovative mobile services, Liao et al. (2015) established that the functional barriers (i.e., usage barrier, value barrier, and risk barrier) would lead to anti-consumption behaviour among consumers. That is to say, when consumers find the functions of an innovation defective, they would then punish the service provider through dysfunctional behaviours such as spreading negative word-of-mouth. It should be noted that the anti-consumption behaviour is manifested in the forms of rejection, postponement, and opposition in their study. In other words, their work indicated that usage barrier, value barrier, and risk barrier are positively related to rejection, postponement, and opposition in a significant manner.

In the context of m-commerce applications, usage barrier arises when mobile users notice the use of m-commerce applications is difficult, as small touchscreens equipped on smart mobile devices are difficult to use for typing and reading as compared to desktop computers (Leong et al., 2020). Furthermore, if mobile users are not convinced with the additional values or advantages offered by m-commerce applications as compared to their currently used alternatives, value barrier surfaces (Chaouali & Souiden, 2019). M-commerce applications represent ways of performing traditional tasks innovatively. Nonetheless, not every task that is performed through m-commerce applications could yield additional values or advantages in the perceptions of mobile users. For instance, mobile users might dislike the idea of ordering food through mobile food delivery as they face slow delivery time and get cold food at last; these events ultimately reduce their perceived relative advantages of the said m-commerce application (Holmes, 2019).

In some situations, mobile users would also feel uncertain if the m-commerce applications could function or perform as expected, which provokes risk barrier among them (Castro et al., 2020). Take for example, mobile users might fear to involve in mobile banking as this class of m-commerce application demands some skills in order for it to perform as expected without being the victims of mobile phishing attacks (Goel & Jain, 2018; Suhartanto et al., 2020). Accordingly, unskilful mobile users would fear if mobile banking could perform the banking tasks as expected.

Using m-commerce applications changes mobile users' traditions and lifestyles; if these changes are inconsistent with their social norms and values, tradition barrier emerges (T. Laukkanen & Kiviniemi, 2010; Leong et al., 2020). As an illustration, mobile users would not intend to look for casual sex through mobile dating apps if this violates the perceived norms in their society (L. S. Chan, 2017).

Last but not least, image barrier manifests if mobile users have an overall negative image of other technology and they subsequently apply the same stereotyped judgement on m-commerce applications (Chaouali & Souiden, 2019). This argument is similar to the notion of Trust Transfer Theory (Stewart, 2003). Specifically, if mobile users have a bad impression of online payment technology, they should hold the same perception of mobile payment (Cao, Yu, et al., 2018).

Based upon the above arguments, this study expects that the distinct forms of resistance behaviour among the resistant mobile users (i.e., rejection, postponement, or opposition) are varied accordingly to their level of active innovation resistance, such that a higher level of active innovation resistance would lead to a higher level of resistance behaviours. Specifically, if mobile users are facing usage barrier, value barrier, risk barrier, tradition barrier, and image barrier in an m-commerce application, they will subsequently reject it, postpone its adoption, or oppose it. With these, the following hypotheses are offered correspondingly:

H1a: Active innovation resistance is associated with rejection behaviour in a positive manner.

H1b: Active innovation resistance is associated with postponement behaviour in a positive manner.

H1c: Active innovation resistance is associated with opposition behaviour in a positive manner.

3.3 MUIPC and Active Innovation Resistance

With the guidance of the Belief-Attitude-Behaviour Theoretical Chain (Fazio et al., 1978), MUIPC, a form of belief in this study (Bansal et al., 2016; Pagani & Malacarne, 2017), is posited to affect the attitudes of mobile users pertaining to m-commerce applications. As stressed earlier, usage barrier, value barrier, risk barrier, tradition barrier, and image barrier together constitute the negative attitudes of mobile users towards m-commerce applications (C. C. Chen et al., 2022). Henceforth, this study postulates that the privacy concerns accumulated by mobile users throughout their usage of mobile apps shall intensify their negative attitudes towards m-commerce applications. Such theoretical postulation is mainly built on the extant literature which suggests that privacy concerns play a significant role in determining the attitudes of users (Mani & Chouk, 2017; Roy & Moorthi, 2017; Soodan & Rana, 2020).

Apart from affecting mobile users' attitudes as a whole, MUIPC is believed to have associations with all the barriers in the domain of active innovation resistance. As noted earlier, the active innovation resistance barriers are corresponding to other widely known concepts in technology adoption studies (Arif et al., 2020; C. C. Chen et al., 2022; Q. Chen et al., 2019; T.

Laukkanen & Kiviniemi, 2010). Usage barrier and value barrier are the opposite of perceived ease of use and perceived usefulness respectively (Arif et al., 2020), while risk barrier is a counterpart to perceived risks (C. C. Chen et al., 2022). Besides, trust is a corresponding concept to psychological barriers (Q. Chen et al., 2019), whereas anxiety is equivalent to image barrier (T. Laukkanen & Kiviniemi, 2010).

Dhagarra et al. (2020) viewed privacy concerns as a form of discomfort with technology that could result in lower perceived usefulness of that technology. Under the m-commerce environment, a higher level of privacy concerns would induce users to ignore the benefits (i.e., usefulness) resulted from m-commerce adoption and ultimately deter them from adopting m-commerce (Roy & Moorthi, 2017). Similarly, it has been asserted that mobile banking users with a high level of privacy concerns are more likely to view the ease of use of mobile banking less favourably (Sreejesh et al., 2016).

In another study of location-based services, Xu and Gupta (2009) ascertained that privacy concerns of mobile users are significantly and negatively related to both performance expectancy and effort expectancy (equivalent to perceived usefulness and perceived ease of use) of location-based services. Xu and Gupta (2009) further argued that such relationships prevail as location-based services are privacy intrusive in nature, thus reducing the expectancy of mobile users pertaining to the technology.

The negative impact of privacy concerns on perceived usefulness receives additional support from Zhou (2015a) who investigated mobile social network site continuance. Specifically, Zhou (2015a) discovered that the privacy concerns of mobile users would lower their perceived usefulness of mobile social network sites, as they might feel that the mobile social network site operators could not protect their information privacy in a good course.

Likewise, a high level of MUIPC shall diminish mobile users' positive evaluation of m-commerce applications, leading them to develop a negative evaluation instead. That is to say, mobile users would find m-commerce useless and difficult to use if they have accumulated a great extent of privacy concerns throughout their usage of mobile apps. Since usage barrier and value barrier have been viewed as the opposite of perceived ease of use and perceived usefulness respectively (Arif et al., 2020), this study postulates that the MUIPC would amplify their usage barrier and value barrier of m-commerce applications.

The study by Zhou (2015a) has also highlighted that the privacy concerns of mobile users are significantly and positively related to their perceived risks from using mobile social network sites. This is not surprising, as privacy concerns have been associated with heightened levels of perceived risks in respect of technology use (Cheng et al., 2021).

Zhou (2015b) concurred with the identical finding under the context of location-based services and reasoned that the perceived risks of mobile users increase accordingly to their privacy concerns as they face uncertainty in

location-based services after they have disclosed too much personal information such as location information. By the same token, mobile users with higher privacy concerns would perceive a higher risk from using mobile health apps, which causes them to evaluate mobile health apps with considerable caution (Y. Chen et al., 2018).

Considering that risk barrier is a counterpart to perceived risks (C. C. Chen et al., 2022), this study expects a similar effect of MUIPC on risk barrier, such that MUIPC is aiding mobile users to establish their risk barrier in the case of m-commerce applications. In particular, mobile users who have acquired plenty of privacy concerns throughout their usage of mobile apps should be worried about the risks that m-commerce applications entail. In other words, under the influence of MUIPC, mobile users would be uncertain if the m-commerce application being evaluated is fully developed and functional as promised.

Besides, concerning the psychological barriers, Q. Chen et al. (2019) believed that they correspond to the concept of trust, given that lack of trust is regarded as an intrinsic psychological attribute among consumers. For this reason, the absence of trust in relation to m-commerce applications among mobile users suggests the development of tradition barrier and image barrier to m-commerce applications within themselves.

Y. Lu et al. (2011) echoed that trust is affiliated with the positive valance (made up of relative advantage, compatibility, and image) of using mobile

payment services. Simply put, the absence of trust indicates the presence of tradition barrier and image barrier. Also, users with a high level of privacy concerns would have a higher tendency to mistrust the ability of service providers in handling their personal data adequately (Bansal et al., 2016; Walter & Abendroth, 2020). Since privacy concerns deteriorate trust and the absence of trust indicates the presence of tradition barrier and image barrier; it is, therefore, expected that privacy concerns are related to tradition barrier and image barrier in a positive manner.

Completing a transaction online without disclosing private information is challenging, and on that account, privacy has been a necessary concern in online transactions notwithstanding that the disclosure is offered to a trusted third party (K. W. Wu et al., 2012). In the studies conducted by Zhou (2011) and Zhou (2015b) on location-based services, privacy concerns were found to have a significant and negative effect on trust among mobile users, given that mobile users with higher privacy concerns would doubt if the mobile service providers could protect their privacy.

In another study that investigated the use of mobile health, J. Zhang et al. (2022) supported the negative role of privacy concerns on trust and they further opined that mobile users would not trust the mobile apps that provide the services if they are highly concerned about their private information collected and stored in the mobile apps.

Similarly, in a study of location-based mobile government services, Aloudat et al. (2014) further opined that if mobile users are not exceedingly concerned about their location privacy, they are likely to trust the service providers. Ozturk et al. (2017) made the same observation in their study of mobile hotel booking and claimed that mobile users are showing a greater level of concern about their information privacy in comparison to desktop computer users considering that smart mobile devices are typically personal to mobile users. This is especially true as smart mobile devices have been regarded as an electronic extension of persona because mobile users are likely to store private information (such as bank account number) and behavioural identifiers (such as addresses) in their smart mobile devices (T. Zhang et al., 2018).

Furthermore, different from the offline environment, transactions made in the mobile environment may raise privacy concerns among mobile users, and for that reason not all mobile users will see the need for a new mobile channel to perform transactions that could already be carried out under the traditional offline environment (T. Laukkanen et al., 2008). Likewise, it was reported that those who are concerned with privacy are less supportive of new smart technology and would rather remain in favour of the tradition (Hmielowski et al., 2019). Because of this, it is anticipated that the MUIPC would give rise to tradition barrier among mobile users.

Besides, as mobile users might face a possible loss of personal information while using mobile apps, anxiety that refers to the fear about the current or future use of ICTs manifests within them (Degirmenci, 2020). The

notion of anxiety is much similar to image barrier, as both refer to the user's impression (J. J. Hew et al., 2019; T. Laukkanen, 2016; T. Laukkanen & Kiviniemi, 2010). In view that privacy concerns may produce anxiety (Bright et al., 2015), the ability to control personal information disclosure helps reduce consumers' anxiety in the e-commerce context (Li, 2014). Comparatively, in the mobile environment, it was reported that a higher level of privacy concerns corresponds to a greater level of anxiety (Elhai et al., 2017). In light of this, MUIPC shall constitute image barrier among mobile users.

Accordingly, in the context of this study, it is postulated that MUIPC would cause mobile users to develop negative attitudes towards m-commerce applications. In particular, the privacy concerns accumulated by mobile users throughout their usage of mobile apps would provoke them to perceive the m-commerce applications being evaluated as difficult, unworthy, and risky to use. Also, mobile users with high privacy concerns would find the m-commerce applications incompatible with their traditions and lifestyles, on top of developing negative impressions.

All things considered, MUIPC would have shown positive associations with the active innovation resistance barriers (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier) among the resistant mobile users regardless of their resistance behaviours (i.e., rejection, postponement, or opposition). With these, the following hypotheses are developed:

H2a: MUIPC is associated with active innovation resistance in a positive manner among rejecters.

H2b: MUIPC is associated with active innovation resistance in a positive manner among postponers.

H2c: MUIPC is associated with active innovation resistance in a positive manner among opponents.

3.4 Mobile Technostress and Active Innovation Resistance

In recent years, advancements in ICTs have been taking place quickly, especially for smart mobile device technologies (Adikpo, 2019; Pivetta et al., 2019). Nonetheless, Malik et al. (2021) noted that high exposure to smart mobile device technologies could harm users' psychosocial well-being. The phenomenon of being over-dependent on smart mobile technologies such as smartphones, as mentioned by Boonjing and Chanvarasuth (2017), is considered a type of stressor.

In this study, mobile technostress incurs due to the inability of mobile users to cope with the fast-changing smart mobile device technologies in a healthy manner (Anand et al., 2014; Mak et al., 2018; Mani & Chouk, 2018). Following the Stress-Strain-Outcome Model (Koeske & Koeske, 1993), this study postulates that the mobile technostress experienced by mobile users would subsequently provoke the development of strain within them.

The past literature has regarded strain as an attitudinal state (Rubino et al., 2012) that refers to consumers' adverse or negative reactions after experiencing stress (Islam et al., 2018), providing a reasonable ground to treat

strain equivalently to attitude. Considering that active innovation resistance has been widely recognised as a form of attitude (Heidenreich & Kraemer, 2015; Joachim et al., 2018; E. V. Tonder, 2017; van Klyton et al., 2021), the mobile technostress experienced by mobile users due to the fast pace of change in smart mobile device technologies shall be related to their active innovation resistance barriers (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier) towards m-commerce applications.

In the organisational context, it was posited that the technostress manifested within employees would affect their attitudes towards technology (L. Chen, 2018; L. Chen & Muthitacharoen, 2016). Likewise, mobile technostress prevents mobile users from using mobile ICTs as it induces them to establish negative attitudes towards mobile ICTs (L. Chen, 2015). As established earlier, the negative attitudes of mobile users towards m-commerce applications are represented by usage barrier, value barrier, risk barrier, tradition barrier, and image barrier in this study (Leong et al., 2020). Hence, it is postulated in this study that the mobile technostress suffered by mobile users would stimulate them to establish active innovation resistance towards m-commerce applications.

Besides, Sharma and Gupta (2023) opined that during the strain stage, users would go through a cognitive appraisal towards the use of ICTs that determine their adaption behaviour (i.e., outcome). Heijden (2002) proclaimed that the cognitive appraisal resembles a process of developing cognitive attitudes (i.e., strain) through an evaluation of beliefs (i.e., stressors), which corresponds to the notion of the Belief-Attitude-Behaviour Theoretical Chain (Fazio et al.,

1978). Rauch et al. (2018) further added that depending on the cognitive appraisal process, the stress experienced by individuals would result in a stress reaction (i.e., strain) that affects their behavioural outcomes.

In the context of ICTs, it was stressed that users would largely base on the cognitive appraisal process to develop their decisions to use ICTs (J. B. Kim, 2012). For example, when using mobile apps, mobile users would perform a cognitive appraisal to evaluate their interaction with the user interface in terms of usefulness and efficiency to determine their future usage (Y. Wu & Chang, 2013). Applying the same notion to the context of ICTs, the technostress experienced by users should affect their cognitive appraisal (i.e., strain) towards the use of ICTs, which subsequently determines their technostress adaptational outcomes (Sharma & Gupta, 2023).

Castro et al. (2020) consented to the role of cognitive appraisal and emphasised that innovation resistance would occur if the cognitive evaluation of innovation produces reasons for consumers to resist it. They further asserted that usage barrier, value barrier, and risk barrier (i.e., the functional barriers) are the cognitive barriers to adoption that emerge after a consumer's deliberate evaluation of the innovation's characteristics.

Additionally, the strain has been considered by Whelan et al. (2020) as a form of psychological reaction that is resulted from stress. Therefore, this study considers the functional and psychological barriers as the strain mobile users developed after deliberately evaluating the m-commerce applications'

characteristics. These arguments further support the association between mobile technostress and active innovation resistance.

Other than influencing the strain of users (which is equivalent to attitude and cognitive appraisal as discussed earlier on) as a whole, technostress has also been reported to affect both usage barrier and value barrier. Steelman and Soror (2017), for example, asserted that technostress is correlated negatively to the cognitive evaluations of system characteristics such as perceived ease of use and perceived usefulness (i.e., the opposite of usage barrier and value barrier respectively). Subsequently, the results obtained in their study have confirmed the significant role of technostress on perceived ease of use.

In a study investigating the adoption of electronic healthcare systems, Y. Zheng et al. (2016) also echoed that technostress shall be a factor that deteriorates the perceived ease of use and perceived usefulness of electronic healthcare systems. Such claims are understandable as both perceived ease of use and perceived usefulness represent the cognitive appraisal towards the usage of a system performed by users, and technostress is deemed to influence such cognitive appraisal (Sharma & Gupta, 2023; Torres & Gerhart, 2019).

In a similar fashion, Verkijika (2019) opined that the advancement in mobile technologies has given rise to the mobile technostress that causes students to opt for print textbooks rather than digital textbooks, despite the usefulness of digital textbooks. In other words, mobile technostress could lower the usefulness of digital textbooks. Also, as noted by L. Chen (2015), when the

users of mobile ICTs are feeling stressful about using mobile technologies, they will experience difficult times in completing their tasks.

Based upon these rationales, the mobile technostress experienced by mobile users due to the fast pace of change in smart mobile device technologies would trigger their usage barrier and value barrier in relation to m-commerce applications, which cause them believing that m-commerce applications are not useful and difficult to use.

As stressed by Chiu et al. (2021), the cognitive appraisal process would result in cognitive attitudes, and S. H. Chang et al. (2016) together with Callum et al. (2014) claimed that perceived risks (counterpart to risk barrier), trust (corresponding to psychological barriers), and anxiety (equivalent to image barrier) are classified as cognitive attitudes. Following the notion that technostress would affect the attitudes towards technology (L. Chen, 2018; L. Chen & Muthitacharoen, 2016), it is believed that mobile technostress is related to risk barrier, tradition barrier, and image barrier.

Specifically, it was commented that the technostress suffered by employees imposes risks for system use and adoption (Haddara & Hetlevik, 2016); hence it was further suggested that technostress and risks are often related (Umair et al., 2019). Under the mobile environment, Spreer and Rauschnabel (2016) considered technostress as the strongest form of uncertainty that creates physical and psychological discomfort. Concerning the effects of mobile technostress, L. Chen (2015) further added that mobile technostress could cause

psychological damage and trigger negative emotions such as anxiety among mobile users.

In accordance with these rationales, this study expects that the mobile technostress experienced by mobile users would trigger their risk barrier, tradition barrier, and image barrier towards m-commerce applications. Mobile users who are suffering a high level of mobile technostress intend to see the use of m-commerce applications entails risk and uncertainty, on top of perceiving them to be incompatible and assigning them with negative impressions.

In essence, regardless of their resistance behaviours (i.e., rejection, postponement, or opposition), this study postulates that the mobile technostress experienced by the resistant mobile users would be positively associated with their levels of active innovation resistance barriers (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier). As such, it is hypothesised that:

H3a: Mobile technostress is associated with active innovation resistance in a positive manner among rejecters.

H3b: Mobile technostress is associated with active innovation resistance in a positive manner among postponers.

H3c: Mobile technostress is associated with active innovation resistance in a positive manner among opponents.

3.5 Passive Innovation Resistance and Active Innovation Resistance

Distinct from active innovation resistance, passive innovation resistance takes place unconsciously before the consumers deliberately evaluate an innovation (Goldkind et al., 2016). As emphasised by Heidenreich, Freisinger, et al. (2022), passive innovation resistance resembles a general predisposition to resist innovations as it is formed before the consumers are aware of an innovation.

Following the five-stage decision-making process of Talke and Heidenreich (2014), after the knowledge stage (i.e., the first stage) in which the consumers are aware of an innovation, passive innovation resistance is likely to influence the innovation evaluation in the persuasion stage (i.e., the second stage) in which the consumers evaluate the innovation's specific features and subsequently develop an attitude towards it.

Generally, consumers with a high level of passive innovation resistance are likely to evaluate the innovation less favourably (Heidenreich & Spieth, 2013). In this regard, it is expected that passive innovation resistance is related to active innovation resistance in a positive manner since the active innovation resistance barriers (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier) constitute the negative attitudes towards an innovation (Leong et al., 2020).

Ghazali et al. (2020), along with Heidenreich et al. (2016), asserted that passive innovation resistance affects the perception of an innovation, hence

fostering functional and psychological barriers during the evaluation of that innovation. Nysveen and Kristensson (2017) endorsed this notion and suggested that passive innovation resistance (comprises inclination to resist changes and status quo satisfaction) would reinforce both functional and psychological barriers (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier).

Empirically, these claims were verified by Heidenreich et al. (2011), who found that passive innovation resistance exerts significant and positive effects on functional and psychological barriers. Moreover, other studies (Heidenreich & Spieth, 2013; Juric & Lindenmeier, 2019) revealed that passive innovation resistance is significantly correlated to active innovation resistance as a whole in a positive manner.

It was also claimed that consumers who show a high level of passive innovation resistance would, by and large, overrate the complexity of innovation as the learning process of using innovation is challenging for them given their high inclination to resist changes (Heidenreich & Spieth, 2013). Also, Heidenreich and Kraemer (2015) argued that it is unlikely for consumers to adopt a superior alternative (e.g., a computerised method) if they are already highly satisfied with their current method (e.g., a manual method) of handling a task.

Hence, it was empirically verified that passive innovation resistance is negatively related to an innovation's usefulness and ease of use (Juric &

Lindenmeier, 2019). Identically, it is expected that if consumers are satisfied with an existing product, they tend to exaggerate the risks entailed by an innovation (Heidenreich & Spieth, 2013). For these reasons, passive innovation resistance is believed to fortify the usage barrier, value barrier, and risk barrier among consumers.

It should also be noted that consumers who are highly inclined to resist changes are less open to innovations as they would feel stressed with the changes imposed by the innovations and find it challenging to break their routines (Heidenreich et al., 2016; Koch et al., 2021). In addition, they prefer the continued use of current products rather than trying alternatives (Heidenreich & Kraemer, 2016), due to their status quo satisfaction would be easily upset by the changes required in adopting new products (Heidenreich et al., 2016).

All things considered, consumers with a considerable degree of passive innovation resistance would negatively evaluate the innovations being considered (Heidenreich & Kraemer, 2015) and subsequently develop psychological reactance (i.e., tradition barrier and image barrier) against the innovations (Heidenreich & Talke, 2020).

In this study, it is postulated that the same notion will hold for m-commerce applications. With the aims of resisting changes and preserving their status quo satisfaction, mobile users with a significant degree of passive innovation resistance would incline to develop negative attitudes towards m-

commerce applications (i.e., usage barrier, value barrier, risk barrier, tradition barrier, and image barrier).

Given that m-commerce applications have been regarded as an innovative way to perform tasks (Al Janabi & Hussein, 2020) and new features are introduced frequently (X. Zhang et al., 2023), it is inevitable for mobile users to make changes prior to adoption. For example, there are three different means for users to choose when performing mobile payment, namely short message service, near field communication, and quick response code (de Luna et al., 2019); each of which would require a behavioural change from the users who use cash as a medium of exchange (N. Kumari & Khanna, 2017). In this manner, mobile users who are inclined to resist changes and satisfied with cash as a payment method would be predisposed to evaluate mobile payment negatively.

Therefore, it is hypothesised that passive innovation resistance is positively related to active innovation resistance among the resistant mobile users regardless of their resistance behaviours (i.e., rejection, postponement, or opposition):

H4a: Passive innovation resistance is associated with active innovation resistance in a positive manner among rejecters.

H4b: Passive innovation resistance is associated with active innovation resistance in a positive manner among postponers.

H4c: Passive innovation resistance is associated with active innovation resistance in a positive manner among opponents.

3.6 Control Variables

According to Atinc et al. (2012), control variables, which are also known as extraneous variables that do not serve as the focal variables in a study, are usually included in a study's design in order to avoid threats that could endanger the valid inferences made by the study. Specifically, by including control variables into a research model, researchers could "purify" the results by statistically removing any potential distortions exerted by the control variables, exposing the genuine relationships eventually (Bernerth et al., 2018).

Moreover, as opined by Clarke (2005), the inclusion of relevant control variables could help reduce bias and inconsistency in a study, and the absence of control variables would limit researchers' ability to estimate inferences correctly. That is to say, since control variables could potentially explain an endogenous construct, the inclusion of them would explain "statistical noise in the" endogenous construct and help researchers assess the hypothesised main effects more accurately (Klarmann & Feurer, 2018, p.27). Consequently, to better understand the influence of focal constructs presented within the MOCART, this study posits six control variables that could potentially influence the resistance behaviours.

Considering that gender and age could play an important role when consumers are making adoption or rejection decisions (T. Laukkanen, 2016), the available literature on innovation resistance has suggested that demographic variables, for example, gender, age, and education level, are related to user

behaviour and hence could exert confounding effects (A. Hong et al., 2020; Y. H. Hong et al., 2015; S. Talwar et al., 2020). Along the same vein, literature on m-commerce applications adoption or resistance advocated that other demographic variables such as income level and usage experience have to be controlled due to their confounding roles (Gong, Cheung, et al., 2020; Gong, Zhang, et al., 2020; Khanra et al., 2021).

Particularly, in a mobile payment study, Khanra et al. (2021) ascertained that age has a significant controlling influence on the postponement of mobile payment services. T. Laukkanen (2016), in another study of mobile banking, confirmed that both age and gender play a significant major role when consumers are making their rejection decisions. On the other hand, both education level and experience were found to have confounding effects on the intention to use functional innovation (Koch et al., 2021). Similarly, Lobera et al. (2020) reported that income level has a significant effect on the perceptions of technology. Accordingly, this study controls the potential confounding effects of gender, age, education level, income level, experience in using smart mobile devices, and experience in using mobile apps, as they are the known covariates of user behaviour.

3.7 Conclusion

In light of relevant literature, this chapter has established the relationships among the major constructs within MOCART. Among the three distinct groups of resistant mobile users (i.e., rejecters, postponers, and

opponents), it is postulated that their MUIPC, mobile technostress, and passive innovation resistance are positively associated with their development of active innovation resistance. Subsequently, the developed active innovation resistance is hypothesised to be positively related to the distinct forms of resistance behaviour (i.e., rejection, postponement, or opposition) among mobile users who do not adopt m-commerce applications. Figure 3.1, Figure 3.2, and Figure 3.3 depict the hypothesised paths among these groups of resistant mobile users. For the purpose of supporting the hypotheses with empirical data, the next chapter describes the research methodology that will be employed in this study.

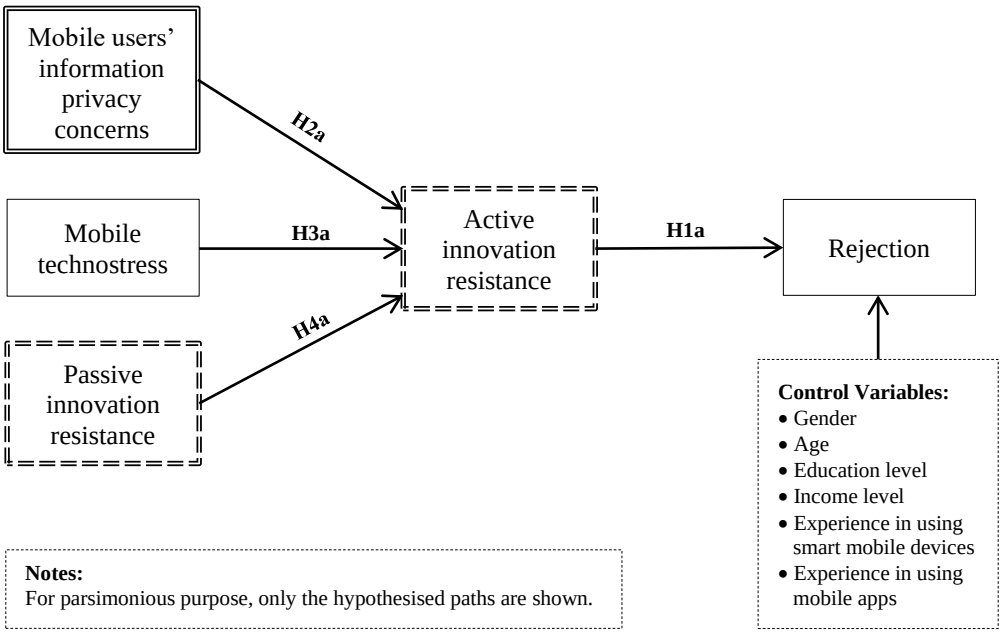

Figure 3.1: The Hypothesised Paths for Rejecters

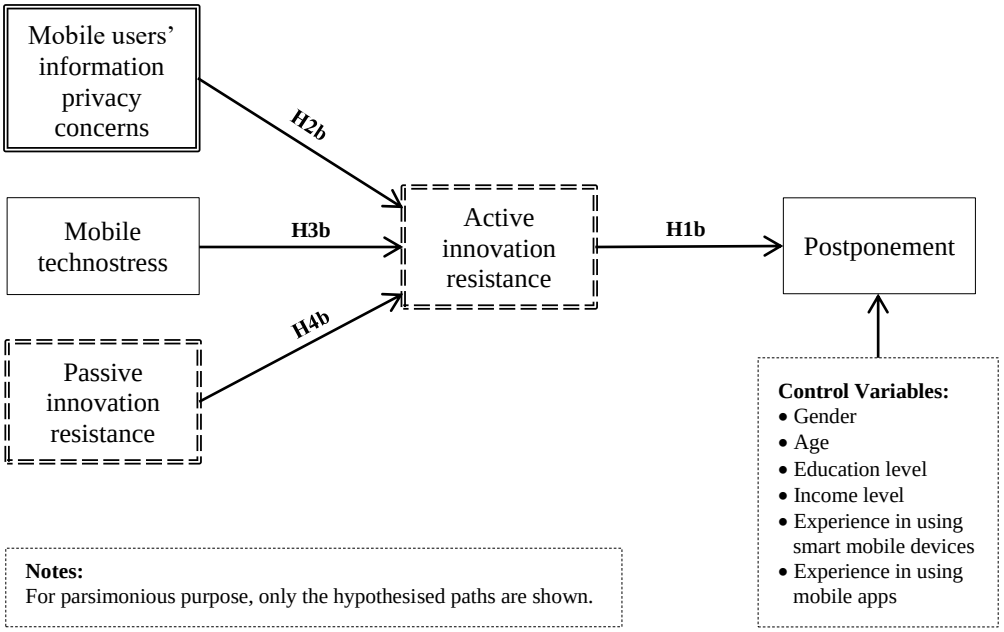

Figure 3.2: The Hypothesised Paths for Postponers

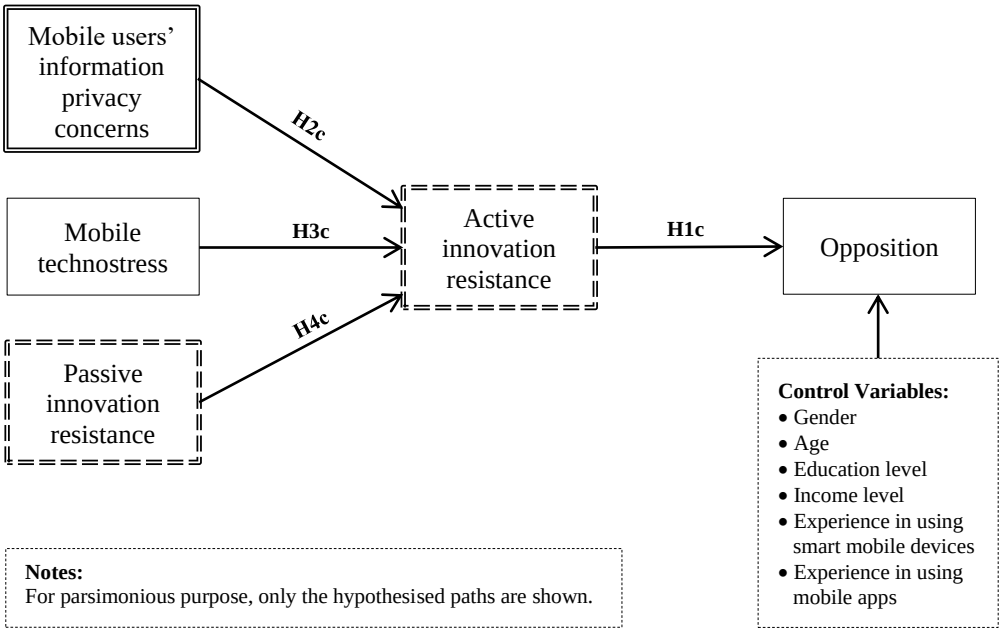

Figure 3.3: The Hypothesised Paths for Opponents

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter aims to discuss the research philosophy, research design (including a detailed explanation of the target population, sampling element, sampling frame, sampling technique, sample size, research instrument, survey location, survey method, and construct operationalisation), pre-test and pilot test, and data analysis techniques employed in this study.

4.2 Research Philosophy

Among the five major research philosophies namely positivism, critical realism, interpretivism, postmodernism, and pragmatism, this study adopts the positivism research philosophy (Saunders et al., 2016). According to Hair et al. (2016), the positivism research philosophy considers "reality as something that can be objectively ascertained and described through research" (p.297).

Giraldo (2020) further shared that positivists would assert that reality is measurable, observable, and quantifiable. Principally, researchers under this philosophy are interested in large-scale social data collection and emphasised

empirical analysis to understand the social world in an objective way (Taylor, 2018; Žukauskas et al., 2018).

In a more specific manner, positivists would develop hypotheses by referring to the existing theories and subsequently test the hypotheses proposed with the intention of developing another novel theory (Saunders et al., 2016). Guided by this research philosophy, this study builds the MOCART with reference to several theories and seeks to verify it empirically through a rigorous research design.

4.3 Research Design

Hair et al. (2016) expressed that there are three main types of research design, namely exploratory, descriptive, and causal. According to them, a study with causal design tests whether one event causes another. Beri (2013), who opined that a causal study investigates the cause and effect relationship between two or more constructs, offered a similar explanation. Hence, this study is deemed to have a causal research design, as it discovers the functional association between the exogenous constructs and their predicted impact on the endogenous constructs under investigation (Bajpai, 2011).

In this study, an online survey questionnaire was used as the research instrument to collect primary data from the representative sample that is drawn from the target population (Mkoba & Marnewick, 2020; Zikmund et al., 2013). As opined by Regmi et al. (2017), an online survey is an ideal method to collect

quantitative data for further analyses, as it is inexpensive to conduct and capable of collecting a huge amount of data. Moreover, since the data collection period for this study (i.e., June 2021 to October 2021) was during the COVID-19 pandemic, an online survey seemed to be a sound and feasible research method that abides by social distancing measures (Ahmed et al., 2020; Elran-Barak & Mozeikov, 2020; Rieger, 2020).

Moreover, since this study attempts to construct generalisations for a population of interest by measuring the behaviours and characteristics of a large representative sample drawn from that population, it is therefore considered quantitative research (Wilson, 2014). Furthermore, Rose et al. (2015) asserted that cross-sectional research is studying a specific phenomenon at a particular point of time. Hence, this study is regarded as a cross-sectional study as the data is collected from the respondents at a specific point of time, disregarding the temporal differences.

In the following sub-sections, more detailed discussions pertaining to the research design (including the target population, sampling element, sampling frame, sampling technique, sample size, research instrument, survey location, survey method, and construct operationalisation) are to be made.

4.3.1 Target Population

In this study, the target population is Malaysian mobile users who are resistant to at least one class of m-commerce application. Specifically, they

should be (i) owning a unit of smart mobile device or more and (ii) encountered an m-commerce application that they know the most about but remains unadopted. As m-commerce applications work only on smart mobile devices, only the mobile users who have encountered an unadopted m-commerce application that they know the most about, are qualified to provide adequate responses regarding their resistance behaviours towards that particular m-commerce application.

4.3.2 Sampling Element

Individual mobile users who are resistant to at least one class of m-commerce application are the sampling element in this study. Sensibly, the resistant mobile users could tell better about their resistance behaviours towards m-commerce applications.

As stressed in Section 2.2, since it is impossible to cover the whole range of m-commerce applications (Hao et al., 2007), this study only covers 14 classes of m-commerce applications (as shown in Table 2.1) that are identified based on the top 100 free mobile apps in both App Store and Google Play (App Annie, 2020). Specifically, only the mobile users who know the most about any of these 14 classes of m-commerce applications yet resistant to it, were sampled.

4.3.3 Sampling Frame

Given that it is impossible to obtain a name list that consists of all Malaysian mobile users who are resistant to at least one class of m-commerce application, the sampling frame is thus unavailable for this study. As such, probability sampling techniques are forbidden in this study, and this limitation motivates the choice of non-probability sampling (Christensen et al., 2015; Saunders et al., 2016).

4.3.4 Sampling Technique

In agreement with Saunders et al. (2016), as the population is large and it is impractical to survey everyone, the sampling technique is deemed necessary. Because of the absence of a sampling frame, this study employs non-probability sampling (Christensen et al., 2015; Saunders et al., 2016). As put forth by Sekaran and Bougie (2016), there are two main types of non-probability sampling, namely convenience sampling and purposive sampling.

Cooper and Schindler (2014) considered convenience sampling as the least reliable method, as researchers have the freedom to invite anyone to be the respondents, and they further stated that purposive sampling, a type of non-probability sampling that recruits respondents based on certain criteria, is divided into two types, namely judgemental sampling and quota sampling. Under the former sampling method, researchers attempt to select a representative sample based on certain criteria set by them (Vehovar et al., 2016). Although

such a method is considered good enough, the latter can improve the representativeness of the sample in reflecting the population (Fowler, 2014; Vehovar et al., 2016).

Like other non-probability sampling methods (such as convenience sampling), quota sampling has been criticised for its generalisability (Sekaran & Bougie, 2016). However, quota sampling is sometimes the only viable method for researchers, especially when probability sampling methods could not be employed due to the absence of a sampling frame (Saunders et al., 2016; Sekaran & Bougie, 2016).

As mentioned earlier, due to the sampling frame's unavailability, probability sampling is not feasible in this study (Christensen et al., 2015; Saunders et al., 2016). Considering this limitation, quota sampling resembles the best possible choice among the non-probability sampling methods. Besides, this method is capable of improving the representativeness of the sample in comparison to other non-probability sampling methods (Fowler, 2014; Saunders et al., 2016; Vehovar et al., 2016).

Quota sampling is a popular method in commercial research, for example, marketing research (Bryman & Bell, 2011; Coolican, 2014). The main objective of quota sampling is to obtain a sample that could reasonably reflect the population (Leavy, 2017). Identical to stratified sampling (a type of probability sampling technique), quota sampling first divides the population into strata or subgroups that could represent the significant characteristics of the wider

population (Cohen et al., 2018). The researchers then decide the desired number of respondent (also known as quota) to be surveyed in each subgroup based on the total number of each subgroup in the population (Sekaran & Bougie, 2016). Once the quota within a certain subgroup is decided, the respondents from whom data is collected would be recruited to participate in the study until the desired quotas for all subgroups are reached (Coolican, 2014). According to Rose et al. (2015), the respondents could be selected through different sampling methods, for instance, convenience or self-selection sampling.

As stressed in Section 4.3, given the COVID-19 pandemic, an online survey questionnaire was used as the means to collect primary data from the representative sample (Ahmed et al., 2020; Elran-Barak & Mozeikov, 2020; Rieger, 2020). Generally, online surveys have to involve the use of a self-selection sampling technique which gives the respondents a right to self-select themselves for inclusion in the study (Rose et al., 2015; Vehovar et al., 2016). In a typical online survey, researchers will post a general invitation on websites such as virtual communities and wait for the potential respondents to respond to the invitation (Sekaran & Bougie, 2016; Vehovar et al., 2016).

In this study, the subgroups of the representative sample were established based on the total number of mobile subscriptions in Malaysia as of the first quarter of 2020 (Malaysian Communications and Multimedia Commission, 2020b). Table 4.1 lists the total number of mobile subscriptions for every state and region in Malaysia.

Table 4.1: Total Number of Mobile Subscriptions in Malaysia

Regions	States
Central Region (12,489.9)	Selangor (8,272)
	Kuala Lumpur (4,116.8)
	Putrajaya (101.1)
Southern Region (7,672.6)	Johor (5,117.6)
	Negeri Sembilan (1,506.5)
	Malacca (1,048.5)
Northern Region (7,668.6)	Perak (2,789.4)
	Penang (2,514.9)
	Kedah (2,097.1)
	Perlis (267.2)
East Malaysia (6,030.2)	Sabah (3,045.4)
	Sarawak (2,884.2)
	Labuan (100.6)
East Coast Region (4,470.1)	Kelantan (1,692.6)
	Pahang (1,629.2)
	Terengganu (1,148.3)

Notes:
1. The total number of mobile subscriptions ('000) obtained from Malaysian Communications and Multimedia Commission (2020a) is shown in parentheses.
2. The grouping of states into regions is similar to other studies conducted in Malaysia (Abdul Shakor et al., 2020; Y. K. Cheah et al., 2020; Yahya et al., 2019).

To select a representative sample, all geographical regions were regarded as individual subgroups and were included in this study for sampling purposes. Such a methodology is comparable to another study conducted in Malaysia (Mahdzan et al., 2019).

Subsequently, quotas were established for all regions (i.e., the subgroups) in proportion to their respective total number of mobile subscriptions. Considering that this study is analysing the three distinct forms of resistance

behaviour (i.e., rejection, postponement, and opposition) separately, another level of sub-quotas for these forms of resistance behaviour was set up for all regions. In order to ensure a fair representation, the same proportion for all three forms of resistance behaviour was allocated to all regions. Given that there was no better basis for establishing the quotas, the total number of mobile subscriptions resembled the best suitable basis in this study.

In Table 4.2, a targeted sample or quota of 1,050 (to be discussed in Section 4.3.5) was allocated to the regions based on the method described above. All three distinct forms of resistance behaviour were assigned with a targeted sample or quota of 350, making the total targeted sample or quota 1,050. The central region had the most allocated sample or quota given its highest amount of total mobile subscriptions, while the east coast region was assigned with the least sample or quota due to its lowest amount of total mobile subscriptions.

Table 4.2: Quotas and Sub-Quotas Allocated for All Regions

Regions	Total mobile subscriptions ('000)	Sub-quotas allocated for			Total quotas
		Rejecters	Postponers	Opponents	
Central Region	12,489.9	114	114	114	342
Southern Region	7,672.6	70	70	70	210
Northern Region	7,668.6	70	70	70	210
East Malaysia	6,030.2	55	55	55	165
East Coast Region	4,470.1	41	41	41	123
	38,331.4	350	350	350	1,050

Notes:

1. Sub-quotas = $\frac{\text{Number of mobile subscriptions in a region}}{\text{Total number of mobile subscriptions in all regions}} \times 1{,}050 \times \frac{1}{3}$

2. Total quotas = Sub-quotas allocated for each form of resistance behaviour × 3

4.3.5 Sample Size

This study mainly analyses the data collected through the partial least squares structural equation modelling (PLS-SEM) technique (further rationales for choosing the PLS-SEM would be discussed under Section 4.5), a path modelling method that has lesser demand on the sample size and, therefore, requires smaller sample size (Hair, Matthews, et al., 2017; Hair, Risher, et al., 2019).

There are some rules of thumb on the minimum sample size required for PLS-SEM. Firstly, K. K. Wong (2013) opined that under the most extreme case and complicated model (when there are 10 arrows pointing to a construct), the minimum sample size required is only 91 cases for each type of resistance behaviour (i.e., rejection, postponement, and opposition). Secondly, Hair et al. (2014, p.109) suggested that the minimum sample size required is "10 times the largest number of formative indicators used to measure one construct or 10 times the largest number of inner model paths directed at a particular construct in the inner model". In this study, the construct of inclination to resist changes has the largest number of formative indicators (i.e., four). With this, the minimum sample size required would be 40 for each type of resistance behaviour.

Nevertheless, Hair, Hult, et al. (2017) advised considering the minimum sample size against the model's background rather than just following the rules of thumb. In this manner, they advocated that the minimum sample size should be determined by the means of power analyses and the number of exogenous

constructs contained within a model. Following their method, in order to achieve a statistical power of 0.80 for detecting coefficient of determination (R^2) values of at least 0.25 with a probability of error of 0.05, the minimum required sample size would be 41 cases when the model has four exogenous constructs. As such, the minimum required sample size for each type of resistance behaviour is 41 under this method.

On the other hand, through the G*Power 3.1.9.7 (Faul et al., 2007) and following the input parameters (i.e., effect size = 0.15, probability of error = 0.05, statistical power = 0.80, and number of predictors = four) recommended by Anholon et al. (2018), it is suggested that the minimum required sample size in this study would be 85 for each type of resistance behaviour.

Aside from the above, based on the number of latent constructs and number of measurement items, Westland (2010, 2012) proposed a method of calculating the minimum required sample size for studies that engaged structural equation modelling (SEM). Such a method is made available as an online calculator by Soper (2023). By using the parameters (i.e., effect size = 0.30, statistical power = 0.80, number of latent constructs = 23, number of measurement items = 51, and probability of error = 0.05) suggested by Ali et al. (2016) and Jászberényi et al. (2022), the recommended minimum sample size would be 349 for each group of resistance behaviour.

Given these rules of thumb and calculations, the minimum sample size should be 349 for each type of resistance behaviour in this study (i.e., the largest

minimum sample size among different approaches). Thus, this study rounded off the recommended sample size and targeted 350 cases for each type of resistance behaviour.

4.3.6 Research Instrument

This study used an online survey to collect data from the target respondents. As stressed earlier, given the data collection period for this study (i.e., June 2021 to October 2021) was during the COVID-19 pandemic, online survey seemed to be a sound and feasible research method that abides by the social distancing measures during the COVID-19 pandemic (Ahmed et al., 2020; Elran-Barak & Mozeikov, 2020; Rieger, 2020).

As shared by Sekaran and Bougie (2016), one of the big advantages of an online survey questionnaire is its ability to reach respondents who are difficult to reach through other channels. Due to the COVID-19 pandemic, many countries' governments, including the Malaysian government, issued orders requiring the community to stay home, resulting in decreased population movement (Moreland et al., 2020).

Since then, online technologies such as online shopping and online learning have become one of the main tools in dealing with the consequences of the crisis (Beaunoyer et al., 2020). Apparently, the best channel to approach the target respondents was through online channels during that unprecedented moment when more time was spent indoors (Fazeli et al., 2020). This is

especially true, as the Malaysian Population and Housing Census 2020 was conducted online owing to the global pandemic (Sharon, 2020).

In typical online surveys, as the invitation to participate is posted online, researchers have to engage self-selection sampling (Vehovar et al., 2016), which leads to self-selection bias, a major limitation of any online surveys (Sekaran & Bougie, 2016). As defined by I. Choi et al. (2017, p.32), self-selection bias is a "systematic difference between those individuals participating in the study and those who do not". For example, given their self-interests in the topic, parents who participate in discussing their children's behaviour might have different beliefs, in some systematic way, compared to other parents who are not interested in such a topic and subsequently decline to participate (Rose et al., 2015).

Despite such a major limitation, an online survey with self-selection sampling was still a good choice for studies conducted during the COVID-19 period where everyone was urged to stay home (Durizzo et al., 2021; Gesser-Edelsburg et al., 2020). While self-selection bias is inherently linked with online surveys (Dolnicar et al., 2009), it could be avoided or controlled in the research design or data collection stage (L. H. Smith, 2020).

To avoid and control for self-selection bias, Mandelkorn et al. (2021) recommended including general survey details (for e.g., you are invited to take a survey) in the invitation to participate in order to avoid recruiting only the participants who are interested in the topic being studied. This is in agreement

with Litman and Robinson (2020) who suggested using a generic title and giving general descriptions and instructions to the participants during the online surveys for the purpose of controlling self-selection bias. Furthermore, Y. Ram and Hall (2022) advocated that using related keywords in the invitation to participate could help minimise the self-selection bias.

The online survey questionnaire in this study consists of two main sections. One of them is about the demographic profile of respondents, wherein the respondents have to disclose their personal details, whereas the other contains the measurement items of all first-order reflectively measured constructs in this study, as shown in Table 4.4.

4.3.7 Survey Location

Sekaran and Bougie (2016) observed that in many online surveys, the researchers would publish the invitation to participate and survey link on websites such as virtual communities in order to reach the target respondents. Following other similar studies that engaged an online survey questionnaire as the research instrument (Akhal & Liu, 2019; F. Zhang & Kaufman, 2017), the invitation to participate and the survey link were posted in a Malaysian online English forum named "lowyat.net" (lowyat.net, 2020b).

According to Alexa (2020), "lowyat.net" was the top forum in Malaysia as of November 2020 in terms of its traffic rank. From the forum's statistics, there were 916,196 registered members as of November 2020 and recorded the

most members ever online on May 29, 2020, with a count of 38,812 members (lowyat.net, 2020a). It is believed that "lowyat.net" is a general forum as it contains sub-forums of varied interests, for instance, "Photography, Digital Imaging & Video", "Property Talk", "Finance, Business and Investment House", "Football Lounge", and so on (lowyat.net, 2020a).

Specifically, the invitation and the survey link were posted in sub-forum named "Kopitiam", given its highest level of popularity in terms of the number of replies (i.e., about 14.5 million as of November 2020) among all the sub-forums in "lowyat.net" (lowyat.net, 2020a). Owing to these, it is believed that "lowyat.net" is an appropriate channel that could reach a great number of target respondents with varied backgrounds and interests.

4.3.8 Survey Method

In the invitation to participate, the potential respondents were briefed about the purpose of this study and survey details. As discussed earlier, in order to avoid and control self-selection bias (Litman & Robinson, 2020; Mandelkorn et al., 2021; Y. Ram & Hall, 2022), the purpose and survey details were as generic as possible with the use of relevant keywords. In this vein, no specific requirements were mentioned to the potential respondents who only knew that the purpose of the survey was about consumer behaviours. This was to avoid recruiting respondents who are interested in the subject being studied, namely the resistance behaviours towards m-commerce applications.

Furthermore, to encourage participation, incentives in the form of cash vouchers were offered as lucky draw prizes, and this was mentioned in the invitation (Degirmenci, 2020). Specifically, 20 respondents who had completed the survey questionnaire were randomly selected and each of them was awarded cash vouchers worth RM100.

Following the practice of Gong, Zhang, et al. (2020), a statement that clarifies "m-commerce applications are the innovative ways of performing certain tasks that require mobility (e.g., mobile payment) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, Boost" was made available in the introductory paragraph of the online survey questionnaire in order to ensure that the respondents would have a clear understanding of m-commerce applications. The respondents could only see this clarification after they had decided to participate and subsequently clicked on the survey link that led them directly to the online survey questionnaire.

Besides, as suggested by Z. W. Y. Lee et al. (2021), with the intention of identifying qualified respondents, three screening questions were asked in the first section of the online survey questionnaire: (i) nationality, (ii) number of smart mobile device(s) owning, and (iii) which of the following mobile commerce application do you know the most about but remains unadopted.

The first screening question offers two choices namely "Malaysian" and "Non-Malaysian", while the second screening question presents multiple choices of "0 unit", "1 unit", "2 - 3 units", and "more than 3 units". Identically,

the third screening question offers multiple choices of 14 classes of m-commerce applications (as shown in Table 2.1). The participants who selected "Non-Malaysian" or "0 unit" or "none of the above" were thanked and dismissed.

Afterwards, to group the qualified respondents based on their resistance behaviours, a question asking them to select their future intention to use the m-commerce application identified was prepared. Three choices are available, namely "never", "intend to use, most likely within a year from now", and "intend to use but have not decided when, most likely more than a year from now". Based on their choice, the qualified respondents were grouped as rejecters, postponers, or opponents respectively (Q. Chen et al., 2019; P. Laukkanen et al., 2008).

Besides, two more procedures were implemented to improve the data quality. Firstly, the online survey questionnaire hosting platform was instructed to allow only one response from each respondent (Gong, Zhang, et al., 2020). Secondly, one attention-trap question was designed and appeared in the middle of the online survey questionnaire (Gong, Cheung, et al., 2020). Specifically, the question is "Please select '6 - Agree' for this statement" (Z. W. Y. Lee et al., 2021).

In order to meet the required quotas established based on quota sampling, the data collection period lasted for about four months, starting at the end of June 2021 and concluding at the end of October 2021. In total, there were 1,311 respondents participated in the online survey. Nonetheless, 98 were not qualified respondents and were excluded from the final sample. Specifically, five are non-

Malaysian, 91 do not have any mobile commerce application that they know the most about but remains unadopted, and two do not own any smart mobile devices.

This resulted in 1,213 qualified respondents who then answered the remaining sections of the online questionnaire. Among these qualified respondents, 58 were eliminated from the final sample as they did not pass the attention-trap question. In total, the online survey collected 1,155 qualified and valid responses.

Given that collecting the desired quotas for every subgroup is necessary, the online survey questionnaire continued even when the desired quotas for some subgroups were met. This resulted in 105 excessive responses which must be excluded from the final sample. Eventually, the final sample constitutes 1,050 qualified and valid responses that meet the desired quotas for every subgroup.

4.3.9 Construct Operationalisation

To operationalise a first-order construct, an operational definition is needed (Barker et al., 2015). Based on the literature reviewed, Table 4.3 showcases and summarises the operational definitions of all first-order constructs adapted in this study with reference to their respective sources.

Table 4.3: Operational Definitions of All First-Order Constructs

First-order constructs	Operational definitions
Perceived surveillance	The extent to which mobile users believe that their personal data is collected by the mobile apps in use (Xu et al., 2012).
Perceived intrusion	The degree to which mobile users are concerned that both their physical and informational spaces are interrupted by the mobile apps in use (Xu et al., 2012).
Secondary use of personal information	Reflects the mobile users' perceptions of the extent to which the personal data collected by mobile apps is being used for unauthorised purposes (Xu et al., 2012).
Mobile technostress	The level of inability to cope with the new smart mobile device technologies in a healthy manner (Mak et al., 2018).
Routine seeking	Indicates the tendency to resist change due to the fear of losing control over certain life situations (Heidenreich & Handrich, 2015).
Emotional reaction to imposed change	Represents the extent of inability to handle change as a stressor (Heidenreich & Handrich, 2015).
Short-term focus	The extent of short-term inconveniences involved in a change even if the change is beneficial in the long run (Heidenreich & Handrich, 2015).
Cognitive rigidity	Represents the magnitude of stubbornness and reluctance in deliberating alternative ideas or perspectives (Heidenreich & Handrich, 2015).
Satisfaction with the extent of innovation	The degree of contentment with the current extent of innovations (Heidenreich & Kraemer, 2016).
Satisfaction with existing products	The extent of emotional attachment to the technological products owned and used repeatedly over time (Heidenreich & Kraemer, 2016).

Table 4.3 continued: Operational Definitions of All First-Order Constructs

First-order constructs	Operational definitions
Tradition barrier	The degree to which an innovation is perceived to be conflicting with family values, social norms, or entrenched traditions (Joachim et al., 2018).
Image barrier	The degree of negative or bad impressions on an innovation (J. J. Hew et al., 2019).
Usage barrier	The level of inconvenience caused by innovation to the existing practices (Leong et al., 2020).
Value barrier	The extent to which an innovation does not offer relative advantages in comparison to existent alternatives (Joachim et al., 2018).
Risk barrier	The degree of risks an innovation entails (M. Talwar et al., 2023).
Rejection	The intent to avoid the adoption of innovation through a cognitive evaluation process (K. Park & Koh, 2017).
Postponement	The intent to postpone the adoption of innovation until the right time comes (K. Park & Koh, 2017).
Opposition	The intent to engage in an active attack against an innovation, for example, spreading negative word-of-mouth to prevent the innovation's success (Q. Chen et al., 2019).

Table 4.4: Measurement Items of All First-Order Constructs

First-order constructs	Measurement items	Sources
Perceived surveillance	PS1: I believe that the location of my smart mobile device is monitored at least part of the time.	Xu et al. (2012).
	PS2: I am concerned that mobile apps are collecting too much information about me.	
	PS3: I am concerned that mobile apps may monitor my activities on my mobile device.	
Perceived intrusion	PI1: I feel that as a result of using mobile apps, others know about me more than I am comfortable with.	Xu et al. (2012).
	PI2: I believe that as a result of using mobile apps, information about me that I consider private is now more readily available to others than I would want.	
	PI3: I feel that as a result of using mobile apps, information about me is out there that, if used, will invade my privacy.	
Secondary use of personal information	SU1: I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	Xu et al. (2012).
	SU2: When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	
	SU3: I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	
Mobile technostress	MT1: I feel stressed by my inability to keep up with the current smart mobile device technologies.	Mak et al. (2018).
	MT2: I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	
	MT3: I feel threatened by new smart mobile device technologies.	
	MT4: I feel pressured if there are new features introduced into my smart mobile devices.	

Table 4.4 continued: Measurement Items of All First-Order Constructs

First-order constructs	Measurement items	Sources
Routine seeking	RS1: I generally consider changes to be a negative thing. RS2: I like to do the same old things rather than try new and different ones. RS3: I would rather be bored than surprised.	Heidenreich and Handrich (2015).
Emotional reaction to imposed change	ER1: If I were to be informed that there is going to be a significant change in the way things are done, I would probably feel stressed. ER2: When I am informed of a change of plans, I tense up a bit. ER3: When things do not go according to plans, it stresses me out.	Heidenreich and Handrich (2015).
Short-term focus	SF1: Often, I feel a bit uncomfortable even about changes that may potentially improve my life. SF2: When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me. SF3: I sometimes find myself avoiding changes that I know will be good for me.	Heidenreich and Handrich (2015).
Cognitive rigidity	CR1: I do not often change my mind. CR2: I do not change my mind easily. CR3: My views are very consistent over time.	Heidenreich and Handrich (2015).

Table 4.4 continued: Measurement Items of All First-Order Constructs

First-order constructs	Measurement items	Sources
Satisfaction with the extent of innovation	SI1: Overall, my personal need for innovations in the field of technological products has been by far covered in the past. SI2: Overall, I consider the number of innovations in the field of technological products as being too high. SI3: Overall, I consider the pace of innovations in the field of technological products as being too fast.	Heidenreich and Handrich (2015).
Satisfaction with existing products	SP1: In the past, I was very satisfied with the available technological products. SP2: In my opinion, past technological products were completely satisfactory so far. SP3: Past technological products fully met my requirements.	Heidenreich and Handrich (2015).
Tradition barrier	TB1: This mobile commerce application does not suit me. TB2: This mobile commerce application does not match my values and norms. TB3: This mobile commerce application does not fit my personality.	Joachim et al. (2018).
Image barrier	IB1: I have only negative feelings towards this mobile commerce application. IB2: I do not like this mobile commerce application. IB3: I have a very negative image of this mobile commerce application.	Joachim et al. (2018) and J. J. Hew et al. (2019).

Table 4.4 continued: Measurement Items of All First-Order Constructs

First-order constructs	Measurement items	Sources
Usage barrier	UB1: This mobile commerce application is difficult to use.	Leong et al. (2020).
	UB2: The use of this mobile commerce application is inconvenient.	
	UB3: This mobile commerce application is inefficient.	
	UB4: The process in this mobile commerce application is unclear.	
Value barrier	VB1: The use of this mobile commerce application is luxurious.	J. J. Hew et al. (2019).
	VB2: This mobile commerce application does not offer any advantage.	
	VB3: This mobile commerce application decreases my ability in performing the tasks that it is designed for.	
	VB4: This mobile commerce application is useless.	
Risk barrier	RB1: I am not confident that this mobile commerce application will perform as described.	Heidenreich and Kraemer (2016).
	RB2: I am not certain that this mobile commerce application will work satisfactorily.	
	RB3: I doubt this mobile commerce application is reliable.	
Rejection	RJ1: I think that avoiding the use of this mobile commerce application is the right choice.	K. Park and Koh (2017).
	RJ2: The use of this mobile commerce application is not wise.	
	RJ3: I will reject any recommendations from people about this mobile commerce application.	

Table 4.4 continued: Measurement Items of All First-Order Constructs

First-order constructs	Measurement items	Sources
Postponement	PP1: I think that this mobile commerce application is acceptable but will not use them immediately.	K. Park and Koh (2017).
	PP2: I think that a later use of this mobile commerce application is better.	
	PP3: I am not sure whether the use of this mobile commerce application is the right decision.	
Opposition	OP1: It is very likely that I will say negative things about this mobile commerce application to other people.	Gurtner (2014).
	OP2: It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	
	OP3: It is very likely that I will influence my friends not to use this mobile commerce application.	

In addition, it is necessary to specify the measurements used (Sirakaya-Turk et al., 2017). This study measures all the first-order constructs using multiple-item scales adapted from the extant literature. As urged by Sekaran and Bougie (2016), it is necessary to adapt the scales from established sources to suit the context of study. As such, all scales were carefully adapted to the context of m-commerce applications in this study. Table 4.4 exhibits the measurement items adapted and sources. A seven-point Likert-scale anchored from "1 - Strongly Disagree" to "7 - Strongly Agree" is employed to gauge the respondents' opinions on all measurement items.

Besides, it should be noted that all the abstract higher-order constructs (i.e., the second-order and third-order constructs) do not need to be measured directly as they are modelled by aggregating their associated concrete lower-order subdimensions (i.e., the first-order constructs) through the bottom-up approach (Hair, Sarstedt, et al., 2017; Sarstedt et al., 2019).

4.4 Pre-Test and Pilot Test

Prior to the actual data collection stage, Rose et al. (2015) recommended a two-stage approach that consists of a pre-test and a pilot test to identify any potential problems in the survey questionnaire. Through these tests, the adapted multiple-item scales' content validity and face validity could be ascertained (Hair et al., 2016). Moreover, potential problems the respondents would face during the actual data collection stage could be identified throughout the pilot test (Saunders et al., 2016; Shmueli et al., 2019).

During the pre-test, three expert researchers in the fields of m-commerce, m-commerce applications, and innovation management were invited to provide their comments on the survey questionnaire, especially on the adapted multiple-item scales (Christensen et al., 2015; Rose et al., 2015). Appendix A shows the survey questionnaire sent for the pre-test. Two expert researchers raised some minor issues on the survey questionnaire, while one expert researcher commented that the survey questionnaire was good and no amendments were needed. The comments by the expert researchers and replies to their comments are shown in Appendix B and Appendix C respectively.

After incorporating the relevant comments from the expert researchers, a pilot test using the revised survey questionnaire (as shown in Appendix D) was conducted online using a simpler version of quota sampling that allocates the desired quota of 25 to each distinct form of resistance behaviour. A total of 85 respondents participated in the pilot test, but six of them were not qualified as they do not have any mobile commerce application that they know the most about but remains unadopted. This resulted in 79 qualified respondents who then proceeded to answer the questionnaire.

Out of these qualified respondents, three did not pass the attention-trap questions and, therefore, were excluded. Eventually, 76 qualified responses, including one excessive response, were collected. After excluding the excessive response, the desired quota of 25 for each distinct form of resistance behaviour was met and analysed for internal consistency reliability (further discussions on internal consistency reliability will be provided in Section 4.5.2).

From the results provided in Table 4.5, the internal consistency reliability of all first-order constructs is established given that all composite reliability and Cronbach's alpha values exceed 0.70. All responses collected from the pilot test were excluded from the final sample and subsequent analyses.

Table 4.5: Internal Consistency Reliability of First-Order Constructs

First-order constructs	Rejecters		Postponers		Opponents	
	Composite reliability	Cronbach's alpha	Composite reliability	Cronbach's alpha	Composite reliability	Cronbach's alpha
CR	0.9560	0.9303	0.9440	0.9115	0.9329	0.8916
ER	0.9145	0.8612	0.8920	0.8180	0.8948	0.8203
IB	0.9510	0.9227	0.9582	0.9344	0.9729	0.9581
MT	0.7248	0.8247	0.9258	0.8945	0.8899	0.8468
PI	0.8560	0.7533	0.9064	0.8445	0.9344	0.8939
PS	0.8624	0.7566	0.9372	0.8999	0.8390	0.7075
RB	0.9528	0.9248	0.9569	0.9324	0.9763	0.9636
RS	0.8442	0.7228	0.8767	0.7876	0.9000	0.8339
SF	0.8629	0.7599	0.9302	0.8877	0.8988	0.8331
SI	0.8608	0.7557	0.9108	0.8524	0.8710	0.7669
SP	0.9366	0.8981	0.9127	0.8550	0.9353	0.8949
SU	0.9039	0.8410	0.9483	0.9180	0.9726	0.9577
TB	0.9133	0.8573	0.9755	0.9623	0.9652	0.9459
UB	0.9659	0.9529	0.9729	0.9628	0.9665	0.9536
VB	0.9146	0.8755	0.9595	0.9437	0.8423	0.7521
OP	-	-	-	-	0.9642	0.9443
PP	-	-	0.8746	0.7930	-	-
RJ	0.9056	0.8436	-	-	-	-

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, VB = value barrier, OP = opposition, PP = postponement, and RJ = rejection.

Furthermore, the respondents involved in the pilot test were instructed to provide their comments on the survey questionnaire if there were any. At the end of the pilot test, it was found that most of their comments were about the length

of the survey questionnaire. Given that the MOCART consists of many first-order constructs, the survey questionnaire is inevitably lengthy.

To tackle this shortcoming, one attention-trap question was eliminated from the finalised survey questionnaire. It should be noted that there were two attention-trap questions, namely "Please select '2 - Disagree' for this statement" and "If you have been answering honestly thus far, please only select '6 - Agree' for this statement" during the pre-test and pilot test. In this manner, the finalised survey questionnaire (as shown in Appendix E), which was then used for the actual data collection, only carries an attention-trap question namely "Please select '6 - Agree' for this statement" (as discussed in Section 4.3.8).

4.5 Data Analysis Methods

Unlike the first-generation data analysis techniques (for e.g., regressions), SEM, the second-generation data analysis method, enables the simultaneous assessment of the measurement model and the structural model (Lowry & Gaskin, 2014). SEM has two main forms, namely covariance-based structural equation modelling (CB-SEM) and PLS-SEM (Hair, Matthews, et al., 2017).

Henseler et al. (2009) contrasted these forms of SEM and opined that CB-SEM is more suitable for theory-testing studies, whereas the prediction-oriented PLS-SEM is good for theory-building studies. Given that this study is developing the MOCART to explain the varied forms of resistance behaviour

among mobile users who do not adopt m-commerce applications, PLS-SEM is deemed appropriate for this purpose (Hair et al., 2011).

Moreover, owing to its ability to allow researchers to estimate complex models with many constructs and measurement items, PLS-SEM has gained popularity in numerous research disciplines such as management information systems and marketing management as compared to the CB-SEM in recent years (Hair, Risher, et al., 2019). On account of the complicated structure of the MOCART, CB-SEM is inappropriate, while PLS-SEM is considered a better fit in this study (Henseler et al., 2009).

Besides, it was advocated that researchers should choose PLS-SEM over CB-SEM when the research model contains formatively measured constructs and higher-order constructs (Hair, Hollingsworth, et al., 2017; Hair, Sarstedt, et al., 2019). In the MOCART, there are five formatively measured second-order constructs and two formatively measured third-order constructs, rendering CB-SEM inappropriate for analysing it (Rigdon et al., 2017). For these reasons, PLS-SEM is engaged as the main data analysis method in testing the hypotheses developed in this study.

This study performs the PLS-SEM analysis through SmartPLS 3.3.9 (Ringle et al., 2015) with the two-step approach that assesses the outer measurement model before the inner structural model (Hair, Hult, et al., 2017). Besides, prior to the PLS-SEM analysis, common method bias (CMB) is

evaluated and reported (Lowry & Gaskin, 2014). All the assessment methods are to be elaborated on in the coming sub-sections.

4.5.1 Common Method Bias

The CMB, as articulated by S. J. Chang et al. (2010), is a concern when the respondents have to provide their perceptions on both the exogenous and endogenous constructs at the time of data collection. In response to such concern, controlling for CMB in this study is vital.

This study follows two main approaches namely procedural remedy and statistical remedy in controlling the CMB (Podsakoff et al., 2003). Procedure remedy was incorporated in both questionnaire design and questionnaire administration. Firstly, throughout the questionnaire design, simple language was used and measurement items were worded concisely. Secondly, several efforts were made during the questionnaire administration, such as assuring respondents about their anonymity and that the measurement items have neither correct nor incorrect responses.

Besides, two statistical tests were employed under the statistical remedy to examine the severity of CMB. The first test is Harman's single-factor test. Following the steps listed by Podsakoff et al. (2003), all measurement items would be loaded into an exploratory factor analysis in which the un-rotated factor solution is examined. If there is only one general factor that accounts for

majority of the variance among the measurement items (i.e., more than 50%), CMB is considered to be serious (Kock, 2021).

Liang et al. (2007), on the other hand, proposed an alternative method named the common method factor to assess the CMB. The main rationale of this test is to assess the variance of each measurement item explained by its primary construct and the common method factor. CMB is not a concern if the following conditions are fulfilled: (i) method factor loadings are insignificant, (ii) the measurement items' substantive variances (i.e., the variance explained by the primary construct) are considerably larger than their method variances (i.e., the variance explained by the common method factor), and (iii) the ratio of average substantive variance to average method variance shows that the method variance is of small magnitude.

4.5.2 Measurement Model Evaluation

In the presence of higher-order and lower-order constructs, Sarstedt et al. (2019) suggested first evaluating the measurement model for the lower-order constructs (i.e., the first-order constructs) with the standard evaluation criteria before the measurement model for the higher-order constructs (i.e., the second-order and third-order constructs) is evaluated through assessing the collinearity and the significance of outer weights among their associated formative indicators.

When evaluating the measurement model for the lower-order constructs, the standard evaluation criteria include internal consistency reliability,

discriminant validity, and convergent validity (Sarstedt et al., 2019). Internal consistency reliability indicates "the degree to which a scale yields consistent and stable measures over time" (Lowry & Gaskin, 2014, p.136), and a construct's reliability is normally assessed through Cronbach's alpha and composite reliability (Hair, Matthews, et al., 2017). To establish reliability, all constructs should exceed the recommended level of 0.70 for both Cronbach's alpha and composite reliability (Kumar & Purani, 2018).

Discriminant validity, on the other hand, is "the extent to which a construct is empirically distinct from other constructs in the path model" (Sarstedt et al., 2014, p.108). Recently, Hair et al. (2020) have stressed the need for ascertaining the discriminant validity through a novel criterion named heterotrait-monotrait ratio of correlations (HTMT), which should be under 0.90 (i.e., $HTMT_{0.90}$).

Nonetheless, if such threshold value is exceeded, Henseler (2021) advised researchers to use an inferential test namely $HTMT_{inference}$ in order to test if the HTMT is significantly different from the value of one. If the value of one is not included in the confidence intervals, then the discriminant validity is still supported (Roemer et al., 2021).

Besides, examining the cross-loading values of every measurement item on all constructs (Sarstedt et al., 2014) is another way to ascertain the discriminant validity. Specifically, this cross-loading criterion demands all

measurement items to have a higher loading value on their own constructs than other constructs (Hair et al., 2014).

Furthermore, for the purpose of ascertaining convergent validity that refers to “the extent to which the construct converges to explain the variance of its items”, a metric named average variance extracted (AVE) is usually used and the threshold for this metric is 0.50 and above (Hair, Risher, et al., 2019, p.9). Besides, the convergent validity of a construct is ascertained when all its measurement items exhibit a loading value of 0.70 and above (Hair et al., 2014).

Afterwards, the measurement model for the higher-order constructs is evaluated (Sarstedt et al., 2019). For the case of formatively measured constructs higher-order constructs, Hair, Sarstedt, et al. (2017) advised that the outer weights of all associated formative indicators have to be significant and there shall not be any collinearity among the associated formative indicators. To be collinearity free, the variance inflation factor (VIF) values should be lower than the threshold of five (Ghasemy et al., 2020).

4.5.3 Structural Model Inspection

Given the presence of higher-order constructs, the two-stage approach (Ringle et al., 2012) recommended by Gaskin et al. (2018) is followed to model the higher-order constructs. Specifically, in the first stage, all lower-order and higher-order constructs are included in the nomological network and a repeated indicator approach that reuses the measurement items of first-order constructs

for higher-order constructs is performed to obtain the latent variable scores (J. H. Cheah et al., 2019). In the second stage, the latent variable scores obtained are used as the indicators for the higher-order constructs in a nomological network that contains only constructs with structural paths (Becker et al., 2022).

With such an approach, researchers could estimate a complex model with higher-order constructs more parsimoniously (J. H. Cheah et al., 2019). As suggested by Hair, Hollingsworth, et al. (2017), a bootstrapping procedure with 5,000 bootstrap samples is performed in the second stage to obtain the inferential statistics. Also, several basic structural model metrics namely explanatory power, predictive relevance, and f^2 effect size are reported (Hair et al., 2020).

The explanatory power a structural model has on its endogenous constructs is measured through the R^2, which represents the variance explained in each endogenous construct (Hair & Alamer, 2022; Sarstedt et al., 2022). Generally, the R^2 values between 0 to 0.10, 0.11 to 0.30, 0.30 to 0.50, and more than 0.50 are "indicative of weak, modest, moderate, and strong explanatory power" respectively (Hair & Alamer, 2022, p.8).

On top of that, the predictive relevance of a structural model for each endogenous construct is appraised by the blindfolding-based cross-validated redundancy measure Q^2 value (Ghasemy et al., 2020). Typically, a Q^2 value larger than zero indicates the presence of predictive relevance (Hair et al., 2020). Specifically, the Q^2 values of zero, 0.25, and 0.50 denote small, medium, and large degrees of predictive relevance accordingly (Hair, Risher, et al., 2019).

Last but not least, as elaborated by Hair et al. (2012, p.331), the f^2 effect size "considers the relative impact of a particular exogenous latent variable on an endogenous latent variable by means of changes in the R^2". Hair, Sarstedt, et al. (2014) explained that if an exogenous construct has ample predictive power on an endogenous construct, then that exogenous construct would show a high effect size f^2 value. For this metric, the values of 0.02, 0.15, and 0.35 represent small, medium, and large effects respectively (Hair, Hollingsworth, et al., 2017).

4.6 Conclusion

This chapter defined the target population and research design along with the rationale behind it. Moreover, the details of data analysis techniques were also disclosed completely after considering their relevancies in this study. Based on the data collected, the next chapter provides the results and outcomes yielded from the data analysis techniques.

CHAPTER 5

DATA ANALYSES

5.1 Introduction

This chapter shows the results obtained from the data analysis methods elaborated on in the earlier chapter. Demographic statistics are provided first, followed by the results obtained from the assessment of CMB and PLS-SEM analysis.

5.2 Demographic Statistics

The demographic profile of respondents in this study is presented in Table 5.1 together with frequency and percentage so as to allow a meaningful comparison within each demographic variable. From the numbers, female respondents are slightly more than male respondents and most respondents are below 30-year-olds in each resistance behaviour. Moreover, for each resistance behaviour, a significant portion of the respondents are single and at least received secondary education. Other than students, the respondents reported that they are mainly privately employed in each resistance group. Besides, for the individual monthly income, many reported having less than RM1000 monthly income in every resistance group. This is reasonable as many of them are still studying, unemployed, retirees, and homemakers. Aside from these respondents, about 40%

of the respondents in each resistance group reported earning a monthly income of RM3000 or below.

It should be noted that the distribution patterns of some demographic variables are quite similar to a recent national survey on hand phone users in Malaysia (Malaysian Communications and Multimedia Commission, 2021). Firstly, in terms of age group, both the national survey and this study's survey have youngsters as the main respondents, and the percentage of elders gradually reduces as the age group increases. Secondly, the respondents in both surveys have at least received secondary education and above. Thirdly, in terms of income level, both surveys show that the respondents are earning RM3000 or below. Hence, it is confident that the respondents in each resistance behaviour display a reasonable degree of representativeness.

Pertaining to their experience in using smart mobile device(s) and mobile apps, a substantial share of the respondents reported having more than five years of experience in every resistance behaviour group. Furthermore, it is surprising to note that a large proportion of the respondents from each group own two to three units of smart mobile devices. Last but not least, it is interesting to learn most of the rejecters and opponents are rejecting and opposing the adoption of mobile dating. Identically, other than postponing the adoption of mobile dating, a number of postponers reported that they are postponing the adoption of mobile banking.

Table 5.1: Demographic Statistics

Demographic variables		Rejecters		Postponers		Opponents	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender	Male	156	44.57%	166	47.43%	136	38.86%
	Female	194	55.43%	184	52.57%	214	61.14%
Age	15 - 19	42	12.00%	43	12.29%	38	10.86%
	20 - 24	128	36.57%	149	42.57%	135	38.57%
	25 - 29	80	22.86%	72	20.57%	77	22.00%
	30 - 34	46	13.14%	31	8.86%	36	10.29%
	35 - 39	21	6.00%	24	6.86%	26	7.43%
	40 - 44	10	2.86%	11	3.14%	10	2.86%
	45 - 49	9	2.57%	8	2.29%	16	4.57%
	50 - 54	8	2.29%	5	1.43%	7	2.00%
	55 - 59	3	0.86%	6	1.71%	2	0.57%
	60 - 64	3	0.86%	1	0.29%	1	0.29%
	65 and above	-	-	-	-	2	0.57%
Marital status	Single	272	77.71%	263	75.14%	286	81.71%
	Married	74	21.14%	85	24.29%	64	18.29%
	Others	4	1.14%	2	0.57%	-	-

Table 5.1 continued: Demographic Statistics

Demographic variables		Rejecters		Postponers		Opponents	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Highest/current education level	UPSR/UPSRA	-	-	4	1.14%	3	0.86%
	PT3/PMR/SRP/LCE/SRA	11	3.14%	14	4.00%	17	4.86%
	SPM/SPMV/MCE/SKM	36	10.29%	32	9.14%	16	4.57%
	STPM/STAM/Pre-U/Foundation/Matrikulasi	28	8.00%	39	11.14%	21	6.00%
	Certificate/Diploma/Advanced diploma	43	12.29%	46	13.14%	49	14.00%
	Bachelor degree/Professional qualification	192	54.86%	189	54.00%	213	60.86%
	Postgraduate degree	40	11.43%	26	7.43%	31	8.86%
Occupation	Homemaker	5	1.43%	4	1.14%	1	0.29%
	Privately employed	128	36.57%	96	27.43%	129	36.86%
	Public servant	18	5.14%	33	9.43%	17	4.86%
	Retiree	4	1.14%	2	0.57%	4	1.14%
	Self-employed	37	10.57%	53	15.14%	34	9.71%
	Student	129	36.86%	141	40.29%	145	41.43%
	Unemployed	29	8.29%	21	6.00%	20	5.71%
Individual monthly income	Less than RM1000	160	45.71%	152	43.43%	156	44.57%
	RM1000 to RM3000	56	16.00%	79	22.57%	63	18.00%
	RM3001 to RM5000	82	23.43%	78	22.29%	75	21.43%
	RM5001 to RM7000	23	6.57%	18	5.14%	31	8.86%
	RM7001 to RM9000	15	4.29%	16	4.57%	12	3.43%
	More than RM9000	14	4.00%	7	2.00%	13	3.71%

Table 5.1 continued: Demographic Statistics

Demographic variables		Rejecters		Postponers		Opponents	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Experience in using smart mobile device(s)	Less than 3 years	15	4.29%	39	11.14%	8	2.29%
	3 - 5 years	41	11.71%	48	13.71%	34	9.71%
	More than 5 years	294	84.00%	263	75.14%	308	88.00%
Experience in using mobile apps	Less than 3 years	21	6.00%	37	10.57%	13	3.71%
	3 - 5 years	45	12.86%	73	20.86%	57	16.29%
	More than 5 years	284	81.14%	240	68.57%	280	80.00%
Number of smart mobile device(s) owning	1 unit	169	48.29%	130	37.14%	151	43.14%
	2 - 3 units	163	46.57%	194	55.43%	176	50.29%
	More than 3 units	18	5.14%	26	7.43%	23	6.57%
Unadopted mobile commerce application	Mobile banking	21	6.00%	44	12.57%	32	9.14%
	Mobile customer relationship management	21	6.00%	39	11.14%	28	8.00%
	Mobile dating	204	58.29%	41	11.71%	68	19.43%
	Mobile entertainment	8	2.29%	28	8.00%	16	4.57%
	Mobile food delivery	18	5.14%	35	10.00%	20	5.71%
	Mobile health	36	10.29%	38	10.86%	57	16.29%
	Mobile instant messaging	3	0.86%	21	6.00%	12	3.43%
	Mobile map navigation	3	0.86%	7	2.00%	2	0.57%
	Mobile payment	2	0.57%	20	5.71%	12	3.43%
	Mobile ride-hailing	5	1.43%	7	2.00%	20	5.71%
	Mobile shopping	2	0.57%	13	3.71%	3	0.86%
	Mobile social networking	7	2.00%	24	6.86%	13	3.71%
	Mobile tourism	11	3.14%	22	6.29%	59	16.86%
	Mobile utilities	9	2.57%	11	3.14%	8	2.29%

5.3 Assessing the Common Method Bias

The results of the first statistical test used in assessing the seriousness of CMB for all resistance groups, namely Harman's single-factor test, are shown in Table 5.2, Table 5.3, and Table 5.4. The results suggest that the general factor could only account for 33.0865%, 40.4841%, and 31.7232% of the variance among the measurement items for rejecters, postponers, and opponents respectively. As all the percentages of variance explained by the general factor are lower than the boundary value of 50%, CMB should not be regarded as a major problem that deserves attention in this study.

Moreover, Table 5.5, Table 5.6, and Table 5.7 show the common method factor test that further assesses the seriousness of CMB. For all resistance behaviours, it was found that: (i) majority of the method factor loadings are insignificant, (ii) all the substantive variances of measurement items are considerably higher than their method variances, and (iii) the ratios of average substantive variance to average method variance are approximately at 246.06:1, 249.27:1, and 276.71:1, indicating a tiny magnitude of method variance. With these, it is again demonstrated that the CMB is not a major concern.

In conclusion, both methods mentioned above have confirmed that CMB is not a serious concern in this study. Following this confirmation, the following sub-sections showcase the results obtained from the PLS-SEM analysis.

Table 5.2: Harman's Single-Factor Test for Rejecters

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.8741	33.0865	33.0865	16.8741	33.0865	33.0865
2	5.4216	10.6305	43.7170			
3	3.6131	7.0845	50.8015			
4	2.1037	4.1248	54.9263			
5	1.9416	3.8070	58.7333			
6	1.6170	3.1705	61.9038			
7	1.4080	2.7609	64.6646			
8	1.1066	2.1699	66.8345			
9	0.9666	1.8953	68.7298			
10	0.9396	1.8423	70.5721			
11	0.8343	1.6358	72.2079			
12	0.8005	1.5697	73.7776			
13	0.7712	1.5122	75.2898			
14	0.7086	1.3894	76.6792			
15	0.6732	1.3199	77.9991			
16	0.6154	1.2066	79.2058			
17	0.5954	1.1675	80.3732			
18	0.5510	1.0804	81.4536			
19	0.5124	1.0046	82.4582			
20	0.4800	0.9412	83.3994			
21	0.4757	0.9328	84.3322			
22	0.4486	0.8795	85.2118			
23	0.4362	0.8552	86.0670			
24	0.4188	0.8211	86.8881			
25	0.3963	0.7772	87.6653			
26	0.3854	0.7558	88.4211			
27	0.3636	0.7130	89.1340			
28	0.3581	0.7022	89.8363			
29	0.3466	0.6796	90.5159			
30	0.3300	0.6472	91.1631			
31	0.3104	0.6087	91.7718			
32	0.2985	0.5854	92.3571			
33	0.2819	0.5527	92.9099			
34	0.2800	0.5490	93.4588			
35	0.2725	0.5342	93.9930			
36	0.2651	0.5198	94.5129			
37	0.2517	0.4935	95.0064			
38	0.2471	0.4845	95.4908			
39	0.2371	0.4649	95.9557			
40	0.2262	0.4436	96.3993			
41	0.2198	0.4309	96.8302			
42	0.2129	0.4174	97.2476			

Table 5.2 continued: Harman's Single-Factor Test for Rejecters

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
43	0.1941	0.3807	97.6283			
44	0.1889	0.3704	97.9987			
45	0.1702	0.3337	98.3324			
46	0.1649	0.3234	98.6558			
47	0.1598	0.3134	98.9692			
48	0.1504	0.2948	99.2640			
49	0.1413	0.2771	99.5411			
50	0.1190	0.2333	99.7744			
51	0.1150	0.2256	100.0000			

Extraction Method: Principal Component Analysis.

Table 5.3: Harman's Single-Factor Test for Postponers

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	20.6469	40.4841	40.4841	20.6469	40.4841	40.4841
2	4.1013	8.0418	48.5259			
3	2.8873	5.6615	54.1873			
4	2.3179	4.5450	58.7323			
5	1.5103	2.9614	61.6937			
6	1.3427	2.6327	64.3264			
7	1.0247	2.0092	66.3355			
8	0.9145	1.7932	68.1288			
9	0.8520	1.6706	69.7993			
10	0.8070	1.5823	71.3816			
11	0.7597	1.4897	72.8713			
12	0.7280	1.4275	74.2988			
13	0.6842	1.3415	75.6403			
14	0.6772	1.3278	76.9680			
15	0.5746	1.1267	78.0947			
16	0.5643	1.1064	79.2012			
17	0.5470	1.0726	80.2737			
18	0.5336	1.0462	81.3199			
19	0.5162	1.0122	82.3322			
20	0.4605	0.9030	83.2352			
21	0.4323	0.8477	84.0829			
22	0.4225	0.8285	84.9113			
23	0.4043	0.7928	85.7041			
24	0.3986	0.7816	86.4858			
25	0.3883	0.7613	87.2471			
26	0.3848	0.7545	88.0015			

Table 5.3 continued: Harman's Single-Factor Test for Postponers

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
27	0.3780	0.7412	88.7428			
28	0.3571	0.7001	89.4429			
29	0.3373	0.6613	90.1042			
30	0.3331	0.6532	90.7574			
31	0.3180	0.6235	91.3809			
32	0.3072	0.6024	91.9833			
33	0.2936	0.5756	92.5589			
34	0.2809	0.5508	93.1097			
35	0.2775	0.5440	93.6537			
36	0.2744	0.5380	94.1918			
37	0.2647	0.5189	94.7107			
38	0.2451	0.4806	95.1912			
39	0.2404	0.4713	95.6625			
40	0.2338	0.4585	96.1210			
41	0.2289	0.4488	96.5699			
42	0.2129	0.4175	96.9874			
43	0.2079	0.4076	97.3949			
44	0.2022	0.3966	97.7915			
45	0.1922	0.3769	98.1685			
46	0.1796	0.3521	98.5206			
47	0.1735	0.3402	98.8607			
48	0.1605	0.3147	99.1754			
49	0.1490	0.2921	99.4676			
50	0.1422	0.2788	99.7464			
51	0.1294	0.2536	100.0000			

Extraction Method: Principal Component Analysis.

Table 5.4: Harman's Single-Factor Test for Opponents

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.1789	31.7232	31.7232	16.1789	31.7232	31.7232
2	5.5775	10.9362	42.6595			
3	4.6668	9.1506	51.8101			
4	2.1793	4.2732	56.0833			
5	1.9428	3.8095	59.8927			
6	1.5048	2.9506	62.8434			
7	1.4006	2.7462	65.5896			
8	1.2521	2.4552	68.0447			
9	1.0577	2.0739	70.1186			
10	0.9509	1.8646	71.9832			

Table 5.4 continued: Harman's Single-Factor Test for Opponents

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
11	0.8327	1.6327	73.6159			
12	0.7957	1.5602	75.1761			
13	0.7569	1.4841	76.6602			
14	0.6848	1.3427	78.0030			
15	0.6546	1.2835	79.2864			
16	0.6007	1.1778	80.4643			
17	0.5678	1.1132	81.5775			
18	0.5040	0.9883	82.5658			
19	0.4803	0.9418	83.5076			
20	0.4410	0.8648	84.3724			
21	0.4262	0.8357	85.2081			
22	0.4184	0.8203	86.0285			
23	0.3980	0.7805	86.8089			
24	0.3886	0.7620	87.5709			
25	0.3719	0.7293	88.3002			
26	0.3672	0.7200	89.0202			
27	0.3570	0.7000	89.7202			
28	0.3407	0.6681	90.3883			
29	0.3359	0.6587	91.0470			
30	0.3166	0.6207	91.6678			
31	0.2873	0.5633	92.2311			
32	0.2865	0.5618	92.7928			
33	0.2783	0.5457	93.3386			
34	0.2615	0.5128	93.8513			
35	0.2528	0.4957	94.3471			
36	0.2431	0.4766	94.8237			
37	0.2417	0.4739	95.2976			
38	0.2220	0.4354	95.7330			
39	0.2160	0.4235	96.1565			
40	0.2062	0.4043	96.5608			
41	0.2029	0.3979	96.9587			
42	0.1956	0.3836	97.3423			
43	0.1855	0.3638	97.7061			
44	0.1791	0.3511	98.0572			
45	0.1750	0.3431	98.4003			
46	0.1659	0.3253	98.7256			
47	0.1456	0.2854	99.0111			
48	0.1397	0.2739	99.2850			
49	0.1307	0.2563	99.5413			
50	0.1223	0.2398	99.7811			
51	0.1116	0.2189	100.0000			

Extraction Method: Principal Component Analysis.

Table 5.5: Common Method Factor Test for Rejecters

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
CR	CR1	0.8237***	0.6785	0.0611^{ns}	0.0037
	CR2	0.9487***	0.9000	-0.0880**	0.0077
	CR3	0.8278***	0.6853	0.0284^{ns}	0.0008
ER	ER1	0.8779***	0.7707	0.0132^{ns}	0.0002
	ER2	0.9204***	0.8471	-0.0356^{ns}	0.0013
	ER3	0.7954***	0.6327	0.0241^{ns}	0.0006
IB	IB1	0.9096***	0.8274	0.0247^{ns}	0.0006
	IB2	0.9349***	0.8740	-0.0467^{ns}	0.0022
	IB3	0.9009***	0.8116	0.0203^{ns}	0.0004
MT	MT1	0.8749***	0.7655	-0.0144^{ns}	0.0002
	MT2	0.8659***	0.7498	0.0061^{ns}	0.0000
	MT3	0.9064***	0.8216	-0.0052^{ns}	0.0000
	MT4	0.8511***	0.7244	0.0136^{ns}	0.0002
PI	PI1	0.7736***	0.5985	0.0757^{ns}	0.0057
	PI2	0.8861***	0.7852	-0.0758*	0.0057
	PI3	0.8533***	0.7281	0.0013^{ns}	0.0000
PS	PS1	0.7363***	0.5421	-0.0047^{ns}	0.0000
	PS2	0.8477***	0.7186	0.0545^{ns}	0.0030
	PS3	0.8963***	0.8034	-0.0534^{ns}	0.0029
RB	RB1	0.9666***	0.9343	-0.0988*	0.0098
	RB2	0.8726***	0.7614	0.0210^{ns}	0.0004
	RB3	0.8191***	0.6709	0.0762^{ns}	0.0058
RJ	RJ1	0.9194***	0.8453	-0.0500^{ns}	0.0025
	RJ2	0.9214***	0.8490	-0.0448^{ns}	0.0020
	RJ3	0.7820***	0.6115	0.0978*	0.0096
RS	RS1	0.7755***	0.6014	0.0903*	0.0082
	RS2	0.8712***	0.7590	-0.0261^{ns}	0.0007
	RS3	0.9233***	0.8525	-0.0647*	0.0042
SF	SF1	0.8832***	0.7800	-0.0085^{ns}	0.0001
	SF2	0.8928***	0.7971	-0.0125^{ns}	0.0002
	SF3	0.8729***	0.7620	0.0209^{ns}	0.0004
SI	SI1	0.7633***	0.5826	0.0396^{ns}	0.0016
	SI2	0.9222***	0.8505	-0.0610^{ns}	0.0037
	SI3	0.8591***	0.7381	0.0236^{ns}	0.0006
SP	SP1	0.8424***	0.7096	-0.0399^{ns}	0.0016
	SP2	0.8771***	0.7693	0.0298^{ns}	0.0009
	SP3	0.9177***	0.8422	0.0055^{ns}	0.0000
SU	SU1	0.8642***	0.7468	0.0357^{ns}	0.0013
	SU2	0.9003***	0.8105	-0.0081^{ns}	0.0001
	SU3	0.9296***	0.8642	-0.0266^{ns}	0.0007
TB	TB1	0.9453***	0.8936	-0.0695**	0.0048
	TB2	0.8702***	0.7572	0.0913**	0.0083

Table 5.5: Common Method Factor Test for Rejecters

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
	TB3	0.9477***	0.8981	-0.0234^{ns}	0.0005
UB	UB1	0.8638***	0.7462	-0.0010^{ns}	0.0000
	UB2	0.9362***	0.8765	-0.0210^{ns}	0.0004
	UB3	0.9546***	0.9113	-0.0812^{ns}	0.0066
	UB4	0.7787***	0.6064	0.1049*	0.0110
VB	VB1	0.8192***	0.6711	-0.0502^{ns}	0.0025
	VB2	0.9035***	0.8163	-0.0696^{ns}	0.0048
	VB3	0.7147***	0.5108	0.1653**	0.0273
	VB4	0.9028***	0.8150	-0.0532^{ns}	0.0028
Average			*0.7628*		*0.0031*
Ratio	*246.06*				

Notes:
1. CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RJ = rejection, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.
2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

Table 5.6: Common Method Factor Test for Postponers

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
CR	CR1	0.8241***	0.6791	0.0512^{ns}	0.0026
	CR2	0.8906***	0.7932	-0.0453^{ns}	0.0021
	CR3	0.8317***	0.6917	-0.0072^{ns}	0.0001
ER	ER1	0.7621***	0.5808	0.1380***	0.0190
	ER2	0.8977***	0.8059	-0.0458^{ns}	0.0021
	ER3	0.9394***	0.8825	-0.1041**	0.0108
IB	IB1	0.9142***	0.8358	-0.0235^{ns}	0.0006
	IB2	0.8519***	0.7257	0.0272^{ns}	0.0007
	IB3	0.9094***	0.8270	-0.0033^{ns}	0.0000
MT	MT1	0.8073***	0.6517	0.0760^{ns}	0.0058
	MT2	0.8827***	0.7792	-0.0482^{ns}	0.0023
	MT3	0.9026***	0.8147	-0.0253^{ns}	0.0006
	MT4	0.8876***	0.7878	-0.0041^{ns}	0.0000
PI	PI1	0.7427***	0.5516	0.1143*	0.0131
	PI2	0.9272***	0.8597	-0.1074**	0.0115
	PI3	0.8772***	0.7695	-0.0112^{ns}	0.0001
PP	PP1	0.8564***	0.7334	-0.0669^{ns}	0.0045
	PP2	0.8297***	0.6884	0.0620^{ns}	0.0038
	PP3	0.8297***	0.6884	0.0620^{ns}	0.0038

Table 5.6 continued: Common Method Factor Test for Postponers

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
PS	PS1	0.8053***	0.6485	-0.0080^{ns}	0.0001
	PS2	0.8555***	0.7319	-0.0306^{ns}	0.0009
	PS3	0.8299***	0.6887	0.0363^{ns}	0.0013
RB	RB1	0.9537***	0.9095	-0.0633^{ns}	0.0040
	RB2	0.8456***	0.7150	0.0686^{ns}	0.0047
	RB3	0.8942***	0.7996	-0.0058^{ns}	0.0000
RS	RS1	0.8581***	0.7363	0.0465^{ns}	0.0022
	RS2	0.8259***	0.6821	0.0528^{ns}	0.0028
	RS3	0.9624***	0.9262	-0.1003*	0.0101
SF	SF1	0.8546***	0.7303	0.0223^{ns}	0.0005
	SF2	0.8156***	0.6652	0.0484^{ns}	0.0023
	SF3	0.9101***	0.8283	-0.0739*	0.0055
SI	SI1	0.7850***	0.6162	0.0086^{ns}	0.0001
	SI2	0.8442***	0.7127	0.0150^{ns}	0.0002
	SI3	0.8976***	0.8057	-0.0222^{ns}	0.0005
SP	SP1	0.8135***	0.6618	-0.0742^{ns}	0.0055
	SP2	0.8545***	0.7302	0.0016^{ns}	0.0000
	SP3	0.8562***	0.7331	0.0588^{ns}	0.0035
SU	SU1	0.8725***	0.7613	0.0219^{ns}	0.0005
	SU2	0.8649***	0.7481	0.0052^{ns}	0.0000
	SU3	0.9250***	0.8556	-0.0265^{ns}	0.0007
TB	TB1	0.8773***	0.7697	0.0226^{ns}	0.0005
	TB2	0.9154***	0.8380	-0.0291^{ns}	0.0008
	TB3	0.8161***	0.6660	0.0800^{ns}	0.0064
UB	UB1	0.8981***	0.8066	-0.0168^{ns}	0.0003
	UB2	0.8811***	0.7763	0.0109^{ns}	0.0001
	UB3	0.8634***	0.7455	0.0340^{ns}	0.0012
	UB4	0.8747***	0.7651	-0.0296^{ns}	0.0009
VB	VB1	0.8401***	0.7058	-0.0555^{ns}	0.0031
	VB2	0.8928***	0.7971	-0.0335^{ns}	0.0011
	VB3	0.7961***	0.6338	0.0950^{ns}	0.0090
	VB4	0.8952***	0.8014	-0.0122^{ns}	0.0001
Average			*0.7478*		*0.0030*
Ratio	*249.27*				

Notes:

1. CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PP = postponement, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.
2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

Table 5.7: Common Method Factor Test for Opponents

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
CR	CR1	0.8594***	0.7386	0.0149^{ns}	0.0002
	CR2	0.9109***	0.8297	-0.0396^{ns}	0.0016
	CR3	0.8275***	0.6848	0.0264^{ns}	0.0007
ER	ER1	0.8041***	0.6466	0.1093***	0.0119
	ER2	0.9338***	0.8720	-0.0389^{ns}	0.0015
	ER3	0.9016***	0.8129	-0.0743*	0.0055
IB	IB1	0.9261***	0.8577	-0.0655^{ns}	0.0043
	IB2	0.8218***	0.6754	0.0882*	0.0078
	IB3	0.9339***	0.8722	-0.0229^{ns}	0.0005
MT	MT1	0.8487***	0.7203	-0.0273^{ns}	0.0007
	MT2	0.9201***	0.8466	-0.0587^{ns}	0.0034
	MT3	0.9303***	0.8655	-0.0196^{ns}	0.0004
	MT4	0.8203***	0.6729	0.1013***	0.0103
OP	OP1	0.8890***	0.7903	-0.0288^{ns}	0.0008
	OP2	0.8963***	0.8034	0.0168^{ns}	0.0003
	OP3	0.8859***	0.7848	0.0109^{ns}	0.0001
PI	PI1	0.8154***	0.6649	0.0780*	0.0061
	PI2	0.9159***	0.8389	-0.0692*	0.0048
	PI3	0.8514***	0.7249	-0.0103^{ns}	0.0001
PS	PS1	0.8133***	0.6615	0.0084^{ns}	0.0001
	PS2	0.9100***	0.8281	-0.0182^{ns}	0.0003
	PS3	0.9084***	0.8252	0.0105^{ns}	0.0001
RB	RB1	0.9404***	0.8844	-0.0386^{ns}	0.0015
	RB2	0.9079***	0.8243	-0.0006^{ns}	0.0000
	RB3	0.8652***	0.7486	0.0393^{ns}	0.0015
RS	RS1	0.7778***	0.6050	0.1252***	0.0157
	RS2	0.9190***	0.8446	-0.0937*	0.0088
	RS3	0.9011***	0.8120	-0.0406^{ns}	0.0016
SF	SF1	0.8458***	0.7154	0.0587^{ns}	0.0034
	SF2	0.8952***	0.8014	-0.0019^{ns}	0.0000
	SF3	0.9278***	0.8608	-0.0573^{ns}	0.0033
SI	SI1	0.7849***	0.6161	0.0046^{ns}	0.0000
	SI2	0.9206***	0.8475	-0.0164^{ns}	0.0003
	SI3	0.8894***	0.7910	0.0124^{ns}	0.0002
SP	SP1	0.8767***	0.7686	-0.0116^{ns}	0.0001
	SP2	0.8842***	0.7818	0.0424^{ns}	0.0018
	SP3	0.8993***	0.8087	-0.0330^{ns}	0.0011
SU	SU1	0.8966***	0.8039	-0.0445^{ns}	0.0020
	SU2	0.9045***	0.8181	0.0327^{ns}	0.0011
	SU3	0.9062***	0.8212	0.0092^{ns}	0.0001
TB	TB1	0.8814***	0.7769	0.0029^{ns}	0.0000
	TB2	0.9150***	0.8372	-0.0006^{ns}	0.0000

Table 5.7 continued: Common Method Factor Test for Opponents

First-order constructs	Items	Substantive factor loadings (a)	Substantive variances (a^2)	Method factor loadings (b)	Method variances (b^2)
	TB3	0.9189***	0.8444	-0.0022^{ns}	0.0000
UB	UB1	0.8348***	0.6969	0.0322^{ns}	0.0010
	UB2	0.9190***	0.8446	-0.0256^{ns}	0.0007
	UB3	0.9207***	0.8477	-0.0397^{ns}	0.0016
	UB4	0.8558***	0.7324	0.0345^{ns}	0.0012
VB	VB1	0.8368***	0.7002	-0.1209*	0.0146
	VB2	0.8951***	0.8012	-0.0534^{ns}	0.0029
	VB3	0.7564***	0.5721	0.1294**	0.0167
	VB4	0.8300***	0.6889	0.0275^{ns}	0.0008
Average			*0.7748*		*0.0028*
Ratio	*276.71*				

Notes:
1. CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, OP = opposition, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.
2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

5.4 Evaluating the Measurement Model

Both Table 5.8 and Table 5.9 exhibit the standard evaluation criteria used in evaluating the first-order constructs nested in the measurement model for the group of rejecters. From Table 5.8, it is noticed that both Cronbach's alpha and composite reliability have exceeded the threshold value of 0.70, thereby confirming the internal consistency reliability. Besides, the discriminant validity is established as all HTMT in Table 5.8 are under the value of 0.90 and all measurement items show a higher loading value on their respective constructs than other constructs in Table 5.9. The convergent validity is also shaped as all AVE values in Table 5.8 are beyond 0.50 and all measurement items exhibit a loading value of at least 0.70 on their respective constructs in Table 5.9.

For postponers, Table 5.10 shows no issue with the internal consistency reliability as Cronbach's alpha and composite reliability are more than 0.70. However, as some of the HTMT for several constructs in Table 5.10 are slightly more than the imposed threshold of 0.90, there are doubts about the discriminant validity. Owing to this, the confidence intervals for all HTMT are constructed in Table 5.11. Given that none of the confidence intervals contains the value of one, the doubts on the discriminant validity are cleared. Moreover, the loading values in Table 5.12 supports that all measurement items show a higher loading value on their respective constructs than other constructs, rendering further support to establishing the discriminant validity. Likewise, the convergent validity is achieved given that all AVE values are more than 0.50 in Table 5.10 and all measurement items exhibit a loading value of 0.70 and more on their own constructs in Table 5.12.

Similarly, as suggested by Table 5.13 and Table 5.14, the internal consistency reliability, discriminant validity, and convergent validity for the group of opponents are also ascertained. This is so as Table 5.13 indicates that Cronbach's alpha and composite reliability values are all above the value of 0.70 and the HTMT are all below 0.90. In addition, the loading values in Table 5.14 clearly state that all measurement items show a higher loading on their respective constructs with a loading value of 0.70 and above.

Table 5.8: Reliability and Validity of First-Order Constructs for Rejecters

First-order constructs	CR	ER	IB	MT	PI	PS	RB	RJ	RS	SF	SI	SP	SU	TB	UB	VB
CR																
ER	0.3058															
IB	0.3568	0.3008														
MT	0.4194	0.5226	0.4091													
PI	0.3157	0.3867	0.4476	0.3635												
PS	0.1838	0.3265	0.4011	0.2155	0.8318											
RB	0.3480	0.3621	0.7384	0.4213	0.5802	0.4796										
RJ	0.3233	0.2325	0.6979	0.3326	0.4146	0.3303	0.6856									
RS	0.5530	0.7112	0.3750	0.7540	0.3405	0.1909	0.4383	0.3777								
SF	0.4276	0.8166	0.3986	0.5797	0.3176	0.2347	0.4266	0.2870	0.7623							
SI	0.5680	0.4737	0.4735	0.6492	0.4766	0.3149	0.5370	0.4511	0.6550	0.6209						
SP	0.4842	0.4038	0.4539	0.5132	0.3268	0.2127	0.4326	0.3659	0.5793	0.5740	0.8115					
SU	0.1482	0.2737	0.3699	0.1921	0.7376	0.7794	0.4448	0.3045	0.0867	0.1878	0.2461	0.1958				
TB	0.1457	0.1571	0.6528	0.1358	0.4218	0.5353	0.6337	0.6699	0.0713	0.1511	0.2877	0.2390	0.4398			
UB	0.4133	0.4035	0.6743	0.5573	0.4762	0.3042	0.7173	0.5594	0.5983	0.5121	0.5315	0.4737	0.2863	0.3621		
VB	0.4701	0.3132	0.7775	0.5559	0.4314	0.2678	0.8131	0.7020	0.5838	0.4800	0.5380	0.4732	0.2423	0.5377	0.8555	
Composite reliability	*0.9007*	*0.8992*	*0.9389*	*0.9287*	*0.8758*	*0.8667*	*0.9161*	*0.9073*	*0.8922*	*0.9138*	*0.8860*	*0.9107*	*0.9261*	*0.9435*	*0.9346*	*0.9013*
Cronbach's alpha	*0.8349*	*0.8317*	*0.9024*	*0.8976*	*0.7879*	*0.7688*	*0.8626*	*0.8468*	*0.8185*	*0.8586*	*0.8061*	*0.8520*	*0.8802*	*0.9102*	*0.9065*	*0.8537*
AVE	*0.7516*	*0.7490*	*0.8368*	*0.7651*	*0.7018*	*0.6864*	*0.7845*	*0.7654*	*0.7340*	*0.7794*	*0.7219*	*0.7730*	*0.8069*	*0.8478*	*0.7814*	*0.6957*

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RJ = rejection, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.9: Loading Values of the Measurement Items for Rejecters

Items	CR	ER	IB	MT	PI	PS	RB	RJ	RS	SF	SI	SP	SU	TB	UB	VB
CR1	**0.8635**	0.2812	0.3006	0.3406	0.2562	0.1266	0.2771	0.2525	0.4229	0.3558	0.4121	0.3549	0.1305	0.1347	0.3506	0.3771
CR2	**0.8902**	0.1677	0.2579	0.2590	0.1853	0.1245	0.2160	0.1977	0.3583	0.2450	0.3870	0.3650	0.0983	0.1147	0.2698	0.2916
CR3	**0.8465**	0.2318	0.2459	0.3444	0.2196	0.1235	0.2751	0.2549	0.4078	0.3433	0.4091	0.3445	0.1017	0.0847	0.3155	0.3630
ER1	0.2754	**0.8968**	0.2014	0.4757	0.2266	0.1941	0.2387	0.1865	0.6195	0.6023	0.3428	0.3091	0.1283	0.0920	0.3277	0.2560
ER2	0.2617	**0.9089**	0.1971	0.4317	0.2374	0.1547	0.2324	0.1315	0.5685	0.6316	0.3299	0.3188	0.1614	0.0464	0.3041	0.2222
ER3	0.1346	**0.7852**	0.2770	0.2647	0.3425	0.3135	0.3240	0.1922	0.3393	0.5606	0.3283	0.2513	0.3181	0.2175	0.2742	0.2044
IB1	0.2940	0.2376	**0.9280**	0.3635	0.3438	0.3451	0.5977	0.5810	0.3196	0.3572	0.4112	0.3911	0.2963	0.5641	0.5327	0.6374
IB2	0.2412	0.2046	**0.9030**	0.2845	0.3293	0.2913	0.6101	0.5456	0.2429	0.2684	0.3329	0.3454	0.3034	0.5697	0.5479	0.6054
IB3	0.3190	0.2555	**0.9131**	0.3638	0.3615	0.2810	0.5788	0.5539	0.3159	0.3374	0.3617	0.3578	0.3049	0.4945	0.5950	0.6350
MT1	0.2848	0.4108	0.3113	**0.8634**	0.3191	0.1974	0.2996	0.2458	0.4823	0.4065	0.4871	0.3725	0.2221	0.1380	0.4137	0.3956
MT2	0.2927	0.4204	0.3530	**0.8735**	0.2380	0.1579	0.3367	0.2395	0.5427	0.4271	0.4822	0.3871	0.1712	0.1288	0.4374	0.4364
MT3	0.3249	0.4261	0.3224	**0.9015**	0.2517	0.1452	0.3200	0.2792	0.6217	0.4834	0.4921	0.4077	0.1230	0.0993	0.4461	0.4349
MT4	0.3798	0.3548	0.3004	**0.8600**	0.2387	0.1495	0.3402	0.2569	0.6053	0.4618	0.4758	0.4052	0.0812	0.0570	0.4595	0.4361
PI1	0.2594	0.2844	0.3266	0.3769	**0.8027**	0.4884	0.3832	0.2915	0.3289	0.2833	0.3807	0.2652	0.4169	0.2242	0.3601	0.3416
PI2	0.1675	0.2407	0.2849	0.1485	**0.8430**	0.5674	0.4097	0.2468	0.1717	0.1852	0.2454	0.1727	0.5026	0.3144	0.3291	0.2663
PI3	0.2236	0.2400	0.3366	0.2405	**0.8664**	0.5884	0.4087	0.3163	0.1873	0.1853	0.3289	0.2361	0.6256	0.3598	0.3210	0.2834
PS1	0.1372	0.2332	0.2451	0.0749	0.4204	**0.7083**	0.2581	0.2404	0.1430	0.1891	0.1497	0.0908	0.3840	0.3870	0.2024	0.1553
PS2	0.1240	0.2178	0.3268	0.2222	0.6067	**0.8806**	0.4054	0.2471	0.1459	0.1676	0.2473	0.1847	0.5924	0.3902	0.2586	0.2309
PS3	0.1051	0.1715	0.2584	0.1457	0.5852	**0.8843**	0.3044	0.1751	0.0889	0.1141	0.2180	0.1516	0.6145	0.3322	0.1663	0.1554
RB1	0.2454	0.2079	0.5452	0.3079	0.3583	0.2732	**0.8914**	0.5214	0.3361	0.2987	0.3656	0.3172	0.2605	0.4368	0.5395	0.6564
RB2	0.2934	0.2933	0.5599	0.3376	0.4461	0.3665	**0.8899**	0.4748	0.3426	0.3754	0.3998	0.3269	0.3638	0.5005	0.5801	0.6106
RB3	0.2528	0.2940	0.6264	0.3403	0.4670	0.4074	**0.8757**	0.5648	0.2965	0.3007	0.4260	0.3417	0.4059	0.5605	0.5661	0.5997

Table 5.9 continued: Loading Values of the Measurement Items for Rejecters

Items	CR	ER	IB	MT	PI	PS	RB	RJ	RS	SF	SI	SP	SU	TB	UB	VB
RJ1	0.2533	0.1580	0.5086	0.2186	0.2913	0.2432	0.4750	**0.8779**	0.2459	0.2079	0.3376	0.2783	0.2469	0.5451	0.3741	0.4907
RJ2	0.2586	0.1230	0.4958	0.2375	0.2622	0.1832	0.5260	**0.8878**	0.2666	0.2006	0.3263	0.2514	0.1827	0.4745	0.4400	0.5628
RJ3	0.2080	0.2227	0.5974	0.3048	0.3363	0.2591	0.5362	**0.8586**	0.3112	0.2365	0.3150	0.2879	0.2609	0.5267	0.4735	0.5229
RS1	0.3928	0.4484	0.3537	0.6452	0.2219	0.1118	0.3494	0.2943	**0.8271**	0.5503	0.4932	0.4247	0.0487	0.0515	0.4897	0.4604
RS2	0.3984	0.5801	0.2202	0.4923	0.2458	0.1742	0.2782	0.2593	**0.8639**	0.5577	0.4614	0.4210	0.1042	0.0506	0.4008	0.3750
RS3	0.3910	0.5121	0.2537	0.5249	0.2189	0.0936	0.3193	0.2584	**0.8785**	0.5378	0.4132	0.3989	0.0257	0.0342	0.4314	0.4121
SF1	0.3293	0.6527	0.3141	0.4511	0.1773	0.1030	0.3045	0.2306	0.6027	**0.8830**	0.4463	0.3933	0.0942	0.1244	0.4009	0.3589
SF2	0.2874	0.5597	0.3071	0.4667	0.2550	0.1821	0.3287	0.1809	0.5191	**0.8778**	0.4520	0.4530	0.1671	0.0921	0.3856	0.3857
SF3	0.3538	0.6138	0.3079	0.4306	0.2477	0.2042	0.3395	0.2388	0.5704	**0.8877**	0.4663	0.4559	0.1713	0.1394	0.4089	0.3455
SI1	0.4237	0.3807	0.3530	0.3906	0.3019	0.1972	0.3394	0.2926	0.4149	0.4613	**0.7931**	0.5508	0.1820	0.2381	0.3880	0.3466
SI2	0.3810	0.2926	0.3220	0.5168	0.2756	0.1932	0.3479	0.3152	0.4954	0.4537	**0.8801**	0.5736	0.1007	0.1536	0.3915	0.3734
SI3	0.3859	0.3100	0.3542	0.4988	0.3824	0.2505	0.4525	0.3409	0.4426	0.4008	**0.8731**	0.5871	0.2457	0.2386	0.3772	0.4226
SP1	0.3071	0.3056	0.3034	0.3426	0.2010	0.1401	0.3008	0.2218	0.3802	0.3769	0.5752	**0.8237**	0.1744	0.1850	0.2883	0.2792
SP2	0.3807	0.3377	0.3642	0.4230	0.2618	0.1833	0.3401	0.3206	0.4395	0.4661	0.5891	**0.8929**	0.1398	0.1958	0.3928	0.3606
SP3	0.3886	0.2575	0.3817	0.4172	0.2381	0.1419	0.3362	0.2777	0.4543	0.4487	0.6070	**0.9184**	0.1328	0.1777	0.4159	0.4276
SU1	0.1489	0.1972	0.2823	0.1609	0.6034	0.5730	0.3657	0.2742	0.1004	0.1643	0.2089	0.1788	**0.8829**	0.3555	0.2313	0.1982
SU2	0.0730	0.2001	0.3011	0.1436	0.5534	0.6023	0.3390	0.2094	0.0424	0.1318	0.1852	0.1355	**0.8962**	0.3796	0.2417	0.1907
SU3	0.1233	0.2006	0.3047	0.1544	0.5175	0.5809	0.3384	0.2264	0.0460	0.1412	0.1635	0.1398	**0.9153**	0.3258	0.2157	0.1824
TB1	0.0783	0.0997	0.4921	0.0521	0.3244	0.4266	0.4453	0.5128	0.0062	0.1054	0.2015	0.1542	0.3539	**0.9039**	0.2462	0.3874
TB2	0.1625	0.1317	0.6028	0.1776	0.3407	0.4034	0.5772	0.5819	0.1064	0.1580	0.2703	0.2457	0.3652	**0.9232**	0.3552	0.5064
TB3	0.1116	0.1182	0.5416	0.0986	0.3348	0.3876	0.5274	0.5302	0.0292	0.1075	0.2059	0.1804	0.3688	**0.9350**	0.3075	0.4280

Table 5.9 continued: Loading Values of the Measurement Items for Rejecters

Items	CR	ER	IB	MT	PI	PS	RB	RJ	RS	SF	SI	SP	SU	TB	UB	VB
UB1	0.2933	0.3600	0.4789	0.4675	0.3459	0.2510	0.5178	0.3861	0.4801	0.4259	0.3919	0.3610	0.2208	0.2665	**0.8610**	0.6293
UB2	0.3398	0.2938	0.5671	0.4639	0.3330	0.1846	0.5695	0.4498	0.4481	0.4226	0.4134	0.3916	0.2294	0.2951	**0.9200**	0.7092
UB3	0.3048	0.2781	0.5649	0.3905	0.3168	0.1813	0.5534	0.4496	0.4004	0.3438	0.3657	0.3454	0.2013	0.3114	**0.8910**	0.6752
UB4	0.3442	0.3084	0.5423	0.4555	0.4188	0.2742	0.6011	0.4549	0.4875	0.4058	0.4323	0.3792	0.2530	0.2958	**0.8625**	0.6445
VB1	0.3472	0.2771	0.4741	0.4246	0.2396	0.1208	0.4349	0.3780	0.4825	0.3436	0.3269	0.3187	0.0939	0.2326	0.6364	**0.7780**
VB2	0.2958	0.1698	0.5914	0.3700	0.3289	0.2196	0.5981	0.5032	0.3534	0.3282	0.3187	0.3006	0.2104	0.4570	0.5909	**0.8453**
VB3	0.3672	0.2725	0.5809	0.4843	0.2952	0.1900	0.6778	0.5630	0.4213	0.4166	0.4545	0.4165	0.1787	0.4368	0.6720	**0.8521**
VB4	0.3252	0.1634	0.6290	0.3453	0.3059	0.1952	0.6165	0.5491	0.3652	0.2800	0.3894	0.3164	0.2176	0.4605	0.6122	**0.8585**

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RJ = rejection, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.10: Reliability and Validity of First-Order Constructs for Postponers

First-order constructs	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
CR																
ER	0.4894															
IB	0.4431	0.5908														
MT	0.4710	0.7003	0.6549													
PI	0.3990	0.6835	0.5210	0.7295												
PP	0.3271	0.3815	0.5287	0.3545	0.4015											
PS	0.3351	0.6152	0.4192	0.4944	0.8340	0.6018										
RB	0.3520	0.6167	0.8540	0.5907	0.6389	0.4986	0.5463									
RS	0.5789	0.8269	0.7751	0.7904	0.5947	0.3574	0.4586	0.6443								
SF	0.5570	0.9555	0.6141	0.7574	0.6963	0.4088	0.5479	0.6163	0.8750							
SI	0.8292	0.6652	0.5552	0.6488	0.5845	0.4882	0.5270	0.4810	0.6892	0.6939						
SP	0.7202	0.5779	0.4968	0.5892	0.6397	0.4827	0.5476	0.4874	0.5806	0.5915	0.8439					
SU	0.3898	0.5363	0.3654	0.4589	0.8100	0.4238	0.7630	0.4881	0.3417	0.4795	0.5101	0.5742				
TB	0.3960	0.4711	0.9011	0.4578	0.4877	0.6391	0.3774	0.7498	0.6004	0.5040	0.4994	0.3926	0.3872			
UB	0.4224	0.6257	0.9132	0.6640	0.6390	0.5357	0.4933	0.9078	0.7083	0.6946	0.5375	0.5090	0.4373	0.8048		
VB	0.4313	0.6210	0.9645	0.6567	0.5576	0.4512	0.4078	0.8834	0.7515	0.6478	0.5296	0.4927	0.3586	0.8425	0.9552	
Composite reliability	*0.8851*	*0.8978*	*0.9212*	*0.9255*	*0.8849*	*0.8402*	*0.8690*	*0.9257*	*0.9130*	*0.8943*	*0.8806*	*0.8777*	*0.9177*	*0.9235*	*0.9316*	*0.9159*
Cronbach's alpha	*0.8057*	*0.8294*	*0.8715*	*0.8927*	*0.8048*	*0.7205*	*0.7740*	*0.8795*	*0.8571*	*0.8228*	*0.7960*	*0.7899*	*0.8653*	*0.8757*	*0.9019*	*0.8772*
AVE	*0.7198*	*0.7454*	*0.7957*	*0.7566*	*0.7196*	*0.6376*	*0.6889*	*0.8059*	*0.7777*	*0.7383*	*0.7113*	*0.7059*	*0.7881*	*0.8009*	*0.7729*	*0.7318*

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PP = postponement, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.11: $HTMT_{inference}$ of First-Order Constructs for Postponers

First-order constructs	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
CR																
ER	[0.4422; 0.5644]															
IB	[0.3271; 0.5072]	[0.5669; 0.5960]														
MT	[0.3173; 0.5205]	[0.6372; 0.7659]	[0.6283; 0.6895]													
PI	[0.2662; 0.4713]	[0.6265; 0.7843]	[0.4924; 0.5658]	[0.6654; 0.8009]												
PP	[0.2855; 0.3946]	[0.3145; 0.4464]	[0.5102; 0.6182]	[0.2867; 0.4378]	[0.3491; 0.4961]											
PS	[0.2715; 0.3957]	[0.5589; 0.7211]	[0.4304; 0.4304]	[0.4184; 0.5603]	[0.7881; 0.8827]	[0.5290; 0.7128]										
RB	[0.2025; 0.4553]	[0.5500; 0.6642]	[0.7937; 0.8829]	[0.5381; 0.6384]	[0.6052; 0.6764]	[0.4841; 0.5435]	[0.5360; 0.6065]									
RS	[0.4801; 0.6715]	[0.8401; 0.8401]	[0.7221; 0.8172]	[0.7555; 0.8325]	[0.5610; 0.6192]	[0.2820; 0.4601]	[0.4149; 0.5492]	[0.5643; 0.7094]								
SF	[0.4711; 0.6567]	[0.9503; 0.9586]	[0.6140; 0.6264]	[0.7168; 0.8047]	[0.6342; 0.7712]	[0.3121; 0.4816]	[0.5047; 0.6521]	[0.5882; 0.6773]	[0.8517; 0.9005]							
SI	[0.7781; 0.9275]	[0.5818; 0.7057]	[0.4970; 0.6056]	[0.5819; 0.7145]	[0.5230; 0.6304]	[0.3709; 0.5745]	[0.3941; 0.6036]	[0.3925; 0.5670]	[0.6274; 0.7314]	[0.6404; 0.7702]						
SP	[0.6489; 0.7599]	[0.4841; 0.6737]	[0.4421; 0.5495]	[0.5036; 0.6441]	[0.5282; 0.6728]	[0.4509; 0.5483]	[0.4203; 0.6070]	[0.4195; 0.5445]	[0.4838; 0.6358]	[0.4429; 0.7056]	[0.7524; 0.8746]					

Table 5.11 continued: $HTMT_{inference}$ of First-Order Constructs for Postponers

First-order constructs	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
SU	[0.3090; 0.4888]	[0.3871; 0.6160]	[0.3323; 0.4501]	[0.4054; 0.5185]	[0.7629; 0.8404]	[0.3487; 0.5366]	[0.6822; 0.8408]	[0.4260; 0.5751]	[0.2374; 0.4376]	[0.3917; 0.5114]	[0.4593; 0.5388]	[0.4130; 0.6409]				
TB	[0.3082; 0.4697]	[0.4236; 0.5613]	[0.8200; 0.9356]	[0.3897; 0.5190]	[0.4818; 0.4968]	[0.6328; 0.6391]	[0.4005; 0.4005]	[0.6719; 0.7681]	[0.5496; 0.7024]	[0.4828; 0.5618]	[0.4179; 0.5368]	[0.3219; 0.4678]	[0.3171; 0.4270]			
UB	[0.3244; 0.4923]	[0.5817; 0.6700]	[0.8795; 0.9285]	[0.6147; 0.7163]	[0.5872; 0.6845]	[0.5049; 0.5923]	[0.4757; 0.5005]	[0.8763; 0.9330]	[0.6671; 0.7293]	[0.6676; 0.7116]	[0.4640; 0.6053]	[0.4291; 0.5889]	[0.3607; 0.4886]	[0.7650; 0.8488]		
VB	[0.3347; 0.5035]	[0.5896; 0.6605]	[0.9276; 0.9900]	[0.6397; 0.7208]	[0.5137; 0.6099]	[0.4178; 0.5398]	[0.3968; 0.4214]	[0.8139; 0.9260]	[0.7122; 0.7710]	[0.6246; 0.6824]	[0.4827; 0.5830]	[0.3979; 0.5018]	[0.2683; 0.4261]	[0.7660; 0.8851]	[0.9284; 0.9778]	

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PP = postponement, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.12: Loading Values of the Measurement Items for Postponers

Items	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
CR1	**0.8621**	0.3627	0.3499	0.4046	0.3010	0.2184	0.1865	0.2617	0.4807	0.4327	0.6326	0.4697	0.2119	0.3171	0.3418	0.3503
CR2	**0.8552**	0.3222	0.2837	0.3073	0.2696	0.2115	0.2382	0.2621	0.3628	0.3321	0.5377	0.4548	0.3351	0.2662	0.2868	0.2812
CR3	**0.8276**	0.3349	0.3117	0.3056	0.2449	0.2161	0.2387	0.2329	0.3808	0.3902	0.5186	0.5343	0.2821	0.2629	0.2902	0.2876
ER1	0.3495	**0.8665**	0.5201	0.6024	0.4905	0.2870	0.4121	0.4945	0.6931	0.7053	0.5115	0.4761	0.3741	0.4002	0.5371	0.5296
ER2	0.3631	**0.8657**	0.4213	0.5074	0.4442	0.2402	0.3868	0.4245	0.5985	0.7005	0.4555	0.3565	0.3550	0.3487	0.4472	0.4622
ER3	0.3266	**0.8578**	0.3596	0.4523	0.5116	0.2376	0.4798	0.4456	0.5175	0.6438	0.4312	0.3889	0.4489	0.2908	0.4156	0.3764
IB1	0.3464	0.4520	**0.8935**	0.5354	0.3795	0.3694	0.2970	0.6520	0.5990	0.4589	0.4124	0.3596	0.2823	0.6858	0.7048	0.7560
IB2	0.2910	0.4612	**0.8759**	0.4779	0.3875	0.4346	0.3178	0.6665	0.5905	0.4691	0.4003	0.3597	0.3042	0.7153	0.7195	0.7417
IB3	0.3613	0.4400	**0.9064**	0.5345	0.3974	0.3681	0.3047	0.6830	0.6032	0.4648	0.4266	0.3925	0.2623	0.7055	0.7455	0.7620
MT1	0.3400	0.5526	0.4960	**0.8683**	0.6140	0.2869	0.4184	0.4828	0.6023	0.5888	0.5164	0.4586	0.4038	0.3977	0.5278	0.4947
MT2	0.3294	0.4958	0.4553	**0.8424**	0.5204	0.2209	0.3805	0.4435	0.5387	0.5261	0.4107	0.4177	0.3742	0.2896	0.4990	0.4867
MT3	0.3753	0.5165	0.5444	**0.8831**	0.5035	0.2987	0.3179	0.4381	0.6070	0.5562	0.5077	0.4365	0.2949	0.3700	0.5065	0.5149
MT4	0.3564	0.5424	0.5140	**0.8849**	0.5057	0.2514	0.3217	0.4551	0.6607	0.5877	0.4782	0.4227	0.3304	0.3512	0.5386	0.5306
PI1	0.2972	0.4751	0.4137	0.5840	**0.8146**	0.2664	0.5519	0.4737	0.4901	0.4836	0.4554	0.4907	0.5167	0.3543	0.4967	0.4758
PI2	0.2634	0.4475	0.3244	0.4883	**0.8559**	0.2218	0.5188	0.4126	0.3522	0.4463	0.3418	0.4079	0.6062	0.3300	0.4023	0.3346
PI3	0.2601	0.4965	0.3722	0.5011	**0.8732**	0.2974	0.6083	0.4806	0.4161	0.5116	0.3920	0.3983	0.5971	0.3571	0.4833	0.3842
PP1	0.2022	0.2532	0.2809	0.1526	0.2574	**0.8052**	0.4321	0.2899	0.1991	0.2410	0.2762	0.3137	0.3112	0.3647	0.3106	0.2011
PP2	0.1645	0.2137	0.2569	0.1650	0.2096	**0.7309**	0.3570	0.2346	0.1520	0.2027	0.2888	0.2843	0.2658	0.3412	0.3047	0.2631
PP3	0.2323	0.2440	0.4687	0.3673	0.2684	**0.8546**	0.2889	0.4294	0.3255	0.3165	0.3199	0.2729	0.2259	0.5135	0.4223	0.3987
PS1	0.2922	0.3790	0.2920	0.2778	0.4927	0.3679	**0.7909**	0.3417	0.2995	0.3347	0.3534	0.3661	0.4612	0.2801	0.3083	0.2723
PS2	0.1883	0.4097	0.2574	0.3649	0.5724	0.3183	**0.8453**	0.3689	0.2871	0.3518	0.3262	0.3795	0.5403	0.2148	0.3116	0.2437
PS3	0.1737	0.4340	0.3078	0.3788	0.5748	0.4028	**0.8524**	0.4118	0.3457	0.4050	0.3449	0.3204	0.5535	0.2783	0.4033	0.3186

Table 5.12 continued: Loading Values of the Measurement Items for Postponers

Items	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
RB1	0.2436	0.4400	0.6508	0.4751	0.4518	0.3783	0.3979	**0.9029**	0.4887	0.4441	0.3414	0.3521	0.3457	0.5692	0.7172	0.7058
RB2	0.3179	0.4965	0.6987	0.4516	0.4900	0.3743	0.4160	**0.9036**	0.5213	0.5138	0.3882	0.3737	0.4069	0.6174	0.7634	0.7209
RB3	0.2372	0.4842	0.6644	0.4832	0.5047	0.3609	0.4028	**0.8865**	0.4974	0.4543	0.3553	0.3757	0.3931	0.5855	0.6961	0.6673
RS1	0.4487	0.6027	0.6232	0.6809	0.4404	0.2562	0.3208	0.5432	**0.8923**	0.6490	0.5593	0.4356	0.2499	0.4744	0.5579	0.6135
RS2	0.4062	0.6874	0.5738	0.6137	0.4667	0.2986	0.3859	0.4767	**0.8747**	0.6618	0.5109	0.4609	0.2841	0.4119	0.5570	0.5490
RS3	0.4277	0.5643	0.5751	0.5378	0.3946	0.2287	0.2819	0.4606	**0.8786**	0.6355	0.4368	0.3862	0.2451	0.4899	0.5347	0.5649
SF1	0.4047	0.7463	0.4613	0.5722	0.4900	0.3276	0.4043	0.4457	0.6655	**0.8772**	0.4928	0.3959	0.3514	0.3771	0.5130	0.4835
SF2	0.3785	0.6676	0.4767	0.5484	0.4999	0.2943	0.4236	0.5003	0.6303	**0.8486**	0.4447	0.4317	0.3659	0.3790	0.5414	0.4887
SF3	0.3932	0.6245	0.4023	0.5544	0.4705	0.2124	0.3015	0.4071	0.5991	**0.8516**	0.5093	0.4083	0.3261	0.3465	0.4883	0.4481
SI1	0.5509	0.4515	0.3518	0.3670	0.3795	0.3324	0.3794	0.3117	0.4501	0.4576	**0.7888**	0.5198	0.3755	0.3737	0.3569	0.3387
SI2	0.5809	0.4679	0.4097	0.5166	0.3812	0.3172	0.3220	0.3470	0.5057	0.5041	**0.8590**	0.6110	0.3238	0.3381	0.3886	0.3818
SI3	0.5556	0.4514	0.4078	0.5026	0.4180	0.2886	0.3414	0.3597	0.4859	0.4574	**0.8797**	0.5633	0.3717	0.3422	0.4066	0.3990
SP1	0.4770	0.3097	0.2665	0.3166	0.4027	0.3124	0.3401	0.2766	0.2475	0.3280	0.5184	**0.7728**	0.3787	0.2175	0.3056	0.2515
SP2	0.4744	0.3950	0.3611	0.4334	0.4288	0.2875	0.3488	0.3402	0.4400	0.4134	0.5529	**0.8508**	0.3931	0.2878	0.3705	0.3852
SP3	0.4939	0.4767	0.4105	0.4958	0.4469	0.3058	0.3857	0.4056	0.5171	0.4577	0.6154	**0.8926**	0.4227	0.3162	0.4061	0.3969
SU1	0.2998	0.4233	0.2839	0.3754	0.6114	0.2830	0.5869	0.3781	0.2787	0.3832	0.4034	0.4103	**0.8877**	0.2883	0.3448	0.2903
SU2	0.2659	0.3663	0.2862	0.3533	0.5799	0.3250	0.5413	0.3947	0.2435	0.3456	0.3530	0.4271	**0.8659**	0.3120	0.3404	0.2726
SU3	0.2909	0.4151	0.2746	0.3434	0.6110	0.2637	0.5395	0.3612	0.2622	0.3489	0.3663	0.4261	**0.9091**	0.2966	0.3408	0.2698
TB1	0.3346	0.3788	0.6957	0.3460	0.3753	0.4804	0.2862	0.5843	0.4681	0.3946	0.3972	0.3456	0.3370	**0.8918**	0.6373	0.6562
TB2	0.2447	0.3401	0.7147	0.3783	0.3245	0.4305	0.2583	0.5895	0.4826	0.3672	0.3596	0.2667	0.2512	**0.8953**	0.6311	0.6743
TB3	0.3183	0.3653	0.7031	0.3659	0.3985	0.4907	0.2859	0.5934	0.4439	0.3875	0.3582	0.2700	0.3159	**0.8976**	0.6559	0.6603

Table 5.12 continued: Loading Values of the Measurement Items for Postponers

Items	CR	ER	IB	MT	PI	PP	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
UB1	0.3203	0.4876	0.7251	0.5449	0.4484	0.3942	0.3594	0.6860	0.5825	0.5314	0.3866	0.3723	0.3224	0.6086	**0.8826**	0.7480
UB2	0.3383	0.4606	0.7626	0.5290	0.4593	0.4087	0.3277	0.7013	0.5556	0.5165	0.4144	0.4136	0.3210	0.6776	**0.8907**	0.7753
UB3	0.3457	0.4670	0.7388	0.5142	0.4742	0.3830	0.3534	0.7368	0.5721	0.5469	0.4184	0.3812	0.3281	0.6796	**0.8947**	0.8021
UB4	0.2681	0.4964	0.6207	0.5075	0.5295	0.3662	0.4132	0.7211	0.4803	0.5092	0.3827	0.3496	0.3867	0.5491	**0.8478**	0.6687
VB1	0.3202	0.4679	0.6452	0.4349	0.3595	0.2983	0.2946	0.5934	0.4845	0.4371	0.3474	0.3178	0.2509	0.5138	0.6405	**0.7907**
VB2	0.3315	0.4388	0.7239	0.4901	0.3983	0.2831	0.2862	0.6491	0.5636	0.4453	0.3823	0.3636	0.2792	0.6527	0.7223	**0.8643**
VB3	0.2905	0.4710	0.7392	0.5311	0.4744	0.3528	0.3349	0.7322	0.5516	0.4985	0.3960	0.3729	0.3434	0.6865	0.7812	**0.8788**
VB4	0.3054	0.4448	0.7754	0.5317	0.3625	0.3391	0.2331	0.6802	0.6284	0.5020	0.3894	0.3595	0.1950	0.6721	0.7658	**0.8847**

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, PI = perceived intrusion, PP = postponement, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.13: Reliability and Validity of First-Order Constructs for Opponents

First-order constructs	CR	ER	IB	MT	OP	PI	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
CR																
ER	0.4193															
IB	0.3232	0.3193														
MT	0.4012	0.5347	0.4881													
OP	0.3139	0.2802	0.7061	0.5017												
PI	0.3305	0.3484	0.2312	0.4010	0.2546											
PS	0.2727	0.3436	0.2251	0.2831	0.1971	0.8882										
RB	0.2265	0.4186	0.6939	0.3671	0.4518	0.3564	0.3589									
RS	0.4663	0.7381	0.4196	0.6396	0.4288	0.2230	0.1523	0.3425								
SF	0.5246	0.8973	0.3542	0.5826	0.3635	0.3097	0.2673	0.3489	0.8393							
SI	0.6451	0.5579	0.3908	0.5937	0.4203	0.4578	0.3808	0.3784	0.5948	0.6303						
SP	0.4929	0.4882	0.2730	0.4850	0.2907	0.3531	0.2794	0.2509	0.5562	0.5454	0.7500					
SU	0.1869	0.3500	0.1220	0.2654	0.1708	0.8329	0.8289	0.2763	0.0989	0.1859	0.3193	0.2250				
TB	0.1748	0.3199	0.7184	0.3345	0.5034	0.2285	0.3113	0.6666	0.2484	0.2377	0.2739	0.1869	0.2434			
UB	0.2492	0.4108	0.7699	0.4124	0.5742	0.2723	0.2547	0.7405	0.4150	0.3552	0.4340	0.2888	0.2058	0.6260		
VB	0.2947	0.3425	0.7903	0.4274	0.6309	0.2380	0.2147	0.7281	0.4221	0.3343	0.3727	0.3489	0.1364	0.6551	0.8551	
Composite reliability	*0.9000*	*0.9105*	*0.9227*	*0.9317*	*0.9197*	*0.8955*	*0.9098*	*0.9311*	*0.8984*	*0.9191*	*0.9004*	*0.9167*	*0.9292*	*0.9316*	*0.9340*	*0.8965*
Cronbach's alpha	*0.8337*	*0.8530*	*0.8743*	*0.9021*	*0.8690*	*0.8250*	*0.8506*	*0.8889*	*0.8304*	*0.8681*	*0.8327*	*0.8636*	*0.8856*	*0.8897*	*0.9057*	*0.8456*
AVE	*0.7501*	*0.7724*	*0.7993*	*0.7735*	*0.7926*	*0.7407*	*0.7713*	*0.8183*	*0.7467*	*0.7912*	*0.7513*	*0.7857*	*0.8140*	*0.8195*	*0.7797*	*0.6848*

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, OP = opposition, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Table 5.14: Loading Values of the Measurement Items for Opponents

Items	CR	ER	IB	MT	OP	PI	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
CR1	**0.8792**	0.3481	0.2439	0.3389	0.2362	0.1985	0.1206	0.1645	0.4036	0.4437	0.4183	0.3495	0.0959	0.1678	0.1894	0.2389
CR2	**0.8784**	0.2576	0.2514	0.3072	0.2295	0.2348	0.1806	0.1740	0.2794	0.3569	0.4657	0.3456	0.1178	0.1007	0.2097	0.1866
CR3	**0.8401**	0.3214	0.2221	0.2690	0.2311	0.2752	0.2955	0.1671	0.3238	0.3622	0.5084	0.3921	0.2036	0.1226	0.1629	0.2218
ER1	0.3544	**0.8876**	0.2854	0.4978	0.2417	0.2660	0.2727	0.3658	0.6624	0.7415	0.4523	0.4202	0.2309	0.2689	0.3430	0.2805
ER2	0.3227	**0.9086**	0.2282	0.4029	0.2086	0.2146	0.2155	0.3143	0.5994	0.6741	0.3742	0.3736	0.2473	0.2301	0.3491	0.2693
ER3	0.2627	**0.8389**	0.2134	0.3372	0.1877	0.2921	0.2823	0.2815	0.3790	0.6205	0.4149	0.3115	0.3231	0.2354	0.2587	0.2230
IB1	0.2360	0.2091	**0.8797**	0.3813	0.5592	0.1464	0.1390	0.5100	0.2907	0.2461	0.3124	0.1727	0.0684	0.5852	0.5173	0.5650
IB2	0.2655	0.2565	**0.8875**	0.4185	0.5511	0.2031	0.2000	0.5739	0.3231	0.2674	0.3008	0.2591	0.1271	0.5892	0.6889	0.6414
IB3	0.2384	0.2798	**0.9145**	0.3679	0.5421	0.1717	0.1725	0.5548	0.3406	0.3140	0.2845	0.2056	0.0929	0.5246	0.6312	0.6272
MT1	0.2451	0.4163	0.3304	**0.8212**	0.3085	0.3472	0.2698	0.2767	0.4135	0.4058	0.4176	0.3748	0.2887	0.2667	0.2783	0.2370
MT2	0.2791	0.3813	0.4041	**0.8772**	0.4099	0.2875	0.2031	0.2685	0.3957	0.4077	0.4104	0.3016	0.2238	0.3074	0.2894	0.3326
MT3	0.3215	0.4030	0.3784	**0.9178**	0.4184	0.2866	0.2166	0.2873	0.5499	0.4808	0.4525	0.3994	0.1652	0.2268	0.3452	0.3672
MT4	0.3834	0.4680	0.4125	**0.8988**	0.4247	0.2886	0.1896	0.3224	0.5858	0.5179	0.5332	0.4328	0.1573	0.2536	0.3972	0.3873
OP1	0.2008	0.1813	0.5280	0.3905	**0.8667**	0.2168	0.1707	0.3282	0.2894	0.2492	0.2900	0.1939	0.1586	0.3812	0.4234	0.4570
OP2	0.2592	0.2267	0.5866	0.3955	**0.9100**	0.1847	0.1310	0.3648	0.3196	0.3011	0.3557	0.2316	0.1245	0.4287	0.4793	0.4936
OP3	0.2543	0.2408	0.5295	0.4093	**0.8937**	0.1710	0.1471	0.3652	0.3601	0.2933	0.3121	0.2493	0.1176	0.3722	0.4576	0.4967
PI1	0.2834	0.2363	0.2539	0.3575	0.2435	**0.8447**	0.6168	0.2938	0.2041	0.2576	0.3250	0.2820	0.5589	0.1347	0.3007	0.2592
PI2	0.2149	0.2322	0.1146	0.2813	0.1351	**0.8797**	0.6341	0.2359	0.1339	0.1838	0.3294	0.2389	0.6086	0.1642	0.1500	0.1246
PI3	0.2047	0.2798	0.1391	0.2464	0.1759	**0.8572**	0.6804	0.2575	0.1378	0.2368	0.3234	0.2504	0.6728	0.2064	0.1572	0.1398
PS1	0.1862	0.2488	0.1995	0.1751	0.1554	0.5573	**0.8018**	0.2710	0.1209	0.1746	0.2265	0.1926	0.5051	0.2833	0.2055	0.1823
PS2	0.1886	0.2185	0.1660	0.2135	0.1473	0.6941	**0.9074**	0.2741	0.0692	0.1817	0.2992	0.1723	0.6756	0.2187	0.2127	0.1712
PS3	0.2203	0.2985	0.1458	0.2543	0.1411	0.7101	**0.9207**	0.2745	0.1470	0.2489	0.3151	0.2675	0.7144	0.2102	0.1699	0.1258

Table 5.14 continued: Loading Values of the Measurement Items for Opponents

Items	CR	ER	IB	MT	OP	PI	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
RB1	0.1581	0.3536	0.5271	0.3001	0.3143	0.2452	0.2477	**0.9156**	0.2466	0.2587	0.2677	0.1684	0.2367	0.5266	0.6369	0.5710
RB2	0.1692	0.3226	0.5495	0.2647	0.3666	0.3038	0.2805	**0.9079**	0.2511	0.2674	0.3142	0.2115	0.2237	0.5777	0.5918	0.5907
RB3	0.2011	0.3201	0.5838	0.3297	0.3978	0.2773	0.3149	**0.8900**	0.2980	0.3063	0.3021	0.2184	0.2064	0.5046	0.5736	0.5639
RS1	0.3343	0.5436	0.4031	0.5789	0.4215	0.1845	0.1046	0.2801	**0.8530**	0.6096	0.4723	0.4379	0.0586	0.2500	0.3798	0.3957
RS2	0.3136	0.5942	0.2108	0.4337	0.2248	0.1409	0.1137	0.2009	**0.8697**	0.6543	0.3989	0.4137	0.0959	0.1504	0.2246	0.2102
RS3	0.3693	0.5026	0.3127	0.4361	0.2989	0.1498	0.1113	0.2803	**0.8695**	0.5827	0.4101	0.3675	0.0650	0.1530	0.3283	0.3203
SF1	0.3854	0.7204	0.2934	0.5080	0.3226	0.2485	0.2087	0.2866	0.6207	**0.8850**	0.5265	0.4687	0.1545	0.2061	0.2952	0.2584
SF2	0.4847	0.6730	0.2690	0.4217	0.2671	0.2637	0.2226	0.2842	0.6323	**0.8957**	0.4897	0.4191	0.1511	0.1557	0.2801	0.2629
SF3	0.3299	0.6763	0.2604	0.4539	0.2550	0.1861	0.1851	0.2456	0.6505	**0.8877**	0.4124	0.3727	0.1294	0.1953	0.2640	0.2491
SI1	0.5003	0.3545	0.2137	0.3613	0.2414	0.3359	0.3074	0.2543	0.4126	0.4531	**0.7998**	0.5583	0.2382	0.1902	0.2839	0.2305
SI2	0.4466	0.4399	0.3223	0.4793	0.3409	0.3234	0.2702	0.2977	0.4501	0.4841	**0.9049**	0.5495	0.2245	0.1819	0.3236	0.2989
SI3	0.4429	0.4262	0.3304	0.5029	0.3488	0.3259	0.2617	0.2926	0.4207	0.4558	**0.8918**	0.5480	0.2504	0.2406	0.3708	0.2827
SP1	0.3372	0.3908	0.1502	0.3369	0.2002	0.3032	0.2787	0.1898	0.3746	0.3879	0.5833	**0.8748**	0.2642	0.1460	0.2043	0.2356
SP2	0.3989	0.3748	0.2607	0.4358	0.2633	0.2650	0.2017	0.2180	0.4302	0.4468	0.6056	**0.9091**	0.1669	0.1694	0.2680	0.2924
SP3	0.3752	0.3588	0.2207	0.3685	0.2078	0.2227	0.1583	0.1755	0.4484	0.4220	0.4994	**0.8749**	0.0922	0.1203	0.2069	0.2752
SU1	0.1368	0.2229	0.0665	0.1908	0.1057	0.6492	0.6738	0.1931	0.0437	0.1152	0.2117	0.1218	**0.8831**	0.1294	0.1327	0.0764
SU2	0.1452	0.2800	0.1218	0.2287	0.1606	0.6784	0.6698	0.2619	0.0880	0.1634	0.2862	0.2107	**0.9177**	0.2397	0.1771	0.1209
SU3	0.1480	0.3076	0.1027	0.2069	0.1370	0.6044	0.6209	0.2091	0.0991	0.1631	0.2429	0.2040	**0.9055**	0.2155	0.1885	0.1296
TB1	0.1405	0.2633	0.5764	0.2373	0.3937	0.1932	0.2695	0.5206	0.1995	0.2006	0.1888	0.1429	0.1938	**0.8845**	0.4899	0.4904
TB2	0.1162	0.2648	0.5737	0.3071	0.4248	0.1639	0.2219	0.5410	0.1889	0.1908	0.2061	0.1470	0.1935	**0.9136**	0.5027	0.5350
TB3	0.1586	0.2301	0.5715	0.2653	0.3851	0.1779	0.2304	0.5487	0.1904	0.1750	0.2449	0.1571	0.1998	**0.9173**	0.5339	0.5328

Table 5.14 continued: Loading Values of the Measurement Items for Opponents

Items	CR	ER	IB	MT	OP	PI	PS	RB	RS	SF	SI	SP	SU	TB	UB	VB
UB1	0.2104	0.3626	0.5921	0.3482	0.4558	0.1584	0.1677	0.5963	0.3281	0.3049	0.3347	0.2210	0.1377	0.4607	**0.8595**	0.6530
UB2	0.2072	0.3086	0.6236	0.3312	0.4727	0.1999	0.1686	0.5658	0.3215	0.2822	0.3172	0.2261	0.1463	0.4976	**0.8990**	0.6713
UB3	0.1489	0.2731	0.6166	0.3134	0.4522	0.2034	0.1814	0.5761	0.3074	0.2189	0.3230	0.2222	0.1398	0.5365	**0.8915**	0.6969
UB4	0.1971	0.3429	0.5884	0.3358	0.4208	0.2606	0.2644	0.6099	0.3087	0.3068	0.3573	0.2360	0.2265	0.4898	**0.8815**	0.6317
VB1	0.1656	0.1980	0.4498	0.2371	0.4026	0.0902	0.1447	0.4066	0.2107	0.1923	0.2383	0.1550	0.0501	0.3452	0.5275	**0.7419**
VB2	0.2000	0.2113	0.5187	0.3008	0.4149	0.1974	0.1563	0.5083	0.2721	0.2033	0.2481	0.3015	0.1358	0.4759	0.6502	**0.8575**
VB3	0.2392	0.3163	0.6284	0.3528	0.5012	0.2196	0.1844	0.5961	0.3411	0.3002	0.2743	0.2688	0.1389	0.5551	0.6895	**0.8554**
VB4	0.2189	0.2423	0.6505	0.3600	0.4711	0.1433	0.1068	0.5762	0.3401	0.2517	0.2749	0.2607	0.0651	0.5029	0.6078	**0.8496**

Note: CR = cognitive rigidity, ER = emotional reaction to imposed change, IB = image barrier, MT = mobile technostress, OP = opposition, PI = perceived intrusion, PS = perceived surveillance, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = Satisfaction with existing products, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.

Given that the first-order constructs are of satisfying quality, Table 5.15 further assesses the quality of the higher-order constructs for all resistance groups. It is confident that all the higher-order constructs have been conceptualised decently for each resistance behaviour as all the outer weights of their associated formative indicators (i.e., lower-order constructs) are statistically significant and all VIF values are under the threshold of five.

Table 5.15: Quality of the Higher-Order Constructs

Higher-order constructs	Lower-order constructs	Rejecters		Postponers		Opponents	
		Outer weights	VIF	Outer weights	VIF	Outer weights	VIF
FUB	RB	0.3101***	2.0809	0.2936***	3.1531	0.3135***	1.9399
	UB	0.4179***	2.4292	0.3979***	4.5637	0.4343***	2.6534
	VB	0.3886***	2.8676	0.3750***	3.9983	0.3735***	2.4870
IPC	PI	0.3747***	1.9867	0.3933***	2.2230	0.3528***	2.6497
	PS	0.3544***	2.1193	0.3453***	1.9821	0.3716***	2.7448
	SU	0.4162***	1.9641	0.4004***	2.0635	0.3799***	2.4626
IRC	CR	0.2492***	1.2911	0.2381***	1.3453	0.2356***	1.2712
	ER	0.3088***	2.0974	0.3068***	2.9329	0.3177***	2.5958
	RS	0.3303***	2.0606	0.3257***	2.5193	0.3043***	2.1311
	SF	0.3558***	2.2955	0.3133***	3.3063	0.3485***	3.3175
PSB	IB	0.5863***	1.5456	0.5372***	2.6302	0.5590***	1.6719
	TB	0.5335***	1.5456	0.5206***	2.6302	0.5474***	1.6719
SQS	SI	0.5313***	1.8218	0.5621***	1.8182	0.5477***	1.6812
	SP	0.5625***	1.8218	0.5319***	1.8182	0.5577***	1.6812
AINR	FUB	0.6787***	2.6786	0.6574***	4.5491	0.6714***	2.6582
	PSB	0.4026***	2.1386	0.3779***	3.7965	0.3859***	2.5259
PINR	IRC	0.6831***	1.6271	0.7290***	1.9632	0.7130***	1.6857
	SQS	0.4203***	1.6271	0.3433***	1.9632	0.3809***	1.6857

Notes:

1. AINR = active innovation resistance, CR = cognitive rigidity, ER = emotional reaction to imposed change, FUB = functional barriers, IB = image barrier, IPC = mobile users' information privacy concerns, IRC = inclination to resist changes, PI = perceived intrusion, PINR = passive innovation resistance, PS = perceived surveillance, PSB = psychological barriers, RB = risk barrier, RS = routine seeking, SF = short-term focus, SI = satisfaction with the extent of innovation, SP = satisfaction with existing products, SQS = status quo satisfaction, SU = secondary use of personal information, TB = tradition barrier, UB = usage barrier, and VB = value barrier.
2. *** $p < 0.001$.

Owing to the great quality displayed by all measurement models for each resistance behaviour, the inner structural model is to be inspected next according to the two-step approach.

5.5 Inspecting the Structural Model

The structural model for rejecters is first inspected in order to verify if the proposed hypotheses are supported. The results are exhibited in Table 5.16 and presented virtually in Figure 5.1. Based on the results, it was found that all hypotheses proposed for rejecters, namely H1a, H2a, H3a, and H4a are fully supported. Specifically, MUIPC ($\beta = 0.3212$, $p < 0.001$), mobile technostress ($\beta = 0.1543$, $p < 0.05$), and passive innovation resistance ($\beta = 0.3446$, $p < 0.001$) are significantly and positively associated with active innovation resistance ($\beta = 0.6911$, $p < 0.001$) that subsequently leads to the behaviour of rejecters namely rejection. As for the control variables, none of them is found to be statistically significant. This indicates that these control variables do not severely influence the results as they do not have confounding effects on rejection behaviour.

Table 5.16: Results of Hypotheses Testing for Rejecters

Hypotheses		Path coefficients	T statistics	P-values	95% bias-corrected confidence intervals	Remarks
H1a	AINR → RJ	0.6911***	21.1726	0.0000	[0.6185, 0.7485]	Supported
H2a	IPC → AINR	0.3212***	8.1348	0.0000	[0.2416, 0.3955]	Supported
H3a	MT → AINR	0.1543*	2.4889	0.0128	[0.0283, 0.2757]	Supported
H4a	PINR → AINR	0.3446***	5.7317	0.0000	[0.2299, 0.4649]	Supported
Control variables:						
	GEN → RJ	-0.0019^{ns}	0.0451	0.9640	[-0.0836, 0.0788]	
	AGE → RJ	0.0296^{ns}	0.7054	0.4806	[-0.0562, 0.1077]	
	EDU → RJ	-0.0189^{ns}	0.4708	0.6378	[-0.0958, 0.0633]	
	INC → RJ	-0.0147^{ns}	0.3008	0.7636	[-0.1072, 0.0823]	

Table 5.16 continued: Results of Hypotheses Testing for Rejecters

Hypotheses	Path coefficients	T statistics	P-values	95% bias-corrected confidence intervals	Remarks
EXM → RJ	-0.0213^{ns}	0.3272	0.7435	[-0.1615, 0.0940]	
EXA → RJ	0.0776^{ns}	1.1574	0.2472	[-0.0441, 0.2219]	

Notes:
1. AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, PINR = passive innovation resistance, and RJ = rejection.
2. * $p < 0.05$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

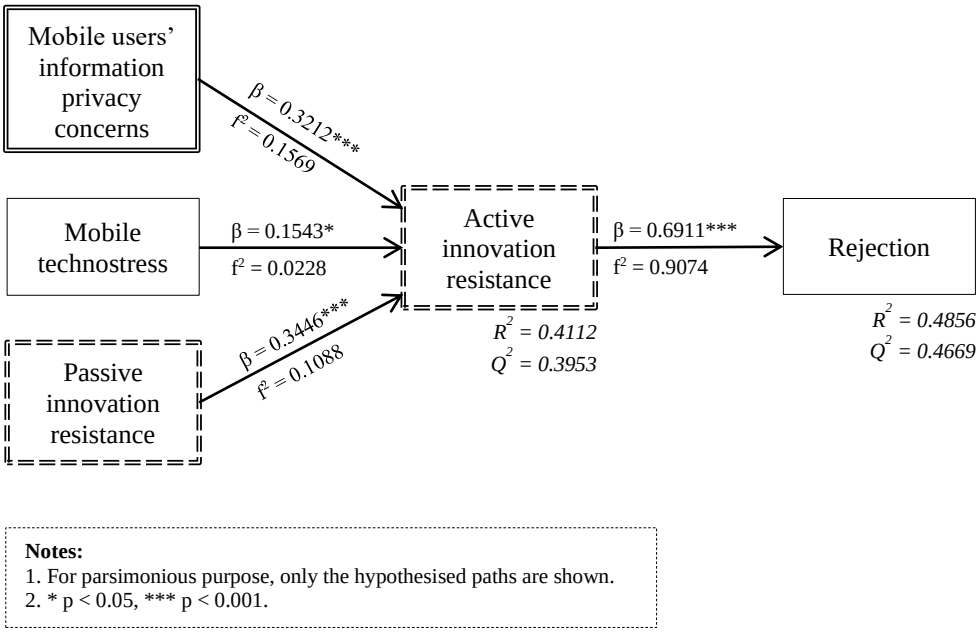

Figure 5.1: Structural Model Inspection for Rejecters

Overall, as outlined in Table 5.17 and depicted in Figure 5.1, the structural model for rejecters could respectively explain 41.12% and 48.56% of the variances in active innovation resistance (R^2 = 0.4112) and rejection behaviour (R^2 = 0.4856), revealing that the structural model has a close to strong level of explanatory power on both constructs. Moreover, the structural model has a greater than medium degree of predictive relevance on active innovation

resistance (Q^2 = 0.3953) and a close to large degree of predictive relevance on rejection behaviour (Q^2 = 0.4669), reflecting a good predictive relevance of the structural model.

Table 5.17: Quality of the Structural Model for Rejecters

Endogenous constructs	R^2	Q^2	Exogenous constructs	f^2
AINR	0.4112	0.3953	IPC	0.1569
			PINR	0.1088
			MT	0.0228
RJ	0.4856	0.4669	AINR	0.9074
			EXA	0.0038
			AGE	0.0012
			EDU	0.0006
			EXM	0.0003
			INC	0.0003
			GEN	0.0000

Note: AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, PINR = passive innovation resistance, and RJ = rejection.

Table 5.17 has also reported the f^2 effect size for each antecedent of active innovation resistance and rejection behaviour. Among the antecedents of active innovation resistance, MUIPC has the highest effect size and this construct has a medium effect size (f^2 = 0.1569), implying that MUIPC has the strongest impact on active innovation resistance. For the control variables, since their effect sizes are negligible, it is once again ensured that these demographic variables do not confound the results yielded.

Likewise, Table 5.18 and Figure 5.2 presents the results for the group of postponers. The results render support to H1b, H2b, H3b, and H4b, suggesting that MUIPC (β = 0.1285, $p < 0.01$), mobile technostress (β = 0.2274, $p < 0.001$), and passive innovation resistance (β = 0.4179, $p < 0.001$) are all significantly

and positively related to active innovation resistance ($\beta = 0.4973$, $p < 0.001$) that subsequently has a significant positive effect on postponement behaviour. Interestingly, the postponers' experience in using mobile apps has a significant and positive effect ($\beta = 0.1807$, $p < 0.001$) on postponement behaviour. This implies that a longer experience in using mobile apps is accompanied by an increased level of postponement behaviour. Apart from experience in using mobile apps, other control variables are statistically insignificant and, therefore, could not explain postponement behaviour.

Table 5.18: Results of Hypotheses Testing for Postponers

Hypotheses		Path coefficients	T statistics	P-values	95% bias-corrected confidence intervals	Remarks
H1b	AINR → PP	0.4973***	9.7041	0.0000	[0.3893, 0.5893]	Supported
H2b	IPC → AINR	0.1285**	2.6048	0.0092	[0.0352, 0.2266]	Supported
H3b	MT → AINR	0.2274***	3.4065	0.0007	[0.0908, 0.3489]	Supported
H4b	PINR → AINR	0.4179***	6.6368	0.0000	[0.2964, 0.5420]	Supported
Control variables:						
	GEN → PP	-0.0347^{ns}	0.7229	0.4698	[-0.1302, 0.0573]	
	AGE → PP	0.0154^{ns}	0.2872	0.7739	[-0.0906, 0.1185]	
	EDU → PP	0.0343^{ns}	0.7613	0.4465	[-0.0540, 0.1210]	
	INC → PP	-0.0961^{ns}	1.8415	0.0656	[-0.1987, 0.0077]	
	EXM → PP	-0.0313^{ns}	0.5500	0.5824	[-0.1481, 0.0776]	
	EXA → PP	0.1807***	3.4556	0.0006	[0.0777, 0.2857]	

Notes:
1. AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, PINR = passive innovation resistance, and PP = postponement.
2. ** $p < 0.01$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

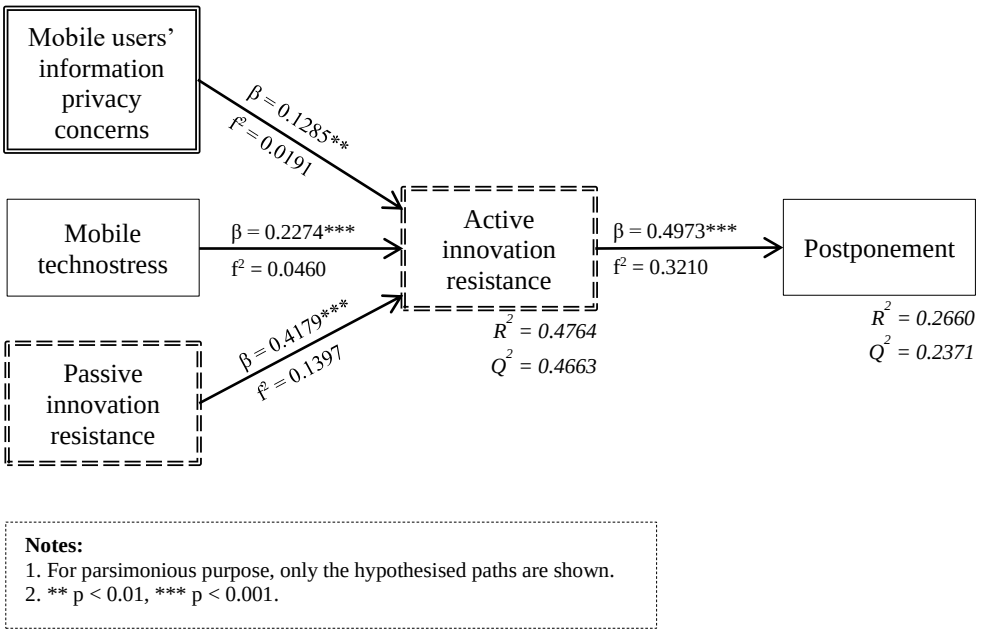

Figure 5.2: Structural Model Inspection for Postponers

Moreover, from the metrics listed in Table 5.19, the structural model has an almost strong level of explanatory power (R^2 = 0.4764) and a close to large degree of predictive relevance (Q^2 = 0.4663) on active innovation resistance, in addition to its ability in explaining for 26.60% of the variance in postponement behaviour (R^2 = 0.2660) and achieving a close to medium degree of predictive relevance on postponement behaviour (Q^2 = 0.2371). Although the postponers' experience in using mobile apps could account for some of the variances in postponement behaviour, its f^2 effect size (i.e., 0.0240) is still far lower as compared to the main construct (i.e., active innovation resistance). This suggests that the postponers' experience in using mobile apps could not really confound the results even if it is significant. Besides, it should be noted that passive innovation resistance has the largest f^2 effect size on active innovation resistance as compared to other antecedents.

Table 5.19: Quality of the Structural Model for Postponers

Endogenous constructs	R^2	Q^2	Exogenous constructs	f^2
AINR	0.4764	0.4663	PINR	0.1397
			MT	0.0460
			IPC	0.0191
PP	0.2660	0.2371	AINR	0.3210
			EXA	0.0240
			INC	0.0080
			GEN	0.0016
			EDU	0.0015
			EXM	0.0007
			AGE	0.0002

Note: AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, PINR = passive innovation resistance, and PP = postponement.

As for the hypotheses for opponents, the results in Table 5.20 and Figure 5.3 support all the hypotheses namely H1c, H2c, H3c, and H4c. Same as rejecters and postponers, MUIPC ($\beta = 0.1142$, $p < 0.05$), mobile technostress ($\beta = 0.2473$, $p < 0.001$), and passive innovation resistance ($\beta = 0.2458$, $p < 0.001$) are all significantly and positively related to active innovation resistance. Besides, opposition behaviour is explained by active innovation resistance ($\beta = 0.5910$, $p < 0.001$) in a significant and positive manner. For the control variables, only experience in using smart mobile devices ($\beta = -0.0929$, $p < 0.05$) is significantly and negatively correlated with opposition behaviour. This implies that the opponents' experience in using smart mobile devices acts as an inhibitor that suppresses their opposition behaviour. Nonetheless, based on the f^2 effect size summarised in Table 5.21, this control variable only has a tiny effect size. This suggests that despite being significant in explaining part of the variances in opposition behaviour, the opponents' experience in using smart mobile devices could not really confound the main antecedent's direct effect.

Table 5.20: Results of Hypotheses Testing for Opponents

Hypotheses		Path coefficients	T statistics	P-values	95% bias-corrected confidence intervals	Remarks
H1c	AINR → OP	0.5910***	15.1135	0.0000	[0.5096, 0.6621]	Supported
H2c	IPC → AINR	0.1142*	2.5603	0.0105	[0.0264, 0.2006]	Supported
H3c	MT → AINR	0.2473***	3.9082	0.0001	[0.1196, 0.3681]	Supported
H4c	PINR → AINR	0.2458***	3.6587	0.0003	[0.1101, 0.3713]	Supported
Control variables:						
	GEN → OP	-0.0438^{ns}	1.0076	0.3137	[-0.1274, 0.0412]	
	AGE → OP	-0.0496^{ns}	0.8239	0.4101	[-0.1733, 0.0630]	
	EDU → OP	-0.0367^{ns}	0.8158	0.4146	[-0.1251, 0.0521]	
	INC → OP	0.0511^{ns}	0.7510	0.4527	[-0.0799, 0.1875]	
	EXM → OP	-0.0929*	2.1333	0.0329	[-0.1794, -0.0070]	
	EXA → OP	-0.0360^{ns}	0.7423	0.4579	[-0.1313, 0.0562]	

Notes:
1. AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, OP = opposition, and PINR = passive innovation resistance.
2. * $p < 0.05$, *** $p < 0.001$, ^{ns} $p \geq 0.05$.

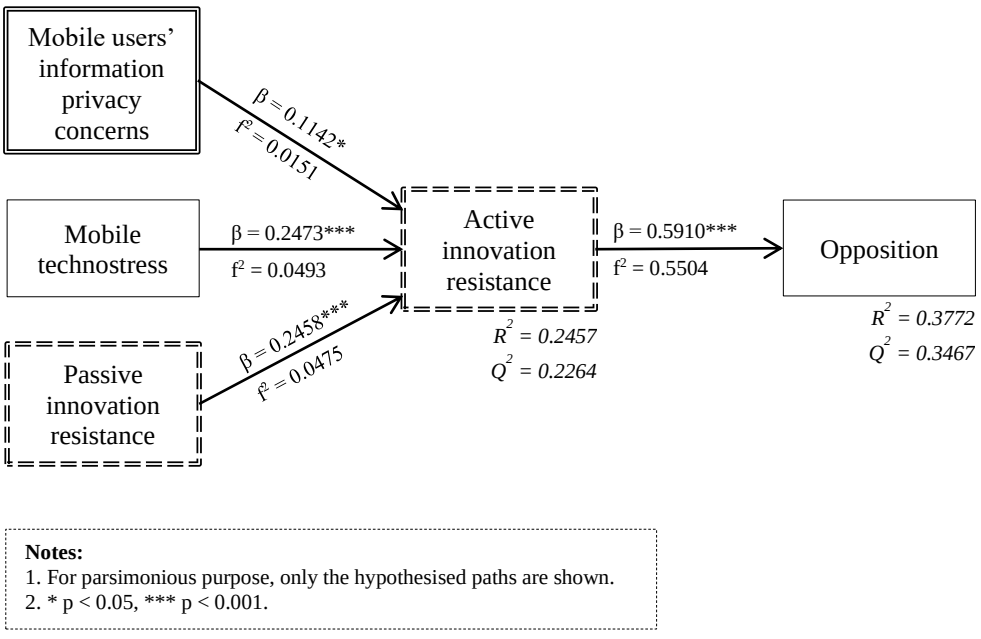

Figure 5.3: Structural Model Inspection for Opponents

Table 5.21: Quality of the Structural Model for Opponents

Endogenous constructs	R^2	Q^2	Exogenous constructs	f^2
AINR	0.2457	0.2264	MT	0.0493
			PINR	0.0475
			IPC	0.0151
OP	0.3772	0.3467	AINR	0.5504
			EXM	0.0099
			GEN	0.0029
			AGE	0.0023
			INC	0.0023
			EDU	0.0018
			EXA	0.0015

Note: AGE = age, AINR = active innovation resistance, EDU = education level, EXA = experience in using mobile apps, EXM = experience in using smart mobile devices, GEN = gender, INC = income level, IPC = mobile users' information privacy concerns, MT = mobile technostress, OP = opposition, and PINR = passive innovation resistance.

Furthermore, the structural model metrics summarised in Table 5.21 indicate that the structural model has a reasonable level of explanatory power and predictive relevance on both active innovation resistance (R^2 = 0.2457, Q^2 = 0.2264) and opposition behaviour (R^2 = 0.3772, Q^2 = 0.3467), with mobile technostress (f^2 = 0.0.493) exerting the strongest effect size on active innovation resistance.

5.6 Conclusion

The results gathered from the data analysis techniques were furnished in this chapter. On top of these, descriptive statistics were provided as well. Afterwards, the next chapter would deliberate on the results obtained, and present the relevant implications to scholars, practitioners, and policymakers.

CHAPTER 6

DISCUSSIONS, IMPLICATIONS, AND CONCLUSION

6.1 Introduction

After the statistical analyses, this chapter discusses the major findings obtained and accordingly suggests relevant theoretical, practical and policy implications. Moreover, a conclusion, along with the limitations and future recommendations, is provided subsequently at the end of this chapter.

6.2 Summary of Statistical Analyses

Principally, the empirical data collected from three distinct groups of mobile users who are resistant to at least one class of m-commerce application supports all the proposed hypotheses and, therefore, statistically endorses the holistic MOCART proposed in this study. In this manner, the general research objective, which is to develop a holistic framework that could explain the behaviours of mobile users who are resistant to m-commerce applications, is accomplished.

Particularly, the three distinct forms of resistance behaviour towards m-commerce applications, namely rejection, postponement, or opposition, are all adequately explained by the MOCART, as the active innovation resistance of

resistant mobile users was found to have significant and positive associations with the resistance behaviours. Owing to this, the first specific research objective, which is to ascertain the role of active innovation resistance on the distinct forms of resistance behaviour among resistant mobile users, is achieved.

Moreover, the empirical results found significant and positive effects of MUIPC, mobile technostress, and passive innovation resistance on active innovation resistance in all three resistance groups, providing a further explanation of the resistance behaviours of mobile users. With these results, it is confident that the second, third, and forth specific research objectives, which seek to assess the effects of MUIPC, mobile technostress, and passive innovation resistance on active innovation resistance, are all fully realised.

Last but not least, the results also found some tiny confounding effects exerted by two demographic variables namely experience in using mobile apps and experience in using smart mobile devices. The former only affects postponers' behaviour, while the latter only influences opponents' behaviour. All other demographic variables were found to be insignificant and, therefore, do not confound the results. Thus, the fifth specific research objective is attained.

6.3 General Discussion of Major Findings

First and foremost, for all three groups of resistant mobile users, the results support that their rejection behaviour, postponement behaviour, or opposition behaviour towards a particular class of m-commerce application is

mainly driven by the active innovation resistance manifested within themselves. Generally, the higher the level of active innovation resistance, the greater the extent of resistance behaviours among rejecters, postponers, and opponents. That is to say, the negative attitudes towards a particular class of m-commerce application, either specifically due to the functions of the m-commerce application itself or simply the psychological conflicts caused by the m-commerce application, would definitely result in different types of resistance behaviour.

Specifically, after a deliberate evaluation of a particular class of m-commerce application, if the mobile users think that the m-commerce application is difficult to use, incapable of offering additional values or advantages, unable to perform as expected, inconsistent with their social norms or values, and undesirable, they will reject, postpone, or oppose to the adoption of that particular class of m-commerce application.

Other than being supported by the Belief-Attitude-Behaviour Theoretical Chain (Fazio et al., 1978) and the Stress-Strain-Outcome Model (Koeske & Koeske, 1993), these results are completely in agreement with the extant literature, notably the studies of C. C. Chen et al. (2022), Joachim et al. (2018), Chaouali and Souiden (2019), Q. Chen et al. (2019), Gurtner (2014), and Liao et al. (2015). Particularly, in these previous studies, it was opined that the resistance to various m-commerce applications was driven by usage barrier, value barrier, risk barrier, tradition barrier, and image barrier. Since this study has yielded

similar results, the prominent role of active innovation resistance has once again received confirmation.

Besides, the positive role exerted by active innovation resistance on rejection, postponement, and opposition is consistent with the extant literature on innovation resistance (for e.g., Huang et al., 2022; Kleijnen et al., 2009; Szmigin & Foxall, 1998; van Klyton et al., 2021), which advocated that the negative attitudes developed by consumers towards an innovation would result in three distinct forms of resistance behaviour namely rejection, postponement, or opposition.

Secondly, the results uphold the notion that the privacy concerns accumulated by mobile users throughout their usage of mobile apps would intensify their negative attitudes towards m-commerce applications, both functionally and psychologically. In a broad sense, the significant role of MUIPC in this study resonates with the recent literature on the crucial role played by privacy concerns on innovation resistance (for e.g., C. T. Lee & Pan, 2023; Mou & Meng, 2023).

More explicitly, the information privacy concerns of mobile users are causing them to develop their active innovation resistance towards m-commerce applications regardless of their resistance behaviours. In this manner, it is ascertained that a greater level of MUIPC would influence all three groups of resistant mobile users to perceive a particular class of m-commerce application to be difficult to use, unworthy, and risky to use. In addition, a higher level of

MUIPC would bring psychological conflicts to mobile users as they would regard a particular class of m-commerce application to be incompatible with their lifestyles and undesirable.

These results are supported by the well-known Belief-Attitude-Behaviour Theoretical Chain (Fazio et al., 1978), as MUIPC, a form of belief, has positive effects on the negative attitudes (i.e., active innovation resistance) of mobile users pertaining to m-commerce applications. Particularly, the expected positive role of MUIPC on active innovation resistance echoes the outcomes attained by other scholars, such as Prakash and Das (2022), Zhou (2015b), Y. Chen et al. (2018), Hmielowski et al. (2019), and Elhai et al. (2017), who agreed that a greater concern for information privacy would generally result in negative attitudes towards m-commerce applications and innovation.

This is especially true and consistent with Mani and Chouk (2019), who learnt that consumers would react negatively towards an innovation if they perceive that their information privacy is being intruded and used for unauthorised purposes by that innovation. This study corroborates that if mobile users are highly concerned about their information privacy, thinking that their personal information is being surveilled, intruded, and unauthorisedly used by their mobile apps, they would be more likely to form negative attitudes towards m-commerce applications.

Thirdly, the mobile technostress experienced by mobile users is found to have a positive association with their active innovation resistance towards m-

commerce applications regardless of their resistance behaviours. This indicates that if mobile users could not cope with the fast-changing smart mobile device technologies in a healthy manner, resulting in mobile technostress, they would perceive a particular class of m-commerce application less favourably. Their negative attitudes towards a particular class of m-commerce application could be either related to the functions of that m-commerce application (functional barriers) or due to their own psychological conflicts caused by that m-commerce application (psychological barriers).

Basically, this outcome supports some recent literature (Gabbiadini et al., 2023; C. T. Lee & Pan, 2023) that posited innovation resistance as a consequence of technostress. In a more precise manner, when mobile users experienced mobile technostress, they would then recognise a particular class of m-commerce application to be difficult to use, useless, and risky to use, on top of judging that m-commerce application to be incompatible with their traditions and unacceptable. These outcomes, other than being supported by the Stress-Strain-Outcome Model (Koeske & Koeske, 1993), are equivalent to the results produced by the extant literature (L. Chen, 2015; Haddara & Hetlevik, 2016; Steelman & Soror, 2017; Thunberg et al., 2023), which suggested that technostress would result in negative attitudes towards innovation.

Furthermore, as stressed by Stana and Nicolajsen (2021), technostress would trigger one to manifest negative attitudes towards ICTs; hence it is not surprising to see the mobile technostress experienced by mobile users is

influencing them to develop negative attitudes towards m-commerce applications in this study.

Fourthly, in accordance with the Innovation Resistance Theory (S. Ram, 1987; S. Ram & Sheth, 1989) and established literature on innovation resistance (Ghazali et al., 2020; T. Laukkanen, 2016; Salari et al., 2018), mobile users' passive innovation resistance, which mobile users unconsciously form before they deliberately evaluate a particular class of m-commerce application, has a positive effect on their active innovation resistance after they have engaged themselves in further information processing by duly evaluating that m-commerce application's specific features.

This is particularly true in accordance with Juric and Lindenmeier (2019), who stressed that consumers who are manifesting a high level of passive innovation resistance would not be keen on receiving further information about an innovation as they are not interested in the innovation and its features, hence resulting in a less favourable evaluation of the innovation. This is especially the case, as consumers who are showing a high level of passive innovation resistance would be less likely to make adjustments to fit with the changes required by new technology and, therefore, are less open to innovation (Heidenreich, Millemann, et al., 2022). Moreover, consumers with a high level of status quo satisfaction are conservative about the benefits offered by innovation and prefer tried and proven products; hence, it is not surprising that they would be inclined to resist changes too (Koch et al., 2021).

The same situation applies in this study. Suppose mobile users possess a high level of passive innovation resistance. In that case, they are less open to innovation and, therefore, are more likely to evaluate a particular class of m-commerce application less favourably. Subsequently, they would develop negative attitudes towards that m-commerce application regardless of their resistance behaviours.

Reasonably, if mobile users are inclined to resist changes and are satisfied with their status quo, they would defy any functional values in m-commerce applications (i.e., functional barriers) and develop psychological reactance against the m-commerce applications (i.e., psychological barriers). Eventually, the mobile users would find m-commerce applications difficult to use, incapable of offering additional values or advantages, unable to perform as expected, inconsistent with their social norms or values, and undesirable. Fundamentally, these results are consistent with the past studies that found a positive association between passive innovation resistance and active innovation resistance (Heidenreich et al., 2011; Heidenreich & Spieth, 2013; Juric & Lindenmeier, 2019).

Apart from the main effects, this study found some significant, yet negligible confounding effects played by two demographic variables namely experience in using mobile apps and experience in using smart mobile devices. The former has a significant and positive effect on postponement behaviour, while the latter is significantly and negatively correlated with opposition behaviour. In other words, the longer the postponers' experience in using mobile

apps, the more intense their postponement behaviour, while the longer the opponents' experience in using smart mobile devices, the milder their opposition behaviour.

It should be noted that these significant confounding effects of experience are similar to Koch et al. (2021)'s study on innovation adoption. Nonetheless, since the confounding effects exerted by these control variables are much lower as compared to the main effects, it is believed that the results are not severely confounded by these control variables and, therefore, could still be inferred to the target population.

In this study, the possible reason for postponers to postpone their adoption of m-commerce applications until a certain date within a year after prolonged usage of mobile apps throughout their daily lives is that they suffer from the so-called app fatigue. According to Ashri (2020), app fatigue refers to the reluctance of mobile users to install and try another new mobile app. Since mobile apps have become an integral part of our daily lives (Bondanini et al., 2020) and nowadays it is difficult for mobile users to search for a suitable mobile app for a given task (Verkijika, 2021), mobile users might postpone their adoption decision for a particular class of m-commerce application.

Behera et al. (2022) echoed this statement as they found that mobile users are deferring their adoption of mobile payment just because there are too many mobile payment service providers and numerous mobile apps for payment in the market.

Besides, the possible argument for opponents who are highly experienced in using smart mobile display a milder level of opposition behaviour is that they have had great experiences with their smart mobile devices (hence the prolonged usage of smart mobile devices).

In a recent study, Yazdanparast and Tran (2021) discovered that if mobile users are highly satisfied with their smartphones, they would be less likely to spread negative word-of-mouth about mobile apps in general and more willing to receive referrals about mobile apps from others. In other words, due to their great experiences with smart mobile devices, opponents would show less aggressive opposition behaviour towards a particular class of m-commerce application after they have deliberately and completely evaluated its functions and attributes.

It is also interesting to note that for each type of resistance behaviour, there is a different level of weightage for the antecedents of active innovation resistance. MUIPC serves as the most important driver of active innovation resistance for the group of rejecters, while passive innovation resistance and mobile technostress are the most crucial antecedents for postponers and opponents respectively.

These interesting findings align with the past studies (P. Laukkanen et al., 2008; Lian & Yen, 2013) that observed differences in innovation resistance between rejecters, postponers, and opponents, suggesting that not all resistance behaviours are the same.

Taken as a whole, given the supportive results, it is assured that the rigorously developed MOCART is capable of explaining all three types of resistance behaviour (i.e., rejection, postponement, and opposition) towards m-commerce applications. While control variables exert some confounding effects on the resistance behaviours, their effects are negligible compared to the main effects exerted by active innovation resistance. With these, the following sub-sections would present the implications derived from these results.

6.4 Implications of the Study

This sub-section provides implications to scholars, practitioners, and policymakers in light of the results obtained. Theoretical implications are to be discussed first, followed by the practical and policy implications.

6.4.1 Theoretical Implications

Drawing upon two overarching theories (i.e., Belief-Attitude-Behaviour Theoretical Chain and Stress-Strain-Outcome Model) and by integrating several theories namely the Innovation Resistance Theory, Communication Privacy Management Theory, and Technostress Theory, this study has succeeded in proposing and validating empirically a holistic framework namely the MOCART to explain three distinct forms of resistance behaviour (which are rejection, postponement, or opposition) exhibited by the mobile users who do not adopt m-commerce applications.

Moreover, given that the MOCART has statistically verified the importance of MUIPC and mobile technostress in the development process of m-commerce applications resistance, it is believed that the MOCART is comprehensive enough to provide a holistic view towards the resistance behaviours of mobile users who do not adopt m-commerce applications as both MUIPC and mobile technostress are the situation-specific constructs pertinent to mobile apps and smart mobile devices.

In addition, the MOCART implies that it is necessary to conceptualise resistance behaviours in different forms and it is insufficient to investigate resistance behaviours by conceptualising them as a single construct or simply measuring them through adoption intention as a proxy. Other than its ability to explain three distinct forms of resistance behaviour, the MOCART serves as a universal theory to explain the resistance behaviours towards any m-commerce applications (e.g., mobile banking, mobile dating, mobile food delivery, mobile payment, and more).

Accordingly, and broadly speaking, the MOCART has successfully advanced the current state of knowledge in the research disciplines of innovation resistance and m-commerce applications by answering several crucial questions that have not been answered yet.

In a more specific manner, the MOCART has three-fold contributions towards the already rare literature on m-commerce applications resistance by addressing several crucial literature gaps.

Firstly, since the literature on m-commerce applications resistance has long neglected the passive innovation resistance possessed by mobile users who are resistant to m-commerce applications, the MOCART has successfully closed this literature gap by clarifying the role of passive innovation resistance in aiding the development process of m-commerce applications resistance by including passive innovation resistance as one of the antecedents to active innovation resistance.

Secondly, unlike previous studies on m-commerce applications resistance that over-simplified the resistance behaviours of mobile users towards m-commerce applications, the MOCART conceptualises three distinct forms of resistance behaviours namely rejection, postponement, or opposition and has, therefore, shed light on the complicated resistance behaviours of mobile users towards m-commerce applications. The results suggest that the MOCART has adequately explained all three distinct forms of resistance behaviours; hence it is confident that this crucial literature gap has been rigorously addressed and closed.

Thirdly, through the incorporation of two situation-specific constructs (i.e., MUIPC and mobile technostress) that are relevant to the context of m-commerce applications as the direct antecedents to active innovation resistance, the MOCART enriches the existing literature on m-commerce applications resistance which has mainly considered the effects of active innovation resistance barriers and, therefore, ignored other important situation-specific constructs that are relevant to the context of m-commerce applications. As the

results substantiate that both situation-specific constructs are crucial in aiding the development process of m-commerce application resistance, it is confident that the MOCART fills this literature gap.

This study has also enriched the Innovation Resistance Theory, Communication Privacy Management Theory, and Technostress Theory by uniting them under the MOCART. Up to now, little is known about the effect of passive innovation resistance in the existing literature on m-commerce applications resistance as scholars have mainly investigated active innovation resistance. The MOCART implies that passive innovation resistance, which the mobile users develop before they duly evaluate an m-commerce application's specific features, also carries weight in explaining m-commerce applications resistance. In this manner, this study enriches the application of Innovation Resistance Theory in the literature on m-commerce applications resistance by considering both passive and active innovation resistance simultaneously.

Likewise, this study has enriched the Communication Privacy Management Theory and Technostress Theory, which have rarely been applied in the context of m-commerce applications resistance. The MOCART implies that both theories, which are manifested as MUIPC and mobile technostress respectively, matter to the subject of m-commerce applications resistance and this, therefore, broadens the applicability of both theories.

Furthermore, given that the results have clearly indicated that both MUIPC and mobile technostress are two prominent drivers of active innovation

resistance other than passive innovation resistance across all resistance groups, it is believed that the Communication Privacy Management Theory and Technostress Theory are harmonising with the Innovation Resistance Theory under the overarching theories of Belief-Attitude-Behaviour Theoretical Chain and Stress-Strain-Outcome Model. That is to say, the Communication Privacy Management Theory and Technostress Theory cohere well with the Innovation Resistance Theory in predicting resistance behaviours. Based upon these results, theoretically, this study should have enriched the current state of knowledge on the Communication Privacy Management Theory and Technostress Theory.

6.4.2 Practical Implications

Based on the findings, it is believed that the MOCART could shed light on the causes of resistance behaviours towards m-commerce applications among resistant mobile users. With these, several practical implications are to be discussed in this sub-section based upon the findings.

Generally, to inhibit the resistance behaviours towards m-commerce applications, practitioners should strive to minimise the resistant mobile users' active innovation resistance by reducing its drivers namely MUIPC, mobile technostress, and passive innovation resistance. Despite that reducing all drivers would help to minimise active innovation resistance, it should be noted that reducing MUIPC is more effective for minimising rejecters' active innovation resistance, while lowering mobile technostress and passive innovation resistance would be more effective for opponents and postponers respectively.

To begin with, practitioners are advised to lessen the information privacy concerns of mobile users throughout their usage of mobile apps (i.e., MUIPC). Particularly, mobile users are concerned if their mobile apps are surveilling and intruding on their private daily lives. Besides, they are worried that their personal data collected by mobile apps is being used for unauthorised purposes.

To tackle these, other than having a statement of fair information practices that informs mobile users about their data-handling processes throughout their usage of mobile apps (Libaque-Sáenz et al., 2021), businesses and developers of m-commerce applications are urged to go further by allowing mobile users to keep an active control of their private information and data.

This includes, but is not limited to, letting mobile users access their stored private information and data, monitor their permissions given on a real-time basis, revoke their permissions given, and remove their stored private information and data. It would also be a good idea if mobile users could perform all these within the mobile apps rather than asking them to go through a tedious process that bothers them with many unnecessary procedures.

On the other hand, mobile technostress is another factor that deserves attention from practitioners. It is inevitable for smart mobile device manufacturers to incorporate new technologies and functions into their products from time to time due to the advancements in other related technologies such as cellular networks (i.e., 5G network), computing chips (e.g., powerful machine learning capable chips), and so on (Coccia & Watts, 2020). Having said that,

businesses and developers of m-commerce applications could always choose whether to integrate such advanced features and functions into their m-commerce applications.

In this vein, it is strongly suggested that m-commerce applications should only be designed to require mobile users to operate using the basic functions of their smart mobile devices. With this, it is believed that the already stressful mobile users would find it less stressful to deal with a new m-commerce application which they have to learn completely from zero.

For instance, there are two main streams of mobile payment systems that rely on different technologies namely NFC (Near Field Communication) and QR (Quick Response) codes and the adoption of these different mobile payment systems is not completely the same (de Luna et al., 2019). NFC mobile payment allows mobile users to tap and pay but they must do some manual setups such as linking with their credit cards or debit cards, whereas QR code mobile payment generates a QR code for mobile users to pay by letting them or others scan on the generated code (Acker & Murthy, 2020).

NFC is a new function in smart mobile devices, and it could be tricky for mobile users to learn it from the beginning (Almaiah et al., 2022). In contrast, QR code would cause fewer troubles to mobile users as it relies on an existing function namely the camera.

Thus, in designing m-commerce applications, businesses and developers should duly consider the integration of advanced technologies and features of smart mobile devices in order to cater to mobile users who suffer from mobile technostress. It is understood that sometimes such integration is desirable for achieving certain outcomes (e.g., faster and more secure), but it would be good to pass the choice to mobile users.

That is to say, businesses and developers of m-commerce applications could consider having two versions for mobile users to choose from, depending on their needs and wants. For example, letting mobile users choose between NFC and QR code mobile payment in a single mobile app would be great for all mobile users regardless of their mobile technostress level, as those with a high level of mobile technostress would choose an existing technology which they are comfortable with and vice versa.

Besides, given that the passive innovation resistance of mobile users is stopping them from evaluating an m-commerce application properly as they are inclined to resist the changes imposed and satisfied with their status quo, it is crucial to address this issue too.

To increase their willingness to do so, Greene and Riel (2021) opined that sufficient resources should be given to them. Accordingly, businesses and developers of m-commerce applications should make sufficient resources available to mobile users. This, perhaps, could be done in a series of promotional events that introduce an m-commerce application to its potential mobile users.

During the promotional events, it is suggested that businesses and developers of m-commerce applications should provide a hands-on experience to the potential mobile users rather than just presenting the m-commerce application abstractly. Demonstrations should be performed to the potential users in order to show them the detailed procedures involved in an m-commerce application so that they would be less worried about the changes imposed and less satisfied with their status quo (i.e., existing methods of doing the tasks). In this manner, potential mobile users should be able to understand an m-commerce application better and subsequently engage in processing further information about that m-commerce application.

Furthermore, other resources such as setting up a dedicated technical assistance team that specifically resolves potential mobile users' queries and having a follow-up team that constantly reaches out to potential mobile users after the promotional events should be considered. For instance, to promote mobile banking to potential mobile users, practitioners should demonstrate the specific functions of mobile banking such as funds transfer, real-time bank accounts management, banking preferences management, etc. during promotional events. Afterwards, potential mobile users should be contacted for follow-up sessions so that more relevant actions could be taken accordingly to resolve their current queries and doubts.

Moreover, the active innovation resistance barriers affixed by mobile users to an m-commerce application based on its attributes deserve attention from businesses and developers of m-commerce applications, as these functional

and psychological barriers represent the negative attitudes developed by mobile users after carefully evaluating an m-commerce application. It should also be noted that active innovation resistance developed by mobile users is a pressing issue as it serves as the sole direct antecedent to resistance behaviours.

Generally, businesses and developers of m-commerce applications should pay attention to their own m-commerce applications in order to ensure that they are easy to use, capable of providing additional values or advantages, able to perform as promised, consistent with mobile users' social norms or values, and free from negative images. In other words, businesses and developers of m-commerce applications should improve the functions of their m-commerce applications (to diminish functional barriers) as well as avoiding any psychological conflicts caused by their m-commerce applications (to reduce psychological barriers).

Since all the m-commerce applications are different, it is advised that a comprehensive survey be carried out to collect the perspectives of mobile users towards a particular m-commerce application. The survey must cover the five barriers. With the results from the comprehensive survey, businesses and developers of m-commerce applications could improve their m-commerce applications' functions by tackling each shortcoming carefully.

Also, the comprehensive survey should provide relevant insights on the psychological conflicts inflicted by their m-commerce applications, helping

businesses and developers formulate long-term strategic plans for addressing the psychological conflicts that are unlikely to be resolved within a short term.

6.4.3 Policy Implications

In line with the practical implications, government policymakers should formulate new policies or revise the existing ones to minimise the drivers of active innovation resistance: MUIPC, mobile technostress, and passive innovation resistance. Eventually, active innovation resistance would be lowered, resulting in the adoption of m-commerce applications.

To relieve MUIPC, policymakers are urged to strengthen the current available acts and regulations or enact new ones in order to better protect information privacy or data privacy. Thus far, Malaysia has the Personal Data Protection Act (2010) as a general personal data protection act to protect data privacy, but this act is only limited to commercial transactions and currently it lacks specific coverage on, among other things, Industry 4.0 technologies (Cheryl & Ng, 2022). Other than Malaysia, other countries including the United States are still progressing with privacy policy laws and regulations (Libaque-Sáenz et al., 2021).

With that said, there is a lack of protection against personal data that is collected from the latest technologies such as m-commerce applications. Owing to this, it is vital for policymakers to resolve this deficiency in order to make sure information privacy or data privacy is being handled rigorously by the collecting

parties and subsequently instilling confidence among mobile users. Particularly, policymakers should devote their efforts to better regulate the data collection practices of mobile apps and perhaps consider punishments in case these acts and regulations are not properly followed.

On the other hand, policymakers could consider establishing various initiatives to ease the mobile technostress suffering by mobile users through delegated commissions (e.g., Malaysian Communications and Multimedia Commission). This includes but is not limited to, community centres and programmes that constantly educate and update mobile users with the latest technologies and functions introduced in smart mobile devices, on top of giving them chances to interact with the latest technologies and functions which might not be available in their current smart mobile devices. Since it was established that a gradual introduction of technologies is a good strategy to increase confidence in innovative development (Y. Choi, 2020), hopefully mobile users would find it easier and less stressful to accept current smart mobile device technologies with such a gradual introduction.

It is also crucial to note that these initiatives by policymakers are expected to ease the passive innovation resistance of mobile users if the community centres and programmes could educate and update mobile users with the latest m-commerce applications. Given that passive innovation resistance takes place before the mobile users even consider an m-commerce application's specific features due to their own inclination to resist change and status quo satisfaction, gradually introducing m-commerce applications to them resembles

a great strategy. Moreover, such initiatives would directly push mobile users to evaluate an m-commerce application's specific features and subsequently develop an attitude towards it.

In addition, policymakers need to pay attention to active innovation resistance. As cyber crimes are getting more serious on a global basis (Srivastava et al., 2020), some mobile users would form negative attitudes (i.e., active innovation resistance barriers) towards m-commerce applications and subsequently refuse to adopt them (Baadel et al., 2019).

To overcome these active innovation resistance barriers, policymakers could enact new acts and regulations or revise the existing ones that are related to cyber crimes in order to better regulate the emerging m-commerce applications, while law enforcement agencies have to ensure of sufficient cyber law enforcement.

For instance, the recent raise of financial fraud and scams (Yeong, 2022) would have caused mobile users to develop bad impression about mobile banking and perceive it to be a risky to use. Even if the Central Bank of Malaysia is now working with the banking institutions to fortify mobile banking with new security measures, these measures alone are far from enough to completely prevent financial fraud and scams as the public still has to be extra cautious (Aman, 2022; Mardhiah, 2022). Furthermore, as noticed by Johari et al. (2023), the enforcement of cyber laws in Malaysia is far from sufficient, leaving cyber criminals out of jail.

In this vein, policymakers should ensure that the relevant cyber laws are being updated regularly to tackle new cyber crimes and law enforcement agencies should equip themselves with the latest knowledge and technologies to ensure the cyber laws are sufficiently enforced. Eventually, when cyber criminals are prosecuted with relevant cyber laws, the faith of mobile users in m-commerce applications would be restored.

6.5 Limitations and Future Recommendations

Like any other research, this study has its own limitations that one should be aware of. Firstly, this study employed a cross-sectional research design that surveys the respondents at a particular point of time. Given that it is possible for temporal differences to play a significant role in the MOCART and researchers are advocating to investigate the effects of time (Venkatesh et al., 2021), it is suggested that longitudinal data should be collected in the future in order to better assess the effects of time on the MOCART. To do this, a two-wave survey could be conducted to collect data from the same respondents so that the differences in their resistance behaviours would be better understood.

Secondly, this study organised m-commerce applications into different classes based on their designated functions and surveyed the respondents by asking their opinions on a particular class of m-commerce application. Because there are many independent service providers (or mobile apps) for a particular m-commerce application class (e.g., Touch ‘n Go eWallet and Boost are two major mobile payment service providers), mobile users might resist these service

providers differently. As such, it is suggested that in the future, researchers could delve further into the service providers or mobile apps rather than just focusing on the classes of m-commerce applications as a whole, though it might be challenging for the respondents to pick a particular service provider or mobile app from an extensive list.

Thirdly, considering that the MOCART was empirically verified with data collected from a developing nation, it would be interesting to study if cross-cultural differences exist in the MOCART. To assess if MOCART is robust against cross-cultural differences, researchers could consider integrating Hofstede's culture dimensions (Hofstede & Bond, 1984) as moderators into the MOCART. Moreover, it is suggested that a cross-country comparison should be carried out for developing and developed nations to see if the MOCART holds in developed nations and to discover any possible differences between developing and developed nations.

6.6 Conclusion

After discussing the major findings, this chapter has elaborated on the results' theoretical, practical, and policy implications. On top of these, the study's limitations were discussed in this final chapter along with recommendations. To conclude this final chapter and this study, a theory named MOCART has been successfully developed and empirically verified in this study.

The recent advancements of ICT have caused m-commerce applications to gain more importance than ever before, changing the business world and bringing conveniences to mobile users ultimately. If the resistance behaviours of mobile users towards m-commerce applications are not fully comprehended, m-commerce applications would face failure in the market, wasting the resources invested by businesses. Hence, this study seeks to address this issue and subsequently proposed and validated the MOCART, a unified theory that explains three distinct forms of resistance behaviour (i.e., rejection, postponement, or opposition) towards m-commerce applications among resistant mobile users.

Through PLS-SEM, the data collected from the representative samples was analysed empirically. The results fully support the MOCART, suggesting that MUIPC, mobile technostress, and passive innovation resistance are all positively related to active innovation resistance, which subsequently leads to three distinct forms of resistance behaviour. Interestingly, it was noted that MUIPC is more salient for rejecters in building their active innovation resistance, while mobile technostress and passive innovation resistance are respectively more crucial for opponents and postponers.

It is believed that this piece of work could, therefore, address a major problem and close several crucial literature gaps. Hopefully, this study could inspire other fellow scholars who devote their efforts to completing our understanding of resistance to m-commerce applications.

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APPENDIX A

QUESTIONNAIRE (FOR PRE-TEST)

UNIVERSITI TUNKU ABDUL RAHMAN
Faculty of Business and Finance

A study of consumer behaviours

Survey Questionnaire

Dear respondents,

The purpose of this survey is to study the consumer behaviours in Malaysia. Please answer all questions to the best of your knowledge. There are no wrong responses to any of these statements. All responses are completely confidential.

In this study, **mobile commerce applications** are referring to the innovative ways of performing certain tasks that require mobility (for e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost** (Al Janabi & Hussein, 2020).

Thank you for your participation.

Instructions:

1) There are FIVE (5) sections in this questionnaire. Please answer ALL questions in ALL sections unless otherwise specified.
2) Completion of this form will take you approximately 5 to 10 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Informed Consent

All responses are completely anonymous, kept in confidential, and used for academic purposes. There are no foreseeable physical or non-physical risks and/or direct benefits from your participation in this study. However, your participation will help us get more information about the relationships between the selected key variables. Please **provide your signature** to indicate that **you have agreed** to participate in the present study. Thank you for your participation.

Signature : _____

Date : _____

Section A - Filtering Questions

*Please tick **only ONE answer** for each of the following questions.*

FQ1. Number of smart mobile device(s) owning (for e.g., smartphones and tablets):

❑ 1 unit ❑ 2 - 3 units ❑ More than 3 units

❑ 0 unit (The questionnaire ends here, thank you for your participation)

FQ2. Which of the following mobile commerce application do you **know the MOST** about **BUT remains unadopted** (please tick **ONE** only):

❑ Mobile banking (e.g., PB engage MY, Maybank MY, and CIMB Clicks Malaysia)
❑ Mobile customer relationship management (e.g., Sushi King MY, MyUMobile, and McDonald's)
❑ Mobile dating (e.g., Omi, Tantan, and Tinder)
❑ Mobile entertainment (e.g., YouTube, Spotify, and Subway Surfers)
❑ Mobile food delivery (e.g., foodpanda, GrabFood, and dahmakan)
❑ Mobile health (e.g., Pulse by Prudential, Health Mate, and HealthifyMe)
❑ Mobile instant messaging (e.g., WhatsApp Messenger, Messenger, and WeChat)
❑ Mobile map navigation (e.g., Waze, Google Maps, and HERE WeGo)
❑ Mobile payment (e.g., Touch 'n Go eWallet, Boost, and BigPay)
❑ Mobile ride-hailing (e.g., Grab, MyCar, and EzCab)
❑ Mobile shopping (e.g., Shopee MY, Lazada, and ZALORA)
❑ Mobile social networking (e.g., Facebook, Instagram, and Twitter)
❑ Mobile tourism (e.g., Agoda, Booking.com, and OYO)
❑ Mobile utilities (e.g., CamScanner, Google Drive, and SHAREit)
❑ None of the above (The questionnaire ends here, thank you for your participation)

Section B

*Please tick **only ONE answer** for the following question to indicate your intention to use the mobile commerce application identified by you in **FQ2**. Based on your answer, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the **statements** that are **associated with** your **selected answer** [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

QB1. When do you intend to use the mobile commerce application identified in **FQ2**?

❑ Never *(kindly answer **RJ1 - RJ3 only**)*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RJ1	I think that avoiding the use of this mobile commerce application is the right choice.	1	2	3	4	5	6	7
RJ2	The use of this mobile commerce application is not wise.	1	2	3	4	5	6	7
RJ3	I will reject any recommendations from people about this mobile commerce application.	1	2	3	4	5	6	7

❑ Intend to use, most likely within a year from now (*kindly answer **PP1 - PP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP1	I think that this mobile commerce application is acceptable but will not use them immediately.	1	2	3	4	5	6	7
PP2	I think that a later use of this mobile commerce application is better.	1	2	3	4	5	6	7
PP3	I am not sure whether the use of this mobile commerce application is the right decision.	1	2	3	4	5	6	7

❑ Intend to use but have not decided when, most likely more than a year from now (*kindly answer **OP1 - OP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
OP1	It is very likely that I say negative things about this mobile commerce application to other people.	1	2	3	4	5	6	7
OP2	It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	1	2	3	4	5	6	7
OP3	It is very likely that I will influence my friends not to use this mobile commerce application.	1	2	3	4	5	6	7

Section C

***Based on your response in FQ2**, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
TB1	This mobile commerce application does not suit me.	1	2	3	4	5	6	7
TB2	This mobile commerce application does not match my values and norms.	1	2	3	4	5	6	7
TB3	This mobile commerce application does not fits my personality.	1	2	3	4	5	6	7
IB1	I have only negative feelings towards this mobile commerce application.	1	2	3	4	5	6	7
IB2	I don't like this mobile commerce application.	1	2	3	4	5	6	7
IB3	I have a very negative image of this mobile commerce application.	1	2	3	4	5	6	7
UB1	This mobile commerce application is difficult to use.	1	2	3	4	5	6	7
UB2	The use of this mobile commerce application is inconvenient.	1	2	3	4	5	6	7
UB3	This mobile commerce application is slow to use.	1	2	3	4	5	6	7
UB4	The process in this mobile commerce application is unclear.	1	2	3	4	5	6	7
AC1	Please select "2 - Disagree" for this statement.	1	2	3	4	5	6	7
VB1	The use of this mobile commerce application is luxurious.	1	2	3	4	5	6	7
VB2	This mobile commerce application does not offer any advantage.	1	2	3	4	5	6	7
VB3	This mobile commerce application decreases my ability in performing the tasks that it is designed for.	1	2	3	4	5	6	7
VB4	This mobile commerce application is useless.	1	2	3	4	5	6	7
RB1	I am not confident that this mobile commerce application will perform as described.	1	2	3	4	5	6	7
RB2	I am not certain that this mobile commerce application will work satisfactorily.	1	2	3	4	5	6	7
RB3	I doubt whether this mobile commerce application is reliable in use.	1	2	3	4	5	6	7

Section D

*Please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PS1	I believe that the location of my smart mobile device is monitored at least part of the time.	1	2	3	4	5	6	7
PS2	I am concerned that mobile apps are collecting too much information about me.	1	2	3	4	5	6	7
PS3	I am concerned that mobile apps may monitor my activities on my mobile device.	1	2	3	4	5	6	7
PI1	I feel that as a result of my using mobile apps, others know about me more than I am comfortable with.	1	2	3	4	5	6	7
PI2	I believe that as a result of my using mobile apps, information about me that I consider private is now more readily available to others than I would want.	1	2	3	4	5	6	7
PI3	I feel that as a result of my using mobile apps, information about me is out there that, if used, will invade my privacy.	1	2	3	4	5	6	7
SU1	I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	1	2	3	4	5	6	7
SU2	When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	1	2	3	4	5	6	7
SU3	I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	1	2	3	4	5	6	7
MT1	I feel stressed by my inability to keep current with smart mobile device technologies.	1	2	3	4	5	6	7
MT2	I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	1	2	3	4	5	6	7
MT3	I feel threatened by new smart mobile device technologies.	1	2	3	4	5	6	7
MT4	I feel pressured if there are new features introduced into my smart mobile devices.	1	2	3	4	5	6	7
RS1	I generally consider changes to be a negative thing.	1	2	3	4	5	6	7
RS2	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6	7
RS3	I would rather be bored than surprised.	1	2	3	4	5	6	7
ER1	If I were to be informed that there is going to be a significant change regarding the way things are done at work, I would probably feel stressed.	1	2	3	4	5	6	7
ER2	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6	7
ER3	When things don't go according to plans, it stresses me out.	1	2	3	4	5	6	7
SF1	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6	7
SF2	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6	7
SF3	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6	7
AC2	If you have been answering honestly thus far, please only select "6 - Agree" for this statement.	1	2	3	4	5	6	7

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
CR1	I don't often change my mind.	1	2	3	4	5	6	7
CR2	I don't change my mind easily.	1	2	3	4	5	6	7
CR3	My views are very consistent over time.	1	2	3	4	5	6	7
SI1	Overall, my personal need for innovations in the field of technological products has been by far covered in the past.	1	2	3	4	5	6	7
SI2	Overall, I consider the number of innovations in the field of technological products as being too high.	1	2	3	4	5	6	7
SI3	Overall, I consider the pace of innovations in the field of technological products as being too fast.	1	2	3	4	5	6	7
SP1	In the past, I was very satisfied with available technological products.	1	2	3	4	5	6	7
SP2	In my opinion, past technological products were completely satisfactory so far.	1	2	3	4	5	6	7
SP3	Past technological products fully met my requirements.	1	2	3	4	5	6	7

Section E

*Please tick **only ONE answer** for each of the following questions.*

QE1. Gender: ❑ Male ❑ Female

QE2. Age: ❑ Below 15 ❑ 15 - 19 ❑ 20 - 24 ❑ 25 - 29 ❑ 30 - 34 ❑ 35 - 39 ❑ 40 - 44 ❑ 45 - 49 ❑ 50 - 54 ❑ 55 - 59 ❑ 60 - 64 ❑ 65 and above

QE3. Marital status: ❑ Single ❑ Married ❑ Others: _____

QE4. Highest/current education level:
❑ UPSR/UPSRA
❑ PT3/PMR/SRP/LCE/SRA
❑ SPM/SPMV/MCE
❑ STPM/Pre-U/Foundation studies
❑ Certificate/Diploma/Advanced Diploma
❑ Bachelor Degree/Professional Qualification
❑ Postgraduate Degree
❑ Others: _____

QE5. Occupation:
❑ Unemployed ❑ Privately employed ❑ Student ❑ Retiree
❑ Self-employed ❑ Public servant ❑ Homemaker ❑ Others: _____

QE6. Individual monthly income:
❑ Less than RM1000 ❑ RM3001 to RM5000 ❑ RM7001 to RM9000
❑ RM1000 to RM3000 ❑ RM5001 to RM7000 ❑ More than RM9000

QE7. Experience in using smart mobile device(s):
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE8. Experience in using mobile apps:
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE9. Currently living in:
❑ Central Region (Selangor, Kuala Lumpur, or Putrajaya)
❑ Southern Region (Johor, Negeri Sembilan, or Malacca)
❑ Northern Region (Perak, Penang, Kedah, or Perlis)
❑ East Malaysia (Sabah, Sarawak, or Labuan)
❑ East Coast Region (Kelantan, Pahang, or Terengganu)

~ The End ~ Thank you for your time and cooperation

APPENDIX B

QUESTIONNAIRE (COMMENTS RECEIVED FROM EXPERT A)

UNIVERSITI TUNKU ABDUL RAHMAN
Faculty of Business and Finance

A study of consumer behaviours

Survey Questionnaire

Dear respondents,

The purpose of this survey is to study ~~the~~ consumer behaviours in Malaysia. Please answer all questions to the best of your knowledge. There are no wrong responses to any of these statements. All responses are completely confidential.

In this study, **mobile commerce applications** are referring to the innovative ways of performing certain tasks that require mobility (~~for~~ e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost** (Al Janabi & Hussein, 2020).

Thank you for your participation.

Instructions:

1) There are FIVE (5) sections in this questionnaire. Please answer ALL questions in ALL sections unless otherwise specified.
2) Completion of this form will take you approximately 5 to 10 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Informed Consent

All responses are completely anonymous, ~~kept in~~ confidential, and used for academic purposes. There are no foreseeable physical or non-physical risks and/or direct benefits from your participation in this study. However, your participation will help us get more information about the relationships between the selected key variables. Please **provide your signature** to indicate that **you have agreed** to participate in the present study. Thank you for your participation.

Signature : _____

Date : _____

*Page **1** of **6***

Commented [u1]: Can PR or expatriate take part in the survey or is it limited to Malaysian citizen?

Commented [HJJ2R1]: This survey is only limited to Malaysian citizen. To determine if the respondents are Malaysian citizen, a filtering question on nationality would be asked.

Section A - Filtering Questions

*Please tick **only ONE answer** for each of the following questions.*

FQ1. Number of smart mobile device(s) owning (~~for~~ e.g., smartphones and tablets):

❑ 1 unit ❑ 2 - 3 units ❑ More than 3 units

❑ 0 unit (The questionnaire ends here, thank you for your participation)

FQ2. Which of the following mobile commerce application do you **know the MOST** about **BUT remains unadopted** (please tick **ONE** only):

❑ Mobile banking (e.g., PB engage MY, Maybank MY, and CIMB Clicks Malaysia)
❑ Mobile customer relationship management (e.g., Sushi King MY, MyUMobile, and McDonald's)
❑ Mobile dating (e.g., Omi, Tantan, and Tinder)
❑ Mobile entertainment (e.g., YouTube, Spotify, and Subway Surfers)
❑ Mobile food delivery (e.g., foodpanda, GrabFood, and dahmakan)
❑ Mobile health (e.g., Pulse by Prudential, Health Mate, and HealthifyMe)
❑ Mobile instant messaging (e.g., WhatsApp Messenger, Messenger, and WeChat)
❑ Mobile map navigation (e.g., Waze, Google Maps, and HERE WeGo)
❑ Mobile payment (e.g., Touch 'n Go eWallet, Boost, and BigPay)
❑ Mobile ride-hailing (e.g., Grab, MyCar, and EzCab)
❑ Mobile shopping (e.g., Shopee MY, Lazada, and ZALORA)
❑ Mobile social networking (e.g., Facebook, Instagram, and Twitter)
❑ Mobile tourism (e.g., Agoda, Booking.com, and OYO)
❑ Mobile utilities (e.g., CamScanner, Google Drive, and SHAREit)
❑ None of the above (The questionnaire ends here, thank you for your participation)

Section B

*Please tick **only ONE answer** for the following question to indicate your intention to use the mobile commerce application identified by you in **FQ2**. Based on your answer, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the **statements** that are **associated with** your **selected answer** [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

QB1. When do you intend to use the mobile commerce application identified in **FQ2**?

❑ Never *(kindly answer **RJ1 - RJ3 only**)*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RJ1	I think that avoiding the use of this mobile commerce application is the right choice.	1	2	3	4	5	6	7
RJ2	The use of this mobile commerce application is not wise.	1	2	3	4	5	6	7
RJ3	I will reject any recommendations from people about this mobile commerce application.	1	2	3	4	5	6	7

❑ Intend to use, most likely within a year from now (*kindly answer **PP1 - PP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP1	I think that this mobile commerce application is acceptable but will not use them immediately.	1	2	3	4	5	6	7
PP2	I think that a later use of this mobile commerce application is better.	1	2	3	4	5	6	7

Commented [u3]: What if the respondents have other smart devices or they are not sure that the devices are categorized as smart devices? E.g. smart watches, PDAs, Palmtops, Cell phones, Pocket PC, etc.

Commented [HJJ4R3]: The smart mobile device in this study is referring mainly to smartphones and tablets that could be used to conduct m-commerce applications. Other smart mobile devices like smartwatches and PDAs are unable to conduct the m-commerce applications as the relevant mobile apps that are needed for the conduct of m-commerce applications could not be installed in these mobile devices.

As such, this question guides the respondents by naming smartphones and tablets in the example.

Commented [u5]: What if the respondents know the most about a particular mobile commerce apps but it is not listed here? They may just ignore this option. Is it possible to accommodate an open response e.g. Other mobile commerce apps (please specify: _____)

Commented [HJJ6R5]: Since it is impossible to cover the whole range of m-commerce applications, this study only covers 14 classes of m-commerce applications that are identified based on the top 100 free mobile apps in both App Store and Google Play.

If the respondents know another m-commerce application but it is not listed here, this suggests that the m-commerce application is not popular or at its early stage of diffusion. As such, the resistance behaviours towards these emerging m-commerce applications might be possibly due to other factors such as uncertainties rather than one's innovation resistance.

Commented [u7]: The same comments apply to the rest of the options.

Commented [HJJ8R7]: Please see my earlier response.

Commented [u9]: What if the respondents use other mobile commerce apps that are not listed e.g. mobile ticketing, mobile health, and etc. Is it possible to capture these apps with an option Other mobile commerce apps (please specify: _____) before the last option of "None of the above…"?

Commented [HJJ10R9]: This study is only recruiting the respondents who are resisting to a m-commerce application they know the most. When the respondents know a m-commerce application well but decide not to adopt it, innovation resistance (the key focus of this study) emerges.

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP3	I am not sure whether the use of this mobile commerce application is the right decision.	1	2	3	4	5	6	7

❑ Intend to use but have not decided when, most likely more than a year from now (*kindly answer **OP1 - OP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
OP1	It is very likely that I will say negative things about this mobile commerce application to other people.	1	2	3	4	5	6	7
OP2	It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	1	2	3	4	5	6	7
OP3	It is very likely that I will influence my friends not to use this mobile commerce application.	1	2	3	4	5	6	7

Section C

***Based on your response in FQ2**, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
TB1	This mobile commerce application does not suit me.	1	2	3	4	5	6	7
TB2	This mobile commerce application does not match my values and norms.	1	2	3	4	5	6	7
TB3	This mobile commerce application does not fits my personality.	1	2	3	4	5	6	7
IB1	I have only negative feelings towards this mobile commerce application.	1	2	3	4	5	6	7
IB2	I don't like this mobile commerce application.	1	2	3	4	5	6	7
IB3	I have a very negative image of this mobile commerce application.	1	2	3	4	5	6	7
UB1	This mobile commerce application is difficult to use.	1	2	3	4	5	6	7
UB2	The use of this mobile commerce application is inconvenient.	1	2	3	4	5	6	7
UB3	This mobile commerce application is slow to use.	1	2	3	4	5	6	7
UB4	The process in this mobile commerce application is unclear.	1	2	3	4	5	6	7
AC1	Please select "2 - Disagree" for this statement.	1	2	3	4	5	6	7
VB1	The use of this mobile commerce application is luxurious.	1	2	3	4	5	6	7
VB2	This mobile commerce application does not offer any advantage.	1	2	3	4	5	6	7
VB3	This mobile commerce application decreases my ability in performing the tasks that it is designed for.	1	2	3	4	5	6	7
VB4	This mobile commerce application is useless.	1	2	3	4	5	6	7
RB1	I am not confident that this mobile commerce application will perform as described.	1	2	3	4	5	6	7
RB2	I am not certain that this mobile commerce application will work satisfactorily.	1	2	3	4	5	6	7

Commented [u11]: There may be some confusion among respondents on the term "mobile commerce application" in section C and "mobile apps" in section D.

Commented [HJJ12R11]: Such confusion is unavoidable in this study as there is no better way to name these two different concepts.

To reduce the potential confusion, in the cover page, it is clarified that "In this study, **mobile commerce applications** are the innovative ways of performing certain tasks that require mobility (e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost**.". Hopefully this simple statement could help the respondents to know the difference between m-commerce applications and mobile apps.

Moreover, it is mentioned that "*("This mobile commerce application" = Your chosen application in **FQ2**)*" at the beginning of this section. Hopefully this could guide the respondents in answering the questions here by thinking about the m-commerce application chosen by them earlier on.

Commented [u13]: Offer?

Commented [HJJ14R13]: Correct, this should be "offer".

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RB3	I doubt whether this mobile commerce application is reliable in use.	1	2	3	4	5	6	7

Section D

*Please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PS1	I believe that the location of my smart mobile device is monitored at least part of the time.	1	2	3	4	5	6	7
PS2	I am concerned that mobile apps are collecting too much information about me.	1	2	3	4	5	6	7
PS3	I am concerned that mobile apps may monitor my activities on my mobile device.	1	2	3	4	5	6	7
PI1	I feel that as a result of my using mobile apps, others know about me more than I am comfortable with.	1	2	3	4	5	6	7
PI2	I believe that as a result of my using mobile apps, information about me that I consider private is now more readily available to others than I would want.	1	2	3	4	5	6	7
PI3	I feel that as a result of my using mobile apps, information about me is out there that, if used, will invade my privacy.	1	2	3	4	5	6	7
SU1	I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	1	2	3	4	5	6	7
SU2	When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	1	2	3	4	5	6	7
SU3	I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	1	2	3	4	5	6	7
MT1	I feel stressed by my inability to keep current with smart mobile device technologies.	1	2	3	4	5	6	7
MT2	I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	1	2	3	4	5	6	7
MT3	I feel threatened by new smart mobile device technologies.	1	2	3	4	5	6	7
MT4	I feel pressured if there are new features introduced into my smart mobile devices.	1	2	3	4	5	6	7
RS1	I generally consider changes to be a negative thing.	1	2	3	4	5	6	7
RS2	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6	7
RS3	I would rather be bored than surprised.	1	2	3	4	5	6	7
ER1	If I were to be informed that there is going to be a significant change regarding the way things are done at work, I would probably feel stressed.	1	2	3	4	5	6	7
ER2	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6	7

Commented [u15]: Does this refer to "mobile commerce applications"? Is it a totally new concept compared to mobile commerce applications that is not related at all?

Commented [HJJ16R15]: No, mobile apps are not referring to the m-commerce applications but the software needed for users to achieve certain tasks in smart mobile devices. For more details on the difference, kindly refer to my earlier response.

In this section, the respondents are not guided to think about the m-commerce application chosen by them earlier. Hopefully with this, they will think about the mobile apps rather than the m-commerce application.

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
ER3	When things don't go according to plans, it stresses me out.	1	2	3	4	5	6	7
SF1	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6	7
SF2	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6	7
SF3	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6	7
AC2	If you have been answering honestly thus far, please only select "6 - Agree" for this statement.	1	2	3	4	5	6	7
CR1	I don't often change my mind.	1	2	3	4	5	6	7
CR2	I don't change my mind easily.	1	2	3	4	5	6	7
CR3	My views are very consistent over time.	1	2	3	4	5	6	7
SI1	Overall, my personal need for innovations in the field of technological products has been by far covered in the past.	1	2	3	4	5	6	7
SI2	Overall, I consider the number of innovations in the field of technological products as being too high.	1	2	3	4	5	6	7
SI3	Overall, I consider the pace of innovations in the field of technological products as being too fast.	1	2	3	4	5	6	7
SP1	In the past, I was very satisfied with available technological products.	1	2	3	4	5	6	7
SP2	In my opinion, past technological products were completely satisfactory so far.	1	2	3	4	5	6	7
SP3	Past technological products fully met my requirements.	1	2	3	4	5	6	7

Section E

*Please tick **only ONE answer** for each of the following questions.*

QE1. Gender: ❑ Male ❑ Female

QE2. Age: ❑ Below 15 ❑ 15 - 19 ❑ 20 - 24 ❑ 25 - 29 ❑ 30 - 34 ❑ 35 - 39 ❑ 40 - 44 ❑ 45 - 49 ❑ 50 - 54 ❑ 55 - 59 ❑ 60 - 64 ❑ 65 and above

QE3. Marital status: ❑ Single ❑ Married ❑ Others: _____

QE4. Highest/current education level:

❑ UPSR/UPSRA
❑ PT3/PMR/SRP/LCE/SRA
❑ SPM/SPMV/MCE
❑ STPM/Pre-U/Foundation studies
❑ Certificate/Diploma/Advanced Diploma
❑ Bachelor Degree/Professional Qualification
❑ Postgraduate Degree
❑ Others:

QE5. Occupation:

❑ Unemployed ❑ Privately employed ❑ Student ❑ Retiree
❑ Self-employed ❑ Public servant ❑ Homemaker ❑ Others: _____

QE6. Individual monthly income:

❑ Less than RM1000 ❑ RM3001 to RM5000 ❑ RM7001 to RM9000
❑ RM1000 to RM3000 ❑ RM5001 to RM7000 ❑ More than RM9000

QE7. Experience in using smart mobile device(s):

Commented [u17]: What about Sijil Kemahiaran Malaysia (SKM)?

Commented [HJJ18R17]: Incorporated.

Commented [u19]: What about Matrikulasi and STAM?

Commented [HJJ20R19]: Incorporated both.

❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE8. Experience in using mobile apps:
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE9. Currently living in:
❑ Central Region (Selangor, Kuala Lumpur, or Putrajaya)
❑ Southern Region (Johor, Negeri Sembilan, or Malacca)
❑ Northern Region (Perak, Penang, Kedah, or Perlis)
❑ East Malaysia (Sabah, Sarawak, or Labuan)
❑ East Coast Region (Kelantan, Pahang, or Terengganu)

~ The End ~ Thank you for your time and cooperation

APPENDIX C

QUESTIONNAIRE (COMMENTS RECEIVED FROM EXPERT B)

UNIVERSITI TUNKU ABDUL RAHMAN
Faculty of Business and Finance

A study of consumer behaviours

Survey Questionnaire

Commented [PTDOKB1]: Would it be better if you can change the tile to: A Study on Consumer behaviours?

Commented [HJJ2R1]: OK, changed.

Dear respondents,

The purpose of this survey is to study ~~the~~ consumer behaviours in Malaysia. Please answer all questions to ~~the best of~~ your best knowledge. There are no right or wrong responses to ~~any of these~~the statements. All responses are completely confidential.

In this study, **mobile commerce applications** are ~~referring to~~ the innovative ways of performing certain tasks that require mobility (for e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost** (Al Janabi & Hussein, 2020).

Commented [PTDOKB3]: Normally cover page does not contain citations

Commented [HJJ4R3]: OK, removed.

Thank you for your participation.

Instructions:

1) There are FIVE (5) sections in this questionnaire. Please answer ALL questions in ALL sections unless otherwise specified.
2) Completion of this form will take you approximately 5 to 10 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Informed Consent

All responses are completely anonymous, kept ~~in~~ confidential, and used for academic purposes. There are no foreseeable physical or non-physical risks and/or direct benefits from your participation in this study. However, your participation will help us get more information about the relationships between the selected key variables. Please **provide your signature** to indicate that **you have agreed** to participate in the present study. Thank you for your participation.

Signature : _____

Date : _____

*Page **1** of **5***

Section A - Filtering Questions

*Please tick **only ONE answer** for each of the following questions.*

FQ1. A Nnumber of the smart mobile device(s) owning (for e.g., smartphones and tablets):

❑ 1 unit ❑ 2 - 3 units ❑ More than 3 units

❑ 0 unit (The questionnaire ends here, thank you for your participation)

Commented [HJJ5]: Would like to keep "Number of smart mobile device(s) owning" as it sounds simpler and more concise.

FQ2. Which of the following mobile commerce application do you **know the MOST** about **BUT remains unadopted** (please tick **ONE** only):

❑ Mobile banking (e.g., PB engage MY, Maybank MY, and CIMB Clicks Malaysia)
❑ Mobile customer relationship management (e.g., Sushi King MY, MyUMobile, and McDonald's)
❑ Mobile dating (e.g., Omi, Tantan, and Tinder)
❑ Mobile entertainment (e.g., YouTube, Spotify, and Subway Surfers)
❑ Mobile food delivery (e.g., foodpanda, GrabFood, and dahmakan)
❑ Mobile health (e.g., Pulse by Prudential, Health Mate, and HealthifyMe)
❑ Mobile instant messaging (e.g., WhatsApp Messenger, Messenger, and WeChat)
❑ Mobile map navigation (e.g., Waze, Google Maps, and HERE WeGo)
❑ Mobile payment (e.g., Touch 'n Go eWallet, Boost, and BigPay)
❑ Mobile ride-hailing (e.g., Grab, MyCar, and EzCab)
❑ Mobile shopping (e.g., Shopee MY, Lazada, and ZALORA)
❑ Mobile social networking (e.g., Facebook, Instagram, and Twitter)
❑ Mobile tourism (e.g., Agoda, Booking.com, and OYO)
❑ Mobile utilities (e.g., CamScanner, Google Drive, and SHAREit)
❑ None of the above (The questionnaire ends here, thank you for your participation)

Section B

*Please tick **only ONE answer** for the following question to indicate your intention to use the mobile commerce application identified by you in **FQ2**. Based on your answer, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the **statements** that are **associated with** your **selected answer** [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

QB1. When do you intend to use the mobile commerce application identified in **FQ2**?

❑ Never *(kindly answer **RJ1 - RJ3 only**)*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RJ1	I think that avoiding the use of this mobile commerce application is the right choice.	1	2	3	4	5	6	7
RJ2	The use of this mobile commerce application is not wise.	1	2	3	4	5	6	7
RJ3	I will reject any recommendations from people about this mobile commerce application.	1	2	3	4	5	6	7

❑ Intend to use, most likely within a year from now (*kindly answer **PP1 - PP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP1	I think that this mobile commerce application is acceptable but will not use them immediately.	1	2	3	4	5	6	7
PP2	I think that a later use of this mobile commerce application is better.	1	2	3	4	5	6	7
PP3	I am not sure whether the use of this mobile commerce application is the right decision.	1	2	3	4	5	6	7

Commented [HJJ6]: According to the source of this item (http://dx.doi.org/10.1016/j.chb.2016.12.017), "a later use" is the wording used, would like to seek your permission to retain "a" in the sentence.

❑ Intend to use but have not decided when, most likely more than a year from now (*kindly answer **OP1 - OP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
OP1	It is very likely that I say negative things about this mobile commerce application to other people.	1	2	3	4	5	6	7
OP2	It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	1	2	3	4	5	6	7
OP3	It is very likely that I will influence my friends not to use this mobile commerce application.	1	2	3	4	5	6	7

Section C

***Based on your response in FQ2**, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ2**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
TB1	This mobile commerce application does not suit me.	1	2	3	4	5	6	7
TB2	This mobile commerce application does not match my values and norms.	1	2	3	4	5	6	7
TB3	This mobile commerce application does not fits my personality.	1	2	3	4	5	6	7
IB1	I have only negative feelings towards this mobile commerce application.	1	2	3	4	5	6	7
IB2	I don't like this mobile commerce application.	1	2	3	4	5	6	7
IB3	I have a very negative image of this mobile commerce application.	1	2	3	4	5	6	7
UB1	This mobile commerce application is difficult to use.	1	2	3	4	5	6	7
UB2	The use of this mobile commerce application is inconvenient.	1	2	3	4	5	6	7
UB3	This mobile commerce application is slow to use.	1	2	3	4	5	6	7
UB4	The process in this mobile commerce application is unclear.	1	2	3	4	5	6	7
AC1	Please select "2 - Disagree" for this statement.	1	2	3	4	5	6	7
VB1	The use of this mobile commerce application is luxurious.	1	2	3	4	5	6	7
VB2	This mobile commerce application does not offer any advantage.	1	2	3	4	5	6	7
VB3	This mobile commerce application decreases my ability in performing the tasks that it is designed for.	1	2	3	4	5	6	7
VB4	This mobile commerce application is useless.	1	2	3	4	5	6	7
RB1	I am not confident that this mobile commerce application will perform as described.	1	2	3	4	5	6	7
RB2	I am not certain that this mobile commerce application will work satisfactorily.	1	2	3	4	5	6	7
RB3	I doubt ~~whether~~ this mobile commerce application is reliable ~~in use.~~	1	2	3	4	5	6	7

Commented [PTDOKB7]: Can't figure out why, if someone intend to use more than a year from now? The statements are all negative?

Commented [HJJ8R7]: According to the source (https://doi.org/10.1016/j.ijinfomgt.2018.07.012), if individuals intend to adopt an innovation, but they have not yet decided when and certainly not within a year, they are the so called opponents who would engage themselves in an active attack against the innovation, for example, spreading negative word-of-mouth to prevent the innovation's success, as they are not convinced about the innovation right now.

In this manner, following another source (https://aisel.aisnet.org/ecis2014/proceedings/track09/7/) , these statements are measuring the opponents' behaviour in opposing to an innovation.

Commented [PTDOKB9]: Would you consider the following:
I likely say negative things about this mobile commerce application to other people.

Commented [HJJ10R9]: All the wordings in this statement is fully adopted from the source (https://aisel.aisnet.org/ecis2014/proceedings/track09/7/), would like to seek your permission to remain it as it is.

Commented [PTDOKB11]: Would you consider the following:

I will likely advise other people not to use this mobile commerce application if they ask me.

Commented [HJJ12R11]: All the wordings in this statement is fully adopted from the source (https://aisel.aisnet.org/ecis2014/proceedings/track09/7/), would like to seek your permission to remain it as it is.

Commented [PTDOKB13]: Would you consider the following:

I will likely influence my friends not to use this mobile commerce application.

Commented [HJJ14R13]: All the wordings in this statement is fully adopted from the source (https://aisel.aisnet.org/ecis2014/proceedings/track09/7/), would like to seek your permission to remain it as it is.

Commented [PTDOKB15]: Please rephrase, English issue!

Commented [HJJ16R15]: Amended as "This mobile commerce application is inefficient."

Section D

*Please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PS1	I believe that the location of my smart mobile device is monitored at least part of the time.	1	2	3	4	5	6	7
PS2	I am concerned that mobile apps are collecting too much information about me.	1	2	3	4	5	6	7
PS3	I am concerned that mobile apps may monitor my activities on my mobile device.	1	2	3	4	5	6	7
PI1	I feel that as a result of ~~my~~ using mobile apps, others know about me more than I am comfortable with.	1	2	3	4	5	6	7
PI2	I believe that as a result of ~~my~~ using mobile apps, information about me that I consider private is now more readily available to others than I would want.	1	2	3	4	5	6	7
PI3	I feel that as a result of ~~my~~ using mobile apps, information about me is out there that, if used, will invade my privacy.	1	2	3	4	5	6	7
SU1	I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	1	2	3	4	5	6	7
SU2	When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	1	2	3	4	5	6	7
SU3	I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	1	2	3	4	5	6	7
MT1	I feel stressed by my inability to keep up with the current ~~with~~ smart mobile device technologies.	1	2	3	4	5	6	7
MT2	I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	1	2	3	4	5	6	7
MT3	I feel threatened by new smart mobile device technologies.	1	2	3	4	5	6	7
MT4	I feel pressured if there are new features introduced into my smart mobile devices.	1	2	3	4	5	6	7
RS1	I generally consider changes to be a negative thing.	1	2	3	4	5	6	7
RS2	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6	7
RS3	I would rather be bored than surprised.	1	2	3	4	5	6	7
ER1	If I were to be informed that there is going to be a significant change ~~regarding~~ in the way things are done at work, I would probably feel	1	2	3	4	5	6	7
ER2	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6	7
ER3	When things do not~~n't~~ go according to plans, it stresses me out.	1	2	3	4	5	6	7
SF1	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6	7
SF2	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6	7
SF3	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6	7
AC2	If you have been answering honestly thus far, please only select "6 - Agree" for this statement.	1	2	3	4	5	6	7

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
CR1	I do notn~~'t~~ often change my mind.	1	2	3	4	5	6	7
CR2	I do notn~~'t~~ change my mind easily.	1	2	3	4	5	6	7
CR3	My views are very consistent over time.	1	2	3	4	5	6	7
SI1	Overall, my personal need for innovations in the field of technological products has been by far covered in the past.	1	2	3	4	5	6	7
SI2	Overall, I consider the number of innovations in the field of technological products as being too high.	1	2	3	4	5	6	7
SI3	Overall, I consider the pace of innovations in the field of technological products as being too fast.	1	2	3	4	5	6	7
SP1	In the past, I was very satisfied with the available technological products.	1	2	3	4	5	6	7
SP2	In my opinion, past technological products were completely satisfiedsatisfactory so far.	1	2	3	4	5	6	7
SP3	Past technological products fully met my requirements.	1	2	3	4	5	6	7

Commented [HJJ17]: The term "satisfactory" is describing the products rather than the individual's feeling, would like to seek your permission to retain the use of "satisfactory" in this sentence.

Section E

*Please tick **only ONE answer** for each of the following questions.*

QE1. Gender: ❑ Male ❑ Female

QE2. Age:
❑ Below 15 ❑ 25 - 29 ❑ 40 - 44 ❑ 55 - 59
❑ 15 - 19 ❑ 30 - 34 ❑ 45 - 49 ❑ 60 - 64
❑ 20 - 24 ❑ 35 - 39 ❑ 50 - 54 ❑ 65 and above

QE3. Marital status: ❑ Single ❑ Married ❑ Others: _____

QE4. Highest/current education level:
❑ UPSR/UPSRA
❑ PT3/PMR/SRP/LCE/SRA
❑ SPM/SPMV/MCE
❑ STPM/Pre-U/Foundation studies
❑ Certificate/Diploma/Advanced Diploma
❑ Bachelor Degree/Professional Qualification
❑ Postgraduate Degree
❑ Others: _____

QE5. Occupation:
❑ Unemployed ❑ Privately employed ❑ Student ❑ Retiree
❑ Self-employed ❑ Public servant ❑ Homemaker ❑ Others: _____

QE6. Individual monthly income:
❑ Less than RM1000 ❑ RM3001 to RM5000 ❑ RM7001 to RM9000
❑ RM1000 to RM3000 ❑ RM5001 to RM7000 ❑ More than RM9000

QE7. Experience in using a smart mobile device(s):
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

Commented [HJJ18]: Since the respondents might be owning more than 1 unit of smart mobile device, "a" seems to be unnecessary here.

QE8. Experience in using mobile apps:
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE9. Currently living in:
❑ Central Region (Selangor, Kuala Lumpur, or Putrajaya)
❑ Southern Region (Johor, Negeri Sembilan, or Malacca)
❑ Northern Region (Perak, Penang, Kedah, or Perlis)
❑ East Malaysia (Sabah, Sarawak, or Labuan)
❑ East Coast Region (Kelantan, Pahang, or Terengganu)

~ The End ~ Thank you for your time and cooperation

APPENDIX D

QUESTIONNAIRE (FOR PILOT TEST)

UNIVERSITI TUNKU ABDUL RAHMAN
Faculty of Business and Finance

A study on consumer behaviours

Survey Questionnaire

Dear respondents,

The purpose of this survey is to study consumer behaviours in Malaysia. Please answer all questions to your best knowledge. There are no right or wrong responses to the statements. All responses are completely confidential.

In this study, **mobile commerce applications** are the innovative ways of performing certain tasks that require mobility (e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost**.

Thank you for your participation.

Instructions:

1) There are FIVE (5) sections in this questionnaire. Please answer ALL questions in ALL sections unless otherwise specified.
2) Completion of this form will take you approximately 5 to 10 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Informed Consent

All responses are completely anonymous, confidential, and used for academic purposes. There are no foreseeable physical or non-physical risks and/or direct benefits from your participation in this study. However, your participation will help us get more information about the relationships between the selected key variables. Please **provide your signature** to indicate that **you have agreed** to participate in the present study. Thank you for your participation.

Signature : _____

Date : _____

Section A - Filtering Questions

*Please tick **only ONE answer** for each of the following questions.*

FQ1. Nationality: ❑ Malaysian
❑ Non-Malaysian (The questionnaire ends here, thank you for your participation)

FQ2. Number of smart mobile device(s) owning (e.g., smartphones and tablets):
❑ 1 unit ❑ 2 - 3 units ❑ More than 3 units
❑ 0 unit (The questionnaire ends here, thank you for your participation)

FQ3. Which of the following mobile commerce application do you **know the MOST** about **BUT remains unadopted** (please tick **ONE** only):
❑ Mobile banking (e.g., PB engage MY, Maybank MY, and CIMB Clicks Malaysia)
❑ Mobile customer relationship management (e.g., Sushi King MY, MyUMobile, and McDonald's)
❑ Mobile dating (e.g., Omi, Tantan, and Tinder)
❑ Mobile entertainment (e.g., YouTube, Spotify, and Subway Surfers)
❑ Mobile food delivery (e.g., foodpanda, GrabFood, and dahmakan)
❑ Mobile health (e.g., Pulse by Prudential, Health Mate, and HealthifyMe)
❑ Mobile instant messaging (e.g., WhatsApp Messenger, Messenger, and WeChat)
❑ Mobile map navigation (e.g., Waze, Google Maps, and HERE WeGo)
❑ Mobile payment (e.g., Touch 'n Go eWallet, Boost, and BigPay)
❑ Mobile ride-hailing (e.g., Grab, MyCar, and EzCab)
❑ Mobile shopping (e.g., Shopee MY, Lazada, and ZALORA)
❑ Mobile social networking (e.g., Facebook, Instagram, and Twitter)
❑ Mobile tourism (e.g., Agoda, Booking.com, and OYO)
❑ Mobile utilities (e.g., CamScanner, Google Drive, and SHAREit)
❑ None of the above (The questionnaire ends here, thank you for your participation)

Section B

*Please tick **only ONE answer** for the following question to indicate your intention to use the mobile commerce application identified by you in **FQ3**. Based on your answer, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the **statements** that are **associated with** your **selected answer** [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

QB1. When do you intend to use the mobile commerce application identified in **FQ3**?

❑ Never *(kindly answer **RJ1 - RJ3 only**)*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RJ1	I think that avoiding the use of this mobile commerce application is the right choice.	1	2	3	4	5	6	7
RJ2	The use of this mobile commerce application is not wise.	1	2	3	4	5	6	7
RJ3	I will reject any recommendations from people about this mobile commerce application.	1	2	3	4	5	6	7

❑ Intend to use, most likely within a year from now (*kindly answer **PP1 - PP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP1	I think that this mobile commerce application is acceptable but will not use them immediately.	1	2	3	4	5	6	7

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP2	I think that a later use of this mobile commerce application is better.	1	2	3	4	5	6	7
PP3	I am not sure whether the use of this mobile commerce application is the right decision.	1	2	3	4	5	6	7

❑ Intend to use but have not decided when, most likely more than a year from now (*kindly answer **OP1 - OP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
OP1	It is very likely that I will say negative things about this mobile commerce application to other people.	1	2	3	4	5	6	7
OP2	It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	1	2	3	4	5	6	7
OP3	It is very likely that I will influence my friends not to use this mobile commerce application.	1	2	3	4	5	6	7

Section C

***Based on your response in FQ3**, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
TB1	This mobile commerce application does not suit me.	1	2	3	4	5	6	7
TB2	This mobile commerce application does not match my values and norms.	1	2	3	4	5	6	7
TB3	This mobile commerce application does not fit my personality.	1	2	3	4	5	6	7
IB1	I have only negative feelings towards this mobile commerce application.	1	2	3	4	5	6	7
IB2	I do not like this mobile commerce application.	1	2	3	4	5	6	7
IB3	I have a very negative image of this mobile commerce application.	1	2	3	4	5	6	7
UB1	This mobile commerce application is difficult to use.	1	2	3	4	5	6	7
UB2	The use of this mobile commerce application is inconvenient.	1	2	3	4	5	6	7
UB3	This mobile commerce application is inefficient.	1	2	3	4	5	6	7
UB4	The process in this mobile commerce application is unclear.	1	2	3	4	5	6	7
AC1	Please select "2 - Disagree" for this statement.	1	2	3	4	5	6	7
VB1	The use of this mobile commerce application is luxurious.	1	2	3	4	5	6	7
VB2	This mobile commerce application does not offer any advantage.	1	2	3	4	5	6	7
VB3	This mobile commerce application decreases my ability in performing the tasks that it is designed for.	1	2	3	4	5	6	7
VB4	This mobile commerce application is useless.	1	2	3	4	5	6	7
RB1	I am not confident that this mobile commerce application will perform as described.	1	2	3	4	5	6	7
RB2	I am not certain that this mobile commerce application will work satisfactorily.	1	2	3	4	5	6	7
RB3	I doubt this mobile commerce application is reliable.	1	2	3	4	5	6	7

Section D

*Please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PS1	I believe that the location of my smart mobile device is monitored at least part of the time.	1	2	3	4	5	6	7
PS2	I am concerned that mobile apps are collecting too much information about me.	1	2	3	4	5	6	7
PS3	I am concerned that mobile apps may monitor my activities on my mobile device.	1	2	3	4	5	6	7
PI1	I feel that as a result of using mobile apps, others know about me more than I am comfortable with.	1	2	3	4	5	6	7
PI2	I believe that as a result of using mobile apps, information about me that I consider private is now more readily available to others than I would want.	1	2	3	4	5	6	7
PI3	I feel that as a result of using mobile apps, information about me is out there that, if used, will invade my privacy.	1	2	3	4	5	6	7
SU1	I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	1	2	3	4	5	6	7
SU2	When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	1	2	3	4	5	6	7
SU3	I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	1	2	3	4	5	6	7
MT1	I feel stressed by my inability to keep up with the current smart mobile device technologies.	1	2	3	4	5	6	7
MT2	I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	1	2	3	4	5	6	7
MT3	I feel threatened by new smart mobile device technologies.	1	2	3	4	5	6	7
MT4	I feel pressured if there are new features introduced into my smart mobile devices.	1	2	3	4	5	6	7
RS1	I generally consider changes to be a negative thing.	1	2	3	4	5	6	7
RS2	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6	7
RS3	I would rather be bored than surprised.	1	2	3	4	5	6	7
ER1	If I were to be informed that there is going to be a significant change in the way things are done, I would probably feel stressed.	1	2	3	4	5	6	7
ER2	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6	7
ER3	When things do not go according to plans, it stresses me out.	1	2	3	4	5	6	7
SF1	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6	7
SF2	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6	7
SF3	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6	7
AC2	If you have been answering honestly thus far, please only select "6 - Agree" for this statement.	1	2	3	4	5	6	7
CR1	I do not often change my mind.	1	2	3	4	5	6	7

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
CR2	I do not change my mind easily.	1	2	3	4	5	6	7
CR3	My views are very consistent over time.	1	2	3	4	5	6	7
SI1	Overall, my personal need for innovations in the field of technological products has been by far covered in the past.	1	2	3	4	5	6	7
SI2	Overall, I consider the number of innovations in the field of technological products as being too high.	1	2	3	4	5	6	7
SI3	Overall, I consider the pace of innovations in the field of technological products as being too fast.	1	2	3	4	5	6	7
SP1	In the past, I was very satisfied with the available technological products.	1	2	3	4	5	6	7
SP2	In my opinion, past technological products were completely satisfactory so far.	1	2	3	4	5	6	7
SP3	Past technological products fully met my requirements.	1	2	3	4	5	6	7

Section E

*Please tick **only ONE answer** for each of the following questions.*

QE1. Gender: ❑ Male ❑ Female

QE2. Age: ❑ Below 15 ❑ 25 - 29 ❑ 40 - 44 ❑ 55 - 59
❑ 15 - 19 ❑ 30 - 34 ❑ 45 - 49 ❑ 60 - 64
❑ 20 - 24 ❑ 35 - 39 ❑ 50 - 54 ❑ 65 and above

QE3. Marital status: ❑ Single ❑ Married ❑ Others: _____

QE4. Highest/current education level:
❑ UPSR/UPSRA
❑ PT3/PMR/SRP/LCE/SRA
❑ SPM/SPMV/MCE/SKM
❑ STPM/STAM/Pre-U/Foundation/Matrikulasi
❑ Certificate/Diploma/Advanced Diploma
❑ Bachelor Degree/Professional Qualification
❑ Postgraduate Degree
❑ Others: _____

QE5. Occupation:
❑ Unemployed ❑ Privately employed ❑ Student ❑ Retiree
❑ Self-employed ❑ Public servant ❑ Homemaker ❑ Others: _____

QE6. Individual monthly income:
❑ Less than RM1000 ❑ RM3001 to RM5000 ❑ RM7001 to RM9000
❑ RM1000 to RM3000 ❑ RM5001 to RM7000 ❑ More than RM9000

QE7. Experience in using smart mobile device(s):
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE8. Experience in using mobile apps:
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE9. Currently living in:
❑ Central Region (Selangor, Kuala Lumpur, or Putrajaya)
❑ Southern Region (Johor, Negeri Sembilan, or Malacca)
❑ Northern Region (Perak, Penang, Kedah, or Perlis)
❑ East Malaysia (Sabah, Sarawak, or Labuan)
❑ East Coast Region (Kelantan, Pahang, or Terengganu)

~ The End ~ Thank you for your time and cooperation

APPENDIX E

QUESTIONNAIRE (FOR ACTUAL DATA COLLECTION)

UNIVERSITI TUNKU ABDUL RAHMAN
Faculty of Business and Finance

A study on consumer behaviours

Survey Questionnaire

Dear respondents,

The purpose of this survey is to study consumer behaviours in Malaysia. Please answer all questions to your best knowledge. There are no right or wrong responses to the statements. All responses are completely confidential.

In this study, **mobile commerce applications** are the innovative ways of performing certain tasks that require mobility (e.g., **mobile payment**) through dedicated mobile applications (mobile apps) on smart mobile devices, for instance, **Boost**.

Thank you for your participation.

Instructions:

1) There are FIVE (5) sections in this questionnaire. Please answer ALL questions in ALL sections unless otherwise specified.
2) Completion of this form will take you approximately 5 to 10 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Informed Consent

All responses are completely anonymous, confidential, and used for academic purposes. There are no foreseeable physical or non-physical risks and/or direct benefits from your participation in this study. However, your participation will help us get more information about the relationships between the selected key variables. Please **provide your signature** to indicate that **you have agreed** to participate in the present study. Thank you for your participation.

Signature : _____

Date : _____

Section A - Filtering Questions

*Please tick **only ONE answer** for each of the following questions.*

FQ1. Nationality: ❑ Malaysian
❑ Non-Malaysian (The questionnaire ends here, thank you for your participation)

FQ2. Number of smart mobile device(s) owning (e.g., smartphones and tablets):
❑ 1 unit ❑ 2 - 3 units ❑ More than 3 units
❑ 0 unit (The questionnaire ends here, thank you for your participation)

FQ3. Which of the following mobile commerce application do you **know the MOST** about **BUT remains unadopted** (please tick **ONE** only):
❑ Mobile banking (e.g., PB engage MY, Maybank MY, and CIMB Clicks Malaysia)
❑ Mobile customer relationship management (e.g., Sushi King MY, MyUMobile, and McDonald's)
❑ Mobile dating (e.g., Omi, Tantan, and Tinder)
❑ Mobile entertainment (e.g., YouTube, Spotify, and Subway Surfers)
❑ Mobile food delivery (e.g., foodpanda, GrabFood, and dahmakan)
❑ Mobile health (e.g., Pulse by Prudential, Health Mate, and HealthifyMe)
❑ Mobile instant messaging (e.g., WhatsApp Messenger, Messenger, and WeChat)
❑ Mobile map navigation (e.g., Waze, Google Maps, and HERE WeGo)
❑ Mobile payment (e.g., Touch 'n Go eWallet, Boost, and BigPay)
❑ Mobile ride-hailing (e.g., Grab, MyCar, and EzCab)
❑ Mobile shopping (e.g., Shopee MY, Lazada, and ZALORA)
❑ Mobile social networking (e.g., Facebook, Instagram, and Twitter)
❑ Mobile tourism (e.g., Agoda, Booking.com, and OYO)
❑ Mobile utilities (e.g., CamScanner, Google Drive, and SHAREit)
❑ None of the above (The questionnaire ends here, thank you for your participation)

Section B

*Please tick **only ONE answer** for the following question to indicate your intention to use the mobile commerce application identified by you in **FQ3**. Based on your answer, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the **statements** that are **associated with** your **selected answer** [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

QB1. When do you intend to use the mobile commerce application identified in **FQ3**?

❑ Never *(kindly answer **RJ1 - RJ3 only**)*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
RJ1	I think that avoiding the use of this mobile commerce application is the right choice.	1	2	3	4	5	6	7
RJ2	The use of this mobile commerce application is not wise.	1	2	3	4	5	6	7
RJ3	I will reject any recommendations from people about this mobile commerce application.	1	2	3	4	5	6	7

❑ Intend to use, most likely within a year from now (*kindly answer **PP1 - PP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP1	I think that this mobile commerce application is acceptable but will not use them immediately.	1	2	3	4	5	6	7

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PP2	I think that a later use of this mobile commerce application is better.	1	2	3	4	5	6	7
PP3	I am not sure whether the use of this mobile commerce application is the right decision.	1	2	3	4	5	6	7

❑ Intend to use but have not decided when, most likely more than a year from now (*kindly answer **OP1 - OP3 only***)

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
OP1	It is very likely that I will say negative things about this mobile commerce application to other people.	1	2	3	4	5	6	7
OP2	It is very likely that I will advise other people not to use this mobile commerce application if they ask me.	1	2	3	4	5	6	7
OP3	It is very likely that I will influence my friends not to use this mobile commerce application.	1	2	3	4	5	6	7

Section C

***Based on your response in FQ3**, please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions *("This mobile commerce application" = Your chosen application in **FQ3**)*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
TB1	This mobile commerce application does not suit me.	1	2	3	4	5	6	7
TB2	This mobile commerce application does not match my values and norms.	1	2	3	4	5	6	7
TB3	This mobile commerce application does not fit my personality.	1	2	3	4	5	6	7
IB1	I have only negative feelings towards this mobile commerce application.	1	2	3	4	5	6	7
IB2	I do not like this mobile commerce application.	1	2	3	4	5	6	7
IB3	I have a very negative image of this mobile commerce application.	1	2	3	4	5	6	7
UB1	This mobile commerce application is difficult to use.	1	2	3	4	5	6	7
UB2	The use of this mobile commerce application is inconvenient.	1	2	3	4	5	6	7
UB3	This mobile commerce application is inefficient.	1	2	3	4	5	6	7
UB4	The process in this mobile commerce application is unclear.	1	2	3	4	5	6	7
VB1	The use of this mobile commerce application is luxurious.	1	2	3	4	5	6	7
VB2	This mobile commerce application does not offer any advantage.	1	2	3	4	5	6	7
VB3	This mobile commerce application decreases my ability in performing the tasks that it is designed for.	1	2	3	4	5	6	7
VB4	This mobile commerce application is useless.	1	2	3	4	5	6	7
RB1	I am not confident that this mobile commerce application will perform as described.	1	2	3	4	5	6	7
RB2	I am not certain that this mobile commerce application will work satisfactorily.	1	2	3	4	5	6	7
RB3	I doubt this mobile commerce application is reliable.	1	2	3	4	5	6	7

Section D

*Please circle **ONE number per line** to indicate the extent to which you agree or disagree with the following statements [(1) = strongly disagree; (2) = disagree; (3) = slightly disagree; (4) = neutral; (5) = slightly agree; (6) = agree; (7) = strongly agree].*

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
PS1	I believe that the location of my smart mobile device is monitored at least part of the time.	1	2	3	4	5	6	7
PS2	I am concerned that mobile apps are collecting too much information about me.	1	2	3	4	5	6	7
PS3	I am concerned that mobile apps may monitor my activities on my mobile device.	1	2	3	4	5	6	7
AC1	Please select '6 - Agree' for this statement.	1	2	3	4	5	6	7
PI1	I feel that as a result of using mobile apps, others know about me more than I am comfortable with.	1	2	3	4	5	6	7
PI2	I believe that as a result of using mobile apps, information about me that I consider private is now more readily available to others than I would want.	1	2	3	4	5	6	7
PI3	I feel that as a result of using mobile apps, information about me is out there that, if used, will invade my privacy.	1	2	3	4	5	6	7
SU1	I am concerned that mobile apps may use my personal information for other purposes without notifying me or getting my authorisation.	1	2	3	4	5	6	7
SU2	When I give personal information to use mobile apps, I am concerned that the apps may use my information for other purposes.	1	2	3	4	5	6	7
SU3	I am concerned that mobile apps may share my personal information with other entities without getting my authorisation.	1	2	3	4	5	6	7
MT1	I feel stressed by my inability to keep up with the current smart mobile device technologies.	1	2	3	4	5	6	7
MT2	I feel intimidated by the smart mobile device technology skills demonstrated by my friends.	1	2	3	4	5	6	7
MT3	I feel threatened by new smart mobile device technologies.	1	2	3	4	5	6	7
MT4	I feel pressured if there are new features introduced into my smart mobile devices.	1	2	3	4	5	6	7
RS1	I generally consider changes to be a negative thing.	1	2	3	4	5	6	7
RS2	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6	7
RS3	I would rather be bored than surprised.	1	2	3	4	5	6	7
ER1	If I were to be informed that there is going to be a significant change in the way things are done, I would probably feel stressed.	1	2	3	4	5	6	7
ER2	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6	7
ER3	When things do not go according to plans, it stresses me out.	1	2	3	4	5	6	7
SF1	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6	7
SF2	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6	7
SF3	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6	7
CR1	I do not often change my mind.	1	2	3	4	5	6	7
CR2	I do not change my mind easily.	1	2	3	4	5	6	7

No	Questions	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
CR3	My views are very consistent over time.	1	2	3	4	5	6	7
SI1	Overall, my personal need for innovations in the field of technological products has been by far covered in the past.	1	2	3	4	5	6	7
SI2	Overall, I consider the number of innovations in the field of technological products as being too high.	1	2	3	4	5	6	7
SI3	Overall, I consider the pace of innovations in the field of technological products as being too fast.	1	2	3	4	5	6	7
SP1	In the past, I was very satisfied with the available technological products.	1	2	3	4	5	6	7
SP2	In my opinion, past technological products were completely satisfactory so far.	1	2	3	4	5	6	7
SP3	Past technological products fully met my requirements.	1	2	3	4	5	6	7

Section E

*Please tick **only ONE answer** for each of the following questions.*

QE1. Gender: ❑ Male ❑ Female

QE2. Age: ❑ Below 15 ❑ 15 - 19 ❑ 20 - 24 ❑ 25 - 29 ❑ 30 - 34 ❑ 35 - 39 ❑ 40 - 44 ❑ 45 - 49 ❑ 50 - 54 ❑ 55 - 59 ❑ 60 - 64 ❑ 65 and above

QE3. Marital status: ❑ Single ❑ Married ❑ Others: _____

QE4. Highest/current education level:
❑ UPSR/UPSRA
❑ PT3/PMR/SRP/LCE/SRA
❑ SPM/SPMV/MCE/SKM
❑ STPM/STAM/Pre-U/Foundation/Matrikulasi
❑ Certificate/Diploma/Advanced Diploma
❑ Bachelor Degree/Professional Qualification
❑ Postgraduate Degree
❑ Others: _____

QE5. Occupation:
❑ Unemployed ❑ Privately employed ❑ Student ❑ Retiree
❑ Self-employed ❑ Public servant ❑ Homemaker ❑ Others: _____

QE6. Individual monthly income:
❑ Less than RM1000 ❑ RM3001 to RM5000 ❑ RM7001 to RM9000
❑ RM1000 to RM3000 ❑ RM5001 to RM7000 ❑ More than RM9000

QE7. Experience in using smart mobile device(s):
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE8. Experience in using mobile apps:
❑ Less than 3 years ❑ 3 - 5 years ❑ More than 5 years

QE9. Currently living in:
❑ Central Region (Selangor, Kuala Lumpur, or Putrajaya)
❑ Southern Region (Johor, Negeri Sembilan, or Malacca)
❑ Northern Region (Perak, Penang, Kedah, or Perlis)
❑ East Malaysia (Sabah, Sarawak, or Labuan)
❑ East Coast Region (Kelantan, Pahang, or Terengganu)

~ The End ~ Thank you for your time and cooperation