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**Northumbria  
University**  
NEWCASTLE

DETERMINANTS OF CONTINUANCE  
INTENTION TO USE MOBILE  
PAYMENTS IN CHINA

GUANGJIN SU

PhD

2022



DETERMINANTS OF CONTINUANCE  
INTENTION TO USE MOBILE  
PAYMENTS IN CHINA

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Northumbria at Newcastle for the degree of  
Doctor of Philosophy

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## Abstract

Mobile payments as a critical service supporting mobile businesses have received significant attention from enterprises. The rapid spread of COVID-19 resulted in the closure of many restaurants, shopping malls, and supermarkets. Meanwhile, mobile payments directly replace cash payment (Yin, Gong, and Pan 2019) and change people's consumption habits (Yin et al. 2019). Thus, it played an important role during the COVID-19 pandemic period when isolation measures were encouraged. With the booming mobile payments, the Chinese market has cultivated two giants and other mobile payments providers. In the competitive market environment, how to understand users' requirements, enhance users' product experience and enhance users' stickiness is the key for enterprises to gain competitive advantages. The commercial value of mobile payments depends on the participation of more users and more using. Retaining existing mobile payment users would be subject to more attention from academic researchers and practitioners in this field. This research aims to apply the value-based adoption model (VAM), expectation-confirmation theory (ECM), and habit theory to investigate the factors affecting the usage continuance of mobile payments in China.

A mixed-method approach, which combined qualitative and quantitative research, is selected for this study. Qualitative research employed the critical incident technique (CIT) method in exploratory analysis to explore the dimensions and connotations of the perceived value of mobile payments. From the perspective of user-perceived benefits, it contains five dimensions: utilitarian value, hedonic value, social value, ecological value and health value. From the perspective of user-perceived sacrifices, it includes three dimensions: risk cost, based on mobile and low-level pain of payment. Quantitative research employed structural equation modelling (SEM) to identify the factors affecting the mobile payments continuance use in China under different constructs, both habit-related factors and product-related factors (i.e., utilitarian, hedonic, social and health).

Results showed that the significant factors directly affecting the intention to continue to use mobile payment services are habit and perceived utilitarian value. The findings also show that perceived hedonic value, perceived social value, and perceived health value all boost consumers' desire to continue using mobile payments indirectly via the mediation of customers' habits. These findings provide a direction for companies and developers of mobile payment services to encourage users' continuance intention. The theoretical, methodological and practical contributions of this study, the generalisation aspects and limitation of this study, and the contexts of future research are discussed.<sup>1</sup>

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<sup>1</sup> Based on this study, two externally peer-reviewed shorter competitive papers from this thesis have been accepted for presentation at the 54th Academy of Marketing Annual Conference on 5-7 July 2022 at the University of Huddersfield (see Appendix G and Appendix H).

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## **Declaration**

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Newcastle Business School's Ethics Committee at Northumbria University on 10/03/2021.

I declare that the Word Count of this Thesis is 75, 926 words

Name: Guangjin Su

Signature:

Date: 12/05/2022

## **List of Abbreviations**

AI	Artificial Intelligence
AMOS	Analysis of Moment Structures
ANOVA	Analysis of Variance
AVE	Average Variance Extracted
CA	Cronbach's alpha
CMV	Common Method Variance
CU	Continuance usage
CON	Convenience
CR	Composite Reliability
CFI	Comparative Fit Index
CIT	Critical Incident Technique
CNNIC	China Internet Network Information Center
DIT	Diffusion of Innovation Theory
DOI	Diffusion of Innovation
ECM	Expectation Confirmation Model
ECT	Expectation Confirmation Theory
ECSI	European Customer Satisfaction Index
EMV	Europay, MasterCard, and Visa
EN	Enjoyment
EFA	Exploratory Factor Analysis
FL	Factor Loading
FV	Financial Value
GSM	Global Association of Mobile Operators
HA	Habit
HBM	Health Belief Model
HV	Health Value



IS	Information Systems
ISS	Information Systems Success
ICT	Information and Communication Technology
ITC	IT continuance
IT	Information Technology
IFI	Incremental Fit Index
MZ	Mianzi
NFC	Near Field Communication
NFI	Normed Fit Index
PAM	Post-acceptance Model
PBOC	People's Bank of China
PCFI	Parsimony Comparative Fit Index
PNFI	Parsimonious Normed Fit Index
PGFI	Parsimonious Goodness of Fit Index
PDA	Personal Digital Assistant
QR	Quick Response
QUAL	Qualitative
QUAN	Quantitative
RMSEA	Root Mean Square Error of Approximation
RFID	Radio Frequency Identification
SEM	Structural Equation Modeling
ST	Social tie
SPSS	Statistical Parcel for the Social Sciences
TAM	Technology Acceptance Model
TCE	Transaction Cost Economics
TCT	Technology Continuance Theory
TTF	Task-technology Fit
TLI	Tucker Lewis index

TPB	Theory of Planned Behaviour
TPE	Technological Personal Environmental
TRA	Theory of Reasoned Action
TRI	Technology Readiness Index
UTAUT	Unified Theory of Acceptance and Use of Technology
U&G	Uses and Gratification
VAM	Value-based Adoption Model
WHO	World Health Organization

## **Chapter 1 Introduction**

### **1.0 Introduction**

The background and context of the mobile payment usage continuance in China are introduced in this chapter. It includes how mobile payments have been developed throughout the years. After providing background information of the study, the factors influencing the continuance usage of mobile payments in the context of mainland China are discussed. The existing studies' theoretical concepts and limitations are explained, and the research gaps are presented. After describing the research questions and research objectives of this study, a brief summary of the methodology used is provided. The potential contributions of this study are also presented. Finally, the chapter concludes with a sum of the structure of the dissertation. Section 1.1 explains the background of mobile payments in terms of the benefits it offers to businesses and consumers. The research problem is then presented in section 1.2, followed by the research objectives and research questions in section 1.3. Research methodology is then discussed in section 1.4, which outlines the methods that were used to accomplish the research aim and objectives. The expected contributions of this study to mobile payments post-adoption research will be discussed in section 1.5. The structure of this thesis will be detailed in section 1.6. In the final section, a summary of the chapter is outlined in section 1.7.

### **1.1 Background of Study**

Mobile services have been widely adopted, and their use has expanded dramatically over the world (Susanto et al., 2016; Khalilzadeh et al., 2017; Prodanova et al., 2019; Karjaluo et al., 2019; Poromatikul et al., 2019; Humbani & Wiese, 2019; Lara-Rubio et al., 2020; Zhao & Bacao, 2020b; Verkijika, 2020; Chuang et al., 2020; Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2021). In the field of marketing, mobile services are defined as content and transaction services accessed and/or delivered via a mobile handheld device (personal digital assistants,

mobile, cellular or smartphone, etc.) based on an interaction/transaction between an organisation and a customer (Gummerus & Pihlström, 2011). The rapid expansion of mobile services has been attributed to the fact that a wide range of businesses is increasingly capitalising on this newly innovative business channel, motivated by its unique characteristics of mobility and broad reach that break down geographical and time barriers (Faqih & Jaradat, 2015). Mobile payment is one example of such mobile services and is broadly defined as the way for consumers to pay for goods, services or accounts using a mobile device such as a mobile phone, smartphone or personal digital assistants (PDAs) (Dahlberg et al. 2015).

Mobile payments as a critical service supporting mobile businesses have received significant attention from enterprises (Zhang et al., 2020; Liébana-Cabanillas et al., 2020; Jia et al., 2020; Handarkho et al., 2021; Raman & Aashish, 2021). Mobile payments are the product of the deep integration of mobile internet, cloud computing, big data, artificial intelligence (AI) and other new-generation information technologies with the traditional financial industry, as well as the result of the upgrading of social consumption demand (iResearch, 2020). The global development of mobile payments is driving the change to a cashless society and modifying behaviour in people's lifestyles. Some countries are trying to fully turn themselves into a cashless society, for example, China emerged as one of the global regions adopting cashless transactions (CNNIC, 2021). A report by the Global Association of Mobile Operators (GSMA) indicates that the total number of mobile phone users worldwide increased to 5.1 billion in 2020, of which approximately 1.2 billion reside in China (GSMA, 2020). From the perspective of mobile payments transaction volume, mobile payment is an excellent complement to traditional financial services and further expands financial services' boundaries. In the first half of 2020, China amounted to 196.98 trillion yuan in its mobile payments, up 18.61% year-on-year, ranking first in the world (CNNIC, 2020). It is expected that this trend will continue to increase in the upcoming years due to the changing lifestyles of consumers, the widespread use of smartphones, and the growth of e-commerce.

Mobile payment services continue to evolve globally. This is a priority in many businesses,

such as retail, hospitality, and finance. This technology is altering the way consumers buy products and request services. The future of the mobile payment services is indeed bright, with up to 4 billion users expected to have mobile wallets by 2024, a considerable increase from the 2.3 billion users today (Softtek, 2020). Besides, mobile money transactions are expected to reach \$9 trillion per year by 2024 (Softtek, 2020). These numbers even increase due to the impact of COVID-19 on mobile payment technology. Coronavirus COVID-19 has had a significant influence on the global economy and humanity (Abodunrin et al., 2020). It has dramatically changed the channels and patterns of monetary transactions used by consumers and merchants. This global COVID crisis forces people to change their daily habits, including being careful to avoid being infected, and mobile payments are a perfect prevention tool to minimise the spread of the COVID-19 virus. In some markets, cash is a thing of the past, and mobile payments' growth is unstoppable (Softtek, 2020).

In China, WeChat and Alipay are the two most popular mobile payment platforms (Shao et al., 2019). They have created a hugely valuable mobile payments market that they absolutely dominate. Alipay has active users of over 500 million monthly, and WeChat Pay has 900 million monthly, as they control 93% of the mobile payment market in China (CGAP, 2019). Telecommunication service providers like China Mobile and China Unicom have also established mobile payment services, allowing users to pay for bus and subway tickets using their mobile phones. In China, the cashless lifestyle is now becoming a reality (Li et al., 2019).

Besides the domestic giants, the international players in China, for example, Apple Pay, which was introduced in China in 2016, has also launched a massive promotional campaign because the brand foresees Chinese customers' significant spending (Pu et al., 2020). Furthermore, another example from the international players, Swatch, has also invested in a contactless payment mechanism called "Swatch Pay", which allows customers to pay using a specially designed Swatch watch after opening an account at a partner bank (Mack, 2014).

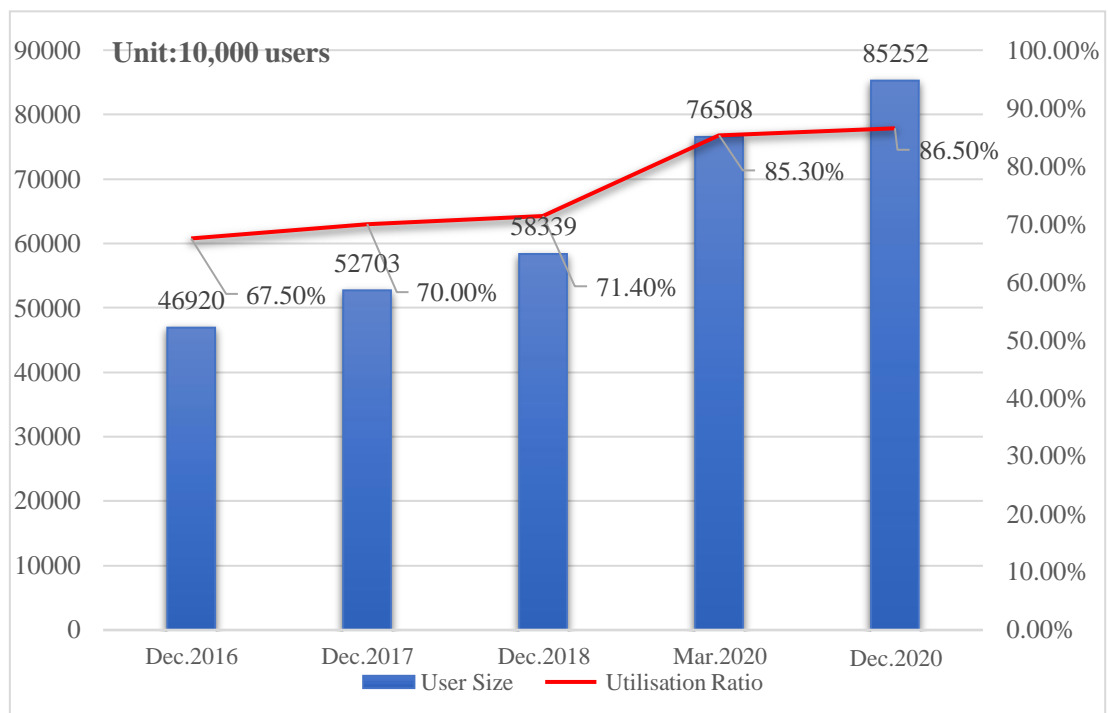


Figure 1.1: CNNIC’s Statistical Survey on China’s Internet Development: User Size and Utilisation Ratio of Mobile Payments from Dec. 2016 to Dec. 2020 (CNNIC, 2021)

China has continued to expand the application of mobile payments, ranking the world’s No. 1 in the transaction scale for three consecutive years (Liao & Yang, 2020). Figure 1.1 shows mobile payments’ user size and utilization ratio from Dec. 2016 to Dec. 2020 in China (CNNIC, 2021). Mobile payments’ user size is the scale of mobile payments users, and the utilisation ratio is meaning their proportion on total mobile users in China. Mobile payments have 852 million users as of December 2020, accounting for 86.5 percent of China’s total mobile Internet users (CNNIC, 2021). The application scenarios of mobile payment are constantly enriched. Payment institutions help the “small shop economy” flourish by means of integrated online and offline payment, national welfare subsidies, and online training and guiding for merchants. Also, payment institutions use big data, AI and other new technologies to promote the development of “credit county” and “county-wide financial inclusion” and expand more “plus payment” application scenarios. During the COVID-19 epidemic, offline merchants accelerated their transformation to online business. Mobile payments played the role of

information carriers, electronic wallets, credit media, cash registers, and bookkeeping to promote mobile payments. The number of customers who are using mobile payments is continuously increasing; however, the stickiness of new users is still unknown, and how to keep existing users loyal to the continuance use of mobile payment services is a real problem for enterprises. Stickiness is the behavioural patterns that can explain the behavioural aspect that an individual continuously uses mobile payments. All mobile payment services - whether it is Alipay, WeChat Pay, or another mobile payment service - attempt to capture a share of the mobile payments market. Therefore, this research investigates the factors affecting or restraining customers from post-adopting mobile payments in China.

Several researchers have studied factors that influence mobile payments' continuance intention in a global context and in the Chinese domain (Raman & Aashish, 2021; Handarkho, 2020; Itthiphone et al., 2020; Siwei Sun et al., 2020; Sreelakshmi & Prathap, 2020; Marinković et al., 2020; Putri et al., 2020; Chuang et al., 2020). Most of the previous studies (Cao et al., 2018; Lin et al., 2018; Sreelakshmi & Prathap, 2020; Pal et al., 2020; Itthiphone et al., 2020; Alhassan et al., 2020; Raman & Aashish, 2021) examined mobile payments using the technology acceptance model (TAM), the diffusion of innovation theory (DIT), the unified theory of acceptance and use of technology (UTAUT), the Uses and Gratification (U&G) theory, the Task-Technology Fit Model (TTF), the IT continuance (ITC) theory, European Customer Satisfaction Index (ECSI) model and the expectation confirmation model (ECM) factors to study mobile payments to uncover the factors that influence continuance intention of mobile payments. Kim et al. (2007) introduced the value-based adoption model (VAM) when studying user behaviour. The empirical results show that the user's perceived value determines user behaviour, while other influencing factors (i.e., usefulness, enjoyment, perceived fee and technicality) ultimately affect user behaviour through perceived value (Kim et al., 2007). Compared with previous research models, the VAM model can better explain users' mobile payments intention and behaviour. Liébana-Cabanillas et al. (2020) indicate that the perceived value is the primary influence of mobile payments. However, no single study is acknowledged

that has studied mobile payments in China in conjunction with the expectation confirmation model (ECM) and the value-based adoption model (VAM). This suggests the need to explore factors affecting customers' mobile payments post-adoption in China, as similar studies carried out in China of study have not adopted the VAM and ECM. Therefore, this research contributes to the need for a composite understanding of the factors affecting mobile payments uptake in China adopting the ECM and VAM models, as this area has not been fully explored in the extant literature. Moreover, it is essential for an in-depth understanding of the dimensions and connotations of the perceived value of mobile payments. Vargo and Lusch (2008) argued that value is always uniquely and phenomenologically determined by the beneficiary. Value is experiential and is derived from consumption experience (Holbrook, 1994). Therefore, this study needs further to understand the perceived value of mobile payment services.

## **1.2 Research Gaps**

In the current work, a range of different limitations and restrictions of mobile payments usage continuance has been established and is being managed. This section summarises these limitations. First, although prior research focuses on mobile payments usage continuance (Zhou, 2013; Chen & Li, 2017; Cao et al., 2018; Shao et al., 2019; Chuang et al., 2020; Pal et al., 2020; Zhao & Bacao, 2020b; Talwar et al., 2020; Singh & Somaiya, 2020; Sreelakshmi & Prathap, 2020; Itthiphone et al., 2020; Siwei Sun et al., 2020; Handarkho et al., 2021); there is a lack of studies examining mobile payments users' perceived beneficial factors. There is little work understanding mobile payment continuance based on the value perspective. Nowadays, marketers and researchers are now paying close attention to perceived value because of its critical role in predicting purchase behaviour and achieving sustainable competitive advantage. Liébana-Cabanillas et al. (2020) argue that perceived value is the primary influence of mobile payments. Currently, most research studies (Yuan et al., 2016; Lu et al., 2017; Chen & Li, 2017; Cao et al., 2018; Kumar et al., 2018; Poromatikul et al., 2019; Khatimah et al., 2019; Shao et al., 2019; Zhao & Bacao, 2020b; Itthiphone et al., 2020; Alhassan et al., 2020; Talwar



et al., 2020; Handarkho, 2020; Marinković et al., 2020; Sreelakshmi & Prathap, 2020; Shelvia et al., 2020; Putri et al., 2020; Duy Phuong et al., 2020; Andrea & Suharto, 2020; Nan et al., 2020; Handarkho et al., 2021) in the area of mobile payments have only used quantitative methods of analysis, which means that they are not able to provide a comprehensive view of potential users' reasoning or perception on the issue of their mobile payments' continuance intention, and also in particular, the way the role the several determinants play in their perceived value of mobile payments. However, only rarely have studies (Hellier et al., 2003; Kuo et al., 2009) been conducted on the effects of various value perception dimensions on post-adoption behaviour. There is room for further research on the salient factors that drive users to continue using mobile payments. Understanding the relative importance of such aspects would assist decision-makers in determining the appropriate strategies to promote mobile payments and encourage people to continue using them. Furthermore, the usage continuance of mobile payments can save operating expenses and boost productivity (Sharma et al., 2018). For researchers, mobile payments usage continuance based on value creation could provide new insights on informatics usage continuance intention.

Second, for service providers to survive in the marketplace, understanding the users' perceived value is an important issue. Perceived value presents different dimensions and connotations depending on the research context or the research object (Pihlström & Pura, 2008). However, mobile payments exhibit different characteristics from other services, such as cash payments. Mobile payments as a means of service innovation bring new value to users, and its functions are continually being improved and innovated. The existing literature does not provide a specific and in-depth analysis of the dimensions and connotations of mobile payments value, and there is a lack of corresponding empirical studies on this topic (Zhao, 2019; Park et al., 2019; Putri et al., 2020).

Third, the studies on informatics, scholars, such as Guo and Barnes (2011), Kim and Malhotra (2005), Limayem et al. (2007), Lee and Chen (2014), and Lee et al. (2019) argue that habit could have both a direct and an interactive effect on behaviour. In accordance with earlier

research, the automaticity of behaviour decreases the need to access intention (Aarts et al., 1998) and adopts habit and perceived value as antecedents of continued usage instead of intention. It can be argued that once a habit is formed, the perceived value becomes relatively less relevant (Amoroso & Lim, 2017), as long as the consumers feel good about repeating the behaviour. The discussion presented in this section has provided the motivation for undertaking the research on the effect of perceived value and habit on consumer intention to continue using mobile payments in China.

### **1.3 Research Objectives and Research Questions**

Given the context of mobile payments in China, the research problem is encapsulated in the requirement to develop a conceptual model applicable in the customers' context, in view of the dearth of previous research that has studied the usage of mobile payments in China. As a result, the overall aim of this research is twofold: to investigate and analyse the factors influencing usage continuance of mobile payments in China, as well as to develop a conceptual model to predict the continuance usage of mobile payments. In relation to the research gaps mentioned in the previous part (section 1.2) of the introduction chapter, the following research objectives are outlined:

- To identify the dimensions and connotations of the perceived value of mobile payments.
- Based on the literature review, to develop a conceptual model that investigates the impact of factors relating to the continuance intention of mobile payments in China.
- To empirically examine the influence of the factors on mobile payments continuance use in the China consumer market and validate the results.
- To investigate the mediation of habit in the relationship between perceived value and continuance intention.
- To make recommendations based on the results from objectives 2, 3 and 4, both from

consumers' and business decision-makers' perspectives, in order to increase the continuance use of mobile payment services, which will increase revenue for mobile payment services providers.

The research questions that attempt to address the research aim and objectives are as follows:

1. What are the dimensions of consumers' perceived value in the context of mobile payments?
2. What are the key factors influencing users' intention to continually use mobile payments in China?
3. How will users habitually use the mobile payments which they are using now?
4. What can be recommended for improved and enhanced usage of mobile payments to keep existing users loyal?

#### **1.4 Research Methodology**

This section contains a summary of the research methodology employed in this study. Further details are discussed in Chapter 4. A mixed-method research approach involving the collection and analysis of qualitative and quantitative data is chosen for this study. Informatics researchers suggest that a mixed-method approach should be employed when the research intends to provide a systematic understanding of the phenomenon for which extant research is fragmented, inconclusive, and equivocal (Venkatesh et al., 2013). It is particularly relevant to the purpose of this research since previous studies have not thoroughly examined the perceived value dimensions of mobile payments and which factors affect the intention to continue to use mobile payments. The mixed-method research can be designed in different ways, namely, based on the timing (parallel or sequential) and order of the quantitative and qualitative methods (Creswell, 2014). For this study, an exploratory sequential mixed-method design was chosen since it best aligns with the research objectives. The exploratory sequential mixed-

method design process begins with a qualitative phase and then moves to a quantitative phase (Creswell, 2014).

The qualitative phase was preceded by an extensive literature review to develop the proposed conceptual model and the research hypotheses. Semi-structured interviews were arranged to collect qualitative data from existing and prospective mobile payments adopters in China, guided by the conceptual model (Figure 3.1). The interviews intended to explore a deep understanding of the factors underpinning the proposed model and identify the new additional factors based on the rich narratives of the interviews. The findings from this explorative qualitative phase of the study serve as the foundation for testing the proposed model and informing the selection of questionnaire measuring items for the following phase. In this study, perceived value is the predictor variable, whereas the main outcome variable is the continuance intention to use mobile payments. In the second phase, quantitative data was collected using an online survey experiment design. The data were examined through the structural equation modelling (SEM), path analysis, bootstrap analysis and the analysis of variance (ANOVA) using statistical packages IBM Statistical Parcel for the Social Sciences (SPSS) 27 and Analysis of Moment Structures (AMOS) 28 for this research. The purpose of the survey experiment was to collect a large amount of data in order to evaluate the hypotheses supporting the suggested model and cross-validate the quantitative and qualitative results. In the qualitative stage, the in-depth semi-structured interview was conducted among 82 valid participants helped to build rapport and dialogue between the researcher and the respondents. In the quantitative stage, a total number of 752 questionnaires were received. Data screening was conducted to ensure the data is useable for further statistical analyses (Gaskin, 2017). There were 746 useable questionnaires for analysing the continuance intention of mobile payments.

### **1.5 Significance and Contribution of the Study**

Based on the analysis of the existing literature related to mobile payments and the current situation of related research, this study's theoretical framework adopts the value-based

adoption model (VAM), expectation-confirmation theory (ECM), and habit theory on continuous usage of mobile payments to conduct an in-depth study on the continuous behaviour of mobile payments in China.

First, mobile payments as a service innovation create value for users through new technical means and unique transaction methods. In the existing theoretical and empirical literature, there are a lack of particular discussions and analyses on the dimensions and connotations of the value of mobile payment services (Zhao, 2019; Park et al., 2019; Putri et al., 2020). This study uses the critical incident technique (CIT) and combines the results of service value-related literature to extract and summarise the service value dimensions and connotations of mobile payments and test them empirically to enrich further and deepen the theoretical research on the service value of mobile payments.

Second, there is a growing research interest from academia and industry in the post-adoption behaviour of informatics. However, it remains unclear as the existing studies on mobile payments adoption still focus mainly on the pre-adoption stage. Pre-adoption variables do not fully explain the post-adoption behaviour of users. This study adopts the value-based adoption model (VAM) in the mobile payments' usage continuance context in order to develop a novel conceptual model (Figure 3.1). The model (Figure 3.1) broadens our understanding of the drive for user usage continuance intention of new technology. This is a particularly important theoretical contribution given the scarcity of research on the impact of perceived value on mobile payments post-adoption.

Thirdly, it contributes to theory building by illustrating the importance of using a mixed-method research design to comprehensively understand the various aspects that influence and comprise value in mobile payments. This research will design a new model based on VAM, ECM and habit theory to fully explore the factors that influence users' intention to continuance usage. The mobile payments market is highly competitive. For the strategic consideration of market layout, operators, financial institutions, and third-party payment companies have

increased their investment in the mobile payments market. The number of mobile payments users is growing rapidly. The novel coronavirus disease (COVID-19) outbreak has significantly affected many lives, as indicated by widespread lockdowns and restrictions. Mobile payments can improve transaction efficiency and facilitate consumption while overcoming the traditional space-time limitations. Based on the study, it was found that perceived health values mediated by habits increased consumers' intention to continue to use mobile payments. Notably, mobile payments can induce the transition from offline to online consumption, thus overcoming space-time limitations, reducing unnecessary personnel mobility, and meeting the needs of consumers and businesses during the pandemic.

However, the stickiness of new users is still unknown, and therefore, how to retain the existing users is a real challenge for enterprises. New skills, versions and models of mobile payments are released constantly. This study not only helps companies better understand users' perceptions and expectations of mobile payment services but also provides insights into products and services that better meet users' needs. It also helps them to innovate their services and products to improve the efficiency and level of their services.

## **1.6 Structure of the Thesis**

In this dissertation, there are a total of eight chapters. The structure of this thesis is as follows: Introduction (Chapter 1), Literature Review (Chapter 2) Research Hypotheses and Theoretical Framework (Chapter 3), Research Methodology (Chapter 4), Qualitative Data Analysis (Chapter 5), Quantitative Data Analysis (Chapter 6), Discussion (Chapter 7), Conclusions, Contributions and Recommendations (Chapter 8).

Chapter 1 provides an overview of this thesis. An overview of the research background is provided, followed by an identification of the research gaps in the field, a description of the research aims and objectives, and a description of the methodological approach adopted, as well as the contribution of this study. It provides a comprehensive summary of the investigation

and defines the context of key subjects related to the study.

Chapter 2 explores existing literature to identify the research gap, focusing on the theoretical models and factors used to examine mobile payments adoption and post-adoption. It also provides an overview of the findings of previous studies pertaining to the factors that influence consumers' continuance intention toward mobile payments. The chapter then identifies the gaps in existing research and provides justification for the chosen theoretical foundation, which is used to develop the conceptual model in Chapter 3.

Chapter 3 proposes the conceptual model for this research based on the theoretical foundation. The chapter contains a discussion and justification of the selection of factors that comprise the proposed conceptual model. Simultaneously, it also includes the development of the research hypotheses that test the relationships among the factors of the proposed model. The second research objective (based on a literature review, to develop a conceptual model that investigates the impact of factors relating to the continuance intention of mobile payments in China) is met when Chapters 2 and Chapter 3 are completed. In light of the current study aim, these theories have been critically analysed and compared.

Chapter 4 presents the research methodology in detail. This implies clarifying the research philosophical stance as well as the rationale underlying the choice of the research methodology. The chapter then proceeds to explain the steps involved in the research process. The chapter concludes with an overview of the ethical concerns in research addressed in this study.

Chapter 5 discusses the results of the qualitative study which was conducted. It begins by using the critical incident technique (CIT) method analysing data obtained from the semi-structured interviews conducted in China to identify the dimensions and connotations of the perceived value of mobile payments. It then discusses the themes that developed from the data analysis related to each factor in the model. Chapter 5 fulfils the first research objective (to identify the dimensions and connotations of the perceived value of mobile payments).

Chapter 6 summarises the findings of the quantitative phase. The chapter discusses the preliminary analysis and the structural equation modelling (SEM) statistical analysis used in this study. The preliminary analysis discusses the data screening, sample demographics, distribution of normality, reliability, and validity of all measures, using IBM SPSS 27. After discussing the preliminary analysis, the chapter discusses the utilisation of the Structural Equation Modelling (SEM) via AMOS 28. Furthermore, the chapter discusses the findings and results of testing the hypothesis within the structural model. Chapter 6 meets the third research objective (to empirically examine the influence of the factors on mobile payments continuance use in the China consumer market and validate the results) and the fourth research objective (to investigate the mediation of habit in the relationship between perceived value and continuance intention).

Chapter 7 summarises the important research findings. The chapter ends with a discussion that cross-validates the quantitative and qualitative findings and links them to prior research. In the previous chapter 6, such empirical results were displayed and presented in the form of figures and tables.

Chapter 8 provides an overview of the thesis, and its main contributions, recommendations, generalisation contexts, limitations and future areas of research. As a result, this chapter gives a summary of the significant findings. Furthermore, the chapter defines the main contributions made by this research as well as categorises the contributions into theoretical contributions and practical implementations. Additionally, the research aim, objectives and questions are addressed and answered through the research conclusions and contributions. Chapter 8 meets the last research objective (to make recommendations based on the results from objectives 2, 3 and 4, both from consumers' and business decision-makers' perspectives, that will enhance revenue from mobile services content).

The overall structure of the thesis can be seen in Figure 1.2.



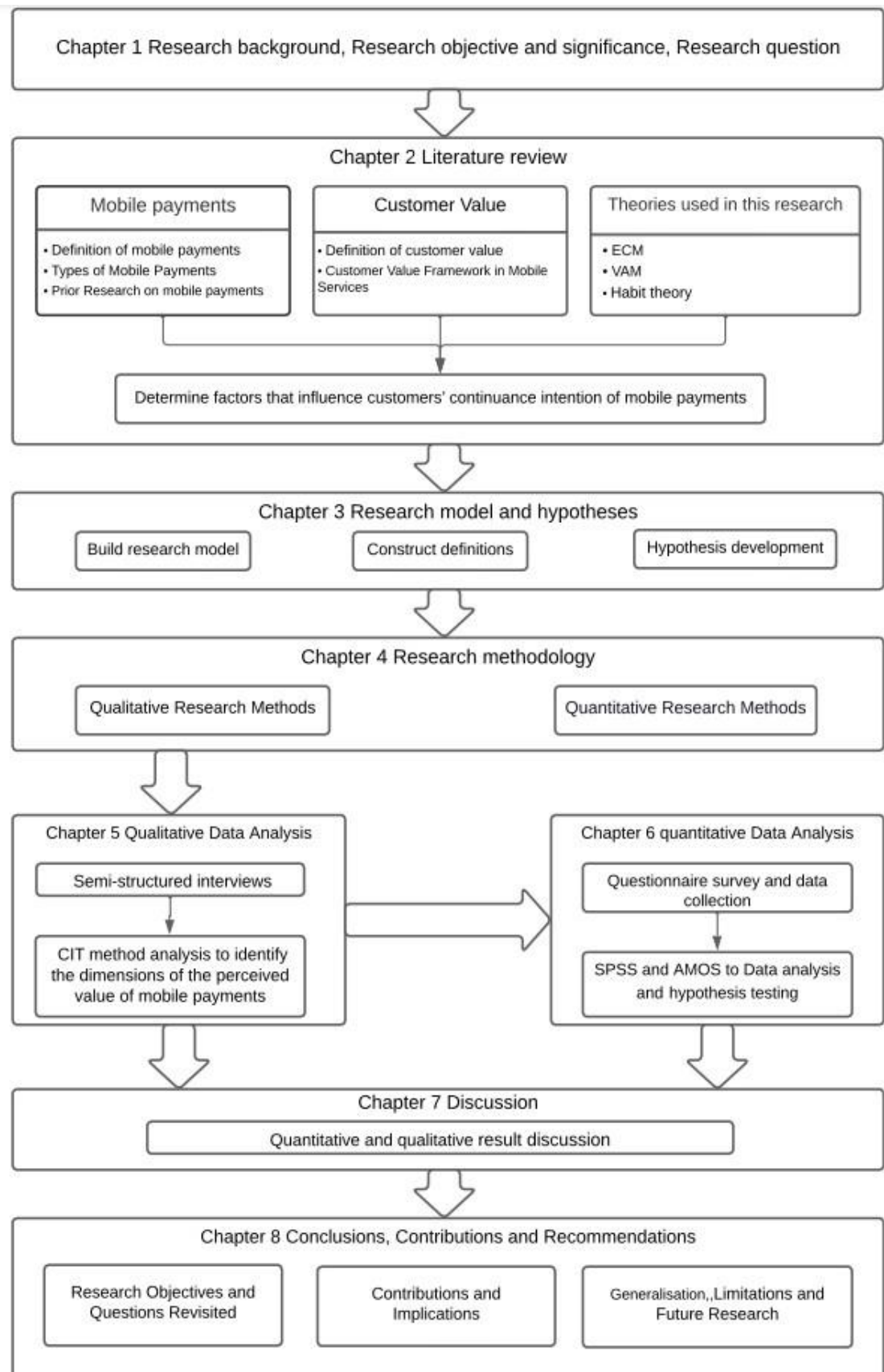


Figure 1.2 Structure of the Thesis

Source: Developed by the author

## **1.7 Conclusion**

This chapter started with the research background of mobile payments, and its growing dominance in the world payment system. As the most significant player in the world mobile payment market, China has been selected as the research target due to its heavy proportion in the world market. In addition, it provides relevant statistics and information about the usage of mobile payment services in China. It goes on to define the main aim of the current study and provides the relevant objectives to attain the aim of the study. In addition, the research questions are presented in this chapter in light of the overall aim of the research and to address the research objectives. Furthermore, the current chapter provides an overview of the research problem and discusses the significance of the research. Finally, this chapter summarises the chapters of this thesis to give a clear image of the recent study. This research contributes to the scholarly literature by studying the continuance intention of mobile payments with a novel model based on VAM, ECM, and habit theory. Chapter two reviews vital literature on the adoption and post-adoption of mobile payments and provides the basis for the research.

## Chapter 2 Literature Review

### 2.0 Introduction

This chapter reviews the literature on users' initial adoption and continuance intention of mobile payments through digital platforms. The research models and theories adopted by extant literature in this topic area are analysed in this chapter in order to explore the topic-specific theoretical progress, challenges and research gaps. The aim here is to develop a theoretical model to test through empirical studies and to contribute to our knowledge of this research topic by lessening the extant research gap. Toward the aforementioned purposes, this chapter consists of the following five sections. Section 2.1 explores the definition of mobile payments and the extant literature about mobile payments. The models and theories used in the extant literature on mobile payments adoption and mobile payments post-adoption research are discussed in section 2.1.3 and section 2.1.4. Section 2.2 explores the definition of customer value and reviews the literature about customer value frameworks in mobile payment services. Section 2.3 explains the identified models and theories from extant literature used in this research by discussing the advantages and disadvantages of those models and theories. Section 2.4 discusses the extant research gaps and explains the aim of this research centred on the extant research gaps. Section 2.5 discusses research objectives and research questions in order to pursue the research aim. The last part, section 2.6, serves as an overall conclusion of this chapter. Mobile payments are not only technological innovation but also service innovation. From the user's behavioural decision-making process and based on the service value of the mobile payment, this research intends to enhance the existing literature by studying the perceived value and continuance intention to use mobile payments with a model based on the value-based adoption model (VAM) and expectation confirmation model (ECM). There are many discussions of the rapidly growing mobile payment services (Zhou, 2013; Chen & Li, 2017; Cao et al., 2018; Shao et al., 2019; Chuang et al., 2020; Pal et al., 2020). However, no academic research on mobile payments post-adoption applying the VAM and ECM has been

conducted.

## **2.1 Research on Mobile Payments**

### **2.1.1 Defining Mobile Payments**

Although the academic and industry-based mobile payments literature is extensive; finding a universally accepted definition of the term “mobile payments” remains elusive (Kim & Yoo, 2020; Luna, 2017; Liébana-Cabanillas et al., 2015; Molina-Castillo et al., 2020; Singh & Somaiya, 2020; Putri et al., 2020). For example, Shaikh and Karjaluoto (2015) pointed out that laptops should not be included in the mobile terminals used for mobile payment, because the payment interface and principle used by laptops are the same as that of traditional PC, which should not be classified as mobile payments. And compared with Dahlberg et al.’s (2015) definition of mobile payments, Pousttchi (2003) and Ghezzi et al. (2010) highlight the difference of mobile payments technology applications. Given the relatively wide range of definitions of mobile payments, we have identified some common aspects and some differences between alternative definitions. As noted above, the majority of concepts identified in the extant literature are focused on the mobile phone and its functionalities as defining characteristics that distinguish mobile payments and other payment methods within electronic commerce platforms (Krueger, 2001; Weber & Darbellay, 2010). Concerning the role of mobile payments, all the definitions refer to transferring the monetary value between the parties involved in a transaction. With regard to the key differences, this research highlight the identification of the different stages involved in the payment transaction (Henkel, 2002; Pousttchi, 2003; Petrova, 2008; Dahlberg et al., 2008) and the payment execution. Table 2.1 details the main definitions identified.

Table 2.1: Definitions of Mobile Payments

Author(s)	Definition	Journal / Publisher
Muller-Versee (2000)	Any transaction with a monetary value is conducted via a mobile telecommunications network.	Mobile Commerce
Krueger (2001)	Payments are completed on a mobile phone.	Electronic Payments Systems Observatory
Mobile Payment Forum (2002)	Wireless transactions of monetary value from one party to another using a mobile device.	Mobile Payment Forum
Henkel (2002)	The central element of mobile payment is the authorization of the payment process by the ultimate customer using a mobile phone.	Mobile Commerce
Poustchi (2003)	Type of payment transaction processing in the course of which-within an electronic procedure (at least), the payer employs mobile communication techniques in conjunction with mobile devices for the initiation, authorisation, or payment realisation.	mBusiness
Zheng and Chen (2003)	Any transaction with a monetary value that is conducted via a mobile telecommunications network.	International Conference on E-Commerce
Deans (2005)	Any payment operation involving the use of a mobile device.	E-commerce and M-commerce Technologies
Karnouskos (2004)	Any payment using a mobile device to initiate, activate and/or confirm the payment can be considered a mobile payment.	IEEE Communications Surveys & Tutorials
Ondrus and Pigneur (2006)	Wireless transactions have a monetary value between two parties, using a mobile device with different physical appearances (from a mobile phone to an authorised mobile device) and processing a financial transaction within a wireless network in a secure way.	Electronic commerce research and applications

Author(s)	Definition	Journal / Publisher
Zmijewska and Lawrence (2005)	Payment transactions including the use of a mobile device, are performed through mobile telecommunications and wireless technologies.	IADIS International Conference on E-Commerce
Au and Kauffman (2008)	Any payment that uses a mobile device to initiate, authorize and confirm a commercial transaction.	Electronic Commerce Research and Applications
Petrova (2008)	A wireless monetary transaction involving the initiation, authorization and completion of payments.	International Conference on Web Information Systems Engineering
Dahlberg et al. (2008; 2015)	A way for consumers to pay for goods, services or accounts using a mobile device such as a mobile phone, smartphone or personal digital assistant (PDA).	Electronic commerce research and applications
Saji (2008)	A monetary transaction implemented through a wireless telecommunications network.	International Journal of mathematical models and methods in applied sciences
Gerpott and Kornmeier (2009)	A system using mobile devices to perform transactions such as paying bills or making bank transfers.	International Journal of Electronic Finance
Kpmg (2009)	Payments performed on mobile phones and other devices for direct purchases or authorising the payment of goods and services.	Third annual consumers and convergence survey
Zhong (2009)	A complete procedure of mobile payment involving the initiation, authorization, compensation/completion, confirmation and money transfer, and delivery of the goods or services purchased.	Facilitating an Open, Effective and Representative eSociety
Juniper (2010)	The payment for goods or services with a mobile device such as a phone, a personal digital assistant (PDA) or other similar devices.	Mobile Commerce

Author(s)	Definition	Journal / Publisher
Ghezzi et al. (2010)	A process in which at least one phase of the transaction is conducted using a mobile device (such as mobile phone, smartphone, PDA, or any wireless-enabled device) capable of securely processing a financial transaction over a mobile network or via various wireless technologies (NFC, Bluetooth, RFID, etc.)	Info
Schierz et al. (2010)	All payments for goods, services, and bills via a smartphone.	Electronic commerce research and applications
Weber and Darbellay (2010)	Range of mobile commerce services involving payment transactions initiated or confirmed using a mobile phone.	Journal of Banking Regulation
Federation National Retail (2011)	Mobile payments are defined as payments for goods or services initiated with a mobile phone or a similar device.	Mobile Retailing Blueprint
Zhou (2013)	Mobile payments is a payment method that enables users to adopt mobile terminals such as smartphones to conduct payment for goods, bills, and services.	Decision support systems
Tan et al. (2014)	Mobile payment service means that a consumer takes a mobile device (such as Smartphones) as a carrier. When sending payment, a consumer could use a non-cash financial instrument through a specific transfer technology, device or network coupled with verification processes. The transaction payment would be complete, and goods or services would be obtained in bricks and mortar location. (e.g., Wireless Application Protocol, Unstructured Supplementary Service Data, short messaging services, and General Packet Radio Service).	Telematics and Informatics

Author(s)	Definition	Journal / Publisher
Di Pietro et al. (2015)	The process of making use of internet connectivity and mobile devices for processing payments when purchasing goods or services.	Transportation Research Part C: Emerging Technologies
Liébana-Cabanillas et al. (2015)	The performance of payments for transactions between two parties in a fast, convenient, safe, and simple way, anytime and anywhere, using a mobile device.	Review of Business Management
Luna (2017)	It is a type of financial process of a private or business nature. An electronic mobile communication device is used to initiate, authorise and carry out a financial transaction.	PhD in Business and Economic Science
Kim and Yoo (2020)	Mobile payment service refers to an electronic payment service that makes payments using a mobile app without complicated procedures such as certificates.	Journal of Distribution Science
George and Sunny (2021)	Mobile payments are a broad umbrella term used for all kinds of smartphone-enabled payment solutions such as mobile banking, mobile wallets, NFC-enabled payment solutions, etc.	IIM Kozhikode Society & Management Review

Source: Developed by the author

Mobile devices can be used to pay for different services and products including, ringtones, trademarks, news, music and online games, and various actual entities such as tickets, parking fees, transportation fees and online bills (Antovski & Gusev, 2003; Ding & Hampe, 2003; Viehland & Leong, 2007; Leng et al., 2018). According to the Mobile Payment Forum (2002), mobile payments are wireless monetary value transactions between two parties via a mobile device. Dahlberg et al. (2015) have defined mobile payments as the way for consumers to pay for goods, services or accounts employing a mobile device such as a mobile phone, smartphone or PDAs. Another definition of mobile payments states that mobile payments are any payment that is initiated, activated, and confirmed using a mobile device (Karnouskos, 2004; Zhu, 2010;



Chavda, 2018; Liu et al., 2020). Ghezzi et al. (2010) describe mobile payments as the process in which at least one phase of the transaction is carried out using a mobile device (such as mobile phone, smartphone, PDAs, or any wireless-enabled device) capable of securely processing a financial transaction over a mobile network, or via various wireless technologies (NFC, Bluetooth, RFID, etc.) (Teo et al., 2015; Liébana-Cabanillas et al., 2018; Singh & Somaiya, 2020; Lu & Wung, 2021). Thereby, mobile payment's central element is the authorization of the payment process by the ultimate customer using a mobile phone (Henkel, 2002; Qasim & Abu-Shanab, 2016; Hahn & Kodó, 2017; Park et al., 2019; Choi et al., 2020). The scope of mobile payments was later expanded to conducting payment, checking balances, and transferring money (Zhou, 2013; Koenig-Lewis et al., 2015; Yang et al., 2015). The process of using internet connectivity and mobile devices for processing payments when purchasing goods or services (Di Pietro et al., 2015). Liébana-Cabanillas et al. (2015) further explained mobile payments as the performance of payments for transactions between two parties in a convenient, fast, safe, and simple way, anytime and anywhere, using a mobile device. Their definition further highlights the advantages of mobile payments innovation. Luna (2017) pointed out mobile payments as the result of the constant progress of information, communication, and economic technologies and stem from certain problems associated with cash management. In both online and offline retail stores, mobile payments have become the preferred payment method (Kim & Yoo, 2020).

Considering the emerging trend and our study focus, this study gives a broad view of mobile payments. Mobile payments are an innovative payment method for purchasing goods and services using a mobile device. Customers can use mobile devices to pay for any services or goods in the digital and physical store without cash, checks, or credit cards (Zhou, 2013). In other words, mobile payments are the transfer or payment of funds typically to a person, merchant or business for bills, goods and services, using a mobile device to execute and confirm the payment. The payment tool can be a digital (virtual or e-) wallet, mobile browser, or SIM toolkit / mobile menu. Mobile payments include any transactions taking place through a mobile

device. This includes things like mobile money transfers and digital wallets. You can use mobile payment technology for peer-to-peer payments as well as to pay for goods and services. Red envelopes expand the usage scenario of mobile payments. So mobile payments are the de facto solution for hundreds of millions of users in China for everything from paying bills to riding buses, from sending virtual “red envelope” to buying money-market funds.

### **2.1.2 Types of Mobile Payments**

Bachfischer et al. (2004) point out that it is particularly important to distinguish between mobile payment systems, not only to facilitate the organization of knowledge but also to clarify the current state of mobile payments development. This can help better understand the success or failure of various mobile payment services. Numerous classifications are used currently for the analysis of payment systems. The main classification criteria in China are as follows (Figure 2.1):

According to the business operating model (components of the industry value chain) (Yan et al., 2015), there are four main business models for mobile payments in China: mobile operators (e.g., China Mobile, China Telecom, China Unicom), financial institutions (such as UnionPay, banks), third-party payment enterprises (such as Alipay and Tenpay) and mobile operators work with financial institutions (Zhang et al., 2011).

According to the amount of the transaction (Schwidorski-Grosche & Knospe, 2002), mainly two operation types are established based on the amount: micro-payments and macro-payments (Baddeley, 2004; Patel & Matte, n.d.). Micro-payments are usually transactions amounts under twenty-five euros, while macro-payments are those with a higher value (Ruiz, 2009).

According to the type of payment validation (Karnouskos, 2004), it refers to the validation that is usually performed by the financial entity when a transaction is made with a card or a mobile phone. Under this standard, there are two classifications (Brands, 1993; O’Mahony et al., 1997; Mu et al., 2001; Wang et al., 2008), offline payment and online payment.

According to the underlying technology type, payment as a process is broadly classified into two main types, remote payment and proximity payment (Ondrus, 2015).

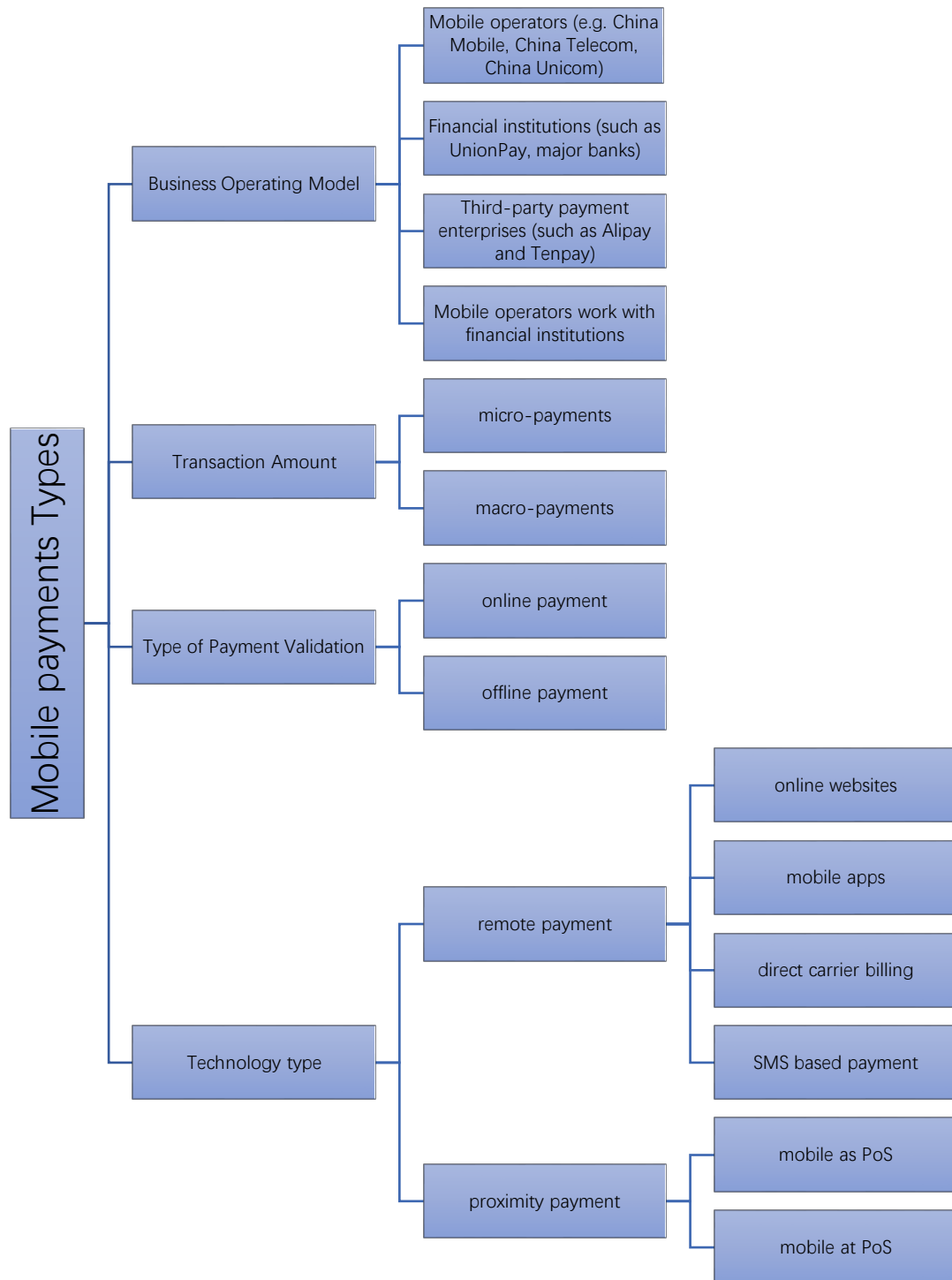


Figure 2.1. Classification of Current Mobile Payments

### **2.1.2.1 Remote Payments**

Remote payments mean that users must connect to remote payment servers to make a payment (Ahuja, 2016). It includes mobile banking and mobile internet payment services, and these payment transactions can be used to buy physical goods and services at any time and from anywhere in the world as long as the user is connected to the internet. The user does not come in direct contact with the merchant. Online shopping websites and apps provide such facilities. The customer logs into the merchant's website or installs an application through the users' mobile device; creates a shopping cart and proceeds for a payment. The payment transaction is processed by banks and payment gateways or virtual mobile wallets that integrate their services with merchant websites and apps. Remote payments enable consumers to pay for digital content (e.g., an ebook or iTunes song) or online purchases of goods or services using their short message service or mobile internet connection (De Kerviler et al., 2016).

### **2.1.2.2 Proximity Payments**

Proximity payments mean that users conduct payments via their mobile phones on the spot. It is often based on technologies such as radio frequency identification (RFID) and near field communication (NFC) (Ahuja, 2016). These payment transactions are performed in-person at physical stores. The mobile device interacts with the merchants EFTPoS terminal to complete a payment. Mobile devices can be used as a payment tool for automated transactions like vending machines, parking meters, ticketing counters, toll plaza etc. or payments at merchant's local stores. Such transactions can be unattended in automatic vending machines or kiosks and monitored remotely or attended by a local store employer.

The proximity payments procedure includes several elements:

- 1) Contactless Reader: the EFTPoS device, which interacts with digital and mobile devices.
- 2) Payment Gateway: a communication channel used to "link a contactless payment reader to

a transaction processor.”

3) Portable Device: a wireless portable device integrated with NFC equipment; in this case, it is a mobile phone fitted with a chipset that allows for secure information exchange between a contactless digital reader and a portable device.

4) Wireless Network: a necessary element for a mobile transaction.

5) E-Wallet App: “electronic wallet software, which allows a mobile phone manage a number of accounts and related transactions” (Kasavana, 2011).

When comparing proximity versus remote mobile payments, the differences are mainly in speed, convenience, and NFC payments using the current financial payment processing infrastructure. There is no need to create accounts with a third party to process payments. The proximity mobile payments data is directly linked to a payment card issued by a trusted financial institution to the consumer. Proximity payments are based on global financial standards such as EMV (Europay, MasterCard, and Visa), which provide a higher level of security. This technology allows mobile phones to act as electronic wallets, reducing the need to carry credit or debit cards (Kasavana, 2011). Proximity payments could be beneficial in case of minimal time or if experiencing difficulties or significant risk using plastic cards (Ding & Unnithan, 2005).

However, the Quick Response Code (QR code) is a technology that was first designed as a mobile advertising tool and has lately been expanded to include both remote and proximity mobile payments. QR code payment is a type of contactless payment method that involves scanning a QR code from a mobile app and making a payment (de Luna et al., 2019). China is the world’s leader in QR code based mobile payments use. The Chinese widely use QR code payments, mostly through the most popular third-party payment platforms: WeChat Pay and Alipay. Therefore, not only mobile payments can be classified into several categories, including content type, transaction value, payment method, and transaction channel (Ding & Hampe, 2003; Ondrus et al., 2005), but they can also be used in various ways to make

purchases (Pousttchi, 2004). With the range of mobile payments provided, consumers can carry out their payment activities more conveniently and with more flexibility (Ondrus & Pigneur, 2006). So, this study focuses on both remote and proximity mobile payments.

### **2.1.3 Prior Research on Mobile Payments Adoption**

Since the invention of mobile payment services, there have been many studies focused on the adoption of such a service from both users' and merchants' perspectives. Mobile payments are being offered by many service providers competing for a larger market share. Thus, understanding consumer behaviour, in the pre-adoption, adoption and post-adoption phase, toward these services is essential for them. What would induce users to use the mobile payment services of a provider for the first time, and what would motivate them to continue using the services, is also of interest to the research community. In this study, mobile payments refer to the completion of payments and transactions using a mobile device in a speedy, convenient and easy way at any time and anywhere (Liébana-Cabanillas et al., 2015). Many studies have investigated the factors driving mobile payments adoption behaviour based on different dependent variables such as consumer satisfaction, loyalty, and behavioural intentions (the intention to use the service) from a variety of perspectives (Wang & Li, 2012). The main goal of their study is to determine which factors most influenced the customers' intention to use mobile payments. Mobile payment is not only a technology but also a service. Service adoption research has been mainly focused on its drivers and inhibitors (Liébana-Cabanillas & Lara-Rubio, 2017). However, most studies focused on the adoption phase. Researchers have approached users' behavioural aspect based on technology acceptance models (TAM) (Venkatesh & Davis, 2000), the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2012), the theory of planned behavior (TPB) (Taylor & Todd, 1995) and the diffusion of innovation (DOI) theory (Rogers, 1995) focusing on traditional constructs such as ease of use, utility, and behavioural intention. Other factors, such as trust, security, and privacy concerns, were also considered to affect service adoption significantly. Mallat (2007) and Zhou

(2014) revealed that relative advantage, compatibility, complexity, and trust affect users' adoption of mobile payments substantially.

A literature review by Dahlberg et al. (2015) demonstrated that the most common models used for mobile payment systems' adoption are the technology acceptance model (TAM) (Venkatesh & Davis, 2000), the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2012), and the diffusion of innovation (DOI) theory (Rogers, 1995). In addition, the authors noted that few studies were utilizing other theories like the theory of task-technology fit (TTF) (Dishaw & Strong, 1999), the theory of reasoned action (TRA) (Hale et al., 2002) and the theory of planned behavior (TPB) (Taylor & Todd, 1995). The TAM has been used widely, with over 20 studies citing it as a theoretical basis for understanding mobile payments. The literature review indicates that many existing studies used the TAM, UTAUT, and DOI models and extended them with variables such as risk, trust, and security. Therefore, it is important to avoid over-reliance on these models, as this will limit the development of mobile payment models.

Alongside the literature review by Dahlberg et al. (2015), other relevant studies on mobile payment systems have introduced new models. For example, Oliveira et al. (2016) developed an integrated model based on the extended UTAUT (UTAUT2). The authors further modified the UTAUT2 by including perceived security as one of the most critical barriers for users and merchants facing mobile payments acceptance and growth, variables from the DOI and the intention to recommend mobile payment systems. The proposed model explained 71.8% variance in behavioural intentions and 61.3% variance in recommending the technology. Similarly, Slade et al. (2015) used the UTAUT2 as the theoretical model for understanding mobile payments adoption. The authors extended the UTAUT2 with perceived risk and perceived trust and found that their model explained a 58.4% variance in the behavioural intention to adopt mobile payment systems. Likewise, Morosan and DeFranco (2016) extended the UTAUT2 with privacy (i.e., general and system-related) and perceived security and showed that all factors except effort expectancy, perceived security, and general privacy were

significantly associated with the intention to adopt near-field communications (NFC) mobile payment systems in hotels. Other recent studies have, however, continued to build on legacy models such as the TAM (Liébana-Cabanillas et al., 2018; Williams, 2018), DOI (Johnson et al., 2018) and UTAUT (De Sena Abrahão et al., 2016). Koenig-Lewis et al. (2015) developed a model based on TAM and IDT and found that their model could explain 65% of the variance of users' propensity to adopt mobile payments. In addition, Pham and Ho (2015) developed a model combining product-related factors (e.g., perceived usefulness, perceived ease of use, compatibility, perceived risk and perceived cost) from the TAM and DOI with personal-related factors (e.g., absorption capacity and innovation in new technology) and others (e.g., risk, trust and attractiveness of alternative) were found to explain over 83% of the variation in mobile payment adoption. Furthermore, Su et al. (2018) showed that users' internet experience was a significant predictor of their mobile payment adoption behaviour and that the association was mediated by TAM variables (i.e. ease of use and perceived usefulness). Nonetheless, a number of studies have departed from conventional models to propose new ways to understand mobile payments adoption. Cocosila and Trabelsi (2016), for example, presented an integrated value-risk model for mobile payments adoption and found that their model explained 61.7% variance in behavioural intention. In a similar study, Gao and Waechter (2017) constructed and validated a mobile payment adoption model based upon users' initial trust in mobile payment services, showing that the model explains 52.3% of variance in consumer behavior. Also, De Kerviler et al. (2016) applied the perceived value theory to demonstrate how different types of values (i.e., utilitarian, emotional, and social) influence the adoption of in-store mobile payments. Furthermore, rather than using a model-based approach to investigate the adoption of mobile payment systems, Gichuki and Mulu-Mutuku (2018) demonstrated that the adoption of mobile payment technologies by women in Kenya was influenced by personal (e.g., education, owning a bank account) and social (e.g., having membership in a table banking group) factors.

There are different decision-making criteria for the use of a product or service at different stages (Kim & Oh, 2011). In the pre-adoption stage, users mainly understand mobile payment as a



new technology, so this stage can be explained in terms of technical characteristics. From the existing research literature on users' mobile payments adoption behaviour, scholars also focus on this stage, mainly on the technical characteristics of mobile payments and the psychological characteristics of users when they face the new technology. In the post-adoption stage, this study argues that users have real feelings and experiences after using it, and understand mobile payment mainly as a service and service innovation. Kim and Malhotra (2005) point out that the user's experience of using a product or service after adoption creates a new perception of the value of that product or service. Compared with initial adoption, post-adoption behaviour is more complex, and users' continued use behaviour is not simply an extension of initial adoption behaviour. The aim of this research is to develop a conceptual model that can predict the continuance usage of mobile payments and gain a deeper understanding of the factors that influence the continuance intention of mobile payments usage in China. Accordingly, this study suggests that customers' continued use of mobile payments may be explained by their perceptions of the value of the solutions they receive. Value-driven theory as one of the most basic theories available can be used to understand customers' choice and their decision making processes (Zhu et al., 2010).

#### **2.1.4 Prior Research on Mobile Payments Continuance Intention**

Continued use is critical to the success of mobile payment services (Zhou, 2013). To maximise the financial investment in mobile payment services, banks, mobile network operators and investors need to ensure that customers will continue to use their services after the initial experience (Susanto et al., 2016). There is limited empirical evidence of studies investigating the factors influencing consumers' continuance intention to use mobile payment services (Raman & Aashish, 2021; Handarkho et al., 2021; Handarkho, 2020; Itthiphone et al., 2020; Siwei Sun et al., 2020; Sreelakshmi & Prathap, 2020; Marinković et al., 2020; Putri et al., 2020; Chuang et al., 2020) (more details in Appendix I). The continuance intention is a behavioural intention that benefits the long-term viability and ultimate success of an information system

(Bhattacharjee, 2001). Reviewed the papers concerning mobile payments continuance published in mainstream informatics journals in recent years. The findings are presented in Table 2.2 (see details in Appendix I).

Table 2.2 Illustrative Prior Studies on Mobile Payments Continuance Behaviour

Author	Theories	Countries	Variables	Journal / Publisher
Zhou (2013)	IS success model Flow theory	China	Trust Flow Satisfaction Service quality System quality Information quality Continuance intention	Decision Support Systems
Zhou (2014a)	Trust theory	China	Performance expectancy Trust in mobile payment Trust in online payment Flow System quality Information quality Continuance usage	Industrial Management and Data Systems
Yuan et al. (2016)	Technology acceptance model (TAM) Task-technology fit model (TTF) Perceived risk Expectation–confirmation model (ECM)	China	Perceived task-technology fit Perceived usefulness Perceived ease of use Perceived risk Confirmation Satisfaction Continuance intention	Information Development
Lu et al. (2017)	Expectation–confirmation model (ECM) Cultural values	China	Usefulness Social influence Mobility Privacy protection Espoused masculinity/femininity Espoused individualism/collectivism Espoused uncertainty avoidance Espoused power distance Satisfaction Continuance intention	Behaviour and Information Technology

Author	Theories	Countries	Variables	Journal / Publisher
Chen and Li (2017)	IS success model IT continuance (ITC) theory	China	Postadoption perceived risk Pre-adoption perceived usefulness Trust Satisfaction Continuance intention	Journal of Computer Information Systems
Amoroso and Chen (2017)	Dual-factor model	China	Perceived value Perceived enjoyment Personal innovativeness Switching costs Habit Satisfaction Loyalty Continuance intention	Journal of Information Technology Management
Cao et al. (2018)	Trust transfer theory	China	Trust in online Payment Perceived similarity Perceived entitativity Trust in mobile payment Satisfaction Continuance intention	Internet Research
Kumar et al.(2018)	Technology acceptance model Expectation–confirmation model (ECM)	India	Perceived usefulness Perceived ease of use Perceived security Grievance redressal Trust Satisfaction Continuance intention	International Journal of Bank Marketing
Humbani and Wiese (2019)	Technology readiness index (TRI) The context of information technology (EECM-IT)	South Africa	Optimism Innovativeness Convenience Compatibility Discomfort Insecurity Cost Risk Adoption Usefulness Ease-of-use Satisfaction Continuance intention	International Journal of Bank Marketing

Author	Theories	Countries	Variables	Journal / Publisher
Poromatikul et al. (2019)	The European Customer Satisfaction Index (ECSI) model	Thailand	Image Confirmation Expectation confirmation Perceived risk Perceived quality Perceived value Satisfaction Trust Complaint handling Continuance intention	International Journal of Bank Marketing
Khayer and Bao (2019)	Context-awareness theory Technology continuance theory	China	Confirmation Perceived usefulness Perceived ease of use Satisfaction Attitude Context Ubiquity Continuance Intention	The Bottom Line
Shao et al. (2019)	Innovation diffusion theory	China	Mobility Customization Security Reputation Trust Perceived Risk Continuance intention	Electronic Commerce Research and Applications
Zhao and Bacao (2020)	Unified Theory of Acceptance and Use of Technology (UTAUT) Expectancy Confirmation Model (ECM)	China	Performance expectancy Effort expectancy Social Influence Trust Confirmation Satisfaction Long/short-term orientation Individualism/collectivism Masculinity/femininity Power distance Uncertainty avoidance	ACM International Conference Proceeding Series
Itthiphone et al. (2020)	IS success model Trust	Korea and Laos	System quality Information quality Service quality Trust Satisfaction Continuance intention	Journal of Internet Computing and Services

Author	Theories	Countries	Variables	Journal / Publisher
Alhassan et al. (2020)	Uses and Gratification (U&G) theory	Ghana	Cognitive Hedonic Integrative Ease of Use Convenience Usefulness Attitude Continuance use	Journal of Systems and Information Technology
Talwar et al. (2020)	Information systems success (ISS) model Transaction cost economics (TCE) theory IT continuance mode	India	Initial trust Perceived information quality Perceived service quality Perceived asset specificity Perceived uncertainty Confirmation Perceived usefulness Dissatisfaction	Journal of Retailing and Consumer Services
Handarkho (2020)	Social impact theory Trust transfer	Indonesia	Perceived Herd Para-social Interaction Trust Perceived Risk Continuance Usage	Asia Pacific Journal of Marketing and Logistics
Marinković et al. (2020)	Unified Theory of Acceptance and Use of Technology (UTAUT)	Serbia	Performance Expectancy Effort Expectancy Social Influence Customer satisfaction Continuance intentions Perceived compatibility Customer involvement Comparative value Epistemic value Trust	Technology Analysis and Strategic Management
Pal et al. (2020)	Resistance theory	India	Price benefit Network externalities Trust Habit Perceived risk Unavailability of facilitating conditions Operational constraints	Information Technology for Development

Author	Theories	Countries	Variables	Journal / Publisher
Sreelakshmi and Prathap (2020)	Health Belief Model (HBM) Expectation confirmation model (ECM)	India	Perceived Susceptibility Perceived severity Perceived self-efficacy Confirmation Perceived usefulness Satisfaction Continuance intention	International Journal of Pervasive Computing and Communications
Putri et al. (2020)	Technological Personal Environmental (TPE) model Technology Continuance Theory (TCT)	Indonesia	Additional Value Normative Social Influence Social Image Payment Culture Credibility Lifestyle Compatibility Facilitating Conditions Continuance Usage	Cogent Engineering
Duy Phuong et al. (2020)	Technology Acceptance Model (TAM)	Vietnam	Mobile Application Quality Familiarity Situational Normality Payment Security Feedback Mechanism Perceived ease of use Perceived usefulness trust in the e-wallet Customers' Satisfaction Continuance Intention	Journal of Asian Finance
Andrea and Suharto (2020)	Technology Acceptance Model (TAM)	Bandung	Perceived Benefit Perceived Risk Risk Tolerance Reputation Familiarity Trust Continuance Intention	International Journal of Economics, Business and Management Research
Andrea and Suharto (2020)	Unified Theory of Acceptance and Use of Technology (UTAUT) Expectation Confirmation Model (ECM)	India	Trust Satisfaction Perceived Security Performance Expectancy Effort Expectancy Confirmation Continuance Intention	Australasian Journal of Information Systems

Author	Theories	Countries	Variables	Journal / Publisher
Nan et al. (2020)	Technology Acceptance Model (TAM) Expectation-Confirmation Theory (ECT)	South Korea	Perceived usefulness Perceived ease of use Perceived security Perceived enjoyment Perceived ubiquity Satisfaction	Sustainability
Handarkho (2020)	Trust transfer theory	Indonesia	Perceived herd Parasocial Interaction Trust Perceived Risk Continuance Usage	Asia Pacific Journal of Marketing and Logistics
Handarkho et al. (2021)	Habit Theory Continuance Theory	Indonesia	Satisfaction Perceived usefulness Deal proneness Perceived compatibility Social ties habit	Journal of Asia Business Studies
Raman and Aashish (2021)	Trust Continuance Theory	India	Service Quality Perceived Trust Convenience Social Value Satisfaction Effort Expectancy Attitude Perceived Risk Continuance Intention	International Journal of Bank Marketing

Source: Developed by the author

Table 2.2 demonstrates that the background research on continuance usage in the mobile payments context in mainstream informatics journals is limited. The majority of the studies concentrated on exploring the associated motivators and underlying mechanisms of continuance using several theoretical lenses. There are a few studies on post-adoption behaviour toward mobile payment systems, and most of these studies are conducted in China (Zhao & Bacao, 2020; Shao et al., 2019; Khayer & Bao, 2019; Cao et al., 2018; Chen & Li, 2017; Lu et al., 2017; Yuan et al., 2016; Zhou, 2013) and India (Sreelakshmi & Prathap, 2020; Pal et al., 2020; Talwar et al., 2020; Kumar et al., 2018). Using the IS success model, based on 195 respondents in China, Zhou (2013; 2014a) investigated the factors of continuance intention to use mobile payments (DeLone & McLean, 2003) and flow theory. Based on Zhou's findings,

trust, the flow in mobile payments, and satisfaction affected continuance intention; service quality influenced trust and satisfaction; information quality and service quality affected flow (Zhou, 2013, 2014b). Yuan et al. (2016) used an integrated model that included the TAM, task-technology fit, and perceived risk with the ECM to study the continued use of mobile payments based on 434 users in China. Their findings indicate that satisfaction, perceived risk, perceived usefulness, and perceived task-technology fit are the primary drivers of continuation intention. Lu et al. (2017) using expectation-confirmation theory examined mobile payments' post-usage in 724 mobile payment users in China. Their studies found that post-usage mobility impacted satisfaction, whereas post-usage privacy protections and social influence impacted continuance usage. In addition, their research found that espoused cultural values acted as antecedents to social influence and post-usage mobility.

Chen and Li (2017), based on 38 interviewees (qualitative analysis) and 243 survey respondents (quantitative analysis), examined the continuous intention to use mobile payments, using the information technology (IT) continuance theory and the risk-trust and affect-cognition framework. According to the findings of the study, satisfaction and perceived usefulness played a significant role in the intention to continue using mobile payments. Based on 219 mobile payment users, Cao et al. (2018) investigated the continuous intention to use mobile payments in China from a trust transfer perspective. Their study reveals that trust in online payments positively effects on trust in mobile payments, and the trust in mobile payments positively influenced continuous intention through satisfaction. Kumar et al. (2018) applied the TAM and ECM as additional measures of perceived security, trust, and grievance redressal in the study of the continued intention to use mobile wallets of 265 mobile wallet users in India. The results indicated that the redress of grievances, trust, and satisfaction influence continuance intentions. Humbani and Wiese (2019) collected data from 426 users of mobile payment apps in South Africa. The model combining the constructs derived from the modified TRI and the EECM-IT explained 81 per cent of the variance in adoption and 78.5 per cent in the intention to continue to use mobile payment services. Khayer and Bao (2019) collected data from 336 Alipay users



from Wuhan, PR China. According to the results, confirmation and perceived usefulness significantly impact the intention to continue to use Alipay through satisfaction. Also, perceived usefulness, satisfaction, mobile payment context (e.g., location information and identity information), and ubiquity directly impact on the continuance intention of Alipay users through attitude. In 2019, Shao et al. obtained 740 valid questionnaires from Chinese Alipay and WeChat Pay users. Results indicate that four characteristics of mobile payment platforms (mobility, customisation, security, and reputation) are beneficial to enhancing customers' trust and continuance intention. According to Zhao and Bacao (2020a), a comprehensive model integrating UTAUT, ECM, and trust can explain Chinese users' continue to use mobile payments, even under moderate cultural influence. Itthiphone et al. (2020) designed their study to identify factors that affect mobile payments' continued use between users in Korea and Laos. The result implies that in order to facilitate users' continuance intention of mobile payment, service providers need to improve information quality and service quality to construct users' trust. Alhassan et al. (2020) adopted the U&G theory by relying on primary data collected from 361 individuals who use mobile payment services in Ghana. This study's findings have revealed that integrative, ease of use and usefulness gratifications significantly influence users' attitudes towards mobile payments. The results also indicate that hedonic, convenience and cognitive gratifications did not influence users' mobile payment attitudes. Talwar et al. (2020) explained the stimulators and inhibitors of initial trust by utilising the ISS model and TCE theory, with information quality being the chief driver. Handarkho (2020) examined factors from an individual's social experience that establish a trust to increase the intention to use proximity mobile payments continually. The number of friends and relatives who use the mobile payment option, and a deep connection of users with such friends and relatives influence trust, leading to mobile payment continual use. Meanwhile, like para-social interaction, the interaction built based on emotions. Para-social interaction is an emotional bond between an individual and an idolized or admired people such as influencers, respected person or celebrities (Sokolova and Kefi, 2020; Ward, 2016). Marinković et al. (2020), based on the UTAUT model, added comparative value. Comparative value is related to the fact that

consumers, when making decisions, often compare value propositions of the alternatives (Hansen et al., 2013). By calculating the perceived benefits and advantages compared with alternatives, positive influence onto the continuance intention of mobile commerce.

During the COVID-19 crisis, the World Health Organization (WHO) strongly advised wearing a mask in public, social distance, self-isolating, and other self-protective activities to avoid direct and indirect contact among people and reduce the chance of COVID-19 transmission (Wilder-Smith & Freedman, 2020; Tang et al., 2020). Despite the negative impact of COVID-19 on the global economy, it has affected residents' purchase habits and has pushed the transformation of firms from traditional in-store service to online-to-offline service in order to survive the pandemic and maintain sustainable development. As a result, factors driving users to continue using mobile payments under the COVID-19 pandemic situation are essential for relevant stakeholders (e.g., mobile payment services providers, financial institutions and merchants) to understand customers' requirements and expectations. Sreelakshmi and Prathap (2020) integrated HBM and ECM framework to explain the pre-adoption and post-adoption behaviour of consumers for mobile-based payment services during the COVID-19 pandemic. They present the adoption and continuance of mobile-based payment as a preventive health behaviour to contain the spread of the COVID-19 outbreak. The study recommends conducting awareness campaigns on health threats of COVID-19 disease to promote mobile payments in preventing disease spread by adopting preventive health behaviour. Putri et al. (2020) combine the technological personal environmental (TPE) model and technology continuance theory (TCT) to examine the post-usage of mobile payments based on 443 mobile payment users in Indonesia. Their findings show that the added value influence consumers' decision to use mobile payment in the form of gifts or rewards given by mobile payment service providers. It indicates that the perceived value is the primary influence of mobile payments (Liébaná-Cabanillas et al., 2020). Therefore, identifying the most beneficial factors to continuance usage of mobile payments is a topic of interest to research and practice.

Despite the growing interest among practitioners and researchers in mobile payment, there is a

lack of studies examining beneficial factors that influence mobile payment continuance behaviour. Although prior research focuses on mobile payments continuance (Pal et al., 2020; Chuang et al., 2020; Shao et al., 2019; Cao et al., 2018; Chen & Li, 2017; Zhou, 2013); based on the value perspective, there is little understanding of mobile payment continuation. Service is a key component of the essence of enterprise marketing, especially in today's online marketing environment, where mobile payment services innovation is becoming one of the cores affecting enterprise competitiveness. Service companies should build up the ability to create a value-oriented user experience. In the process of service provision, new technologies and concepts are used to improve and change the service process and service interaction, improve service quality and efficiency, create new value for users, and ultimately form the competitive advantage of service enterprises (Sundbo & Toivonen, 2011).

Despite the huge potential of the mobile payment service market, however, the reality is that mobile payment service providers still lack sufficient understanding of how users perceive the value of the services they provide, i.e., understanding how the value of their services is constructed and formed from the users' perspective (Putri et al., 2020; Lu & Wung, 2021; George & Sunny, 2021). Above all, there is room for further research on the salient factors that drive users to continue using mobile payments. For practitioners, retaining users' usage continuance is very important for mobile payment service companies. Understanding the relative importance of such factors will help guide the measures needed to promote mobile payments and motivate people to continue using them. Furthermore, continued usage of mobile payments can reduce operation costs and boost productivity. For researchers, mobile payment continuance usage based on value creation provides new insights on information service (IS) usage continuance intention. Perceived value presents different dimensions and connotations depending on the research context or the research object. Mobile payments as a means of service innovation bring new value to users, and its functions are continually being improved and innovated. The existing literature as presented in the current and the preceding sub-sections demonstrate that there is a lack of specific and in-depth analysis of the dimensions and

connotations of mobile payments value, and there is a lack of corresponding empirical studies (Putri et al., 2020; Lin et al., 2020; Shelvia et al., 2020; Lu & Wung, 2021; George & Sunny, 2021).

## **2.2 Research on Customer Value**

Customer value became a rising topic of interest for businesses in the 1990s, both academically and professionally (Landroquez et al., 2013). According to Holbrook (1999), customer value is labelled as “the fundamental basis for all marketing activity” and as an important predictor of customer behaviour (Potra et al., 2018). Customer value is one of the essential factors influencing a company’s long-term performance (Gale et al., 1994; Porter, 1996; Huber et al., 2001), and it is considered a significant source of competitive advantage (Mizik & Jacobson, 2003; Spiteri & Dion, 2004; Woodruff, 1997). Furthermore, customer value is now being recognized as an important strategy for attracting and retaining customers (Chen & Quester, 2006; Sánchez-Fernández & Iniesta-Bonillo, 2006; Wang et al., 2004) as well as an indicator of the intention to repurchase (Parasuraman & Grewal, 2000).

A variety of authors acknowledge the challenges in defining customer value (Woodruff, 1997; Sánchez-Fernández & Iniesta-Bonillo, 2006; Choo et al., 2012). This concept is complex because of its ambiguous interpretation (Khalifa, 2004) and the subjectivity of value (Kortge & Okonkwo, 1993; Patterson & Spreng, 1997). Customer value can be assessed at different times, such as during the purchase decision or following the experience of the service outcome (Woodruff, 1997). Sánchez-Fernández & Iniesta-Bonillo (2006), point out that a wide range of terms have been used to describe customer value, such as “consumption value” (Sin et al., 2001; Sweeney & Soutar, 2001), “perceived value” (Agarwal & Teas, 2001), “consumer value” (Holbrook, 1994), “received value” (Flint & Woodruff, 2001), “perceived customer value” (Gale et al., 1994), “shopping value” (Babin et al., 1994), “product value” (Bowman & Ambrosini, 2000) and “luxury customer value” (Vigneron & Johnson, 2004). In 2001, Payne et al. classified customer value into three categories, including “creating and delivering

customer value” (e.g., how companies can “add value”), “customer perceived value” (e.g., desired and received value at the time of purchase and use) and “value of the customer” (e.g., customer lifetime value). Additionally, Schwartz (1992) defined basic value as a list of trans-situational goals of varying importance, which provides guiding principles in anyone’s life. Schwartz (2012) posited that basic values are designed into a coherent system that underlies and explains people’s behaviour, attitudes, and decision making. This coherent structure emerges from the social and psychological conflict or congruity between values that people experience when they make everyday decisions (Schwartz et al., 2012). Khalifa (2004) classified the customer value definitions into three types: value components models (Kaufman, 2001), benefits/costs ratio models (Groth & Kinney, 1994) and means-ends models (Woodruff, 1997). Taken as a whole, these models are incomplete in themselves and, therefore, have limited utility. It is clear that each category emphasizes certain aspects of the concept and ignores others. Despite this, one should note that these categories of value definitions are not mutually exclusive. Conversely, they are highly related, resulting in an integrative configuration of the concept of customer value.

In order to examine the significance of customer value, two different levels have been explored (Woodruff, 1997). At the first level — customer value from a firm’s perspective — customer value is critical for the businesses. The aim is to determine whether a particular customer, or customer group, is attractive from a business perspective (Payne et al., 2001). Research in this area is strongly related to relationship marketing, aiming to establish and maintain profitable business relationships with specific customers (Graf & Maas, 2008). At the second level — customer value from a customer’s perspective — the value generated by a company’s product or service as perceived by the customer, or the achievement of customer goals and desires by the company’s products and services (Woodruff, 1997). There is a positive impact on behavioural outcomes, including purchase (and re-purchase) intentions (Chaudhuri & Holbrook, 2001; Sweeney & Soutar, 2001; Gallarza & Saura, 2006). Similarly, Smith and Colgate (2007). Graf and Maas (2008) categorised customer value into two groups: the value

of the customer (customer perceived value or customer accepted value) and the value of the company (customer value, could also be referred to as customer lifetime value). However, this study does not deal with the first level of customer value. This study argues that the essence of service is the co-creation of value perceived for consumers, and that consumers choose products or services based on value. When providing products or services to users, companies should start from a user-oriented perspective and take the user's perception of the value of the product or service as the deciding factor. The perceived benefits and losses as the core of the trade-offs also represent the mainstream perception of value in today's academic world, which fits well with the main characteristics of mobile payment as a service industry, so this paper understands service value from the user's perspective.

### 2.2.1 Defining the Customer Value

Although customer value has attracted equally considerable attention in academic research and the private sector in recent decades, little consensus exists regarding the definition and concept of customer value (Choo et al., 2012). Customer value is probably one of the most overused and misused concepts in social science, particularly in the marketing literature (Khalifa, 2004). The lack of agreement among scholars concerning the definition and customer value concept results in inconsistent and immensurable empirical measures (Boksberger & Melsen, 2011). Table 2.3 represents a summary of various definitions of customer value used in the existing literature.

Table 2.3 Definitions of Customer Value

Source(s)	Definition	Journal / Publisher
Zeithaml (1988)	Perceived value is a customer's overall assessment of the utility of a product based on perceptions of what is received and what is given.	Journal of Marketing

Source(s)	Definition	Journal / Publisher
Monroe (1990)	Buyers' perception of value represents a trade-off between the quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price.	Pricing: Making Profitable Decisions
Anderson and Weitz (1992)	Value in business markets is the perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product, taking into consideration the available suppliers' offering and prices.	Journal of Marketing Research
Gale et al. (1994)	Customer value is market perceived quality-adjusted for the relative price of your product.	Managing Customer Value: Creating quality and service that customers can see
Holbrook (1994)	Customer value is "a relativistic (comparative, personal, situational) preference characterizing a subject's consumer's experience of interacting with some object. i.e., any good, service, person, place, thing, event, or idea. "	Service Quality: New directions in theory and practice
Lassar et al. (1995)	Customer value as "the perceived brand utility relative to its costs, assessed by the consumer and based on simultaneous considerations of what is received and what is given up to receive it".	Journal of Consumer Marketing
Butz Jr and Goodstein (1996)	By customer value, we mean the emotional bond established between a customer and a product after the customer has used a salient product or service produced by that supplier and found the product to provide an added value.	Organizational Dynamics
Patterson and Spreng (1997)	Customer value as "a ration or trade-off of total benefits received to total sacrifices. "	International Journal of Service Industry Management

Source(s)	Definition	Journal / Publisher
Woodruff (1997)	Customer value is a customer's perceived preference for and evaluation of those product attributes attribute performance, any consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations.	Journal of the Academy of Marketing Science
Smith and Colgate (2007)	What customers get (benefits, quality, worth, utility) from purchasing and using a product versus what they pay (price, costs, sacrifices), resulting in an attitude toward or an emotional bond with the product.	Journal of Marketing Theory and Practice

Source: Developed by the author

In the definition of customer value, terminology such as utility, quality, advantage, and preference are used even though these terms are themselves not clearly defined (Spiteri & Dion, 2004). However, the alternative definitions have in common that customer value is considered as a theoretical construct that focuses on customer perspective(s) to design and deliver customer value through products or services (Huber et al., 2001; Spiteri & Dion, 2004). Some authors (i.e., Karjaluoto et al., 2019; Orth et al., 2004; Sweeney & Soutar, 2001) only focus on customer value benefits. Some authors (i.e., Lin et al., 2020; Pal et al., 2020; Zhou et al., 2009) adopt a cost-benefit view, which evaluates value based on “get forgive”. In other words, benefits are what customers value, and costs are what they lose (Netemeyer et al., 2004; Whittaker et al., 2007). Monroe (2005) referred to customer value as the ‘worth what paid for’ trade-off within a pricing theory context. In light of this, when a single purchase of a product is made, the customer expects to receive a benefit more significant than the cost: the customer wishes to receive value. This study, for example, employs the “worth what paid for” approach, as Brodie et al. (2009) demonstrate the effectiveness of this method in examining the relationship between customer value and loyalty. Many researchers (i.e., Lee & Choeh, 2021; Potra et al., 2018; Helkkula & Kelleher, 2010; Chen, 2015) have suggested ways to define value from the customer's value perspective. According to Payne et al. (2001), Woodruff



(1997) developed the most comprehensive definition of customer value (see Table 2.3). Woodruff (1997) developed a “customer value hierarchy model” based on the critical factors in this definition, linking desired product/service attributes and performances to desired consequences in use settings, eventually connecting to the customer’s goals and purchases. In common with this and other views of customer perceived value (Ravald & Grönroos, 1996) is the idea of a trade-off between perceived benefits and perceived sacrifice (or positive and negative consequences of a particular purchase). Perceived sacrifice entails acknowledging all costs (e.g., search cost, psychological cost, monetary cost etc.) a buyer incurs when she or he makes a purchase (Kim et al., 2017; Rasull et al., 2019; Molina-Castillo et al., 2020). The perceived benefits represent a number of elements that may include physical and psychological attributes about the product’s use, the purchase price, and other perceived quality indicators or perceptions (e.g., the social value of purchasing/using a particular brand).

Graf and Maas (2008) distinguished between perceived customer value and desired customer value based on a customer perspective. Perceived customer value is conceptualised as a trade-off between benefits and sacrifices, focusing on the products/services’ ultimate performance characteristics to fulfil the customers’ needs, wants and expectations (Gale et al., 1994; Patterson & Spreng, 1997). Desired customer value is conceptualised as a component of the customer’s value system. In order to achieve the desired customer value, organisations focus on abstract dimensions or consequences that are derived from specific performance characteristics (Woodruff, 1997). The hedonic value of a product is determined by a consumer’s multisensory capacity, such as taste and visual image (Lim & Ang, 2008). Hedonic value is more subjective and individual than their utilitarian counterparts and leads to increased enjoyment and amusement than task fulfilment (Babin et al., 1994). Chaudhuri and Holbrook (2001) investigate how hedonic value influences stimulus purchases. As a result, hedonic value connects the purchase of a product with the potential for enjoyment and emotional worth. Furthermore, Chaudhuri and Holbrook (2001) proposed a hedonic value definition in which consumers feel happy, pleased, and interested in a product. Therefore, consumers feel happy

or delighted by purchasing a luxury brand and using a luxury product, which leads to positive emotions. Similarly, Woodruff (1997) and Woodruff and Gardial (1996) developed a “value hierarchy” to introduce a judgement of desired value and received value based on the expectancy disconfirmation paradigm. In summary, customers judge satisfaction through a process of mental accounting by comparing the ex-post performance of a product with ex-ante expectations held about it. When performance meets or exceeds initial expectations, a mental state of positive disconfirmation develops, which has a positive effect on satisfaction. The expectancy disconfirmation paradigm can predict and explain consumers’ satisfaction with products or services (e.g., Spreng and Page Jr 2003; Patterson et al. 1997; Oliver 1980).

Based on the review of the relevant literature, Zeithaml (1988) identified four common features of value: (1) price; (2) the trade-off between costs and benefits; (3) the trade-off between perceived product quality and price; and (4) an overall assessment of subjective worth. As Woodruff (1997) identified, customer value refers to a customer’s preferences, evaluations of attributes, attribute performance, and consequences as perceived during the consumption process. As indicated, Woodruff’s definition emphasizes consumer preference or belief regarding the product being consumed, similar to Zeithaml’s (1988) fourth category. Some researchers (i.e., Butz Jr & Goodstein, 1996; Smith & Colgate, 2007) also defined customer value as what customers receive from the purchase and use of a product versus what they pay, resulting in an attitude toward, or an emotional bond with, the product. According to Zeithaml’s (1988) definition, this is identical to the third feature of customer value. Given the debate of customer value that there is no commonly accepted definition, framework or typology of customer value, which is an individual’s enduring feature in the consumption context that could be different from the actual delivered and perceived value (Choo et al., 2012). Thus, Customer value is a subjective construct comprised of various value components (Huber et al., 2001). To understand the value of mobile payment services, this research adopts Woodruff’s (1997) definition of customer value, and considers the customer value of mobile payments as customer preference for and belief in the attributes and attribute performance of the mobile payments.

However, according to Smith and Colgate's (2007) definition of customer value, there is also a significant role that an emotional link resulting from a positive perception and attitude towards an item plays in understanding the customer value.

### **2.2.2 Customer Value Framework in Mobile Services**

Mobile services provide value that cannot be delivered through other traditional channels. In this study, mobile services refer to the use of mobile devices (e.g., smartphones, tablets, laptops, EFTPOS etc.) by customers as a channel of communication, as enterprises intend to interact with customers and offer information or transaction services, including mobile news, mobile search, mobile video, mobile health care, mobile shopping, and mobile payments through such devices. As the cognition of service value continues to deepen and improve, scholars have begun to devote themselves to the study of service value dimensions and their composition. Liu et al. (2011) argue that the multi-role, cross-industry, integrated, dynamic, interactive, and demand uncertainty characteristics of mobile services make it difficult to measure their service value. The perceived value of services by customers varies according to individual, service type, and use situation. Multidimensional perceived value constructs are based on providing the heterogeneity of the perceived value of different services (Childers et al., 2001; Dubé et al., 2003; Sweeney & Soutar, 2001).

So, because present marketing literature may not fully describe how mobile services add significance beyond traditional commerce, new theoretical frameworks are needed to structure the different dimensions of perceived value (Watson et al., 2002). The value users derive from mobile payment services has positive and important implications for mobile payment companies and users (Pant, 2018; JungKun Park et al., 2019; Hesamzadeh, 2020; Yan & Mo, 2020). On the one hand, it is an important factor in evaluating the mobile payment services innovation process to underpin service quality. On the other hand, users' value of mobile payment services influences their continued usage behaviour (Marinković et al., 2020; Putri et al., 2020). Table 2.4 summarises the key literature regarding the customer value framework in

mobile services.

Table 2.4 Customer Value Framework in Mobile Services

Authors/Year	Type of Mobile Services	Dimensions	Journal / Publisher
Pura (2005)	Mobile Location-based Services	Monetary value Convenience value Social value Emotional value Conditional value Epistemic value	Managing Service Quality
Turel et al. (2007)	Mobile Short Messaging Services	Performance/quality value Emotional value Value-for-money Social value	Information and Management
Kim et al. (2007)	Mobile Internet	Usefulness Enjoyment Technicality Perceived fee	Decision Support Systems
Pihlström and Brush (2008)	Information and Entertainment Mobile Services	Monetary value Convenience value Social value Emotional value Epistemic value Conditional value	Psychology and Marketing
Kim and Han (2009)	Mobile Data Services	Utilitarian value Social values Hedonic value	Journal of Information Technology
Zhu et al. (2011)	Mobile Payment	Functional value Social value Perceived fee Perceived risk	Journal of Beijing Information Science and Technology University
Kim and Hwang (2012)	Mobile Internet	Utilitarian value Hedonic value	Information Systems Frontiers

Authors/Year	Type of Mobile Services	Dimensions	Journal / Publisher
Wang et al. (2013)	Mobile App	Conditional value Functional value Social value Emotional value Epistemic value	International Journal of Marketing Studies
Dai et al. (2015)	Mobile Technology-Mediated Services	Utilitarian value Hedonic value	Decision Support Systems
Karjaluoto et al. (2019)	Mobile Financial Services Apps	Utilitarian value Hedonic value	International Journal of Information Management
Prodanova et al. (2019)	Mobile Banking	hedonic value utilitarian value epistemic value	Marketing Intelligence and Planning
Huang et al. (2019)	Mobile Marketing	Emotional value Functional value Monetary value Guarantee value Social value Design value	Journal of Retailing and Consumer Services
Alhallaq et al. (2019)	Proximity Mobile Payment	Convenience value Monetary value Enjoyment value Social value Perceived trust in provider Perceived risk Existing alternatives Lack of knowledge	Association for Information Systems
Park et al. (2019)	Mobile Payment	Convenience Economic Information security Enjoyment benefit Experiential Social benefit	Journal of Retailing and Consumer Services

Authors/Year	Type of Mobile Services	Dimensions	Journal / Publisher
Yan and Mo (2020)	Mobile E-commerce	Functional value Emotional value	International Journal of Smart Business and Technology
Hesamzadeh (2020)	Mobile Bank Applications	Perceived usefulness Perceived ease to use Perceived enjoyment Perceived credibility	Journal of Mobile Computing, Communications & Mobile Networks

Source: Developed by the author

As can be seen from Table 2.4, the research on the value perception of mobile network services is still relatively limited compared to mobile payment services' rapid development. Instead of being incorporated in products, value is created, decided, and perceived through use. This has led experts to conclude that value is produced by a number of factors/dimensions that are viewed differently by various individuals. However, the number of academic journal publications in recent years still shows an increasing trend, showing that more scholars are concerned about this field. Pura (2005) studied the impact of the value perception dimensions of mobile location services on users' attitudes and behaviours and classified the value dimensions of mobile location services into monetary value, convenience value, social value, emotional value, conditional value, and cognitive value, and found that each value dimension has different degrees of influence, thus pointing out that a single value dimension measurement cannot be applied to the mobile context. Kim and Han (2009) propose a theoretical framework for driving the use of mobile data services from a value perspective and examine the role of three types of value evaluation criteria for the service: utilitarian value (functional dimension), hedonic value (enjoyment, pleasure, anxiety), and social value (desire for social outcomes) in users' adoption decisions. Pihlström and Brush (2008) argue that value perception plays an important role in consumers' decision making, but few studies have examined the impact of various dimensions of value perceptions on post-purchase behaviour. They examine the impact of differences in value perception on user intentions and behaviour between users of mobile

information services and mobile entertainment services, where the value dimensions that have a direct impact include: monetary value, convenience value, emotional value and social value, while conditional value and perceived value have an antecedent effect on these four value dimensions. Al-Debei and Al-Lozi (2014) argue that the value of mobile data services can be conveyed through users' usage and consider it as a multidimensional structure that includes utilitarian, hedonic, unique, cognitive, and economic values. And it was found that hedonic value, unique value and cognitive value are less important than utilitarian value and economic value in terms of mobile data service use.

In the study of mobile payment services, Zhu et al. (2011) used the four-dimensional value theory framework proposed by Sweeney and Soutar (2001), and summarised the value of mobile payment services into two positive value perceptions: functional value and social value (Karjaluoto et al., 2019; Yan & Mo, 2020), and two negative value perception dimensions: perceived risk and perceived cost. According to Park et al. (2019), the most important adoption drivers of mobile payment services are perceived economic and convenient benefit (utilitarian) and perceived enjoyment benefit (hedonic), as they significantly generate positive attitudes and contribute to adoption intention. Alhallaq et al. (2019) identify the determinants of the benefits side of value to include convenience, monetary, social and enjoyment (Sweeney & Soutar, 2001; Pura, 2005) in addition to perceived trust in provider (Kim & Hwang, 2012). Service value has different dimensions and connotations depending on the research context or the object of study. The mobile payment as a means of service innovation brings new value to users, and its functions are constantly being improved and innovated. The existing literature does not provide a concrete and in-depth analysis of the dimensions and connotations of mobile payment service value. So this study will clarify the dimensions and connotations of the value of the service in the current trend of mobile payments.

### **2.2.3 Risks of Mobile Payments**

The sacrifice of customers to obtain value from mobile payment service, mainly are perceived

financial and privacy risks. The perceived risk combines uncertainty with the severity of the potential consequences (Bauer, 1967). Therefore, such privacy and financial risks are related to the potential monetary and psychological losses resulting from the loss of control over personal information (Featherman & Pavlou, 2003; Hérault & Belvaux, 2014), transaction errors or fraudulent uses of banking information (Lee, 2009). Bauer (1967) begins the examination of perceived risk with two components: uncertainty (consumers' lack of knowledge regarding what might happen when they make a purchase) and the eventual negative consequences of the purchase. Subsequently, this same author noted that all consumer behaviour entails a risk since its effects cannot be predicted with certainty (Bauer, 1967). Also, Gefen et al. (2003) define perceived risk as to the result of a decision reflecting the variation of its eventual products. Gerrard et al. (2006) argue that the possibility that the use of an innovation could not be safe. Gupta and Kim (2010) define perceived risk as "a consumer's perception about the uncertainty and the adverse consequences of a transaction performed by a seller" (p.19). The existing literature on mobile payment systems emphasises the importance of analysing perceived risk (De Kerviler et al., 2016; Jungkun Park et al., 2019; Wong & Mo, 2019; Lara-Rubio et al., 2020; Singh et al., 2020). With mobile payments, consumers show retailers permission to use their personal information and access their bank accounts (Jeon et al., 2011; Hutchinson & Warren, 2003). Thus shoppers may be concerned about the potential risks associated with privacy, personal data, and the transaction (Bauer et al., 2005; Shin, 2009). Additionally, the perceived risk will have a significant impact on the users' trust towards the mobile payments (Chandra et al., 2010; Liu & Zhang, 2011), therefore decreasing the intention to use the new payment system (Chen, 2008; Yang et al., 2012).

Few researchers have examined perceived risk as a relevant antecedent in the post-adoption phase of mobile payment services, especially for continuance intention (Chen & Li, 2017; Pal et al., 2020; Raman & Aashish, 2021). Chen and Li (2017) reveal that the users were concerned about the risk associated with mobile payments in their continuance decisions, mainly focusing on the potential financial loss. Raman and Aashish (2021) reflect the users' perception



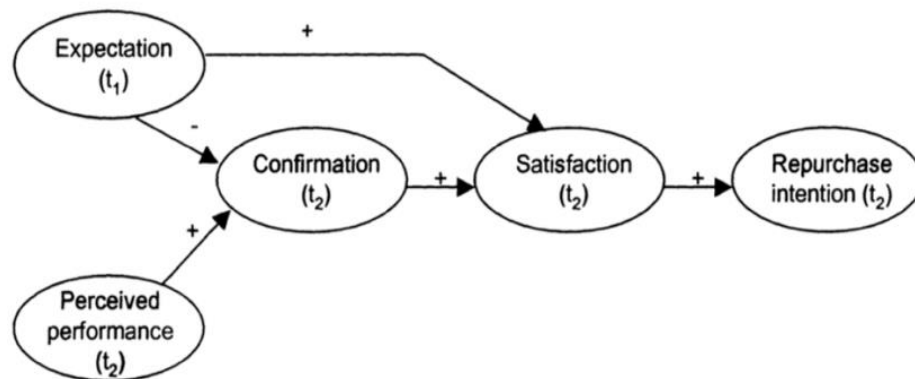
regarding the possible negative outcomes or ambiguity associated with using mobile payment services. Users believe that there is a considerable security issue when it comes to using mobile payments. In a study conducted by Shao et al. (2019), the same conclusions were drawn, it was deduced that security issues related to using a technology increase the risk perception among the users and lower the intention to continue using it. In the mobile payment services context, payment amounts, and situational characteristics may vary widely across different transactions. This study extends the scope of continuance usage to explicitly include both negative (perceived risk) and positive factors (perceived benefits) concurrently. The research may give practitioners an increased understanding of customers' risk perceptions which can then devise risk-reducing strategies and trust-building mechanisms to encourage the continued use of mobile payments.

## **2.3 Customer Value Theories**

### **2.3.1 Expectation Confirmation Model (ECM)**

The expectation confirmation theory (ECT) (as shown in Figure 2.2) was initially used to study customer satisfaction and post-purchase behaviour in the domain of consumer behaviour (Oliver, 1980). It differs from earlier research seeking to explain and predict adoption behaviour (Davis, 1989; Van der Heijden, 2004). ECT influences researchers' attention to the post-adoption stage. According to ECT, consumers form the initial expectations pertaining to the pre-consumption stage of services or products (Bhattacharjee, 2001). Once the purchase is made and users start to use the service or product, they will gradually develop perceptions of its performance. Following that, it is compared with their initial expectations to assess how closely their expectations have been met (confirmed). Based on their expectations and confirmation levels, consumers assess the extent of their satisfaction, which impacts the consumers' intention to repurchase. Bhattacharjee (2001) argues that users' decision to use a certain information system consistently is similar to their repurchasing decisions. Both types of decisions occur after initial decision-making, which is influenced by the initial user

experience. Those decisions may also generate completely different outcomes compared with users' initial determination. Hence, Bhattacharjee (2001) applies ECT, which was proposed for studying consumer behaviour in the research field of marketing, in the study of information system continuance in the research field of informatics.



Note: t<sub>1</sub> = pre-consumption variable; t<sub>2</sub> = post-consumption variable

Figure 2.2 Expectation-confirmation theory (ECT) (Oliver, 1980)

With the theoretical framework of ECT and a literature review of previous research about IS continuance, Bhattacharjee (2001) proposes a post-acceptance model (PAM), or the expectation confirmation model (ECM) (as shown in Figure 2.3). The ECM model focuses on the continuance usage of IS, enabling an understanding of user behaviours that the initial adoption theories cannot explain. Moreover, according to the ECM, users' initial expectations change after the actual usage, when the post-adoption expectation is formed based on the perceived usefulness. This complements the ECT (Hong et al., 2006). It is greatly influenced by the confirmation of values that considers the dynamic changes in users' perception in the post-consumption stage. According to this theory, pre-consumption expectations are usually formed by advertising or word-of-mouth, while post-consumption expectations are typically determined by customers' aggregate usage experiences (Lin et al., 2012). In terms of the application of the theory, expectation confirmation or met expectations have been used in a variety of domains, including information systems, organisational behaviour, psychology, marketing and work environment (Brown et al., 2014; Venkatesh & Goyal, 2010). More

specifically, EMC is commonly adopted in online contexts, including virtual communities, e-commerce services, online banking, and web-based learning programs (Bhattacharjee, 2001; Cheung et al., 2009; Lee, 2010). In the context of mobile phones, ECT has also been gradually used to understand the continued use of mobile internet services (Hong et al., 2006) and mobile data services (Kim & Oh, 2011).

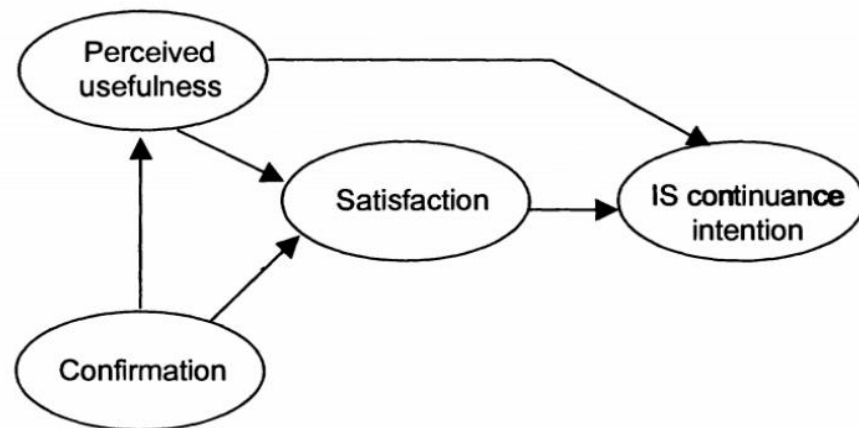


Figure 2.3 Expectation Confirmation Model (ECM) (Bhattacharjee, 2001)

In the model proposed by Bhattacharjee (2011), perceived usefulness is a key factor in determining continuance intention. Usefulness, the concept from TAM, is often used to explain the adoption intention of various technologies, such as mobile payments (Li et al., 2014; Kim et al., 2010; Li et al., 2019; Wang & Dai, 2020; Gautam et al., 2020). However, given that TAM has been developed to understand the initial adoption intention of technologies within organizational settings, it is essential to emphasize that those technologies are for work purposes, and the cost of mandatory adoption and usage is borne by the organization (Kim et al., 2007). As a result, I argue that TAM provides an inadequate explanation of consumers' intention because mobile payments users should be treated as both technology users and service consumers. In general, the primary difference between users and consumers is that customers are responsible for their own costs and risks. When making a decision, consumers estimate each choice's value by considering all relevant benefits and sacrifices (Kim et al., 2007; Zeithaml, 1988). Indeed, in order for this discussion to be meaningful, it is necessary to understand the value of the service to the consumer to identify issues related to satisfaction and

provide guidance to managers (Woodruff, 1997). In addition to perceived usefulness reflecting the benefits of perceived value, sacrifice aspects must equally be considered (Kim et al., 2007). Therefore, this study's key objective is to argue that perceived usefulness should be replaced with perceived value to reflect the essence of cost/benefit evaluation in the context of mobile payments. In light of this issue, the next section examines the value-based post-adoption model. The research model and hypotheses are developed accordingly based on the integration of ECT, VAM and habit theory research streams.

### **2.3.2 Value-based Adoption Model (VAM)**

Kim et al. (2007) proposed the VAM and used it to explain m-internet adoption. In general, the essence of VAM is to use perceived value to justify the usage behaviour of new technology, and perceived value is formed by the perceptions of the benefits and sacrifices needed to use IS. While the fundamental objective of technology users in businesses is usefulness and ease of use, the primary concern of rational consumers is value maximisation. Assuming value maximization in economics and marketing, Kim et al. (2007) demonstrate that VAM can be used to explain the adoption decisions of new information and communication technologies (ICT) in light of net value. In particular, adoption intention is determined by the evaluated value, a detailed comparison of benefits (e.g., usefulness and enjoyment) and sacrifices (e.g., technicality and perceived fee). Although VAM was designed to understand the initial adoption intention, this model can be used to understand post-adoption behaviour (Lin et al., 2012). Similar to initial adoption decisions, customers also consider value while making continuing decisions (Hellier et al., 2003; Kuo et al., 2009). This study uses VAM to understand user mobile payments continuance intention because of two reasons. First of all, mobile payments can be considered new technology and offer a number of advantages. Understanding relative advantage and its relationship with continuance intention are critical for services providers to develop and promote mobile payments. Second, based on the benefit/cost paradigm, users need to consider the perception of value at both the initial adoption and post-adoption stages.

Value plays an important role in decision making and it can be perceived as a comparison of weighted “get” attributes to “give” attributes (Patterson & Spreng, 1997), involving a tradeoff between perceived benefits received and perceived sacrifices (Buzzell et al., 1987; Monroe, 2003; Patterson & Spreng, 1997). Initial value-based studies mainly focused on quality-oriented benefits and monetary-based sacrifices (e.g., Chang & Wildt, 1994; Dodds et al., 1991; Grewal et al., 1998; Voss et al., 1998). The research that followed articulated these two factors in more complex ways in diverse contexts. For example, Lapierre (2000) established a scale, including 13 drivers to measure customer-perceived value in a business-to-business scenario. These 13 drivers comprised benefits (alternative solutions, product quality, product personalization, responsiveness, flexibility, reliability, technical competence, supplier’s image, trust and supplier solidarity (with customers) and sacrifices (price, time/effort/energy, conflict). In the marketing strategy-forming field, Ulaga & Chacour (2001) utilized benefits (including quality-related components, product-related components, service-related components and promotion-related components) and sacrifices (price-related) to measure customer value. In the study on the value of mobile payment services, Zhu et al. (2011) borrowed the four-dimensional value theory framework proposed by Sweeney & Soutar (2001) and summarised the value of mobile payment services into two positive value perceptions: functional value and social value (Karjaluoto et al., 2019; Yan & Mo, 2020), and two negative value perception dimensions: perceived risk and perceived cost. As shown by Park et al. (2019), the most important adoption drivers of mobile payment services are perceived economic and convenient benefit (utilitarian) and perceived enjoyment benefit (hedonic), as they significantly form positive attitudes and contribute to adoption intention. Alhallaq et al. (2019) derive the determinants of the benefits side of value to include convenience, monetary, social and enjoyment (Sweeney & Soutar, 2001; Pura, 2005) in addition to perceived trust in provider (Kim & Hwang, 2012). It is proposed that such a dimensional division is slightly general and sketchy and does not fully and objectively reflect mobile payments’ current service value. This study uses VAM to understand mobile user payments continuance intention, and VAM can be used to understand the continuance usage of mobile payments based on perceived value. To better understand the

value of mobile payment services, this study will use the critical incident technique (CIT) to conduct interviews and survey questionnaires with mobile payment services users.

### **2.3.3 Habit Theory**

An extensive review of the literature on the habit of IS was conducted by Limayem et al. (2007). They reviewed 43 studies on habit and proposed the following definition: “we define IS habit as the extent to which people perform behaviours (use IS) automatically as a result of learning” (p.705). A mobile phone, a common everyday appliance, is particularly susceptible to automatic behaviour (Aarts et al., 1998; Ouellette & Wood, 1998). De Guinea & Markus (2009) define a habit as learned behaviours that evolve into repeated action without conscious intention. In the IS field, the habit construct is an intellectual and then automatic-unconscious behaviour that impacts IS intention and usage. Studies on information systems have found a correlation between habit and continuance intention (Cheung & Limayem, 2005; Kim & Malhotra, 2005; Liao et al., 2006; Venkatesh et al., 2012; Lankton et al., 2010). Hu & Kettinger (2008) proposed the function of habit as a moderating effect between usage intention and the IS continuance. According to Turel et al. (2011), habit is positively influenced by prior usage and perceived enjoyment, while it suggests involvement and addiction to online auctions. Kim et al. (2014) revealed significant connections between habit, perceived switching costs, and intention to continue. According to Hsu et al. (2015), habit moderated the relationships between purchase intention and perceived value, trust, and satisfaction.

Habit can have both a direct and an interactive effect on behaviour. While some studies have used habit as a predictor of intention (Barnes, 2011; Hong et al., 2006; Venkatesh et al., 2012), others have considered it to be a moderator of intention and actual behaviour (Guo & Barnes, 2011; Kim & Malhotra, 2005; Limayem et al., 2007). Additionally, further research has confirmed that habits have relatively little conceptual overlap with intentions, providing the potential for explanatory power regarding continued IT usage (Limayem et al., 2007; Lee & Chen, 2014; Lee et al., 2019). Previous research shows that automaticity of behaviour decreases

the requirement to access intention (Aarts et al., 1998), this study adopts habit and another important factor (i.e., perceived value) as the antecedents of continuance intention instead of intention. From this research may discover that once the habit is established, the perceived value becomes less important (Amoroso & Lim, 2017), as long as they feel good about the repeat behaviour. In the current paper, consent to the argument and test habit effects on continuance intention as mediators between perceived value variables and continuance intention.

This study tests a theoretical model that integrates the VAM and ECM to explore and explain the consumer behaviour scope further in mobile payments. First, among the theories discussed above of continuance, ECM emphasises continuance intention and has been widely used to study post-adoption behaviour (Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2020b; Kumar et al., 2018; Lu et al., 2017; Yuan et al., 2016). Second, ECT had been extended by incorporating vital factors such as habit (Limayem et al., 2007) and perceived playfulness (Lin et al., 2005). Moreover, discovering the established and emergent antecedent factors affecting continuous intention to use mobile payment services has the potential to create new marketing strategies for businesses and will also be of great theoretical significance. Thus, as previously discussed, this study empirically verifies the factors affecting continuous intention to use mobile payment services by applying a theoretical model that integrates the VAM and ECM concepts together. Based on the findings, this study provides important data to assist in the development of marketing strategies for businesses and companies by analysing customer behaviour and providing practical recommendations.

#### **2.4 Gaps in Existing Literature**

The literature review confirms that there are a limited number of academic publications on paying for mobile payments. The literature review reveals three research gaps related to the topic of mobile payments' continuous intention. First, although prior research focuses on mobile payments continuance (Pal et al., 2020; Chuang et al., 2020; Shao et al., 2019; Cao et

al., 2018; Chen & Li, 2017; Zhou, 2013), there is a lack of studies examining mobile payment continuance's beneficial factors. There is little work on understanding mobile payment services continuance based on the value perspective (Raman & Aashish, 2021; Shelvia et al., 2020). Perceived value has received much attention from marketers and researchers because of its critical role in predicting purchase behaviour and achieving sustainable competitive advantage. Liébana-Cabanillas et al. (2020) argue that perceived value is the primary influence of mobile payments. However, studies have been conducted on the effects of various value perception dimensions on post-adoption behaviour. There is room for further research on the factors that drive users to continue using mobile payments, especially those that offer them a wide range of benefits. For practitioners, understanding the relative importance of such factors will help guide decision-makers on measures needed to promote mobile payments and motivate people to continue using them. Further, continued usage of mobile payments can save operation costs and improve work efficiency. For researchers, mobile payments continuance usage based on value creation provides new insights on IS continuance intention.

Second, understanding the perceived value is an important issue for service providers to survive in the marketplace. Perceived value presents different dimensions and connotations depending on the research context or the research object. However, mobile payments exhibit different characteristics from other services. Mobile payments as a means of service process innovation bring new value to users, and its functions are continually being improved and innovated. The existing literature does not provide a specific and in-depth analysis of the dimensions and connotations of mobile payments value, and there is a lack of corresponding empirical studies (JungKun Park et al., 2019; Raman & Aashish, 2021; Shelvia et al., 2020).

Third, some researchers (e.g., Lin et al., 2018; Yen & Wu, 2016) found habit is one of the important factors that affect the continued use of mobile payments. These results are in line with that of Hsiao et al.'s (2016) conclusion that habit has played a critical role in the use of mobile payments. Some researchers (e.g., Handarkho et al., 2021; Lin et al., 2018) further pointed out that the stronger users' habit is, the less consideration of options other than existing



mobile payments. Although, Lin et al.(2018) argue that perceived value affects users' habit of using mobile payment services if such services satisfy perceived value in mobile payments. Understanding how various perceived value affect habit still needs in-depth analysis. This is meaningful to help reveal the development process of habit.

## **2.5 Research Objectives and Research Questions**

Based on the research gaps already addressed in the previous part of this introduction, the aim is to explore the determinants of continuance intention to use mobile payments in China by examining the perceived value. It also intends to develop and empirically test a relevant theoretical framework in order to fill the knowledge gap in the literature for understanding the dimensions of value in mobile payments. The following objectives were set to address the stated research aims:

- To identify the dimensions and connotations of the perceived value of mobile payments.
- Based on a literature review, to develop a conceptual model that investigates the impact of factors relating to continuance intention of mobile payments in China.
- To empirically examine the influence of the factors on mobile payments continuance use in the China consumer market and validate the results.
- To investigate the mediation of habit in the relationship between perceived value and continuance intention.
- To make recommendations based on the results from objectives 2, 3 and 4, both from a consumers' and business decision-makers' perspective, that will enhance revenue for mobile payment services providers.

To achieve the above objectives, the following questions are posed:

- 1) What are the dimensions of consumers' perceived value in the context of mobile payments?
- 2) What are the key factors influencing users' intention to continually use mobile payments in China?
- 3) How will users habitually use the mobile payments which they are using now?
- 4) What can be recommended for improved and enhanced usage of mobile payments to keep existing users loyal?

## **2.6 Conclusion**

This chapter explains the research background, definitions of mobile payments as well as provides the definitions and comparisons among the types of mobile payments in the present research. Moreover, the strengths and weaknesses of each type have been illustrated, as well as justifying the selection of mobile payments for this research.

This chapter explores the literature on the technology adoption and continuance intention in the mobile services context in general, with special emphasis on mobile payments. Hence, the chapter reviewed and presented findings of the current scholarly work related to factors influencing mobile payments' adoption and post-adoption. It has provided adequate details and analysed numerous mobile payments in the business context; the benefits, challenges including previous work and related theories. By reviewing the main theories used to model consumer behaviour, this chapter has highlighted the factors that previous studies investigated along with the strengths and weaknesses of such theories in relation to their suitability for mobile payments post-adoption research. Additionally, the literature review presented an academic argument in designing a conceptual model necessary to evaluate mobile payments continuance usage factors. This chapter also explained theoretical perspectives underpinning perceived value research on mobile payments context and described mobile services' perceived value and highlighted different dimensions and connotations of perceived value.

Furthermore, the chapter analysed habit as a vital factor in mobile payments' continuance intention. This study deepens understanding of how various perceived value dimensions affect habit, which is meaningful to help reveal habit development. Finally, this chapter has explained why the affordance technique was used to develop the theoretical model that underpins this research. The literature review discussed in this chapter has formed the foundation for developing the theoretical framework in the next chapter. The following chapter discusses the research design followed in conducting the present study.

## **Chapter 3 Research Hypotheses and Theoretical Framework**

### **3.0 Introduction**

This chapter presents the arguments for research hypotheses development and the subsequent theoretical framework. A conceptual theoretical framework, by definition, is a group of theories and models from extant literature underpinning a positivist investigation (Abel, 2008). It is a concept of how the investigator makes logical sense of associations between elements recognised as a problem to be explored and explained. It helps the researcher hypothesise testable relationships that can enhance the knowledge of the determinants of the studied problem (Bougie & Sekaran, 2019). The analysis of widely used theoretical models, discussed in the previous chapter, provides the researcher with several feasible constructs to develop a theoretical model, which has been confirmed to be effective in predicting either user behavioural intention or continuous intention. For example, Yuan et al. (2016) used an integrated model that included the technology acceptance model (TAM), task–technology fit (TTF), and perceived risk with the expectation-confirmation model (ECM) to investigate the continuance intention to use mobile payments in China. Lu et al. (2017) used expectation-confirmation theory to investigate the post-usage of mobile payments in China. Kumar et al. (2018) used the technology acceptance model (TAM) and the expectation-confirmation model (ECM), as well as the added constructs of perceived security and trust, to investigate continued intention to use M-wallets in India. Zhao and Bacao (2020a) present a complete model that integrates the unified theory of acceptance and use of technology (UTAUT) and the expectation-confirmation model (ECM) with trust to explain Chinese users' continued intention to use mobile payments under the influence of culture. A number of the theories discussed in the previous chapter (section 2.1.3) have been instrumental in the research related to mobile payments and technology adoption in general, by highlighting the influence of various factors on behavioral intentions. Although, applications of such theories in a consumer

context have been criticized for overlooking the roles of value and its determinants as significant factors influencing consumer behavior (Turel et al., 2007; Ström et al., 2014; De Kerviler et al., 2016). For the purpose of examining consumer behaviour towards technology, value maximisation has been considered to be the most fundamental assumption (Kim et al., 2007). Mobile payments are not only technology but also as the consumer services. In response, this study employs the perceived value theory, which has roots in marketing literature, as a suitable theoretical lens that fits the aim of the study. Even though previous studies of mobile payments adoption have provided some useful information about consumers' perceptions of the value of mobile payments (e.g., Cocosila and Trabelsi, 2016; De Kerviler et al., 2016), however, such studies have been strictly quantitative. So extant models fail to fully meet the current study's research objectives which lack of deep understanding of mobile payment services perceived value and habit influencing the continuance usage of mobile payment services. Therefore, the current research establishes a conceptual framework of the crucial elements based on the perceived value theory that affects continuous consumer usage of mobile payments in China.

### **3.1 Hypotheses Development**

This section provides scientific arguments about the key factors of the conceptual model. Additionally, detailed explanations are given about the relations among the constructs to develop a conceptual model of the continuous use of mobile payments in China by considering the effects of the selected factors on the usage of mobile payment options. Based on existing theoretical models within the technology acceptance area of research, such factors have been hypothesised.

Research on “technology adoption” has successfully employed the perceived value theory to explain the adoption of various technologies. Using this value-based approach, the basic assumption is that value maximisation is the common determinant of the eventual consumer behaviour (Kim et al., 2007; Chau et al., 2019). A limited number of recent contributions have

started to utilise the perceived value theory to understand consumers' continuance usage of mobile payments. For example, Cocosila and Trabelsi (2016) have examined the adoption of proximity mobile payments based on an integrated value-risk model, where determinants of value included utilitarian, enjoyment and social values as benefits while the sacrifices side incorporated multiple factors. As well, De Kerviler et al. (2016) studied in-store mobile payments adoption and information search. However, they classified utilitarian benefits into economic benefits and convenience, hedonic benefits into experiential benefits and enjoyment along with the social benefits, as well as privacy and financial risks as sacrifices. Both studies have empirically supported the importance of the positive effects of utilitarian, hedonic, and social benefits, as well as the negative effects of perceptions of risk on eventual behavior. Sreelakshmi and Prathap (2020) integrated HBM and ECM framework to explain the pre-adoption and post-adoption behaviour of consumers for mobile-based payment services during the COVID-19 context. They presented the adoption and continuance of mobile-based payment as a preventive health behaviour to contain the spread of COVID-19 outbreak. The study recommends conducting awareness campaigns on health threats of COVID-19 disease to promote mobile payments in preventing disease spread by adopting preventive health behaviour.

As mentioned earlier chapter (session 2.1.4), highlighted established theories that are developed to understand mobile payments continuance use. It can be noted that the theories, e.g., TAM, UTAUT and the ECM discussed in chapter 2 share some similarities. For example, all the theories discussed in this chapter acknowledge that the individual's beliefs are linked to the individual's behavioural intention. However, some of the discussed theories propose that the individual's beliefs directly influence the individual's behavioural intention such as the TAM without the mediating effect of attitude, the UTAUT. Yet, some theories contend that belief directly affects behavior, such as the TAM, regardless of attitude, the UTAUT. However, the TAM diverts researchers' attention from important issues concerning the adoption and acceptance of new technologies. Furthermore, the TAM has offered a limited exploration of

the consequences that are linked with the adoption of new technologies and acceptance. Based on the UTAUT model, 41 independent variables are created to predict behavioural intention, and eight independent variables to predict behavior (Bagozzi, 2007). There are, however, important direct effects that Venkatesh et al. (2003) did not test, and important predictors that were left out. However, the ECM acknowledges the role of affect by emphasising that satisfaction (e.g., an affect) mediates an individual perception of the technological innovation to behavioural intention, while an individual perception may influence the behavioural intention directly even if the individual was not satisfied with using the technological innovation.

Furthermore, interrelationships between determinants of value were not validated by both studies of Cocosila & Trabelsi (2016) and De Kerviler et al. (2016). Following the same line of research, this study employs the value-based adoption model (VAM), expectation confirmation model (ECM) and habit theory to understand the continuance usage of mobile payments. In doing so, this study builds on previous research and derive the determinants of the benefits side of value to include utilitarian, hedonic and social value (Sweeney & Soutar, 2001; Pura, 2005; Turel et al., 2011; Alhallaq et al., 2019; Prodanova et al., 2019; Huang et al., 2019), in addition to health value (Tudoran et al., 2009; Sreelakshmi & Prathap, 2020). Furthermore, Hsiao et al. (2016) pointed out in the mobile services study that the user's value perception affects the degree of habit. In other words, the higher the total value of such service that the users consider, the more their habit increases. Therefore, this study postulates that when perceiving that the mobile payment service presents a value perception, users will develop a using habit, which affects their continued usage of the services. The following subsections draw on previous studies to define and support the inclusion of these determinants within mobile payments.

### **3.2 Customer Value Perspectives**

Customer value has been recognised as an important predictor of customer purchase decisions

in the marketing and eCommerce literature (Kim et al., 2007; Wang et al., 2013). It is derived from an individual's experience and interaction with a product or service (Turel et al., 2011). Understanding the value of a product or service from the perspective of users has long been recognised as a successful customer strategy, and is often linked to overall business performance (Desarbo et al., 2001; Wiedmann et al., 2009; Kim & Han, 2009; Carolina et al., 2020).

### **3.2.1 Perceived Utilitarian Value**

Utilitarian value refers to the extent of effectiveness, and efficiency consumers perceive when using mobile services (De Kerviler et al., 2016; Prodanova et al., 2019), including economic benefits denoting perceptions of good value for money (Sheth et al., 1991; Huang et al., 2019; Alhallaq et al., 2019; Turel et al., 2007; JungKun Park et al., 2019). Utilitarian value can also be described as the effective achievement of a utilitarian goal which is often suitable for customers classified as problem-solvers (Pura, 2005). Utilitarian value reflects the acquisition of a product or service efficiently and can be viewed as reflecting a more task-oriented, cognitive, and non-emotional outcome of adoption (Babin et al., 1994; Holbrook & Hirschman, 1982). The objective of a utilitarian information system is to increase the user's task performance while encouraging efficiency. Therefore, utilitarian designs provide instrumental and productivity-oriented value to users. For example, to overcome the time and place constraints, mobile payments services can be seen as the most significant benefits (Carlsson et al., 2005; Kim et al., 2014). Furthermore, the results of many studies indicated that utilitarian value has a positive and significant influence on the continuance usage of mobile payments (Anckar & Walden, 2003; Van der Heijden, 2004; Carlsson et al., 2005).

The development of habits is influenced by how often a behavior is repeatedly conducted (Wu et al., 2016). However, there is a need for consumer motivation through activities that meet expectations to ensure this repetition. Kim et al. (2012) argued that a user is driven to perform a particular act continuously if a value or benefit is perceived from such behavior. In the context



of IS usage, user-perceived value is derived from the quantity of benefit and cost retrieved from using a particular system (Jun et al., 2018). However, the value of a construct is measured by the difference between the advantages and disadvantages offered by the system, and the scope can be in the form of utilitarian, monetary and even social (Karjaluoto et al., 2012). Specifically, the development of habit increases when consumer perception toward value received from IS usage is high (Lin et al., 2018). Mobile payments have the ability to enhance tasks related to payments by providing convenience, simplicity and security during the process (Kim et al., 2019; Humbani & Wiese, 2019). Handarkho et al. (2021) enhanced the perceived value as a factor that leads to mobile payments habit formation.

From a utilitarian perspective, it also represents the value and benefits obtained by users (Jun et al., 2018; Yang et al., 2016). Mainly based on a utilitarian view, the traditional model of user continuance usage of mobile services include convenience (Alhassan et al., 2020; Shelvia et al., 2020; Singh et al., 2020; Marinković et al., 2020) and financial value (Singh et al., 2020; Zhao & Bacao, 2020b; Alhallaq et al., 2019) as key variables influencing behavioural intention to continues use. So, this thesis investigating the two variables (convenience and financial value) of perceived utilitarian value as indicated.

### **3.2.1.1 Convenience**

Convenience is described as consistency between the advancement in consumers' experience, values, and needs related to the usage of mobile payment services (Shelvia et al., 2020). Mobile payment services, unlike traditional payment services, are required to provide customized payment services to meet users' needs whilst ensuring that users can make payment at their own convenience from anywhere on their mobile devices by simply authenticating users through either passwords or biometric authentication (Liébana-Cabanillas et al., 2018; Liébana-Cabanillas & Lara-Rubio, 2017; Zhou, 2014b; De Kerviler et al., 2016; Ahn & Lee, 2019; Shelvia et al., 2020; Lin et al., 2018; Raman & Aashish, 2021). As long as a customer has access to a smart mobile device, the customer should have user-friendly access to the system

to pay for her/his purchases. Bezovski (2016) argues that an important aspect of convenience for users to adopt the mobile payment method is the system's flexibility to be easily integrated into consumers' daily lives. According to Phonthanakitithaworn et al. (2016), convenience when making mobile payments is one reason that states the perceived convenience of using mobile payment; also mobile devices are effective in enabling secure and convenient payment transactions (Herzberg, 2003). Dewan and Chen (2005), Kreyer et al. (2003), Mallat (2007), Pousttchi and Zenker (2003), Duy Phuong et al. (2020), Yang et al. (2021), Hesamzadeh (2020) and Alhassan et al. (2020) also state that ease of payment is a factor in consumer acceptance and use of mobile payments; so convenience is the advantage of the consumer's assessment of products or services that may affect the overall perceived benefits of a mobile payment service, thereby affecting the intention to continue (Lin et al., 2018). However, in contrast to the research by Hossain et al. (2019), convenience has no effect in determining consumer intentions using mobile payments. Given the conflicting findings, it is important to examine this relationship in this study.

Customers in the information era mostly lack time, and coupled with the consumer payments change; convenience is also one of the pursuits of current consumers. According to Heiens and Pleshko (1996) study, consumers will have the repeating purchase behaviour due to the factor of convenience. Berry et al. (2002) also imply that the fulfillment of consumers' demand for convenience associated with service acquisition processes, including time- and effort-saving transaction processes is highly related to the development of the consumers' habit regarding the use of the service. The study of Wang et al. (2006) also indicated that consumers would have the habit due to the limitation of the convenience factor. In addition, Mahon et al. (2006) pointed out that for products with more convenience, the consumers will more easily gain a habit, and be more continuance intention with the product. Yu et al. (2014) used habit as a mediator to analyse the relationship between satisfaction, convenience and continued use behaviour, and empirically examined the significant mediating effect of habit on the relationship between convenience and continued usage. Therefore, when consumers have a

stronger convenience feeling, the consumer's habit will be gradually formed, and customer continuance intention will be enhanced.

### **3.2.1.2 Financial Value**

Another utilitarian factor considered to have an impact on the usage level of mobile payments is the financial value (Karjaluoto et al., 2012; Carlos Fandos Roig et al., 2006; Karjaluoto et al., 2019; Alhassan et al., 2020). Mobile payment service providers usually offer bonus points, rebates, and other incentives. Some may even use freemium strategies, offering further bonus points for promotion (e.g., China's DiDi linking rides with mobile payment services) (Zhang et al., 2017). The term "freemium" is a portmanteau made up of two words: "free" and "premium", and it refers to a mobile app that is free to download and use but offers in-app purchases or a paid premium edition with additional features. Consumers can gain access to records and benefits through mobile payments. Consumers may also be able to take advantage of various discounts while transacting in other areas. This effectively encourages customers to use mobile payment to get discounts, giving the perception that mobile payment provides discounts. Consumers can gain access to records and benefits through mobile payments. For example, China's Alipay uses a number of discount-offers to attract and retain consumers (e.g., no service charges, offering bonus points) and offers bonuses for purchases made with certain credit cards (CGAP, 2019). Concerning mobile payments, the monetary value obtained by a user can be in the form of financial rewards such as a promotional discount, cashback, redeemable points and other prizes (Jun et al., 2018; Alhallaq et al., 2019; Park et al., 2019; Zhao & Bacao, 2020a). This is believed to increase customers' perceived value from mobile payments usage and encourage the development of repetitive usage leading to habit formation (Handarkho et al., 2021). Therefore, utilitarian value is also suggested to be a factor influencing habit formation. For clarity, utilitarian value refers to the extent to which a user conducts a specific behaviour owing to perceived monetary rewards (Lichtenstein & Menu, 1995). Handarkho et al. (2021) argued that utilitarian benefits could significantly affect the habit of

using mobile payments. These arguments are also supported by Lin et al. (2018) who argue that there is a positive correlation of utilitarian value toward continuance usage of mobile payment services. Hence, these arguments lead to the following hypothesis:

H1a: Perceived utilitarian value (convenience and financial value) will have a positive effect on the habit.

H1b: Perceived utilitarian value (convenience and financial value) will have a positive effect on the continuance usage of mobile payments.

H1c: The effect of perceived utilitarian value (convenience and financial value) on continuance usage of mobile payments is sequentially mediated by habit.

### **3.2.2 Perceived Hedonic Value**

Hedonic value, such as enjoyment, has been applied in technology acceptance studies to express the fun and joy of using mobile services (Venkatesh et al., 2012; Brown et al., 2014; Moorthy et al., 2019; Zheng et al., 2019; Lin et al., 2020). Hedonic value considers one of the most crucial elements of human being-feelings. Maslow's hierarchy of needs is the best explanation for the demand for awareness concerning hedonic value (Hopper, 2020). The economic and functional benefits in consumer value can be considered as the provision of basic needs. However, proceeding to the top of Maslow's needs is what significantly satisfy human beings. The hedonic value resides at the level of belongingness and love needs (Hopper, 2020). Therefore, neglecting the consumer's feelings can severely damage the satisfaction rate and continued usage (Khalifa, 2004; Wiedmann et al., 2009).

Earlier findings indicated that the hedonic value positively influences the new service perceived value and customers' loyalty (Llach et al., 2013). In line with this, Davis (2010) stated that consumers use mobile commerce services to hedonically experience "fun" (Prodanova et al., 2019). Accordingly, it was established that the hedonic features of mobile services provide pleasant usage experiences to customers (Jamshidi et al., 2018). Precisely, the entertainment-

related characteristics (e.g., exciting, delightful, thrilling, enjoyable) and the fun perceived in the service usage, as elements of hedonic value, are highly valued by the users of mobile payments services (Karjaluoto et al., 2019; Huang et al., 2019; Patil et al., 2020; Chen et al., 2020). Adapted to this research, increasing the hedonic value that mobile payments provide leads users to continue using and enjoying them. Therefore, when the use of mobile payments can satisfy users' hedonic needs, users may regard it as a positive activation and then develop habit easily and continue using it. Otherwise, if users' emotional needs cannot be fulfilled, they may discard using it.

Bridges and Florsheim (2008) identified utilitarian and hedonic values as the online shopping goals, and Aarts and Dijksterhuis (2000) argued that habits are goal-directed; the higher value an online shopper perceives, the more likely it is that the habit will be reinforced. Khatimah et al. (2019) revealed that hedonic motivation significantly impacts payment habit and has a significant effect on behavioural intention through payment habit as a mediator.

Therefore, posit the following:

H2a: Perceived hedonic value (enjoyment) will have a positive effect on the habit.

H2b: Perceived hedonic value (enjoyment) will have a positive effect on the continuance usage of mobile payments.

H2c: The effect of perceived hedonic value (enjoyment) on usage continuance of mobile payments is sequentially mediated by habit.

### **3.2.3 Perceived Social Value**

No one can ignore the role social pressure plays in people's behaviour. In this research, social value is defined as the ability of mobile payment services to enhance social self-image and interpersonal communication (Sheth et al., 1991; Sweeney & Soutar, 2001; Carlos Fandos Roig et al., 2006; Kim & Han, 2009; K. Y. Lin et al., 2020; Shelvia et al., 2020). The literature from

early mobile payment services research to the present day consistently describes the difficulty of defining mobile payments as social transaction (Dahlberg et al., 2015). Kremers and Brassett (2017) frame them as radically different from traditional payments as new social payments, like social media, blur production and consumption more broadly. However, we define mobile payments as co-productions, or “achievements between collaborating agents and as opportunities for rich social interactions” (Ferreira et al., 2015). Previous studies have shown that consumers believe that they would (i) gain higher social status; (ii) enhance their social image; and (iii) improve their sense of involvement by using advanced mobile services, given that such services are generally accepted and welcomed by the global community (Hsu et al., 2007; Kwon & Chidambaram, 2000; Al-Debei & Al-Lozi, 2014; Moorthy et al., 2019). It has also been found that social value significantly affects on the value dimensions that can be derived from mobile payments (Phan & Daim, 2011; Raman & Aashish, 2021). Furthermore, it is argued in the literature that perceptions of people about mobile payments along with the value such services offer to consumers are likely to be affected by the information received from members of their social networks (Lu et al., 2005; Kim & Han, 2009; Kremers & Brassett, 2017; Handarkho, 2020). So, there are two root variables (mianzi and social tie) of perceived social value.

### **3.2.3.1 Mianzi**

The word mianzi (Chinese face) denotes an individuals’ social position or prestige gained by successfully performing one or more specific social roles that others recognise (Hu, 1944; Zhou & Zhang, 2017, 2018; Filieri et al., 2019; Chen & Lunt, 2021). Mianzi stands for “the kind of prestige that is emphasised [...] a reputation achieved through getting on in life, through success and ostentation” (Hu, 1944; Filieri et al., 2019; Chen & Lunt, 2021). Enhancing mianzi is associated with feelings of pride, glory, and prestige, while losing face in Chinese culture means feeling inferior towards others (Ho, 1976; Dong & Lee, 2007; Qi, 2011; Zhang et al., 2019; Wang et al., 2020). That is, one is judged by mianzi in the social network, whether he

(or she) behaves adequately and reasonably based on social position. Joy (2001) analyzes the behavioral patterns of Hong Kong consumers in choosing gifts to maintain social relations. He believes that these characteristics were closely related to several traditional Chinese values such as the mianzi. Lu (2005) also believes that when studying Chinese consumers' behaviour, it is necessary to consider the influence of mianzi. Mianzi has a great manipulating power that can change the opinion one holds about a certain product or service. For example, individuals sometimes face pressure to use mobile payments just because most of their peers do so; hence, they feel that such usage becomes obligatory to gain face. Qiuyan (2011) simply highlighted mianzi as a value that Chinese consumers value and influences their habit of consuming.

### **3.2.3.2 Social Tie**

In creating social networks, social ties represent individuals of social networks' perceived strength of social relationships with others. These social ties play a role in coercing behavioural norms among group members as well as promoting the diffusion of information (Chai et al., 2011). For example, how often an individual corresponds or communicates with others and how important an individual considers his/her friends. The combination of mobile payments and social interaction has created a new channel for money transactions between friends and friends. The convergence of social and payments will have a huge impact on people's money transaction behaviour and could change long-standing habits. Strong social ties give customers abundant opportunities to recommend a service to others, and in such situations, these ties depend greatly on customer satisfaction. Through mobile services, users can communicate and connect with each other wherever and whenever they are and they can easily build social connection (Abeele et al., 2018). Hsiao et al. (2016) and Gan et al. (2017) found that social ties have a significant effect on continuance intention in mobile services. When users use mobile payment services for social purposes, they will regard it as a positive outcome, which will ultimately help activate the habitual behavior and continuance usage of mobile payments.

According to Danner et al. (2008), habit is formed when a certain activity is repeated in the

same physical setting and social environment, implying that the cue of a stable context might also be in the form of social signals (Aldrich et al., 2011; Hsiao et al., 2016). Danner et al. (2008) gave an example that a drinking habit is formed from the combination of repeated behavior in the same bar (physical setting) and with the same set of friends on weekends (social environment). Therefore, social ties were also considered as a factor representing social cues in a stable context. They are observed to be the relationship strength perceived with others in a specific context (Hsiao et al., 2016) which can be formed due to the frequency of previous interactions, time spent, togetherness and the significance of an individual to the others (Ng, 2013). In the context of mobile payments, the presence of others using this payment method is believed to be correlated with the perspective of society toward its application in daily life habit, which further leads to continual act. Hence, the following hypotheses are put forward.

H3a: Perceived social value (Mianzi and social tie) will have a positive effect on the habit.

H3b: Perceived social value (Mianzi and social tie) will have a positive effect on the continuance usage of mobile payments.

H3c: The effect of perceived social value (Mianzi and social tie) on usage continuance of mobile payments is sequentially mediated by habit.

#### **3.2.4 Perceived Health Value**

Health value has initially been referred to as the extent to which health is a fundamental end-state, which consumers want to achieve in life (Rokeach, 1973). Nowadays, it is commonly believed that health value represents either a fundamental end-state (terminal value) when it is valued independently of other end-states, or an instrumental end-state (domain-specific value) when individuals maintain their health in order to achieve other valued end-states (Smith & Wallston, 1992; Tudoran et al., 2009). Regardless of whether health is valued for itself or for what it allows one to do, this study refers exclusively to the degree to which individuals value their health.



The current study integrated the health value to explain how the policymakers can induce people to adopt and continue the usage of mobile payments as an alternate to physical cash and bank transactions to prevent the spread of the COVID-19 virus. In the event of the increasing spread of the disease in post-lockdown, health workers could organize awareness campaigns to boost adoption so as to maintain social distancing. Mobile payment services providers should focus on mechanisms to enhance the self-efficacy of consumers to induce the adoption and usage. As the disease spread is expected to continue for a quite long period, to maintain the social distancing by evading physical cash transactions, the continued usage of mobile payments has to be ensured. When users use mobile payments for health successfully, they may develop a habitual behaviour and promote their continuance intention. Through qualitative analysis, Peng et al. (2021) found that the most important start to users' habit formation in information devices is the perceived health value. Volpp and Loewenstein (2020) highlight habits increase the marginal utility of engaging in an activity in the future. Therefore, people may enjoy use mobile payments, or dislike it less, once they become more accustomed to it; as they become more fit they may get more positive feedback in terms of performance for the same level of effort. Accordingly, this study proposes the following hypothesis:

H4a: Perceived health value will have a positive effect on the continuance usage of mobile payments.

H4b: Perceived health value will have a positive effect on the continuance usage of mobile payments.

H4c: The effect of perceived health value on continuance usage of mobile payments is sequentially mediated by habit.

### **3.3 Habit and Continuance Usage**

A habit is an instinctive consumer behaviour that effortlessly displays their preferences (Worm et al., 2017). Kalinic et al. (2019) revealed that habits bring inter alia shortcut, preference, and

mooring or anchoring effects. Bargh (2002) suggested that perceived inertia is automatic and subconscious behavior. A habit is a long-standing behaviour that is hard to change when people are not familiar with doing certain things, the process of doing those things takes a long time (Beck & Ajzen, 1991). For example, if consumers typically purchase products through mobile payments, they are more familiar with the mobile services than they were in their previous shopping experiences. De Guinea and Markus (2009) discuss how habit is a key factor influencing the choice of continued use of technology beyond the rational decision-making factors related to technology's usefulness or features. Chiu et al. (2012) believed that familiarity with the payment procedures enables consumers to execute and complete repeat purchases with minimal effort. Thus, there is a close relationship between consumers' attention to transaction costs and their habits.

The above analysis demonstrates the regulating effect of mooring that habit should have on human behaviour. In everyday life, habits are often defined as behaviours that are automatically prompted by contextual cues as a result of behavioural associations of learned stimuli (LaRose, 2010). Habits help us to accept the enormous complexity of everyday life. In general, customary factors positively or negatively influence consumer behaviour, thus impacting the continued use of mobile payments. For the usage of mobile payment services to emerge as a habit or tradition, they need to exist in the environment for a relatively prolonged time period (Pal et al., 2020). Since mobile payments is a relatively recent technology in its primary stages of progression (Sharma et al., 2018), few studies have examined the emergence of a habit in the mobile payment arena to date. A notable number of developing countries like Kenya, Tanzania, Philippines, India, Bangladesh, and Brazil, have already been introduced to mobile payment services (Cruz et al., 2010; Mbiti & Weil, 2016; Pelletier et al., 2017; Patil et al., 2020; Humbani & Wiese, 2019) for several years now. In China, mobile payments have been very successful. According to statistics released in early 2020 by the People's Bank of China (PBOC), the number of electronic payments processed by the country's banks increased by 6.3% compared to the same period in 2018. As a result, 62.1 billion electronic payments have

been registered, including 30.7 billion mobile transactions, representing a year-on-year increase of 73.6%. In March 2020, 776.08 million persons were using mobile payment in China (CNNIC, 2020). Over the past few years, paying with a mobile phone has become a daily gesture in China. Thus, the users who have been using mobile payment services for some time would experience the tendency and convenience of using these mobile payments to carry out their transactions. The habit of using mobile payments is anticipated to result in users' future intentions to continue using these payment services. Thus, the following hypothesis is developed.

H5: Habit will have a positive effect on the continuance usage of mobile payments.

### **3.4 Construction of Research Model**

In summary, this study integrates the habit construct into the VAM and ECM models in order to explore which factors influence usage continuance in mobile payments. There are several reasons why habit, VAM and ECM models have been selected. First of all, according to the literature review of the dominant theories and models used in the mobile services research in the previous chapter, the VAM model has a greater explanatory power in comparison with other theories/models (Kim et al., 2007; De Kerviler et al., 2016; Wang et al., 2020; Shelvia et al., 2020). Moreover, ECM is a model that can explain post-adoption behaviour in mobile services usage continuance research (Kim & Oh, 2011; Yuan et al., 2016; Lu et al., 2017; Kumar et al., 2018; Marinković et al., 2020; Duy Phuong et al., 2020; Zhao & Bacao, 2020b; Singh & Somaiya, 2020). Secondly, many scholars (e.g., Kim et al., 2019; Zhang et al., 2015; Hariguna et al., 2020; Ruangkanjanases et al., 2020) have applied VAM and ECM models in the research field related to usage intention of mobile services, producing satisfactory results with the hypothesis testing, however this has not been tested as regards continued usage of mobile payments. In addition, habit has been integrated into the VAM and ECM model to study the continuance usage of mobile payments in China. Amoroso and Lim (2017) found a strong relationship between habit and continuance intention. This confirms earlier studies by

Limayem et al. (2007) and Polites and Karahanna (2012) that link habit to continuance intention. However, it is notable that the behaviour of continuation intention with the mobile services may not be derived solely from consumer satisfaction (consumer satisfaction has insignificant and weak path coefficients with continuance intention when controlled by inertia), since other factors such as perceived value contribute to continuous intention (Amoroso & Lim, 2017). The current study consents to this argument and tests habit effects on continuance usage as mediators between perceived value variables and continuance usage. Thus, this study arrives at a framework which integrates model constructs of VAM, ECM and habit models, which in combination are expected to be effective in studying the factors that influence consumer usage continuance in relation to mobile payments. The integrated model is shown in the following Figure 3.1.

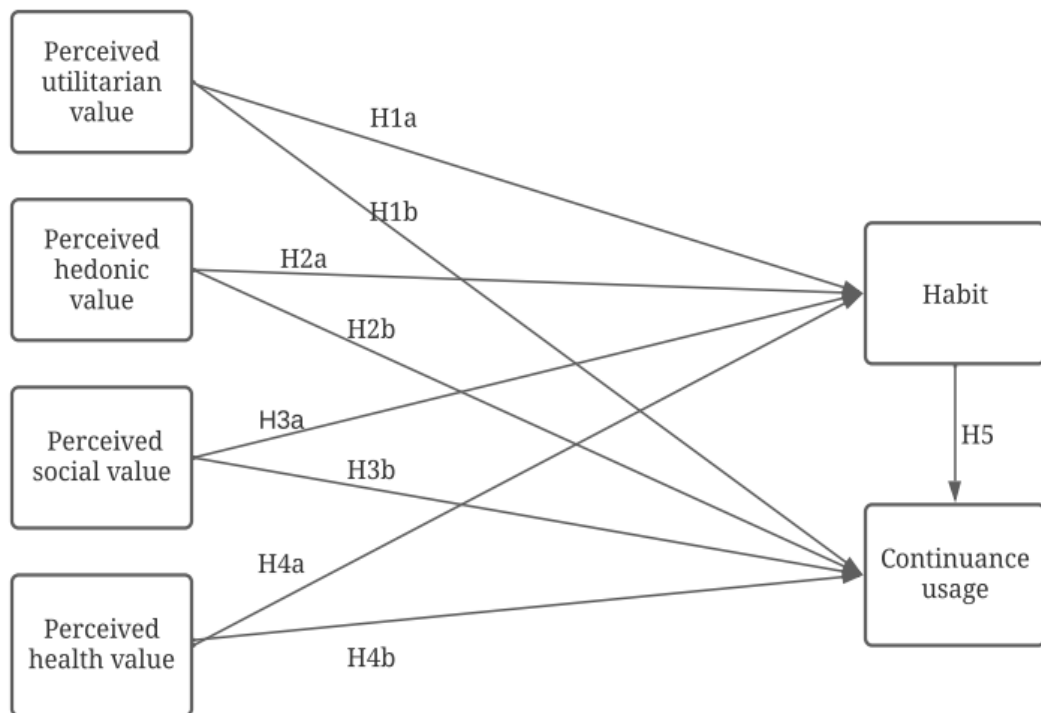


Figure 3.1 The Proposed Research Model and Hypotheses

### 3.5 Research Hypotheses

Following the literature discussion and the explanation of the reasons for proposing the new

integrated model of VAM, ECT and habit, the researcher highlighted many elements which influence mobile payments continuance usages such as utilitarian value, hedonic value, social value, health value, habit and demography variable. Therefore, the researcher postulates these hypotheses:

H1a: Perceived utilitarian value (convenience and financial value) will have a positive effect on the habit.

H1b: Perceived utilitarian value (convenience and financial value) will have a positive effect on the continuance usage of mobile payments.

H1c: The effect of perceived utilitarian value (convenience and financial value) on continuance usage of mobile payments is sequentially mediated by habit.

H2a: Perceived hedonic value (enjoyment) will have a positive effect on the habit.

H2b: Perceived hedonic value (enjoyment) will have a positive effect on the continuance usage of mobile payments.

H2c: The effect of perceived hedonic value (enjoyment) on continuance usage of mobile payments is sequentially mediated by habit.

H3a: Perceived social value (Mianzi and social tie) will have a positive effect on the habit.

H3b: Perceived social value (Mianzi and social tie) will have a positive effect on the continuance usage of mobile payments.

H3c: The effect of perceived social value (Mianzi and social tie) on continuance usage of mobile payments is sequentially mediated by habit.

H4a: Perceived health value will have a positive effect on the continuance usage of mobile payments.

H4b: Perceived health value will have a positive effect on the continuance usage of mobile

payments.

H4c: The effect of perceived health value on continuance usage of mobile payments is sequentially mediated by habit.

H5: Habit will have a positive effect on the continuance usage of mobile payments.

All hypotheses will test with empirical data gathered from mobile payments users from China who have used mobile payments before.

### **3.6 Conclusion**

This chapter has presented the proposed research model to analyse and compare existing models extensively used in mobile payments research. The proposed model is based on habit and perceived value theory to generate a comprehensive understanding of the determinants of continuance intention. This has been judged to be an appropriate theoretical foundation for studying the hypothesised continuance usage of mobile payments are supposed to provide. In order to fully understand the effect of perceived value, the relevant components of benefits in addition to habit were incorporated into the model. The components of benefits include convenience value, financial value, enjoyment value, social tie, mianzi and health value. This model also measures the effect of habit as a mediator and an antecedent on continuance usage of mobile payments. In summary, a total of 13 hypotheses have been developed for this research and will be tested with empirical data collected in China. The research methodology that will be employed to empirically assess and analyse the proposed model will be discussed in the next chapter.

## **Chapter 4 Research Methodology**

### **4.0 Introduction**

The previous chapter proposed a conceptual model that investigates the impact of perceived value and habit on customers' continuous use of mobile payments. This chapter discusses commonly used research approaches to guide selecting an appropriate approach for validating the proposed conceptual model. The research approach, which relates to the research methodology, is defined as the plan and procedures followed by a researcher in order to achieve the study aim (Pruzan, 2016). This thesis has identified three main research approaches: qualitative, quantitative, and mixed methods based on the literature review. According to Creswell (2014), three selection criteria determine which of these approaches is chosen: the research paradigm, the research design, and the specific methods employed to collect, analyse and interpret data. So, this chapter is structured as follows. Section 4.1 discusses the philosophical assumptions of the main research paradigms adopted in information systems research and justifies the research paradigm for this study. The pragmatist paradigm was considered the most appropriate paradigm. The research designs linked with the chosen research paradigm are described in Section 4.2. It also indicates the design that is thought to be the best for fulfilling the proposed research objective. Sections 4.3 and 4.4 discuss and justify specific data collection and analysis methods used in the research. These two sections also illustrate respective validity measures taken to ensure the research credibility. Section 4.6 describes the steps taken to adhere to the research ethics principles. Finally, section 4.7 provides a chapter summary.

### **4.1 Research Paradigm**

The research paradigm refers to a set of philosophical assumptions that researchers adopt to

define and acquire knowledge (Myers, 1997; Hassan et al., 2018). Four main research paradigms have been identified in information system services research: positivist, interpretivism, critical research, and pragmatist (Orlikowski & Baroudi, 1991; Mingers, 2001; Venkatesh et al., 2013). The philosophical assumption of the positivist paradigm follows a deterministic approach in which outcomes are determined by causes based on a priori theory (Creswell, 2014). Researchers who adopt this paradigm assume that reality is objectively given in the form of a theory comprising a set of measurable variables (Myers, 1997). The use of a predefined theory aims to deductively generate hypotheses that can be tested to understand a given phenomenon (Bryman & Cramer, 2012; Creswell, 2014). Typically, the hypotheses are meant to test the direction and significance of relationships between the variables in theory. The essential premise of this paradigm is objectivity in the sense that reality is investigated in isolation from the researcher's own beliefs (Orlikowski & Baroudi, 1991). For this reason, the methods employed under this research paradigm must be examined for bias through quantitative measures, such as validity and reliability (Creswell, 2014). Studies that use the positivist paradigm are mostly quantitative by design (Rehman & Alharthi, 2016). Thus, the method of inquiry follows a form of close-ended questions (e.g., surveys) that intend to generalise the findings from a sample of a population (Sukamolson, 2007).

The interpretivist paradigm, also known as a constructivist paradigm, assumes that reality can only be accessed through social constructions such as language, consciousness, and shared meanings (Myers, 1997). Since individuals develop varied subjective meanings for a given phenomenon, researchers who adopt this paradigm attempt to look for the complexity of these meanings to generate inductively the patterns that best explain the phenomenon (Creswell, 2014). This highlights the difference between the deductive reasoning of the positivist paradigm and the inductive reasoning that characterises this paradigm. Whilst the former uses data to validate hypotheses generated from a pre-existing theory, the latter aims to develop an approach based on the inferred data patterns. Furthermore, the direct interaction between the researcher and the research participants implies that the inferences drawn from data patterns



are specific to the context of both the researcher's and participants' experiences and cultural backgrounds (Creswell, 2014). The interpretivist paradigm is mainly employed by qualitative researchers, whose method of inquiry aims to elicit a detailed account of experiences and perspectives through open-ended questions (Kaplan & Maxwell, 2005).

The philosophical assumption of critical research, also known as the transformative paradigm, focuses on criticising the status quo within social systems by confronting social oppression caused by alienation and domination (Myers, 1997; Creswell, 2014). Critical research within information systems research is concerned with social issues such as freedom, power, social control, and values associated with the development, use, and impact of information technology (Myers & Klein, 2011). According to Orlikowski and Baroudi (1991), critical researchers believe in the ability of people to change their social circumstances. Yet, this ability is constrained by the dominating systems of economic, political, and cultural authority. By integrating political and social change agendas, critical research aims to transform the lives of those affected by social oppression by helping to eliminate the causes of alienation and domination (Myers, 1997; Creswell, 2014). The transformative philosophy of critical research is thus different from the positivist and interpretive research philosophies, which focus on predicting and explaining the status quo (Orlikowski & Baroudi, 1991; Myers & Klein, 2011).

The pragmatist paradigm focuses on the research problem without imposing restrictions on the philosophical stance (Creswell, 2014). This paradigm has been regarded as the underlying assumption of a mixed-method design, where researchers employ pluralistic approaches to derive knowledge about the research problem (Tashakkori & Teddlie, 2010). According to Venkatesh et al. (2013), researchers who adopt this paradigm emphasise the importance of the research questions and select the methods that help to obtain useful answers to these questions. In doing so, they liberally use the assumptions that underpin the qualitative and quantitative designs to fulfil the aim of their research (Creswell, 2014). Therefore, the logic of inquiry that pragmatists follow include the use of deduction, induction, and abduction (Johnson & Onwuegbuzie, 2004). While deduction and induction are the dominant approaches used in

quantitative and qualitative designs respectively, abduction combines both approaches to provide the best explanations for the obtained results (Johnson & Onwuegbuzie, 2004; Venkatesh et al., 2013). Since the focus of this paradigm is on the research problem, it concerns itself with actions and consequences that provide practical solutions to such problems (Creswell, 2014). Given that actions represent a means of change, they must be guided by purpose and knowledge to create the change that leads to the desired consequences. In this regard, Goldkuhl (2012) argues that actions and their consequences represent the essence of the pragmatist paradigm as it views the meaning of a given concept to be the practical consequences of that concept.

Based on the review and analysis of the four research paradigms, the pragmatist paradigm was considered as the most appropriate paradigm for this study for two primary reasons. First, the current study's main aim is to investigate the effect of integrating perceived value and habit into mobile payment solutions on consumers' continuance usage. This integration can be considered an action of change that aims to increase the perceived value of mobile payments and habit, consequently promoting its continued use. Since the pragmatist paradigm is concerned with actions and their practical consequences, adopting it as the underlying assumption was appropriate to achieve the aim of the current study. Second, achieving the main aim of this study relies on three essential objectives: understanding the concept of value in the mobile payments' context; assessing the effect of perceived value on mobile payments continuance usage and assessing the impact of habit as a mediator and as an antecedent of continuance usage and perceived value. As illustrated in Chapter 2 (section 2.2), perceived value is a highly subjective concept that holds different meanings among consumers. Thus, gaining an in-depth understanding of this meaning follows the assumptions of the interpretivist paradigm. Moreover, drawing conclusions about the effect of perceived value based on the theoretical representation of value is in line with the underlying philosophy of the positivist paradigm. Therefore, combining the assumptions of both paradigms into a single study is justified by adopting the assumptions of the pragmatist paradigm.

## 4.2 Research Design

The research design serves as a framework for data collecting and analysis (Bryman & Cramer, 2012). Furthermore, it specifies the type of inquiry that a researcher follows within the chosen research approach (Creswell, 2014). Since the current study adopts the pragmatist paradigm; a mixed-method research approach is followed. Information systems researchers have highlighted the importance of mixed-method as a suitable approach that fits with diverse research contexts. This is due to the interdisciplinary nature of the information systems domain, which draws upon a wide range of fields that employ different research approaches (Mingers, 2001). Furthermore, mixed-method research has been suggested as a suitable approach to overcome the inherent weaknesses of a single research approach (qualitative or quantitative) to better understand a given phenomenon (Dennis & Valacich, 2001). This research will be conducted in two phases that are interdependent with each other. The “mixed research method exploratory sequential design”, also known as “triangulation”. Triangulation refers to using different sources of data or data collection methods in a single research inquiry to enhance validity (Creswell & Miller, 2000; Kaplan & Maxwell, 2005; Morse, 2015). Triangulation offers greater credibility of research by allowing researchers to spot congruences and/or discrepancies in the findings that emerge from the different data collection methods and sources (Kaplan & Maxwell, 2005). Since this study employs a mixed methods approach, triangulation is supported by design. The findings of both the qualitative and quantitative phases will be compared to support the validity of inferences obtained from both methods.

The rapid integration of mobile services into the daily life of individual mobile service users. This reinforces the need for multiple research approaches to understand the adoption and post-adoption of emerging mobile payment services. However, existing information systems theories are mainly developed for work-related contexts and may not sufficiently explain the adoption (Venkatesh et al., 2013; Alhallaq et al., 2019; Yan & Mo, 2020; Sze Wan et al., 2019)

and post-adoption (Hsiao et al., 2016; Lin et al., 2018; Zhao & Bacao, 2020a) of such services for mobile service users. In support of this view, Venkatesh et al. (2013) have discussed three main advantages of employing a mixed-method approach in the context of mobile services research:

- 1) The mixed-method approach allows conducting exploratory and explanatory/confirmatory studies within a single research study. While the former has been the typical approach of qualitative information systems studies, which aim to understand a new phenomenon, the latter have largely featured in quantitative studies for theory testing.
- 2) The mixed-method approach can address the weaknesses of both qualitative and quantitative approaches by integrating their complementary strengths. For example, the qualitative approach is often concerned with the depth of data collection, whereas the quantitative approach is more inclined to address the breadth of collected data. As a result, the mixed-method approach provides a more comprehensive understanding of a given phenomenon than an individual approach can offer due to the multi-perspective view of data collected from both approaches.
- 3) Such a multi-perspective view can assist researchers by highlighting potential complementary and/or contradictory findings that emerge from each individual approach. The complementary findings offer a holistic understanding of the underlying concepts and their relationships that shape a given phenomenon. In contrast, the contradictory results can re-evaluate the conceptual foundation and suggest new future research directions.

The combination of qualitative and quantitative studies into a mixed-method approach is not meant to be conducted haphazardly, however. Instead, the findings that emerge from one study should be logically integrated in a sequential and synchronized way into the selected mixed (i.e., qualitative and quantitative) research design (Creswell & Tashakkori, 2007). For instance, Johnson and Onwuegbuzie (2004) suggest two dimensions to consider when choosing a mixed-method design: the time order of the qualitative and quantitative studies, and the degree of

dominance of each method. The researcher has developed a matrix that illustrates nine possible designs based on these dimensions, as shown in Figure 4.1.

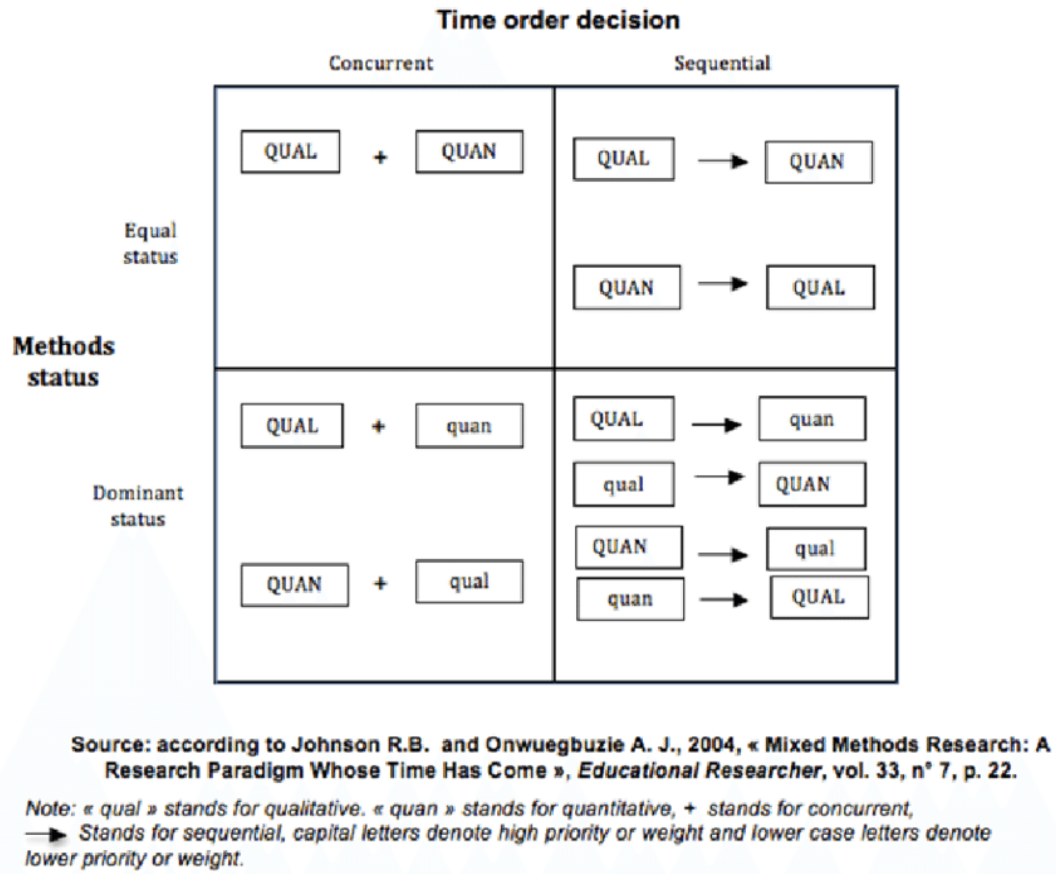


Figure 4.1 Mixed-Method Design Matrix (Johnson & Onwuegbuzie, 2004)

The time order indicates whether the qualitative “qual” and quantitative “quan” studies are conducted concurrently as denoted by the sign “+” or sequentially as denoted by the symbol “→”. The capital letters used in “QUAL” and “QUAN” indicate the dominance of qualitative and quantitative studies. The dominance refers to whether the qualitative or quantitative study is relatively more important or has a higher priority than the other in terms of size or depth of analysis to achieve the research aim. In equal status designs, researchers emphasise the importance of both studies in investigating the research problem. Information systems researchers suggest that one study’s decision is significantly more important than the other should be based on the research aim and objectives (Venkatesh et al., 2016).

A more practical classification of mixed-method designs has been provided by Creswell (2014) based on the following three commonly used research modes:

- Convergent parallel mixed-method: this design involves merging data from qualitative and quantitative datasets to analyse the research problem comprehensively. Both types of data are typically gathered at roughly the same time. The data integration process takes place during the interpretation of the overall results. A practical issue with this design is the need for a team of researchers to collect qualitative and quantitative data concurrently.
- Explanatory sequential mixed-method: in this design, a researcher starts with the quantitative research phase to explain the obtained results in a subsequent qualitative research phase. An important aspect of this design is to identify the key results of the quantitative phase to be further explored in the qualitative phase.
- Exploratory sequential mixed-method: researchers who adopt this design begin with a qualitative research phase that aims to explore participants' views. The obtained qualitative results can be used to specify the variables that should be included in a follow-up quantitative research phase. They can also be used to develop or identify the instruments that provide the measurements that best reflect on the concept of the specified variables based on the appropriate interpretation of the qualitative findings.

Following this review of the different mixed-methods design, it is clear that specifying the logic of the relationship between the datasets of the qualitative and quantitative studies plays a primary role in selecting the appropriate and eventual design of a mixed-method study. Furthermore, the availability of different designs indicates the flexibility and advantageous nature of the mixed-method approach, enabling researchers to choose the design that best suits their research purposes. Therefore, given the research aim and objectives discussed in Chapter 1 (section 1.4), the exploratory sequential mixed-method with equal status design (i.e., QUAL → QUAN) has been considered as the most appropriate design for this study for the following reasons:

**Exploratory and confirmatory purposes:** in the context of mobile payment services research, researchers have employed exploratory sequential design to explore the individuals' perceptions of mobile services (Venkatesh et al., 2013). In doing so, this study started with an exploratory qualitative study to elicit the factors that participants consider when post-adoption of such mobile payment services. A subsequent quantitative study was then conducted to quantify these factors' effect on continued behaviour (e.g., Pavlou & Fygenson, 2006; Kim et al., 2016; Tu, 2018). In this study, perceived value is considered a relatively new means of adding value that mobile payments have not fully explored, i.e., from the users' perspective, understanding how the value of mobile payment services is produced and formed (Pant, 2018; JungKun Park et al., 2019; Hesamzadeh, 2020; Yan & Mo, 2020). Thus, evaluating the effect of perceived value as a less-explore phenomenon requires, in the first place, an exploration of the components of value and its antecedent factors that consumers consider during the process of deciding whether to continue with mobile payment services. This would best be achieved by starting with an exploratory qualitative study framed by a preliminary theoretical model (Figure 3.1) that includes such components and factors based on the literature review. The role of theory in this qualitative study is to provide a lens that shapes the data collection (Kaplan & Maxwell, 2005; Creswell, 2014; Hennink et al., 2020). In addition, it serves as a point of departure that allows new factors to emerge due to the inductive nature of the qualitative inquiry. In this regard, Morgan (2007) argues that one of the most common applications of the pragmatist paradigm is "to further a process of inquiry that evaluates the results of prior inductions through their ability to predict the workability of future lines of behaviour" (P.49). By employing this example of abductive reasoning, as Morgan (2007) describes, the researcher converts observations obtained from qualitative data into theories that can be tested using quantitative data. Subsequently, the resulting model can be tested, explained, and perhaps confirmed in the quantitative phase. Sequential design: A sequential design has been chosen because the findings of one study can be used to theoretically inform the subsequent study (Venkatesh et al., 2013). In the current study, the purpose of the first qualitative study is to: (1) Provide a contextual understanding of the less-explored factors in the initial proposed model. (2) Explore

potential new factors. (3) Guide the selection of the measurement items to be used in the subsequent quantitative study to test the extant but less explored factors and any embryonic factor/s from the qualitative study.

**Equal status design:** the decision to consider the qualitative and quantitative studies equally important in the current study is based on their significance in addressing the research problem (Venkatesh et al., 2016). While the qualitative study played an essential role in specifying the factors and selecting the measurement items that best reflect them, the quantitative study evaluated the 13 hypothesized relationships among them. Although the effect of perceived value on mobile payments post-adoption is empirically assessed in the quantitative study based on the proposed hypotheses and model, the qualitative study provided methods to make such assessment feasible. Since each study constituted an integral part of the overall investigation process, both were considered at the same priority level.

### **4.3 Qualitative Research Method**

This section describes the research method used in this study's qualitative phase. It does so by discussing and justifying the choice of the data collection, sampling and analysis approach. In addition, it discusses the strategies used to ensure the validity and reliability of the qualitative findings of this research, based on suggestions from qualitative research methodologists.

#### **4.3.1 Data Collection – Semi-Structured Interviews**

Qualitative data are collected using online/phone semi-structured individual interviews. Using interviews has been recommended when the aim of the study is concerned with understanding participants' perceptions towards a given phenomenon (Creswell & Tashakkori, 2007). Since the focus of this qualitative phase is to gain an in-depth understanding of mobile payment services' value as a subjective concept, one-on-one semi-structured interviews are deemed to be suitable for several reasons. First, interviews provide a means to contrast the differences among participants based on their individual experiences and perceptions. Using open-ended



questions, the researcher allows participants to describe their views in their own terms without being restricted to specific response categories (Kaplan & Maxwell, 2005). Second, in order to measure the constructs of the proposed research model in the subsequent quantitative phase, a set of questionnaire items that capture the domain of each construct should be developed (Churchill Jr, 1979). The domain of the construct specifies what is included in the definition of the construct. Although these constructs have been defined based on the literature review as discussed in Chapter 3 (section 3.2 and section 3.3), revisiting these definitions through participants' views provides a contextualized understanding of each construct's domain. Interviews have been suggested as a suitable method of generating the measurement items that capture the respective construct domain perceived by participants (Churchill Jr, 1979; Creswell, 2014). Third, interviews allow the researcher to control open-ended questions (or topics of discussion) using a prepared interview guide to prompt data collection (Creswell, 2014). The semi-structured interview format maintains a fixed set of open-ended questions while allowing the researcher to ask additional questions in response to significant replies and to motivate participants to further elaborate on their answers (Bryman & Cramer, 2012; Hennink et al., 2020). Finally, previous mobile payments adoption research has demonstrated the suitability of interviews for qualitative data collection in exploratory studies (Mallat, 2007b; Chen et al., 2018).

An interview guide is designed to include a list of relevant topics and questions to prompt data collection. The guide comprises three sections according to the guidelines provided by Hennink et al. (2020):

The first section includes a brief introduction to the researcher and the purpose of the research. After providing information about how data will be handled, interviewee consent was sought to proceed. Opening questions are included in this section to cover the interviewees' demographic information as well as questions related to previous mobile payments experience.

The second section aims to elicit the interviewees' perceptions of mobile payments as a sole

service in terms of the theorised constructs included in the proposed research model (Figure 3.1). For this purpose, a brief definition of each construct is included followed by open-ended questions to ask interviewees for their perceptions of the presented construct in relation to mobile payments. This method allows the interviewees to define each construct in their own words and contextualise their answers around the applicable scenarios of mobile payments.

The third section aimed to elicit the interviewees' perceptions of the theorised constructs towards mobile payments augmented with each suggested perceived value and habit discussed in Chapter 3 (section 3.2 and section 3.3). The purpose is to highlight any potential contrast of the interviewees' perceptions towards the mobile payment services as a sole and augmented service in terms of the proposed model's constructs. Finally, the section concludes with additional questions about how the interviewees rank the proposed perceived value and whether they have suggestions for additional factors not covered as part of the theorised constructs. These questions aim to understand the most critical factors they consider maximising mobile payments' habit and continuance usage. The interview guide (both Chinese and English) is provided in Appendix A.

#### **4.3.2 Sampling**

Sampling is the process of selecting a subset of a population to represent the entire population. The representativeness of the sample chosen aims to provide some form of generalisability. Generalisability is the extent to which research findings of a study can be applied across, and are considered relevant to different persons, settings and times (Johnson, 1997, P.191). According to Onwuegbuzie and Collins (2015), generalisability is interpreted differently based on whether the research approach is qualitative or quantitative. Typically, qualitative studies aim to achieve analytical generalisation using small sample size, whereas quantitative studies draw on a large sample size to achieve statistical generalisation over the whole population.

As Miles and Huberman (1994) argue, the analytical generalisation of qualitative studies is based on obtaining the sample that best represents the theoretical model. In this regard, the

authors explain that sampling in qualitative studies is driven by either a prespecified or emerging theory. Therefore, the researcher attempts to generalise the meaning of its underlying constructs and their relationships through a sample of participants. Since the current study investigates the effect of perceived value and habit on mobile payments continuance behaviour; it is deemed important to obtain a sample of participants who have the means to use mobile payments. Furthermore, to understand the motivations based on the proposed research model, current adopters and non-adopters of mobile payment services should be included in the sample. For this purpose, the selection criteria are to include participants who (1) are at least 18 years old; (2) use mobile payments; and (3) are Chinese consumers (the participations with strict Chinese citizenship) as it is the location of this study. Furthermore, the inclusion of adult Chinese consumers who use mobile payments, regardless of any other demographic characteristics, aimed to maximise the sample's diversity, thus achieving analytical generalisation of the theoretical model.

For the qualitative phase of this study, a snowball sampling strategy is recommended. Snowball sampling involves identifying people who know other information-rich people (Miles & Huberman, 1994). Thus, the choice of snowball sampling aims to include an initial set of participants that can contribute through their own experiences and subsequently through their social networks to advance the researcher's understanding of the phenomenon of interest (Bryman, 2016). Different channels are used to invite participants, including a university research activity group with subscribed staff and students interested in research activities, existing personal contacts, and students. Participants who accepted the interview invitation are asked to refer the invitation to other potential participants within their networks who met the above criteria and are interested in the study topic, as this subsequent option would add demographic diversity in participants. Along with identifying the method of recruiting participants, specifying the sample size is another issue that needs to be addressed in the sampling process. Although qualitative studies typically have small sample sizes, judging the number of participants is not straightforward (Creswell, 2014). Whilst some researchers

suggest that 5-35 individual interviews are sufficient (Creswell & Tashakkori, 2007); Flanagan (1954) believes that the sample size between 50 and 100 when using the critical incident technique is sufficient to meet the needs of the general task. To address this issue, the current study adopted the data saturation principle to judge the adequacy of the sample size. Data saturation is when no new information is emerging in a series of interviews (Guest et al., 2006). This implies that the sample size cannot be specified beforehand (Bryman, 2016). In addition, data collection and analysis should be conducted concurrently to decide whether the collected data provides enough information to explain the theoretical concepts fully. The data saturation principle is based on the assumptions of grounded theory research, which aims to develop new theories inductively from qualitative data (Bryman, 2016). However, grounded theory methodologists assert that this principle can also be applied when researchers apply it to advance an existing theory as a platform to enhance its existing constructs and develop new ones (Corbin & Strauss, 2014). This applies to the current study, where the proposed theoretical model was used to frame data collection to explore the existing constructs of the model further and allow new ones to emerge through the process. As data collection and analysis are conducted in parallel, sampling continued until data saturation had been reached – till no new insights could be identified during the coding process, which will be discussed in the following subsection 4.3.3.

### **4.3.3 Qualitative Data Analysis**

Data analysis in qualitative research is a process that can generally be organised into three main stages: preparation, coding, and interpretation (Creswell & Poth, 2016). Data preparation involves recording collected data from interviews into a manageable database. In this study, all interviews were audiotaped and transcribed verbatim into text files.

#### **4.3.3.1 Critical Incident Technique**

Flanagan (Flanagan, 1954), a psychology professor at the University of Pittsburgh, proposed

the Critical Incident Technique (CIT). It is a qualitative research method in which researchers use content analysis to identify critical events in a particular field or topic. Or the invalid behaviour that could be classified and processed, and the method of research conclusion would be reached only after in-depth analysis. Flanagan (1954, P.327) describes the method as “a process by which to directly observe and collect human behaviour and effectively extract its potential value to solve practical problems.” It defines a critical incident as a real event that is valuable and meaningful to the overall research goal, whether positive or negative, and has the value of analysis and evaluation (Flanagan, 1954; Vianden, 2012). In this study, the critical incident refers to the user’s personal experience, experience and perception when using mobile payment services, which expresses the focus and problems that mobile payment users are most concerned about.

The critical incident technique (CIT) was initially applied to the military field and is a research method for identifying and judging the effectiveness of diverse human behaviours (Butterfield et al., 2005). CIT is well suited to exploratory research that seeks to gain a first-hand perspective on human activities in context and the significance of those activities. Within this, individual real-life experiences can assist in identifying broader patterns and understandings within social phenomena (Chell, 1998), whereby the study of unique experiences provides insight into ‘shared reality’ (Kain, 2003, p. 82). CIT perspectives tend to broaden beyond the concerns of purely behavioural issues to include a more holistic understanding that encompasses ‘the conscious reflections of the incumbent, their frame of reference, feelings, attitudes and perspective on matters which are of critical importance to them’ (Chell, 1998, p.68). Because of the unique advantages of illuminate how participants feel and identifying positive and negative behaviours in studying human behaviour, it has been practiced in many fields such as medicine, management, education, and psychology (Norman et al., 1992; Fountain, 1999; Khandelwal, 2009; Vianden, 2012; Butterfield et al., 2009; Fridlund, 2017). In recent years, the critical incident technique has gained more and more applications in the service industry (Gremmler, 2004; (Sharon) Zou et al., 2017). It provides a good tool for scholars

to study the problems and phenomena of concern better. Through the critical incident technique, Yin et al. (2010) researched customer-to-customer interaction by using critical incident technique (CIT) in China. Based on this, the impact of compatibility management on customer response was measured using the experimental design of the participants. Zhang and Wang (2015) used the CIT to collect critical events that drive customer delight and anger under the context of catering services, hairdressing services, online shopping, shopping malls and banking services, and explored and tested the types and structures of ubiquitous customer service needs. Under the network services, Du (2008) used the CIT to collect 258 events of online shopping abandonment behaviour to analyze the reasons for abandoning online shopping. Using the CIT, Zhang and Ge (2010) analyzed 240 comments from four domestic banks' online banking forums and the key factors identified that mainly affect the quality of China's online banking services. Gummerus and Pihlström (2011) used CIT to study the dimensions and intrinsic relationship between mobile services' contextual value and use value. Komulainen and Makkonen (2018) used CIT to gain a comprehensive understanding of how customers perceive omni-banking services and the key factors influencing their perceptions.

In the field of mobile payments, the critical incident technique has been applied to identify and classify the most common sources of satisfaction and dissatisfaction with mobile payments (Smolarczyk, 2018). To date, there has been no scholarly application of critical incident technology to analyse the dimension and connotation of its service value to impact the continued behaviour (Hampshire, 2017; Mallat, 2007b; Efendi & Lina, 2020). When users use mobile payment services, they will inevitably produce some experiences that generate impressions. They may be pleasant and satisfying, or they may be worried and anxious. These real experiences will form a brand in the memory of users, reflecting on a user's perception and evaluation of the value of mobile payment services. In their research, Kim and Malhotra (2005) pointed out that the user experience after adopting a product or service will have a new knowledge of the value of the product or service. For example, Najmul Islam (2014) used CIT to identify sources of satisfaction and dissatisfaction with a learning management system after

it was adopted.

So, this study chooses CIT as the value dimension and connotation analysis method of classified mobile payment services mainly based on the following considerations: First, the value of mobile payment services is actually a user's perception of the value of the service received or used. The CIT has been successfully applied to the mobile services research (Du, 2008; Zhang & Ge, 2010; Gummerus & Pihlström, 2011; Komulainen & Makkonen, 2018).

Second, CIT can collect detailed experience information when users use mobile payment services, which is very suitable for researchers to explore the perceived value of mobile payment services from multiple layers of time, space, situation and psychology. Examine the factors that influence the perceived value of mobile payment services and explore concerns that haven't been addressed in previous research. Third, CIT can obtain more accurate results through a small number of samples, which is more practical for dividing the value dimensions of the mobile payment services and determining its connotation.

According to CIT (Flanagan, 1954), the method is divided into four stages: The first is to establish research goals and plans; the second is data collection; the third is data analysis; the fourth is to conclude.

- **Identify research goals and plans**

The research objectives of this study are to focus on the services and application cases provided by mobile payments, so that respondents can deepen their understanding of mobile payment services. Based on this, this study uses CIT to analyze the experience of respondents to mobile payments (positive events and negative events), obtain the user's perception of the value of mobile payment services. And then presented the dimensions and connotations of the value of mobile payment services, to support the theoretical model (Figure 3.1) that is test for subsequent empirical analysis.

The research plan includes the determination of the respondents, how the data is collected, the

location of the collection, and the corresponding interview guide. In selecting the interview object, the user who has experience in using the mobile payment services is taken as an interview object, and collects critical events that the user personally experiences when using the mobile payment services. Using online/phone one-on-one interviews, the main questions to ask participants would be:

- 1) Please describe some of the events in the impression that you feel that mobile payments have a positive impact on your life or work (please specify the specific situation or cause at the time).
- 2) Please describe the problem you encountered when using mobile payment or the event that caused your concern (please specify the specific situation or reason at the time).

- **Data collection**

Flanagan (1954) introduced two main data gathering methods: (a) direct observations of participant behaviour by trained professionals and (b) requesting individuals to recall critical incidents from their memory. Although Flanagan (1954) first believed that direct observation was the best way of data collection, he later stated that when participants are asked to describe an incident in precise detail, authentic and accurate results can emerge (Butterfield et al., 2005). Individual or group interviews and open-ended surveys or questionnaires are the primary data collection methods for the CIT. For example, Voss et al. (2010) conducted an open-ended online survey for a suitable CIT study. Well-designed online surveys allow researchers to reach hundreds of participants using qualitative methods that would be impractical using face-to-face data collection methods. CIT researchers looked at the number of critical events accurately recalled rather than the number of participants to determine the sample size (Butterfield et al., 2005). During the interview, the researcher requested participants to tell stories about a critical event, incident, or experience, and to explain why that particular event was significant or memorable.

In their studies, Aamodt et al. (1981) ask participants to recall positive and negative incidents,



while focus on only either positive or problematic incidents (Belch & Marshak, 2006). According to Kain (2003), better to ask participants to recall events narrate in detail during an interview. Encourage participants to memorize one or two events (either negative or positive or both). According to Kain (2003), adequate samples in published CIT studies ranged from as few as 16 to as many as 4,000 incidents.

To ensure the effectiveness of the data collected by the study, before the investigation, the purpose of the interviews is explained to the respondent, and services provided by the mobile payments and its application cases are introduced to the respondents to understand the mobile payment service further. On this basis, open-ended interviews are mainly used. Respondents are asked to restate the process of events in descriptive language. If the respondent is able to recall the situation when using mobile payments, then this event can be considered a critical event.

#### **4.3.3.2 Reliability and Validity**

CIT, like many other types of qualitative research, is not without criticism. According to Butterfield et al. (2005), much CIT research lacks legitimacy and trustworthy checks. Andersson and Nilsson (1964) are cited in many CIT studies as validating the reliability of CIT. Years later, Ronan and Latham (1974) conducted a second reliability study on CIT, and their findings corroborated Anderson and Nilsson (1964). Nonetheless, Butterfield et al. (2005) advise that CIT researchers to implement certain steps to help ensure the credibility and reliability of their findings. For example, to aid reliability and validity, tape recording and transcribing the interviews can increase accuracy for qualitative researchers. Maxwell (1992) described the boost in accuracy it brings to research while examining data. Flanagan (1954) noted the importance of specifics in recalling critical incidents. Flanagan asserted that the more details revealed, the more certain one may be that the narrative is true. Recording the interviews ensures that the interviewer catches all of the details offered by the participants.

In CIT, categorization is the most problematic and contested area of critical incident analysis.

To validate the current researcher's judgments, two researchers and I will give the incidents and category names and asked to sort the incidents into the newly developed categories. If two of the three judges categorised an incident as belonging to the same category, the incident was classified as belonging to that category. Any incident that could not be agreed upon by two sorters was either rejected or assigned to a new category (Gremler, 2004; Yin et al., 2010). This procedure was important to confirm the findings' reliability and validity. This study uses the Reliability index proposed by Perreault Jr and Leigh (1989) to test the reliability of the classification process.

#### **4.4 Quantitative Research Methods**

The research methods used in the quantitative phase of this study are discussed and justified in this part as appropriate to meet the research objective 3 (empirically examine the influence of the factors on mobile payments continuance use in the China consumer market and validate the results) and objective 4 (investigate the mediation of habit in the relationship between perceived value and continuance intention). Data collection, sampling techniques, sample size calculations, and data analysis are all included in the methods provided. Finally, the procedures for assuring the quantitative approach's validity and reliability are outlined.

##### **4.4.1 Data Collection – The Online Questionnaire Survey**

Surveys are commonly used to collect quantitative data about a people's feelings, beliefs, opinions, and behaviours by studying a sample of the population (Adu, 2019). The purpose is to generalise the results from the research sample to the entire population (Knoke et al., 2017). A survey method falls between the experimental and ethnography research studies. Understanding and evaluating the causal associations between variables leads the logic of an experiment inside the laboratory into the field (Gill et al., 2010). There are two main reasons in business and management research for the application of online questionnaire survey methods.

- 1) Establishing causal inferences: Survey experiments have been described as the “gold standard” for establishing causal relationships (Mutz, 2011). The data collected through survey questionnaires can be examined after processing the data to explore the association between variables in a specified cause and effect relationship (Gill et al., 2010). The survey incorporates the ability to deliver an appropriate and correct depiction of the topic being studied and define the relationship among variables via analytical surveys (Fowler Jr, 2013). The primary objective of the present study is to find the relationship between the consumer’s mobile payment value factors and mobile payment continuance usage. Therefore, the survey method is a suitable technique for collecting the data in the present study.
  
- 2) Popularity of the online questionnaire survey method: As a data collection method, surveys are the most commonly used method in technology adoption research (Williams et al., 2009) and information systems research (Palvia et al., 2015). In the context of mobile payments adoption research, a systematic literature review conducted by Dahlberg et al. (2015) reveals that over 90% of studies (31 out of 34) have collected data using survey questionnaires. The survey method is convenience, economical, ideal, targeting a huge population and collecting a large amount of data. It also provides substantial control over time and cost, as the data results could be universal through suitable sampling techniques to the larger population. Therefore, it is one of the most commonly used tools for data collection. The benefits include anonymity, extensive reach to survey respondents, fewer costs, and convenience. Numerous studies have used online survey for data collection purposes (Baptista & Oliveira, 2015; Escobar-Rodríguez & Carvajal-Trujillo, 2013; Hajli, 2015; Khalilzadeh et al., 2017; Liang & Turban, 2011; Chen & Li, 2017; Lin et al., 2018; Jamshidi et al., 2018; Cao et al., 2018; Humbani & Wiese, 2019; Jia et al., 2020; Patil et al., 2020; Zhang et al., 2020; Handarkho et al., 2021; George & Sunny, 2021; Yang et al., 2021) because the online survey generates lower costs and is easy to manage by sending invitations through. For example, sharing on social media, using WeChat, and requesting

snowballing. As, the present study is proposed to study the mobile payment consumer behaviour, and to access this specific community for collecting data, the suitable technique is an online questionnaire.

However, questionnaires have some disadvantages. First, in this study, the sample was collected using snowball sampling; this leaves the sample with similar demographic and psychological characteristics, implying they are not representative of any defined population (Malhotra & Birks, 2018). Second, a survey questionnaire may not be able to cover all the questions for the participants to answer. The scholar tries to incorporate as maximum and as required questions to be added to the survey questionnaire (Bhattacharjee, 2012). Furthermore, sometimes respondents do not respond to the questions honestly in the best interest of the scholar. This shortcoming is difficult to control for. In some cases, close observations by the researchers to the responses can specify whether the respondents were correctly responding to a questionnaire or not. Despite the certain shortcoming of survey questionnaires, this non-random approach is considered most suitable pertinent to the present research study.

To conclude, the online questionnaire survey method is the most suitable technique for the present study to elaborate the hypothetical relationships between consumer's mobile payment value factors and mobile payment continuance usage. The key reasons for this are as follows: First, the survey method is appropriate when there is a larger population. Second, it permits a large quantity of data to be collected from a sample out of the population (Collis & Hussey, 2013). Third, a survey method is used for data collection when the researcher requires measuring the intentions and behaviours of the population (Babbie et al., 2018). As the objective of the current study is to measure the continuance usage of consumers in the mobile payments' context, the online questionnaire survey method is an appropriate technique to find out the mobile payment continued use factors. Finally, the online questionnaire survey method allows quantitative data collection that can be descriptive in nature and inferential statistics. Therefore, mobile payments' continuous usage factors will be explained by applying relevant statistical techniques to the data collected through the online questionnaire survey method.

#### **4.4.2 Survey Instrument Development**

“A methodologist once described the question-writing task as similar to driving in freeway traffic while drinking a cup of hot coffee and answering an emergency call on his cell phone. Many things are competing for attention, and failure to heed any of them can spell disaster. Writing questions for self-administered surveys is difficult due to the need to consider many competing factors at once. However, unlike freeway driving, while tending to coffee and telephone calls, which is not advisable, many things need to be considered when writing questions” (Dillman, 2011, P.32).

Many studies fail to meet their aims and objectives as the instrument question designed cannot accomplish its purpose (Bell et al., 2018). There are various reasons for this failure. For example, the failure may be because of the unsuitable structure of the questions, or ambiguous use of words may lead it to be unanswerable. Also, the questions used in one survey may not be valid in another research (Dillman, 2011). Thus, some strategies help develop the measure for the survey (Churchill Jr, 1979). First, the items of the constructs should be adopted and should be a mixture of pretested questions from existing literature and those created by appropriate analysis of the literature and hypotheses created. Second, a pilot test for the instrument should be performed to debug a questionnaire. The instrument should be tested for the specified sample. Finally, the instrument’s data should be processed and use recommended statistical techniques to analyse the data (Churchill Jr, 1979).

In the present study, firstly, all the constructs’ measures were derived from the existing literature. The questionnaire consists of the items: perceived convenience, financial value, perceived enjoyment, mianzi, social tie, perceived health value, habit and continued usage behaviour. Also, the respondent’s demography was asked through gender, age, educational qualification and frequency of mobile payments usage. Secondly, pilot testing will carry out amongst colleagues, students, and some online friends. An online survey questionnaire will develop which will disperse among the people mentioned above through WeChat. Thirdly,

after the pilot test, some well-informed colleagues, a small group of respondents, and analysts will request to participate in a series of discussion to check and interpret if the questionnaire items are appropriate for data collection.

#### **4.4.2.1 Use of Multiple Items for Measurement**

Multiple items for determining variables in research are suggested by scholars using the survey method. There are several aims of using multiple items as described by Hair, (2009); Murtagh and Heck, (2012).

It enables reduction of the measurement error which is inborn in all the variables. The degree to which the experimental values are not demonstrative of the actual values is measurement error (Hair, 2009). The influence of measurement error is to make the assessment of multivariate models easy and to mask any relationships moderately (Freckleton, 2011).

In a single measure, it confirms the capability to signify the multiple features of perception. An attempt is made to signify the several aspects of a perception which is complex by applying more constructs in a multivariate model in social science research. Parsimoniousness in the number of constructs in the multivariate model is attained by using several questions (Diamantopoulos et al., 2012).

In the present study, the multiple measurement items were adapted from existing literature which has been explained in Table 4.1. To check whether or not the multiple items will be applicable in the present research setting, it is essential to conduct a pilot testing of the questionnaire items and get them reviewed by experts. Some improvements and modifications in the words of the questionnaire were carried out to avoid any ambiguity. These amendments will be verified by internal consistency and Cronbach Alpha scores. The measurement items will put in SEM for the measurement model. The model will test for reliability, convergent validity, and discriminant validity. Finally, the items will put in the structural model through SEM, and the hypotheses will be test.

Table 4.1: Measurement Items and Their Sources

Construct	#	Item	Sources
Perceived utilitarian value			
Convenience	1	Using mobile payments is an efficient way to manage my time.	Kim et al. (2010); De Kerviler et al. (2016); Lin et al. (2018); Ahn and Lee (2019); Park et al. (2019); Pal et al. (2020); Raman and Aashish (2021);
	2	Using mobile payments is convenient because I can use it anytime and anywhere.	
	3	Using mobile payments would allow me to save time and effort.	
	4	Using mobile payments would allow me to use service transactions instantly.	
Financial value	1	Using mobile payments would allow me to save money.	Cocosila and Trabelsi (2016); De Kerviler et al. (2016); Park et al. (2019);
	2	Using mobile payments would allow me to take advantage of promotional offers.	
	3	Using mobile payments can earn rewards or points.	
	4	Using mobile payments can let me get economic benefits.	
Perceived hedonic value			
Enjoyment	1	Using mobile payments would be enjoyable.	Sweeney and Soutar (2001); Venkatesh et al. (2012); De Kerviler et al. (2016); Park et al. (2019);
	2	Using mobile payments would be fun.	
	3	Using mobile payments makes me feel good.	
Perceived social value			
Social tie	1	Using mobile payments, I develop the friendship with some other members.	Hsiao et al. (2016); Lin et al. (2020);

Construct	#	Item	Sources
	2	Using mobile payments would allow me to enhance interactions with friends and family.	Handarkho et al. (2021);
	3	Using mobile payments would allow me to enrich my social life.	
	4	Using mobile payments would allow me to improve my existing relationships.	
Mianzi	1	Using mobile payments enables me to gain mianzi.	Wang (2007); Lisha et al. (2017); Filieri et al. (2019);
	2	Using mobile payments increases my mianzi in front of others.	
	3	Using mobile payments enables me to get easily accepted in social groups.	
	4	I worry about losing mianzi in daily life if I am not using mobile payments.	
Perceived health value			
Health value	1	The disease can be easily prevented by using mobile payments.	Sreelakshmi and Prathap (2020)
	2	Using mobile payments would reduce the risk of coronavirus.	
	3	Using mobile payments is considered as a preventive health behavior.	
Habit	1	Once I start using the mobile payments, I will continue to use it.	Limayem et al. (2007); Hsiao et al. (2016); Lin et al. (2018); Handarkho et al. (2021);
	2	I find it difficult to stop the mobile payments once I have started to use it.	
	3	Using mobile payments has become automatic to me.	



Construct	#	Item	Sources
	4	I must use the mobile payments.	
Continuance usage	1	I would consider using mobile payments in the long term.	Limayem et al. (2007); Zhou (2014); Hsiao et al. (2016); Lin et al. (2018); Handarkho (2020); Putri et al. (2020); Raman and Aashish (2021);
	2	All things considered, I will expect to continue to use mobile payments into the future.	
	3	If I could, I would like to continue my use of mobile payments.	

Source: Developed by author

#### 4.4.2.2 Demographic Variables

Respondent's age, gender, education and mobile payment usage experience are considered as demographic variables in the present study. These demographics are measured in the categorical format as:

Age: Between 18-25, Between 26-40, Between 41-65, 66 and above

Gender: Female/Male/Prefer not to say

Education: High school, Diploma or bachelor's degree, Master or Postgraduate degree, Ph.D. or above.

#### 4.4.2.3 Measures

The present study will use the Likert Scale to measure all the items of the constructs except the respondent's demography except mobile payment usage frequency. There are various benefits of using the Likert Scale. First, they are easy to construct and manage. Questions that highlight the insides of a field are prepared and then respondents are invited to measure their choice to

the question. Second, the Likert Scales usually possess high reliability and track an appealing model (Nemoto & Beglar, 2014; Barua, 2013; Willits et al., 2016). This elaborates that the questions that are developed determine the capability to measure what they are envisioned to measure, which is the reliability of the scale that is, the exactness or correctness of a measuring instrument that yields reliable results (Peterson, 1994). Lastly, the Likert Scale can measure different types of attitudes and behaviours and have created significant results in several past studies (Chen & Tan, 2004; Pura, 2005; Cheung & Limayem, 2005; Hu & Kettinger, 2008; Zhou et al., 2009; Kim & Han, 2009; Lee, 2010; Kim & Oh, 2011; Michaud & Llerena, 2011; Llach et al., 2013; Lee & Chen, 2014; Al-Debei & Al-Lozi, 2014; Othman et al., 2019; Moorthy et al., 2019; Filieri et al., 2019; Zhao & Bacao, 2020b; R. S. Putri et al., 2020; Lee & Choeh, 2021). Also, numerous previous studies related to mobile payments have used Likert Scales (Schierz et al., 2010; Kim et al., 2010; Liu & Zhang, 2011; Zhu et al., 2011; Zhou, 2014b; Li et al., 2014; Di Pietro et al., 2015; De Sena Abrahão et al., 2016; Oliveira et al., 2016; Chen & Li, 2017; Lin et al., 2018; Johnson et al., 2018; Cao et al., 2018; Alhallaq et al., 2019; Poromatikul et al., 2019; Siwei Sun et al., 2020; Sreelakshmi & Prathap, 2020; Itthiphone et al., 2020; Sunny Sun et al., 2020; Handarkho et al., 2021; George & Sunny, 2021; Raman & Aashish, 2021).

Therefore, following the previous research and based on the current research design, the present study also adopts the 7-point Likert Scale for measuring the variables. The 7-point Likert scale was used for this study for a variety of reasons. To begin with, respondents have the ability to precisely distinguish each response group into a greater number of scale points (Malhotra & Birks, 2018). Second, a 7-point Likert scale gives respondents more options and helps them express their sentiments about the brand of their choice, as well as providing more room for evaluating the scale's reliability and validity (Hinkin, 1995; Ogba & Tan, 2009). Finally, when the data is analysed using complex statistical approaches, more categories (i.e., seven or more categories) are necessary (Malhotra & Birks, 2018).

#### **4.4.3 Sample Size and Sampling Technique**

It is almost impossible to access all the potential respondents from the targeted population. Hence, it is significant to select a sample for the research to manage the online survey. This can be credited to the limitations of the scholar related to money, time and limited reach to all the potential respondents (Saunders et al., 2009). As mentioned earlier, the objective of the present study is to find consumer continuance usage factors in mobile payments. Therefore, the target population of the present study consists of mobile payment users in China. In 2020, around 805 million people used mobile payment transactions in China (CNNIC, 2020).

Since the potential population for the present study is too large, it is impossible to query the entire population. Therefore, it is necessary to develop a sample, i.e., a portion of the population is chosen by the scholar for examination (Bryman, 2016). Furthermore, a sample is appropriate as it allows to make interpretations about the targeted population (Blair et al., 2013), as it assists in saving time and money.

There are various strategies and statistical methods available for determining the required sample size, which is essential to have trust in the findings of the research. Therefore, defining the sample size is a critical step in the research design. The sample size is also vital because of cost and time limitations, as an entire population cannot be studied (Saunders et al., 2009). Bryman (2016) explained that primarily there are two types of samples: probability sampling and non-probability sampling. A probability sampling method includes collecting a sample where the chances of each respondent being chosen from the population are known and are generally equal for all respondents. Conversely, in a non-probability sampling method, the chance or probability for each case being chosen from the total population is unknown, and sometimes have more likelihood of being chosen than others (Schonlau & Elliott, 2002).

The present study adopts a non-probability self-selected sampling method. The self-selected surveys, which do not encompass any restrictions, thereby allowing any internet/mobile user to complete the survey through its widespread availability on social media, in emails, and on

various advertising mediums and websites. This survey type does, however, have limitations in the sense that it lacks a sample frame. Nonetheless, a number of well-regarded scientific establishments support this type of survey as a valuable and legitimate approach (Couper, 2000). Above all, this study has applied non-probability as its sampling technique, with self-selected survey technique. Owing to the fact that this particular method has sought to encompass a wide-ranging geographical area and survey a large population in mind of gathering data from a diverse population with varying characteristics, such as in terms of age, education level and gender, for example, this method was believed to be most suitable. This is because the likelihood of the inclusion of several types of respondents is enhanced, and therefore, more validity is acquired in the collected data. Previous literature related to mobile payment studies had fluctuated sample sizes. For example, Lin et al. (2018) used 368 respondents from customers with mobile payment experience in Taiwan; Oliveira et al. (2016) had 789 students and alumni from universities in Portugal; Liang et al. (2013) study had 865 respondents from an online survey; Schierz et al. (2010) had 1447 usable surveys from persons in Germany who can use mobile applications; Su et al. (2018) had 922 respondents. In this study, the sample size is determined based on the work of Smith (2013), who proposes a method for calculating the minimum representative sample size for structural equation modelling survey research. The method uses subsets of data to determine the minimum correlation effect in estimating latent variables at the significance and power level. Smith (2013) suggested the following sample size calculation formula to be used at confidence interval 95% (1.96) and margin of error 4% (0.04) (Smith 2013).

$$\text{Sample size} = \frac{(Z)^2 \times p(1-p)}{(e)^2}$$

Z = confidence level (1.96)

p = population proportion (0.6)

e = Margin of error (0.04)

$$\text{Sample size} = (1.96)^2 * 0.6(1-0.6) / (0.04)^2 = 576$$

The sample size representation needed is determined at 576 respondents.

#### **4.4.4 Questionnaire Quality**

In quantitative research, questionnaires are the most frequently used instruments for collecting data. Questionnaires serve as a tool for gathering and evaluating knowledge, attitudes, opinions, behaviors, facts, and other information. Based on the literature review in chapter two of this study, a well-structured questionnaire was designed. The review of literature (chapter 2) helped to extract important points that needed to be included in the questionnaire for the research objectives to be met. The questionnaire was divided into three parts (see Appendix B and Appendix C). Part 1 was part of the main questionnaire about the usage of mobile payments. Part 2 was main body of the questionnaire, it contains 29 statements and sought to investigate the factors influencing mobile payment services continuance usage intention from respondents. Part 3 was designed to provide demographic data including genders, age, income, marital status, educational level and income of the respondents. Validity and reliability are the questionnaire's two qualitative criteria. The accuracy of the measurement process is referred to as validity, whereas the consistency of the constructs can be checked through reliability. Reliability is about attaining similar results through similar measuring instruments from similar partakers under similar conditions. Reliability does not essentially indicate validity, whereas if the instrument is valid, it will be reliable (Gill et al., 2010).

##### **4.4.4.1 Validity**

Measurement validity is about defining whether several measures chosen for measuring the constructs of the study are truly measuring it. According to Bryman (2016), "Validity refers to the issue of whether an indicator (or set of indicators) that are devised to gauge a concept measure that." The validity of the survey questionnaire was confirmed by exploring unambiguous language with the analysis unit through confirmatory research and also by

pretesting the instrument with colleagues, academic experts and the targeted population of the present study. There are several techniques to define the validity of a construct: face validity, construct validity, and convergent validity (Bryman, 2016; Saunders et al., 2009). Thus, the present study dealt with these three types of validity suitable for the present study.

### **Face Validity**

An extent to which a test is subjectively observed as covering the phenomenon it reasons to measure is called face validity. It refers to the relevance and transparency of an investigation as it seems to test respondents (Gravetter & Forzano, 2018). In a simpler way, if the instrument is going to measure what it is meant to measure, it has face validity (Nevo, 1985). The face validity of the present study was confirmed by reviewing the survey questionnaire by two academics to ensure that the questionnaire will accomplish what it was designed to do (i.e., its descriptive and investigation objectives and its investigation goals are to test the links between the model's constructs). In addition, necessary changes were made regarding the clarity of words in some questions by rephrasing them.

### **Construct Validity**

A positivist survey must have differentiated construct validity, which means that the constructs must measure separate things in order to undertake multivariate analysis. The goal of construct validity is to verify that the pieces that make up the constructs are meaningfully connected. As a result, factor loading is employed to see if the pre-defined elements are well-loaded on their respective constructs. The variance level of the indicators that must be explained by the relevant latent variables is examined using this method (Urbach & Ahlemann, 2010). Factor loadings of more than 0.6 were found in all of the constructs in this investigation. This demonstrates that the constructs in the three models are valid.

### **Convergent validity**

Convergent validity is the validity measure, which evaluates the level of association of the constructs' items with each other and with their composite constructs in order to associate these

items with other constructs. It is calculated using the average variance extracted (AVE), which compares the magnitude of variance in the indicators. To indicate the level of variance owing to measurement error, a construct is used to represent this magnitude. It's regarded as acceptable if the number is greater than 0.5 (Henseler et al., 2014).

#### **4.4.4.2 Reliability**

The “consistency of a concept” is referred to as reliability (Bryman, 2016). Reliability measures ensure that the constructs are internal consistent. “Internal consistency” refers to the extent to which all of the items in a test measure the same concept or construct and is thus related to the inter-relatedness in the test (Henseler et al., 2014). Composite Reliability and Cronbach's Alpha are the two main measures for assessing construct reliability.

Composite Reliability evaluates the total of a latent variable's factor loadings based on the total of factor loadings and taking error variance into account (Urbach & Ahlemann, 2010, p.19). A composite reliability score of 0.7 is considered acceptable (Wu & Chen, 2017). Cronbach's alpha assesses the reliability of a survey instrument by measuring the average correlation of its items (Santos et al., 2012). To confirm the reliability of the scales and allow them to be used in the analytical models, all of these indicators require a score greater than 0.7.

#### **4.4.5 Questionnaire Translation**

The questionnaire was designed in English than has been translated into the Chinese language, which is the native language of China customers who are the targeted sample of this research. Afterwards, another professional translator with a PhD degree translated the Chinese version back into English. In this way, the back-and-forth translation was confirmed. This process enabled the identification, discussion and modification of ambiguous expressions within some items. Following these modifications, all translated items were easily understood by the participants and correctly expressed the meaning of the original items. The final items and their sources are listed in Table 4.1 and the final versions (both Chinese and English) of the

questionnaire are provided in Appendix B and Appendix C.

During the back-translation process, no particular difficulties in translation were observed. The translation for the Chinese version questionnaire considered the aid of other useful resources to minimise the ambiguity and uncertainty about the expressions. In China, online survey services are provided by a number of websites, such as SurveyStar (<https://www.wjx.cn>) and SurveyWeb (<https://www.wenjuan.com>). The questionnaire was transformed to the website format at SurveyStar ([www.wjx.cn](http://www.wjx.cn)), one of China's most used online survey platforms. The survey link was distributed and circulated through WeChat; China's most widely used social networking application. Thus, this study chose SurveyStar for questionnaire creation, distribution and collection.

#### **4.4.6 Pilot Testing**

A pilot testing is a test run of the measurement conducted on a small scale before the data collection at a large scale. The objective of the pre-testing is to evaluate the capability of the research design and the survey questionnaire being used for data gathering (Sapsford & Jupp, 1996). The pilot sample will cover several respondents who are the target respondents for the main data collection, as covering the entire population representation for the pilot study may not be possible. Andrews et al. (2003) suggested four main phases for the pilot study:

- 1) The pilot study should be carried out among the related knowledgeable colleagues and academic experts to make sure the equality of the questions related to suitable format, relevance, and completeness.
- 2) Administering the respondents while answering the survey.
- 3) Pre-test the scale in a small group that closely follows all the techniques that are projected for the main research.
- 4) Due to the over familiarisation of the researcher with the survey, a final check by a third



party is necessary for any errors or omissions and typos which might have been overlooked.

The present study carried out a pilot study to debug the survey questionnaire. First, the instrument is dispersing among the academic experts in addition to knowledgeable university colleagues and some online friends. Second, a detailed discussion takes place to understand if there is any ambiguity in question as some of the colleagues will request to fill the questionnaire in the researcher's presence. Third, essential changes will made to the instrument items wherever considered suitable after receiving the input from academic experts. The final draft of the instrument will develop after considering their comments.

The questionnaire was posted (Piloted) online and a URL linking to it was posted on e-mail and some social media (WeChat, Qzone, Weibo, and Zhihu). A snowballing technique was applied, as participants were requested to forwarding a link to the piloted survey to friends and colleagues who they thought may be interested. The pilot study received 105 respondents after nearly one month of distributing the questionnaire's link; those respondents were a similar sample to the intended sample of the final survey, as the questionnaire filtered the participants, who had to be mobile payments users. The participants' noted that the language of the questionnaire was clear, and the length of the questions was appropriate, and it did not take more than the anticipated time in the covering statement of the questionnaire. Moreover, the reliability of the instrument's items was examined using Composite Reliability and Cronbach's alpha test carried out using SPSS IBM Program, version 27.

Table 4.2: The Internal Consistency and Reliability Testing of the Questionnaire. N=105.

<b>Constructs</b>	<b>Composite Reliability (CR)</b>	<b>Cronbach's alpha (<math>\alpha</math>) (&gt; 0.70)</b>
Convenience	0.900	0.869
Financial value	0.885	0.850
Enjoyment	0.894	0.813

<b>Constructs</b>	<b>Composite Reliability (CR)</b>	<b>Cronbach's alpha (<math>\alpha</math>) (&gt; 0.70)</b>
Social tie	0.842	0.901
Mianzi	0.889	0.801
Health value	0.825	0.767
Habit	0.867	0.822
Continuance usage	0.836	0.802

Source: Calculated by the author based on the piloted questionnaire data using SPSS

As seen in Table 4.2, the results show that all of Composite Reliability and Cronbach's alpha ( $\alpha$ ) results exceeded the value 0.70 of all constructs, which is an adequate level of reliability as recommended by Nunnally (1978), who considers this value to be the threshold level to approve the measurement reliability and internal consistency. Afterwards addressing the main steps and procedures of translation, validity, reliability and internal consistency of the questionnaire, the main survey launched, data was collected on respondents by using the online SurveyStar tool.

#### **4.4.7 Quantitative Data Analysis**

The researcher also keeps motivated people at various platforms used in the present study for collecting the data to submit their response by sharing the online survey link time and again to enhance the number of replies. The sample size is one of the critical aspects that inflicts some constraints to the methods applied to conduct the data analysis (Bryman, 2016). The present study applied the Structural Equation Modeling (SEM) method to test the proposed hypotheses. In SEM, I used Anderson and Gerbing's two-step statistical analysis approach, first analysing reliability and validity using a measurement model and then path analysis using a structural model (Anderson & Gerbing, 1988). According to Hair et al. (2010), SEM estimates a series of separate but interdependent multiple regression equations at the same time by specifying the structural model used by the statistical programme. Because of its simplicity and user-

friendliness, AMOS (version 28) was chosen to test SEM for this study.

SEM was selected as a statistical analysis method because it provides several advantages over more straightforward methods of data analysis (Garson, 2009):

- This approach encompasses more flexible assumptions, and therefore is suitable for interpretation even when multicollinearity exists.
- With SEM, the use of confirmatory factor analysis is used to reduce measurement error since multiple indicators can be defined per latent variable according to the scale, and they make up the item that is being analysed in the study. In this study, each latent construct will be measured by at least three indicators.
- Its potential allows superior model visualisation by means of its graphical modelling interface. This is one of AMOS's major advantages when compared to all other SEM packages.
- SEM provides overall testing of the hypothesized model rather than coefficients individually. For complex models such as this one, this approach is potentially valuable.
- SEM can test models with multiple dependents.
- SEM can model error terms.
- And, finally, it can provide a comparison of alternative models to assess the relative model fit to make it more robust.

The present study will apply the Structural Equation Modeling (SEM) method to test the proposed hypotheses. SEM method is considered suitable for the type of analysis performed in the current study as it permits for responding the questions that included multiple regression analysis of constructs among a group of measured independent variables and a single measured dependent variable (Fidell & Tabachnick, 2003). SEM method is considered suitable for the

type of analysis performed in the current study as it permits for responding the questions that included multiple regression analysis of constructs among a group of measured independent variables and a single measured dependent variable (Fidell & Tabachnick, 2003). SEM is a methodical process to examine the developed hypotheses. Hair Jr and Sarstedt (2019) found that two significant concerns require being considered, the order of the constructs and the association between them while considering a model. Both concerns in SEM are highly significant as they epitomize hypotheses and their associations. SEM can be used in two phases, i.e., measurement model where internal consistency, individual reliability and average variance extracted (AVE) are normally considered in SEM. In the second phase, the structural model is assessed, where path analysis is applied (Hair Jr & Sarstedt, 2019).

Normally, the path analysis or structural model holds the concurrent analysis of a number of regression models which hypothetically outline the causal associations among the constructs (Schreiber et al., 2006; Kline, 2015). Primarily, SEM contrasts from the traditional model methods as a variable can act as a dependent or independent variable or as the situation may be. This is why SEM application has exponentially enhanced to broader research areas including business and management sciences as it has several benefits over the traditional regression methods (Hair Jr et al., 2021). Therefore, the present study applies the SEM technique for data analysis.

#### **4.5 Research Design Pattern**

The research process is a broad depiction of the methodical steps and stages taken to address the study's questions. In this aspect, the research design can be defined as a research design plan that serves as an organised strategic guide for the researcher as they progress through the various stages of the research (Dillon et al., 1994). As a result, the research design is a general reflection or abstract of the research methodology (research strategy), which also comprises stages of research procedures and data collection kinds (Saunders et al., 2009). This study aims to utilise the exploratory sequential design by conducting semi-structured in-depth interviews

(qualitative method), followed by an online survey (quantitative method) to verify the results from the in-depth interviews. The study shows how several methodologies can be combined in one study to help researchers gain a better understanding of post-adoption. The study is divided into three phases based on a sequential design.

***Phase 1: Literature review*** The research began with the basic reading on mobile payments. The subjective understanding that the adoption and post-adoption of mobile payments came from the literature and discipline review. I can examine the present state of mobile payments research, allowing me to determine what is currently known and how thoroughly the mobile payments topic has been researched.

***Phase 2: Qualitative Interviewing*** The interview is semi-structured, with open-ended questions. The purpose of the interviews was to identify the dimensions and connotations of perceived value of mobile payments. This phase conducting in-depth interviews with respondents. The qualitative data analysis through the CIT.

***Phase 3: Quantitative Survey*** This phase the researcher collects the quantitative data from a large sample of the population, and then the quantitative data is analysed through statistical techniques.

The research design and the process for this study is presented in Figure 4.2

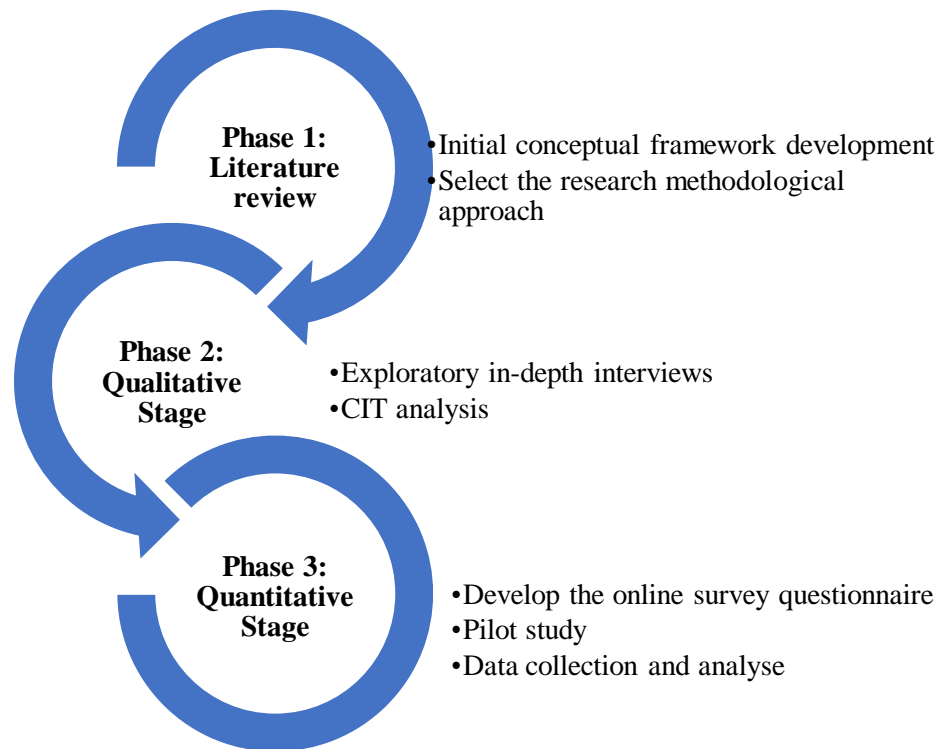


Figure 4.2 Research Design and Process

Source: Developed by author

#### 4.6 Research Ethics

As in all other studies, ethical considerations have emerged in this research. Ethical considerations relating to the conduct of the research were addressed with reference to recommendations from the literature (De Vaus & de Vaus, 2013; Fowler Jr, 2013; Knoke et al., 2017), and in accordance with Northumbria University guidelines on research governance and ethics. The study fully adhered to Northumbria University’s Research Ethics and Governance Handbook: <https://www.northumbria.ac.uk/media/27327041/nu-research-ethics-governance-handbook-2016-17.pdf>.

Before a study is undertaken, researchers should gain formal ethics approval from the appropriate ethical committee (Broom, 2006). In line with this, ethical approval (see Appendix D) was granted by the Newcastle Business School Ethics Committee. Full information regarding the nature and purpose of the research and how the results would be used was provided when seeking access to originations so that consent was fully informed (Silverman,

2013; Bryman, 2016). Privacy and confidentiality are the most obvious and important as there are understandable ethical concerns in social research (Broom, 2006). Ethical responsibility was exercised by treating confidential information appropriately through agreements regarding anonymity and confidentiality (Fowler Jr, 2013; De Vaus & de Vaus, 2013; Neuman & Robson, 2014; Knoke et al., 2017). The identities of the participating consumers were concealed by the adoption of a coding system. Participants' identity and responses also remained anonymous. Moreover, all data was stored securely, electronically on the computer which was password protected. The researcher explained the goals of this study and the procedures that will be followed as well as the methods to protect the privacy of participants in the consent form and required participants to read the informed consent form (Appendix E) and the additional participant information sheet (Appendix F).

#### 4.7 Conclusion

Given the complex and challenging nature of the research problem addressed in this thesis, it is not feasible to use a single methodology. This thesis therefore adopts various research methodologies to design, develop and evaluate the proposed solution. Based on a review and critical analysis of a number of existing methodologies, this chapter has provided analysis and justification for the methodologies chosen. Table 4.3 provides a summary of the methodological choices that have been adopted.

Table 4.3 Summary of the Methodological Choices

Research paradigm	Pragmatist	
Research design	Exploratory sequential mixed methods	
Approach	Qualitative	Quantitative

Data collection method	Individual interviews	Online questionnaire survey
Data analysis method	Critical Incident Technique (CIT)	Structural Equation Modelling (SEM)

Source: Developed by author

Following a detailed review of the different research paradigms, the pragmatist paradigm was chosen for this study. It focuses on solving the research problem without imposing restrictions on the methodologies used. Employing traditionally classified methodologies under different research paradigms is important for this study as it requires qualitative and quantitative investigations to achieve the research aim and objectives. The exploratory sequential mixed methods design was chosen as it starts with an exploratory qualitative study followed by a confirmatory quantitative study. The qualitative investigation aims to develop and enhance a conceptual model by providing an in-depth understanding of the highly subjective concept of the value and its relationship with mobile payments services. For this purpose, a snowball sampling technique was chosen to invite participants for individual interviews to collect qualitative data. The data analysis, which involved recording, transcribing, and interpreting data using CIT. The outcome of the qualitative investigation achieves the first research objectives.

The quantitative investigation builds upon the findings obtained qualitatively to test the theorised causal effect of perceived value and habit that predict mobile payments post-adoption intention. To isolate the causal impact of perceived value and habit on mobile payments continued usage, a crowdsourcing platform was used to invite participants to take part in a randomised survey experiment using a between-subjects posttest-only design for quantitative data collection. The statistical power analysis method was chosen to specify an adequate sample size. SPSS-SEM was considered the most appropriate technique for evaluating the proposed model and testing the research hypotheses. The outcome of the quantitative



investigation achieves the second and third research objectives. Both the qualitative and quantitative investigations provide the foundations to establish the research implications and suggest future research directions. The ethics considerations pertaining to the methodologies employed throughout the two phases of this study were approved by Northumbria University Research Ethics Committee.

## **Chapter 5 Qualitative Data Analysis**

### **5.0 Introduction**

This chapter examines the qualitative data collected from semi-structured interviews. Data analysis is focused on presenting the contextualised descriptions of both the initially proposed in chapter 2 (section 3) and newly emergent factors that influence the continuance intention to use mobile payment as perceived by the participants. In this chapter, I will discuss and reflect upon the results of interviews that have been conducted in this research to insights on the research question one: What are the dimensions of consumers' perceived value in the context of mobile payments? The research question shows that certain factors objectively impact the consumer perceived value of mobile payments in China. Thus, this chapter's objective is to investigate such factors that can then be presented in the literature for other investigators interested in the topic and interested practitioners of mobile payments. The analysis reflections are based on chapter two's research propositions, further considerations, and some extensive aspects of related materials. This chapter begins by outlining the characteristics of the study sample in section 5.1. Section 5.2 discusses the participants' perceptions of the initially proposed factors in chapter 2, Literature Review. The overall findings are discussed and compared against existing research findings in section 5.3. Finally, the chapter concludes in section 5.4 by summarising the main findings.

### **5.1 Characteristics of Sample**

As stated in chapter 4 (section 4.3.3.1), a critical incident is defined as 'a brief description of vividly remembered events' that are significant to the individual who experienced them (Brookfield, 1990, P.84). Hott and Budin (1999) state that 'critical incident reports are based on the subject's memory of incidents that involved human activities' (P.107). These activities can be associated with past or current experiences or observations in everyday life or professional practice (Ghaye & Lillyman, 2006). There are both positive and negative aspects

to critical incidents (Hott & Budin, 1999; Radford, 2006; Green et al., 2007). Aside from this, critical incidents are unplanned, unanticipated and uncontrolled (Woods, 1993). In this study, the critical incidents reported by interviews were positive and negative. A total of 84 interviews were conducted between July 2021 and August. Excluding the interviews that did not meet the technical requirements for critical incidents, 82 remain valid participants. As a qualitative research method, the critical incident technique means that more in-depth and valuable research data can be obtained by studying a small number of critical incidents. Flanagan (1954) believes that a sample size between 50 and 100 is sufficient to meet the needs of the general task. In view of this, this thesis believes that the sample size of 82 people surveyed meets the research needs. The interview duration ranged between 28 and 55 minutes, with an average duration of 39 minutes. Table 5.1 outlines a summary of the demographic characteristics of the participants. Given the unconditional sample selection regarding prior mobile payments experience, the interviews involved both continued and non-continued users.

Table 5.1 Demographic Characteristics of the Sample (82 Participants)

Measure	Group	Number of Participants	Percentage (%)
Age	18-25	10	12.20
	26-40	43	52.44
	41-65	28	34.15
	66 and above	1	1.21
Gender	Male	48	58.54
	Female	34	41.46
Occupational status	Professionals	63	76.84
	Students	18	21.95
	Retired	1	1.21
Geographical location	North China	16	19.51
	Northeast China	12	14.63

Measure	Group	Number of Participants	Percentage (%)
	East China	20	24.39
	South China	11	13.41
	Central China	6	7.32
	Southwest China	7	8.54
	Northwest China	10	12.20

Source: Calculated by the author based on the semi-structured interviews data of this study

According to the results, it was discovered that most respondents are in the range of 26 to 40 and 40 to 65 years old, which account for 86.59% of the total data. There is 12.20% for 18-25 and only 1.21% for 66 and above years. This is matching the age structure of internet users in China that the proportion of internet users aged 30-39 in China was the highest among all age groups. Among the respondents, 48 are male, accounting for 58.54% of the total sample, 34 are female, accounting for 41.46% of the total sample, and the age-range is predominantly between 26 and 40 years old. The distribution of responses for gender is almost equal, roughly the same as that in China's overall population. Regarding the occupational status, most respondents are professionals with 76.84%; students is 21.95% and only 1.21% are in the range of retired. Also, it shows that most respondents used mobile payment services in the location of East China accounting for 24.39% of the total data. North China with 19.51%, Northeast China with 14.63%, South China with 13.41%, Northwest China with 12.2%, Southwest China with 8.54% and Central region with 7.32%. The participants came from different regions to make sure diversity. The extent of mobile payment usage varies from person to person, from continual use to occasional use. They mostly used mobile payment services are noted for account inquiry, transfer remittance, bill payment, red envelope (a monetary gift), living payment, etc. After analysing the collected data, 98 critical events met the research objectives (to identify the dimensions and connotations of the perceived value of mobile payments), including 89 positive events (related to perceived values) and nine negative

events (related to perceived costs).

## **5.2 Data Analysis**

The classification of critical incidents can be derived from theoretical models or summarized from the sample (Jiang & Hu, 2011). The analysis process of the qualitative stage is consistent with Roos's (2002) research method. The content analysis extracts the dimension of mobile payment services value from the collected respondents' narratives of positive and negative events related to the use of mobile payment services (Roos, 2002). First, the dimension of the value of mobile payment services comes from the inductive classification of critical events. Critical events are defined as real events that are valuable and meaningful to the overall research objectives. Whether it is positive or negative, it has value in analysis and evaluation (Flanagan, 1954). In this study, critical events refer to users' personal experiences, feelings and perceptions when using mobile payment services. It expresses the focus and issues that mobile payment users are most concerned about. Based on the existing literature on the value dimension and driving factors of mobile network services, which are discussed in chapter 2 and chapter 3, this study establishes a preliminary framework in chapter 3 (Figure 3.1) for classifying value categories of mobile payment services. Second, the classification of critical events (Table 5.2) was carried out by three researchers (two faculty members of the e-business department who are referred to here as Researcher A and researcher B, and myself (the doctoral candidate). For the convenience of elaboration, the viewpoints of researchers A and B are respectively presented in the subsequent discussion of this current section. The classification process was based on the analysis steps of Yin et al. (2010). First, the collected events were classified and named through the basic classification criteria, which followed the perceived value in the framework (Figure 3.1); then, the critical events were grouped into the classification framework according to subjective judgment. To verify the judgments made by the doctoral candidate, researchers A and B were given the incidents and category names and requested to sort the incidents into the newly created categorie, named echological value. The

reliability index tested the reliability of the classification process (Perreault Jr & Leigh, 1989).

$$I_r = \sqrt{\frac{\left(\frac{F_0}{N} - \frac{1}{K}\right)}{\left(\frac{K}{K-1}\right)}}, F_0/N \geq 1/K$$

$I_r$  is the reliability index.  $F_0$  is the number of events judged to be consistent between researchers.  $N$  is the total number of events.  $K$  is the number of categories. The results are considered reliable if  $I_r$  is greater than 0.8.

Compared to the classification result between researcher A and researcher B, 92 events achieved a consistent classification.  $N=98$ ,  $K=10$ , the reliability index  $I_r=0.869$ . Using the same method, the two previous researchers (A and B) and I judged 96 identical events. After substituting into the reliability index formula to calculate  $I_r=0.890$ . Therefore, this classification has good reliability.

After using the critical incidents technique (CIT) and in-depth interpretation and analysis based on the content analysis method, the summary of the value dimension of the mobile payment services is shown in Table 5.2.

Table 5.2 Summary Table of Critical Events of Value Dimensions of Mobile Payment Services

<b>Value Dimensions</b>	<b>Factor</b>	<b>Description</b>	<b>Typical Critical Incident Description</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Utilitarian value	Convenience value	Convenience refers to the immediate convenience of purchasing goods in locations convenient to customers, requiring minimum effort.	I can use mobile payment anytime and anywhere, and pay the bills without leaving home.	32	32.65

<b>Value Dimensions</b>	<b>Factor</b>	<b>Description</b>	<b>Typical Critical Incident Description</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Utilitarian value	Financial value	The economic benefits users get from using mobile payments.	One day I went to the supermarket to shop. When I check out at the checkout counter, I can enjoy a 20% discount on the day of payment via mobile phone, which saves me some expenses.	15	15.3
Hedonic value	Enjoyment value	Psychological or emotional gains that users receive while using mobile payments.	Now, whether it is QQ group or WeChat group, there are often friends who make red envelopes. Sometimes, although there is not much money, the process of grabbing red envelopes is very interesting.	17	17.35
Social value	Mianzi	Mianzi reflects one's social image, which is achieved by performing social roles accepted by others.	Using mobile payments is important for preserving mianzi because it is a status symbol in my environment.	6	6.12

<b>Value Dimensions</b>	<b>Factor</b>	<b>Description</b>	<b>Typical Critical Incident Description</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Social value	Social tie	The benefits that mobile payment services help users enhance interaction, communication and build network relationships.	Every time I send a red envelope in the WeChat group, it becomes very lively. Many people who don't usually speak are also coming out. In the chat, everyone has also improved their feelings.	8	8.16
Ecological value	Ecological value	The environmental benefits that users get from using mobile payments.	Mobile payment reduces the use of consumable resources such as paper and ink during the payment transaction.	6	6.12
Health value	Health value	The health benefits are preventive health behaviour to contain the spread of the Covid-19 outbreak.	Using mobile payments can maintain social distance and reduce the disease spread.	5	5.10
Cost	Privacy risk	The perceived risk of using mobile payments.	Fear of leaking personal information.	5	5.10
Cost	Based on mobile (Risk associated with using the	Mobile payments are based on smartphone platforms.	Fear of the phone suddenly runs out of battery, goes	1	1.02



Value Dimensions	Factor	Description	Typical Critical Incident Description	Frequency	Percentage (%)
	mobile device itself)		missing or loses its Internet connection.		
Cost	Low-level pain of payment	The negative emotions we feel when making a purchase.	I don't feel distressed every time I pay with my mobile phone, spend money like water.	3	3.06

Source: Developed by the author based on the semi-structured interviews data of this study

As discussed, the data analysis has employed the proposed initial research model (Figure 3.1) as a starting point to explore the existing themes of the model further. Moreover, it allows new themes to emerge as the progress of analysis. The following subsections (section 5.2.1- 5.2.6) discuss the findings of data analysis based on the participants' interpretations of the proposed themes, namely convenience value, monetary value, enjoyment value, mianzi, social tie and health value. In addition, a new theme has been discovered from data analysis, namely ecological value, which will also be discussed (section 5.2.7). The participants' views about the effect of each perceived value on mobile payments will then be presented and analysed.

### 5.2.1 Convenience Value

As discussed in chapter 3 (section 3.2.1), convenience value has been conceptualised as the consumers' perceived utility from the ease of signing up to and using mobile payment as a service that can be accessible anytime and anywhere (Moghavvemi et al., 2021; Lin et al., 2020). From the participants' perspectives, the convenience value of mobile payments is predominantly identified in terms of the ubiquity of the mobile phone. In this context, ubiquity means that they carry their phones all the time with a multitude of applications that they use on

the move. Having the payment facility integrated into the mobile phone, which is frequently used for a variety of other utilities, is perceived by adopters as a convenient alternative to conventional wallets. The participants also mention that making a payment through a mobile saves them the effort of getting cards or cash out of a physical wallet. This study demonstrates that convenience entails a wide range of aspects.

Convenience can be gained through speed and time benefits related to using a particular service. Mobile payments' convenience feature has replaced interactions with physical money and shortened transaction time, satisfying people's desire for convenience in life. This agrees with previous research that confirmed the significant effect of convenience of mobile payment behavioural intention (De Kerviler et al., 2016; Gao & Waechter, 2017; Jungkun Park et al., 2019; Moghavvemi et al., 2021). With the rapid advancement of technology, the popularity of mobile payment service options is mostly due to their flexibility and convenience (Lee, 2009; W. R. Lin et al., 2020). Mobile payments are instant, simply tap or scan. Users can access to mobile payment at any time, complete payment when needed, and users can improve their time efficiency by using mobile payment. Few quotes from the participants of this study are shared here:

“...just pick up the phone and pay. It's so convenient.”

“It is convenient and fast to use mobile payment. When I pay my credit card, I no longer need to queue in front of the bank counter, saving my waiting time in line.”

In addition, digital infrastructure development supports mobile payments. Mobile payments are used almost as much for offline shopping as online shopping, indicating that they have successfully integrated a large number of physical shops into their networks. Some participants reported that they now use mobile pay across many physical locations in their daily lives, including brick and mortar stores, restaurants, and different transportation tools.

“When I want to buy something, just scan the QR code, and the payment is successful. Not only in shops also in street stalls.”

“I used them to buy almost everything in my life. I don’t really need my wallet anymore since they were so widely accepted – online shops like Taobao and Tmall, or physical stores like the newspaper booths downstairs. Once I even brought fresh flowers from farmers on the street using WeChat Pay.”

“They (QR codes) are everywhere – breakfast vendors, supermarkets, grocery stores, restaurants, farmers on the street ... I don’t really have to ask the vendor, like ‘do you accept mobile payment here?’ When I saw the codes, I know immediately there’s something that I can buy (with my phone)!”

Furthermore, mobile payments allow individuals to access services without leaving their current location. Users can choose to pay at a suitable place, such as home, school or work. Few other relevant remarks from participants:

“One day, I didn’t pay the water bill until I ran out of water at home, so I just paid with my mobile phone. Now the water, electricity and gas bills at home can be paid by mobile. It’s so easy.”

“I was glad I had the ability to pay my bills... just pulled out my phone and did it. It felt very productive too, to get something like that done (instantly with less effort); I felt like I accomplished something in class today.”

“I have been on business trips, big and small cities everywhere. A month spent either in a hotel or on the way to the airport or bullet train station, no wallet, only mobile phone. So convenience.”

In addition, some participants consider using mobile payments for small purchases as another convenience factor:

“I don’t need to carry coins to take the bus. Before, I used to have to save coins for the bus, but now I only use my phone.”

“I don’t need change (of money) for fruits and vegetables, and no more small change or coins in my hand.”

“Before the washing machine in my school accommodation used to be coin-operated. Now it changed to scan the code to pay. I don’t have to walk around the building looking for coins anymore. It’s really very convenient.”

“Once I went to another city, I forgot to bring my wallet that day, and I really had no money. Luckily, I used mobile payments to pay for the car parking and my lunch.”

The qualitative findings suggest that convenience is a critical component of mobile payment value as perceived by participants, regardless of their previous mobile payments experience. This agrees with previous research that confirmed the significant effect of convenience on mobile payment behavioural intention (De Kerviler et al., 2016; Gao & Waechter, 2017; Shelvia et al., 2020; Alhassan et al., 2020).

### **5.2.2 Financial Value**

In response to whether participants perceive mobile payments to save money, some of them stated that they get discounts when using mobile payments. In general, financial value has an impact on selecting a service option among alternatives to completing a task more cost-effectively. It refers to the more significant monetary advantage than alternative competitive options (Sheth et al., 1991; Prodanova et al., 2019). Financial value is generally a key factor related to perceived value, because it allows easy access to services with a high monetary value when compared to other options:

“On that day, I went shopping in Supermarket. When I checked out at the cashier desk, I found that the supermarket union Alipay was engaged in an activity. I could enjoy a 20% discount for mobile payment on that day, which saved me some expenses.”

“...sometimes I forget to take the loyalty card out and use it or sometimes I am in a rush and I

don't bother to use it so if it was automatically enabled on the phone on the app I think it would save some money..."

"I am still slightly wary about my details being held somehow...in a mobile phone. But...if someone said to me actually if you paid by your phone you would get 10% off your shopping if you went to this shop or something, if only that was the case, that would definitely give me a reason to use it instead."

Furthermore, some participants thought that seeing the balance before and after the payment would help them to budget more effectively rather than directly saving them money.

"Monthly reports of my spending (is) categorised, (share) useful insights of how I spend my money and more ways to save money."

"With mobile payments, I found that my every expenditure can be clearly checked, and there are some financial management apps that can help me make a monthly budget and remind you when I exceed the budget!"

The bigger mobile payment service providers in China, such as WeChat and Alipay, have their own financial products, which can generate money from users' and merchants' capital accounts. With mobile payments, the participants can easily manage their money, take it out and use it at any time. Few other relevant participant quotes support this view:

"In most cases, when I get paid, I transfer the money to Alipay as soon as I am paid, so I can directly swipe my phone when I need to use it, which does not affect my use, and I also get some additional interest income as well."

"Alipay has a lot of financial products. I can manage my money through mobile payment with my fingers."

It is reasonable to conclude, based on these results, that mobile payments are perceived by some of users as having monetary value. As far as mobile payments users are concerned, they

confirmed that they got monetary value from the service.

### **5.2.3 Enjoyment Value**

In the context of this study, enjoyment value represents the emotional aspects that could be derived from using mobile payments, such as the positive feelings and fun or pleasure (Kim et al., 2019; Singh & Somaiya, 2020). Many participants have linked emotional aspects of joy to how mobile payments are intuitive and convenient. In addition, the aesthetic aspects of app design are considered by some adopters / participants as a factor that might lead to some effective states of likely use of a mobile payment service. Furthermore, interviewees have expressed their enjoyment in using mobile payments in terms of emotional states, such as satisfaction and ‘feeling good’, which they associate with the way the payment is made and the interactivity of the mobile payment services. This is evident in their enjoyment when they describe the ease and speed of payment and the successful payment notification they received from the phone, for example:

“... it doesn’t take you through loops to prove who you are, it’s just you click or tap with your phone and then they know who you are. So, I think the enjoyment comes from the convenience rather than any exclusive enjoyment source.”

“My experience when I hear the sound from my mobile which is the beep when I make the payment, it makes me feel good.”

“...a massive enjoyment value, because I derive enjoyment from convenience and ease, that would take out an entire thought process of what I have to do and make it so simpler and save me money.”

“I’d probably find it more enjoyable than using chip and PIN, but that comes from the ease factor.”

However, nowadays, whether in the QQ group or WeChat group, friends often give hongbao

(literally “red envelope”). Users in groups can exchange one form of mobile hongbao called as a Lucky Hongbao. When small amounts of Lucky Hongbao are given to friends, it has a playful character to it (Kow et al., 2017). According to the participants of this study, though they don’t have much money, the process of grabbing red envelopes is very interesting to them, as they describe that:

“I like to use mobile phones to grab red envelopes, and it’s fun.”

“I usually grab red envelop that would make me happy.”

The results described above demonstrate that among participants, the enjoyment factor is a key component of the perceived value associated with mobile payments. Despite some participants referring to specific aspects of the red envelope as a source of enjoyment, the findings indicate that enjoyment is mainly derived from convenience-related perceptions.

#### **5.2.4 Mianzi**

Mianzi represents one’s social image, produced by the performance of social roles recognised by others (Zhou & Zhang, 2017; Filieri et al., 2019). The results of the qualitative research demonstrate that mobile payments to enhance Chinese consumers’ mianzi is important to improve the consumer’s reputation in front of significant others. The Chinese consumers may add value to mobile payments because it allows them to gain mianzi, making them feel special, accepted and recognised by others. It has been described by users who gain mianzi as the good impression that others would have of them if they used mobile payments in their everyday lives. For example, the participants describe:

“When I was able to pay via mobile payments, I felt like a good citizen. Although I am old, I am not left behind by mobile technology.”

“...when I invite friends for a coffee or this sort of things, when I pay using my mobile in front of them, I feel this is cool.”

Some participants, however, indicated that they would lose mianzi if they did not use mobile payments.

“I had just come back from abroad that year. Everyone paid with mobile phones, but I only used paper money. I felt so humiliated.”

“All my friends around me are using mobile payment, and if I don’t use it, I feel like a laggard.”

### **5.2.5 Social Tie**

Based on the analysis of interviews, it appears that social tie plays an important role in the continuance usage intention of mobile payments. Social tie will provide rich scenarios for mobile payments. For example, mobile payments can create new channels for friends to exchange money (Handarkho et al., 2021; Singh et al., 2020), which can increase someone’s social tie subsequently. Social networking is actually a kind of scene, the biggest feature of which is the convenience of online and offline communication between people (Gan et al., 2017; Sze Wan et al., 2019). Social services will provide rich scenarios for mobile payments, and the integration of social services (e.g., WeChat and Tencent QQ) with mobile payments will create new channels for the transfer of money between friends (Kow et al., 2017). The convergence of social value and mobile payments will have a huge impact on people’s financial transactions. The fun and convenience of transactions will greatly reduce the barriers between members in social interaction. For example, WeChat Payment and Alipay have exerted a profound influence on the development of mobile payment. The red envelope has social value, which is a social behaviour in mobile payment (Kow et al., 2017). Sending or receiving red envelopes through mobile payments strengthens the communication and interaction between members (friends, relatives and friends, net friends) and reduces the distance between each other. The traditional payment cannot have this influence. For example, the interview participants describe:

“Every time there is a red envelope in the WeChat group, it becomes very lively; many people



who usually do not speak also come out, and we also enhance the relationship in the chat.”

In China, hongbao (“red envelope”) gifting is becoming increasingly difficult for young Chinese who have left their hometowns to work in cities (Kow et al., 2017). The changing social structure of family members needing the maintenance of traditional relationships beyond distance reduces the efficacy of paper hongbao. As a consequence, the offering of digital hongbao is growing more popular among distant relatives. For example, the interview participants describe:

“During festivals, we always send hongbao back home. For example, during Chinese New Year, I sent a hongbao to my niece through WeChat payments. We could not meet since we live in different cities.”

“On the day of the New Year, after dinner, the whole family will have a new family activity - WeChat grabs red envelopes....”

Based on the findings, mobile payments provide both mianzi and social tie as social value. Participants who perceived social value believed that using mobile payments would enhance their mianzi and social tie among their peers and family.

### **5.2.6 Health Value**

In the context of this study, health value represents preventive health behaviour to contain the spread of a disease, e.g., the COVID-19 virus and relevant illness (Sze Wan et al., 2019; Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2021; George & Sunny, 2021). Some participants who perceived health value believe that using mobile payments is a preventative health behaviour. In addition, some participants described that even in the absence of the pandemic, paper money is dirty and carries a lot of bacteria. Participants’ quotes relevant to health value:

“To control the spread of the virus, payment via Alipay and WeChat Pay has become an ideal

payment method to ensure our personal health safety. I can pay by scanning a QR code without touching anything, which greatly reduces the risk of infection.”

“Since childhood, I knew paper money is very dirty, after touching it (we) must wash hands!”

### **5.2.7 Ecological Value**

In addition to the factors initially included in the proposed model (Figure 3.1), a new factor has emerged from the feedback of interview participants, as a significant benefit to mobile payments, namely ecological value. The ecological value refers to the value delivered by consuming environmentally friendly products or services (Koller et al., 2011). In mobile services, Zhang et al. (2020) defined users who have high environmental concern is more satisfied the mobile service. Mobile payments is a new kind of green and low-carbon behaviour application based on information technology (Zhang et al., 2020). It offers a new way that enables people to protect the environment, such as using electronic invoices to reduce the paper waste. The interviewees describe how mobile payments create ecological value to reduce resource waste and protect the environment:

“Before the use the mobile payments, banknotes were widely used, but in the process of circulation, banknotes would become worn out and broken. After a certain period of time, banks had to recycle the banknotes and destroy them. If they were destroyed in large quantities, they would undoubtedly cause damage to resources and the environment.”

“Use the mobile payments is not about eliminating cash, but about promoting environmental protection.”

Based on the above argument, the participants perceived ecological value of mobile payments affects their continuance usage intention.

### 5.3 Discussion of Qualitative Results

This section of the chapter aims to respond to the one research question: “What are the dimensions of consumer perceived value in the context of mobile payments?” Therefore, this part builds the foundation of the contribution of this thesis by exploring customer perceived value in mobile payments, where prior research is scarce (Zhao, 2019; Park et al., 2019; Putri et al., 2020). In this context, this section focuses on to analyse what mobile payment service users perceive as valuable in different types of mobile payment service options in everyday life situations. The findings of this qualitative study have provided contextualised interpretations of the value components that affect consumers’ continuance to use mobile payments. It will combing the relevant studies on the value of mobile services and the analysis of typical cases of mobile payments. This study applies the critical incident technique (CIT) furthermore to generalize and extract the value dimension and main connotation of mobile payments (compiled in Table 5.2). From the perspective of user-perceived benefits, it is considered helpful in discovering the underlying value perceptions.

Existing literature on “value” may not explain adequately how ubiquitous mobile payments provide value beyond traditional payments (Watson et al., 2002). The findings reveal multiple subdimensions of perceived value, some of which have not been reported earlier in mobile payment contexts. For example, Alhallaq et al. (2019) employed utilitarian value (convenience and monetary), hedonic value (enjoyment) and social value as perceived benefits of using mobile payments. Karjaluoto et al. (2019) only examined utilitarian value and hedonic value drive the use of mobile financial services. And Shelvia et al. (2020) analysed the factors that influence continuance intention to use mobile payments from perceived benefits, convenience and social value. The results complement the previous value literature and help further conceptualisation of the perceived value of mobile payments by giving justified meanings to the value dimensions in mobile payment services. There are similarities and differences between the value dimension of mobile payment services identified in the interviews and the definition of value dimension in the existing literature. Based on the above results (compiled

in Table 5.2), this study divides the value of mobile payment service into the following dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value, health value and cost-related value (privacy risk, based on mobile and low-level pain of payment). This complements previous value theories and helps further conceptualisation of the value of mobile payment services in the future. Table 5.3 provides an outline of the main factors of the initially proposed and newly emergent value that have been identified based on the participants' views.

Table 5.3 Identified Factors of Value Dimensions

Value Dimensions	Factor	Factors derived from the interviews	Prior research
Utilitarian value	Convenience value	Mobility and ubiquity of mobile phones Easy and fast payments Flexible payments Efficient	Kim et al. (2010); De Kerviler et al. (2016); Lin et al. (2018); Ahn and Lee (2019); Park et al. (2019); Pal et al. (2020); Raman and Aashish (2021);
	Financial value	Save money Special offers Free gifts	Cocosila and Trabelsi (2016); De Kerviler et al. (2016); Park et al. (2019);
Hedonic value	Enjoyment value	Enjoyment Feel good Fun	Sweeney and Soutar (2001); Venkatesh et al. (2012); De Kerviler et al. (2016); Park et al. (2019);
Social value	Mianzi	Accepted and recognised by others	Wang (2007); Lisha et al. (2017);

Value Dimensions	Factor	Factors derived from the interviews	Prior research
		Gain mianzi Social identity	Filieri et al. (2019);
	Social tie	Build and maintain relationships Social interaction	Hsiao et al. (2016); Lin et al. (2020); Handarkho et al. (2021);
Health value	Health value	Ensure our personal health safety Reduces the risk of infection	Sreelakshmi and Prathap (2020)
Ecological value	Ecological value	Reduce resource waste Protect the environment	Zhang et al. (2020)

Source: Developed by the author based on the semi-structured interviews data of this study

The qualitative analysis reveals that utilitarian value is a critical component of mobile payment value as perceived by participants, regardless of their previous mobile payments experience. Utilitarian value is based on the comments of the participants. In general, mobile payments make financial transactions more convenient. Mainly because of the comparison to the payment in the physical environment, the mobile payments option provides service features, such as convenience, time-saving, discount and bonus (Cohen, 2013), rendering users able to develop perceived value in mind after comparison, and further contribute to continuance usage intention. The findings of this work also support the view of scholars, such as Kim et al. (2007), Lin & Lu (2015) and De Kerviler et al. (2016).

According to existing literature, hedonic value can be acquired when a product/service stimulates feelings fun or enjoyment and has been shown to play an important role in determining technology adoption and post-adoption (Sheth et al., 1991; Kim & Oh, 2011; Huang et al., 2019). Although most participants think that enjoyment could be derived from the convenience and financial related aspects (Cocosila & Trabelsi, 2016; De Kerviler et al., 2016). However, participants suggest that hedonic value is also a key determinant of mobile

payments continuance usage. Participants also added that the hedonic value of mobile payments also comes from some innovative services or functions it provides, such as sending and receiving red envelopes, which makes users feel fun or excited.

Previous mobile payments adoption research has confirmed the significance of social value as an influential value component (Cocosila & Trabelsi, 2016; De Kerviler et al., 2016). Moreover, the qualitative findings of this research indicate that the social value of mobile payments in China has two specific factors: mianzi and social tie. Mianzi refers to the social recognition and improvement of self-image in the impression of others brought to users by using mobile payments (Hu, 1944; Filieri et al., 2019; Chen & Lunt, 2021). In contrast, social tie refers to the benefits of mobile payments in helping to build network interpersonal relationships (Chai et al., 2011). With the fast growth of mobile payment in recent years, social tie have become increasingly important (Hsiao et al., 2016; Gan et al., 2017). According to data from Tencent, n.d., the “red envelope (Hongbao)” has gradually entered into people’s daily life, with the daily amount of red envelopes distributed through its two mobile payment apps surpassing the daily money amounts during the Spring Festival holiday. More and more organizations are paying attention to the social field of mobile payments (Khatimah et al., 2019; Nan et al., 2020).

Based on CIT analysis, this study also clarifies that mobile payments have health value and ecological value, which are not possessed by traditional cash or card payment services. So as an innovative payment method, mobile payments have new value characteristics. There are few references (e.g., Sreelakshmi and Prathap, 2020; Zhang et al., 2020) to these two dimensions in the existing research literature on the value of mobile network services. The qualitative study findings suggest that health value influences the continuance usage of mobile payments, especially during COVID-19. It explains the adoption and continuance of mobile payments as a preventive health behaviour to contain the spread of the COVID-19 outbreak.

In this current study of the value dimension of mobile payment services, this thesis analyses

the benefits of mobile payment services to users and discusses the costs paid by users when using mobile payment services. There are three cost factors mentioned in Table 5.2: privacy risk, based on mobile (risk associated with using the mobile device itself) and low-level pain of payment. Firstly, in mobile payments, perceived risk represents the hazard-perception perceived by customers from the compromise of personal information and loss of finance (McKnight et al., 2002; Kim & Oh, 2011; Poromatikul et al., 2019; Shao et al., 2019; Kang & Namkung, 2019; Raman & Aashish, 2021). Because of customers' trepidation of financial and privacy risks using mobile payments, perceived risk is identified as a salient adverse factor affecting customers' continuance intention (Yang et al., 2015; Lin et al., 2020). For example, the interview participants describe:

“As I have yet to experience large transactions, I usually use my bank card to make them. I didn't connect my bank account (to mobile payments), just that I feel a little less secure.”

“Last time I saw one of my friends' Alipay accounts stolen, I stopped using it.”

“Mobile payments will leave a track of where and what you've bought. And I already feel like Big Brother is watching me. I really don't like this.”

“In my opinion, any payment method that is used always carries a certain amount of risk, but I think using my credit card in a shop can make me feel that the transaction is more secure because there is no worry about anything being hacked. I am not sure about the security of the mobile payments, however I still feel that hacking the information contained in those apps might be a much easier task compared to using a credit card.”

Secondly, Mobile payments are based on smartphone platforms. This risk associated with using the mobile device itself. One interviewee mentioned that “if the phone suddenly runs out of battery, goes missing or loses its internet connection, the transaction can't take place”. Thirdly, the pain of paying refers to the negative emotions we feel when making a purchase (Pisani & Atalay, 2018; Pomerance, 2020). The pain of paying will vary depending on the type of payment you make. Mobile payments, unlike credit cards and cash payments, experience a

low-level pain of payment. It is true that consumers feel lower levels of pain when making purchases with mobile payments. Three participants described that the lower levels of pain would make them spend more money using the mobile payment options.

“No matter how much I spend, one yuan (RMB) or a thousand yuan (RMB), it’s all done in an instant, which is freeing my mind from the burden of spending, which increases both necessary and unnecessary costs.”

“Using mobile payments, I do not need to hand out money, so there will not be a real feeling that I have spent money, there will not be any pain sensed in payment, so I can spend more money.”

“I have reduced my usage of mobile payments in recent months. At the end of each month, I am not sure where my money has gone (with mobile payments). . .”

There is existing research focusing on the impact of mobile payments on pain of paying, which indicates that using mobile payments results in reduced levels of pain when compared to cash, but also to cards (Pisani & Atalay, 2018).

## **5.4 Conclusion**

The objective of this chapter was to provide a detailed analysis of the qualitative data obtained through the semi-structured interviews. The results of the interviews conducted in this chapter and gaining a better understanding of the research question: What are the dimensions of consumer perceived value in the context of mobile payments? This analysis of the data was conducted using the CIT that extends the perceived value theory to providers as determinants of mobile payment services adoption intention. Interestingly, the findings show that, from the perspective of user-perceived benefits, it contains the following dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value, and health value. From the perspective of users’ perceived sacrifices, it contains three dimensions: privacy risk, based on mobile (risk associated with



using the mobile device itself) and low-level pain of payment. The existing constructs convenience value, financial value, enjoyment value, mianzi, social tie and health value already found to influence continuance usage of mobile payments in the literature research - were affirmed in the main study interviews. In response to the rapid development of mobile services, the value of mobile payment services is continuously changing. Based on these findings, this chapter has presented evidence to use the proposed research model for empirical research. Furthermore, through CIT, this chapter introduces ecological value as a new influential construct in mobile payment services. This extension is intended as an interesting direction for further research. Mobile payment services providers need to understand that the value of the services is determined by their customers as opposed to the services themselves.

## **Chapter 6 Quantitative Data Analysis**

### **6.0 Introduction**

This chapter presents a quantitative analysis of the data obtained from the survey experiment. As discussed in Chapter 4, Structural Equation Modelling (SEM) will be employed to test the proposed hypotheses of this study in two steps. The first step will assess the measurement indicators to confirm their reliability and validity to represent the underlying constructs. The second step will determine the structural model based on its hypothesised relationships and predictive power. This chapter has been organized in the following way. Section 6.1 review the research hypotheses, section 6.2 describes the data screening procedure and the resulting sample. Section 6.3 introduces the data normality before analysis the factors. Then the Principal Components Analysis (PCA) was applied to to evaluate the factorial validity of the questionnaire items in section 6.4, before the descriptive demographic analysis of the data, whereas in section 6.5, the demographic data are presented. The data analysis procedures are described in section 6.6. The measurement model and structural model are evaluated within data analysis. Section 6.6.4 presents the structural model assessment results in terms of the study hypotheses and the predictive power of the proposed model. The mediation analysis results are shown in section 6.6.5. Finally, a chapter summary is provided in section 6.7.

### **6.1 Review the Research Hypotheses**

This research was conducted on the basis of hypothetical assumptions, as the research measures mobile payments usage continuance using the value-based adoption model (VAM), expectation

confirmation model (ECT) and habit to identify the most critical factors influencing Chinese consumer continuance intentions toward mobile payments. The literature review about mobile payments and customer perceived value in Chapter 2 (section 2.1 and 2.2) supported the views that addressing those factors are:

H1a: Perceived utilitarian value (convenience and financial value) will positively affect habit.

H1b: Perceived utilitarian value (convenience and financial value) will positively affect continuance usage of mobile payments.

H1c: The effect of perceived utilitarian value (convenience and financial value) on continuance usage of mobile payments is sequentially mediated by habit.

H2a: Perceived hedonic value (enjoyment) will positively affect habit.

H2b: Perceived hedonic value (enjoyment) will positively affect continuance usage of mobile payments.

H2c: The effect of perceived hedonic value (enjoyment) on continuance usage of mobile payments is sequentially mediated by habit.

H3a: Perceived social value (mianzi and social tie) will positively affect habit.

H3b: Perceived social value (mianzi and social tie) will positively affect continuance usage of mobile payments.

H3c: The effect of perceived social value (mianzi and social tie) on continuance usage of mobile payments is sequentially mediated by habit.

H4a: Perceived health value will positively affect continuance usage of mobile payments.

H4b: Perceived health value will positively affect continuance usage of mobile payments.

H4c: The effect of perceived health value on continuance usage of mobile payments is sequentially mediated by habit.

H5: Habit will positively affect continuance usage of mobile payments.

As discussed earlier in Chapter 4, the Research Methodology of this research, all constructs used in this study are from well-established peer reviewed academic sources. Based on the sample size identified in this research (section 4.4.3, chapter 4), the questionnaire was developed and distributed to Chinese consumers. The research measures determinations of the continuance usage in mobile payments using the value-based adoption model and expectation confirmation model to identify the most important factors influencing Chinese users' continuance usage of mobile payments. Twenty-nine items are spread across eight constructs: convenience, financial value, enjoyment, social tie, mianzi, health value, habit and continuance usage.

## **6.2 Data Cleaning and Missing Data**

Data examination is “a time-consuming, but necessary, initial step in any analysis that researchers often overlook” (Hair et al., 2010, p. 32). The data presented in this research was collected by using online questionnaire administration. In this research, no missing data were found because of the compulsory setting on SurveyStar that makes it mandatory for respondents to move to the next question only after they have answered the present one. If a

respondent would not like to answer a current question, they could end the online questionnaire.

Therefore, no missing data were created, and all the questions of the 752 received surveys were fully completed. However, to ensure that all the data could generate a high standard of result, the following two criteria were applied to select the data.

A pilot stage was conducted among Chinese consumers using mobile payments to test the length and time required to complete the survey questionnaire. On average, the survey questionnaire took about ten minutes to complete. When the time for completing the questionnaire was significantly lower than three minutes, it was assumed that the questionnaire had been completed with little thought. However, some of the answers in the questionnaire did not make sense, even though they were completed in reasonable times. These questionnaires had been deemed to be randomly completed. Hence, you would need to get rid of all those questionnaires from the dataset. For instance, some respondents provided the same response throughout the questionnaire, even though some questions were reverse coded. As such, these types of questionnaires have been removed. Lastly, after the initial screening and deletion of six unqualified responses, the remaining data were subjected to a normality test and an outliers examination, which will be explained in the next section. A total of 746 questionnaires were used for the final analysis of the data.

### **6.3 Normality**

Normality is characterised as a central assumption in multivariate data analysis (Tabachnick et al., 2007). There are two types of normality that can be applied: univariate and multivariate.

Univariate normality relates to a single variable. Multivariate normality, which consists of the

combination of two or more variables, means that the individual variables are normal in a univariate sense but also that the combination of variables is also normal (Hair, 2009). As stated by Hair (2009, P.15), “if the variation from the normal distribution is sufficiently large, all resulting statistical tests are invalid.” He goes on to caution that violation of normality within multivariate analysis can be a reason for underestimating fit indices and standardised residuals of estimations. Hair (2009) reported that if the constructs satisfy the multivariate normality, they also fulfil the univariate normality, while the reverse is not necessarily correct. It is quite difficult to determine multivariate normality. Accordingly, this study focuses on achieving univariate normality for all variables as sufficient. Data skewness and kurtosis are the ways utilised to assess univariate normality, for validating an assumption. Table 6.1 below details the results of the test conducted to test the normality for this study:

Table 6.1 Skewness and Kurtosis of the Scale Items

Items	Mean	Std.	Skewness	kurtosis
CON1	5.606	1.462	-1.165	0.653
CON2	5.574	1.448	-1.243	0.923
CON3	5.564	1.472	-1.144	0.701
CON4	5.666	1.478	-1.393	1.291
FV1	5.485	1.339	-1.086	0.701
FV2	5.568	1.524	-1.215	0.823
FV3	5.363	1.529	-1.057	0.569
FV4	5.326	1.445	-1.087	0.743
EN1	5.438	1.628	-0.997	-0.131
EN2	5.196	1.600	-0.915	-0.200

Items	Mean	Std.	Skewness	kurtosis
EN3	5.426	1.577	-1.082	0.101
ST1	5.677	1.311	-1.232	1.185
ST2	5.938	1.363	-1.775	2.572
ST3	5.611	1.352	-1.263	1.346
ST4	5.936	1.365	-1.539	1.822
MZ1	5.591	1.420	-1.106	0.792
MZ2	5.340	1.383	-0.788	-0.052
MZ3	5.340	1.433	-0.694	-0.148
MZ4	5.420	1.432	-0.925	0.476
HV1	5.859	1.358	-1.545	1.684
HV2	5.697	1.461	-1.426	1.469
HV3	5.812	1.441	-1.638	1.991
HA1	5.597	1.265	-0.917	0.514
HA2	5.594	1.396	-1.058	0.405
HA3	5.631	1.296	-1.168	1.029
HA4	5.685	1.384	-1.129	0.742
CU1	5.916	1.273	-1.680	2.600
CU2	5.732	1.313	-1.551	2.451
CU3	5.971	1.388	-1.883	3.188

Source: Calculated by the author based on the questionnaire data of this study using SPSS

The value of the test is compared to the kurtosis of the normal distribution, which equals 4. If the kurtosis of the dataset is greater than 4 or lesser than -4, then the data normality becomes questionable (Kline, 2011; Teo et al., 2009). As per the standard, data is normal as it meets the

criteria of skewness being less than 3 and kurtosis being less than 7 (Teo et al., 2009). However, it has been argued by Fidell et al. (2013) that if a study has a sample higher than 200, then deviation from the normality standards under skewness and kurtosis does not make a huge difference in data analysis. The application of this analysis revealed that our data meets the said standard of normality, as shown in Table 6.1 above.

#### **6.4 Construct Factorial Validity**

The second objective of this study, as mentioned in the first chapter of the current study, is to develop a conceptual model that investigates the impact of factors relating to the continuance intention of mobile payments in China. Consequently, factor analysis and correlation matrix tests have been conducted as part of this study, which are commonly used to evaluate the validity of constructs (Hair et al., 2006). According to Hair et al. (2006), additional requirements for conducting such factorial validity analyses include providing at least 10 observations for each construct with a minimum sample size of 50 observations. The number of respondents in the current research was 746, which is adequate for the purpose of factor analysis.

In this study, the Principal Components Analysis (PCA) was applied as a factor analysis tool, which was used to evaluate the factorial validity of the questionnaire items in measuring the model's constructs. Based on theoretical models, the 29-item questionnaire can be divided into eight latent dimensions. These dimensions were expected to measure the intention of continuance usage of mobile payments, namely they were convenience value, financial value, enjoyment value, mianzi, social tie, health value and habit.



The factor analysis revealed that all the factors convenience value, financial value, enjoyment value, mianzi, social tie, health value, habit and continuance usage represented a unique single dimension, as was evident from their scree plots (Figure 6.1), as can be seen in the figures below.

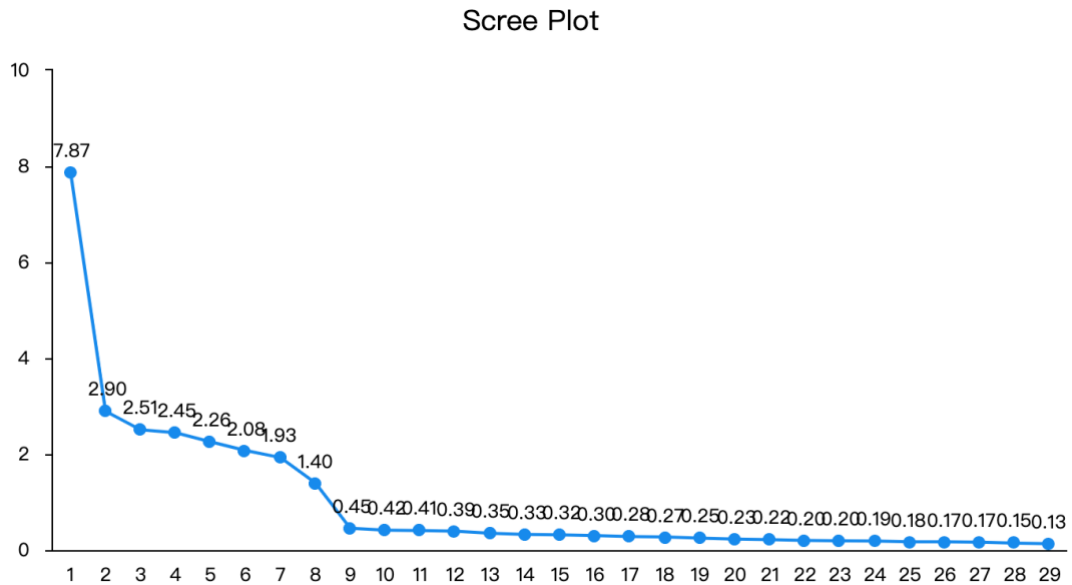


Figure 6.1 Scree Plot of PCA Analysis

Source: Calculated by the author based on the questionnaire data of this study using SPSS

Besides this, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity should be analysed. The two tests indicate the suitability of the data for structure detection (International Business Machines (IBM) Corporation, 2018). Kaiser-Meyer-Olkin (KMO) was also run to test the sampling adequacy for all the variables in the model and ensure the data suitability for factor analysis. This measures the proportion of variance among the variables. The KMO closes to 0 indicates diffusion in the pattern of correlations so factor analysis is likely to be inappropriate (Field, 2013). The cut-off ranges of KMO are marvelous (values in the 0.90s), meritorious (values in the 0.80s), middling (values in the 0.70s), mediocre (values in the 0.60s), miserable (values in the 0.50s) and unacceptable (values below 0.50)

(Hutcheson & Sofroniou, 1999, Field, 2013, p. 685). The KMO value between 0.8 and 1 shows the adequacy of the sampling (Cerny & Kaiser, 1977), and it is recorded as 0.855 in this study (Table 6.2), which conforms to the standards. Bartlett’s Test indicates whether the correlation matrix is significantly different from an identity matrix (Field, 2013). The significance value (less than 0.05) means that the correlations between variables are (overall) significantly different from zero, that verified the sampling adequacy for the analysis.

Table 6.2 KMO and Bartlett test

KMO		0.855
Bartlett test	Approx. Chi-Square	15831.768
	df	406
	p value	0.000

Source: Calculated by the author based on the questionnaire data of this study using SPSS

## 6.5 Demographic Information

In this section, Figure 6.1 demonstrates a specific taxonomy of the most type of mobile payments that respondents can use. As shown, Alipay and WeChat Pay are the most popular mobile payments among sampled consumers.

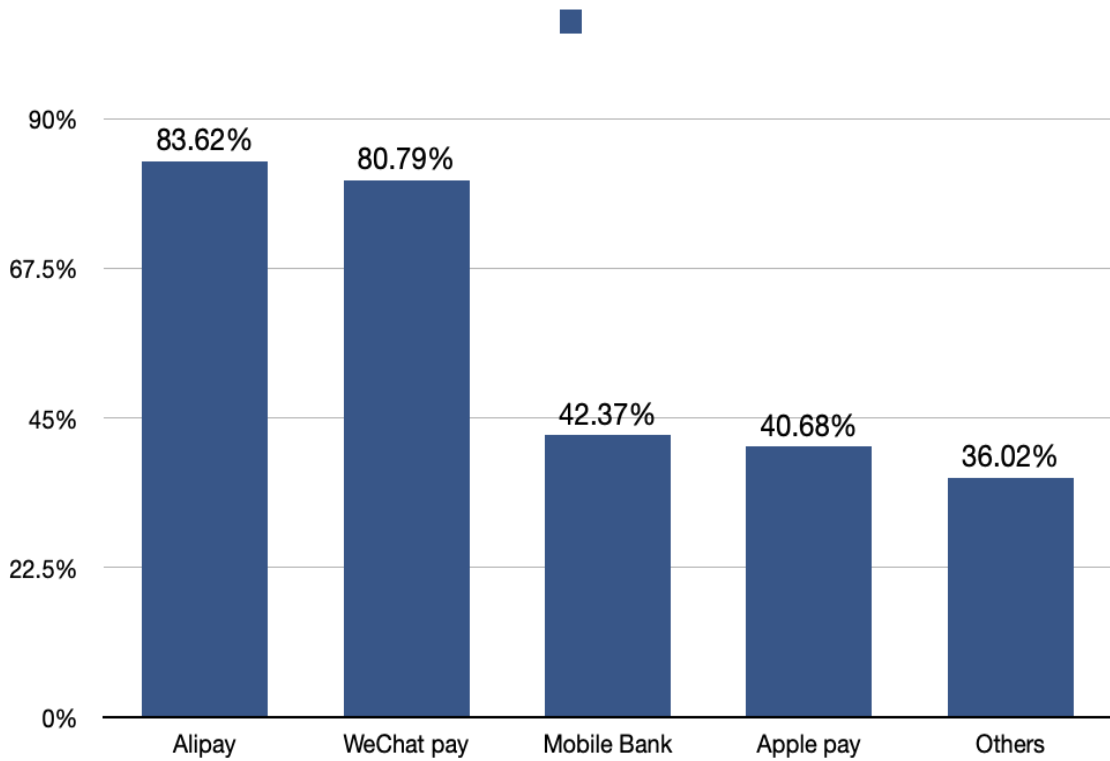


Figure 6.2 Types of Mobile Payments

Source: Calculated by the author based on the questionnaire data of this study using SPSS

Among these 746 respondents, 399 (53.49%) were male, and 347 (46.51%) were female.

Hence, men were predominant in the sample. This is corresponded to the gender makeup of the population of China. Most of the survey respondents were aged 26-40 (45.31%) years old, followed by 41-65 (25.74%) years old. The results show that people aged between 26-40 were the most popular group in responding, and people aged 66 and over (13.14%) were less interested in the investigation. This correspond to the age structure in the report of China Internet Network Information Center (CNNIC) in which age group ranges from 20 to 39 years old takes up 37.7% which is the highest among all age groups. The result also indicates young people embrace new technology more than old people and they are more representative than middle and old-age people in terms of mobile payments usage. Among the respondents, 628 respondents were married, occupying 84.18% of the total number of respondents, and 118

respondents were unmarried, occupying 15.82% of the total number of respondents. The educational level of respondents was as follows. 121 respondents attended high school and below (16.22%), 391 respondents attended diploma or bachelor's degree (52.41% of all respondents), 226 respondents obtained a master or postgraduate degree (30.29%), with the remaining 8 respondents being PhD holders or above (1.07%). The results show that more than half of the respondents have a diploma or bachelor's degree. The annual income of respondents varies. 44.10% of the respondents had a yearly income of less than 48000 RMB, occupying the most significant percentage, followed by a 23.99% of respondents with an annual income between 48000 and 72000 RMB. The third-largest group were respondents with an annual income between 72000 and 96000 RMB, taking up 21.58% of the total. The number of respondents with an annual income of over 96000 RMB is 77, accounting for 10.32% of the total respondents. In terms of mobile payments usage, it can be seen that most respondents use mobile payments every day with 523 (70.11%), while the second group is 190, which uses once every 2-3 days (25.47%). After that, the group (once every 4-5 days) represented (4.42%). Results of demographic information are displayed in Table 6.3.

Table 6.3: Demographic Details of the Respondents (N=746)

Items	Categories	N	Percent (%)	Cumulative Percent (%)
Gender	Male	399	53.49	53.49
	Female	347	46.51	100.00
Age	18-25	118	15.82	15.82
	26-40	338	45.31	61.13
	41-65	192	25.74	86.86

Items	Categories	N	Percent (%)	Cumulative Percent (%)
	66 and above	98	13.14	100.00
Marital	Married	628	84.18	84.18
	Unmarried	118	15.82	100.00
Education	High school and below	121	16.22	16.22
	Diploma or Bachelor degree	391	52.41	68.63
	Master or Postgraduate degree	226	30.29	98.93
	Ph.D.or above	8	1.07	100.00
Income	Less than 48000	329	44.10	44.10
	48000-72000	179	23.99	68.10
	72001-96000	161	21.58	89.68
	96001 and above	77	10.32	100.00
Frequency	Everyday	523	70.11	70.11
	Once every 2-3 days	190	25.47	95.58
	Once every 4-5 days	33	4.42	100.00
Total		746	100.0	100.0

Source: Calculated by the author based on the questionnaire data of this study using SPSS

## 6.6 Data Analysis Procedures

Statistical Package for the Social Sciences (SPSS) and Analysis of a Moment Structures (AMOS) was used for the data analysis. In section 6.4, with the descriptive analysis, find the demographic information of the respondents. Followed Anderson and Gerbing (1988) two-step

statistical analysis approach in Structural Equation Modeling (SEM), this study first used confirmatory factor analysis to test the reliability and validity by measurement model and then second using structural model to path analysis. Essentially, this two-step approach involves the establishment of the reliability and validity of measures prior to testing for their structural relationships. More specifically, SPSS 27 was used for calculating reliability and conducting factor analysis. For the purpose of evaluating the model's internal consistency, Cronbach's alpha (CA) and composite reliability (CR) were used. Convergent validity was used to test the measuring model by examining factor loadings, composite reliability, average variance, and reliability scores for each construct. Then, using the square root of the AVE values, test the discriminant validity of each variable. Next, AMOS 28 was used for carrying out SEM. Confirmatory factor analysis was employed to confirm our measurement model fit indices ( $\chi^2/df = 4.083$ , RMSEA = 0.064, CFI = 0.928, NFI = 0.906, IFI = 0.928, TLI = 0.919) (Anderson & Gerbing, 1988), as it is the most appropriate and accepted technique for validating the measurement model.

### **6.6.1 Validity and Reliability**

Exploratory factor analysis (EFA) was used to examine whether the factor loading (FL) is significant. Additionally, the loadings of each item observed above the lower cut-off value of 0.4, indicating that there was no cross-loading effect and that further analysis is recommended (Hair Jr et al., 2018). The results of the EFA were calculated using principal components method with varimax rotation and suppressing any values less than 0.50. The average variance extracted (AVE) was also examined for items reliability and validity. In this research data, all

the AVE values were all greater than the minimum recommended threshold of 0.50 (Fornell & Larcker, 1981), which indicates that the items satisfied the convergent validity requirements. To measure the reliability of the constructs, this study used two different reliability measures - composite reliability (CR) and Cronbach's alpha (CA). Values of CR and CA above 0.7 are considered acceptable (Wu & Chen, 2017). Table 6.4 shows that all CR and CA values exceed 0.7, verifying measurement reliability.

Table 6.4 Validity and Reliability Constructs

Variable	Items	FL	Cronbach's alpha	AVE	CR
Convenience (CON)	CON1	0.846	0.912	0.721	0.912
	CON2	0.835			
	CON3	0.821			
	CON4	0.852			
Financial Value (FV)	FV1	0.839	0.909	0.721	0.911
	FV2	0.836			
	FV3	0.870			
	FV4	0.868			
Enjoyment (EN)	EN1	0.936	0.924	0.804	0.925
	EN2	0.920			
	EN3	0.909			
Social tie (ST)	ST1	0.849	0.906	0.709	0.907
	ST2	0.863			
	ST3	0.875			

Variable	Items	FL	Cronbach's alpha	AVE	CR
	ST4	0.799			
Mianzi (MZ)	MZ1	0.852	0.900	0.694	0.900
	MZ2	0.843			
	MZ3	0.839			
	MZ4	0.834			
Health Value (HV)	HV1	0.917	0.893	0.737	0.894
	HV2	0.874			
	HV3	0.911			
Habit (HA)	HA1	0.800	0.897	0.689	0.898
	HA2	0.819			
	HA3	0.794			
	HA4	0.793			
Continuance usage (CU)	CU1	0.880	0.886	0.723	0.887
	CU2	0.864			
	CU3	0.864			

Note: FL: factor loading extracted using PCA with varimax rotation.

CR: composite reliability. This is computed by  $(\sum k)^2 / (\sum k)^2 + (\sum d)$ .

AVE: average variance extracted. This is computed by adding the squared factor loadings divided by the number of factors of the underlying construct. \*p < .01.

Source: Calculated by the author based on the questionnaire data of this study using SPSS

Discriminant validity is achieved by initially ensuring an indicator's outer loading on a



construct is greater than the cross-loadings with other constructs, and in addition ensuring for each construct the square root of the AVE is higher than the outer correlations (Hair et al., 2014). The results show all outer loadings are greater than cross-loadings for each construct and the square root of AVEs are higher than outer correlations (Table 6.5). This indicates that discriminant validity has been demonstrated. Overall, Results indicate that the proposed measurement model shows excellent reliability and validity.

Table 6.5 Correlations and Discriminant Validity

	CON	FV	EN	ST	MZ	HV	HA	CU
CON	<b>0.849</b>							
FV	0.302	<b>0.849</b>						
EN	0.118	0.102	<b>0.897</b>					
ST	0.345	0.221	0.035	<b>0.842</b>				
MZ	0.355	0.216	0.054	0.294	<b>0.833</b>			
HV	0.103	0.050	-0.002	0.164	0.122	<b>0.859</b>		
HA	0.422	0.302	0.217	0.401	0.382	0.044	<b>0.830</b>	
CU	0.258	0.206	0.080	0.164	0.247	0.045	0.401	<b>0.850</b>

Note: The square root values of the average variance extracted (AVE) are in bold.

CON=Convenience, FV=Financial value, EN=Enjoyment, ST=Social tie, MZ=Mianzi, HV=Health value, HA=Habit, CU=Continuance usage.

Source: Calculated by the author based on the questionnaire data of this study using SPSS

Furthermore, the measurement model was tested for the validated measures using AMOS 28 (Figure 6.3). This study followed Hooper et al. (2008) classification of the goodness of fit indexes: (1) Absolute Fit Measures, (2) Incremental Fit Measures, (3) Parsimonious Adjusted Measures. To measure the goodness of fit indexes, the measures suggested by Schreiber et al. (2006) was used. First, to confirm absolute fit measures this study used four indexes: (1) Chi-

square/degree of freedom ( $\chi^2/df$ ), wherein the value of  $\chi^2/df$  smaller than 2.0 is considered good and between 2.0 and 5.0 is acceptable (Hair et al., 2010); (2) RMSEA, wherein the RMSEA value of below 0.08 shows good fit (Anderson & Gerbing, 1988; Hu & Bentler, 1999); (3) GFI wherein a value of 0.90 or above indicates a good fit (Anderson & Gerbing, 1988; Hu & Bentler, 1999). The results output generated through AMOS are as follows;  $\chi^2/df = 4.087$ , RMSEA = 0.064 and GFI = 0.900, thus indicates good fitness to model. Second, indexes for incremental fit measures include the Normed Fit Index (NFI), Incremental Fit Index (IFI) and Comparative Fit Index (CFI). The values for all these fit indexes should be greater than the threshold of 0.90 (Anderson & Gerbing, 1988; Hu & Bentler, 1999). The results output generated through AMOS is as: NFI = 0.911, IFI = 0.931, and CFI = 0.930. Additionally, the Parsimonious Adjusted Measures include Parsimony Comparative Fit Index (PCFI), Parsimonious Normed Fit Index (PNFI) and Parsimonious Goodness of Fit Index (PGFI). The values of PCFI, PNFI, and PGFI should exceed 0.50 for a good fit to model (Anderson & Gerbing, 1988; Hu & Bentler, 1999). According to the AMOS output, the values are: PCFI = 0.800, PNFI = 0.783, and PGFI = 0.728. Therefore, the outcomes show a valid model fit in Table 6.6.

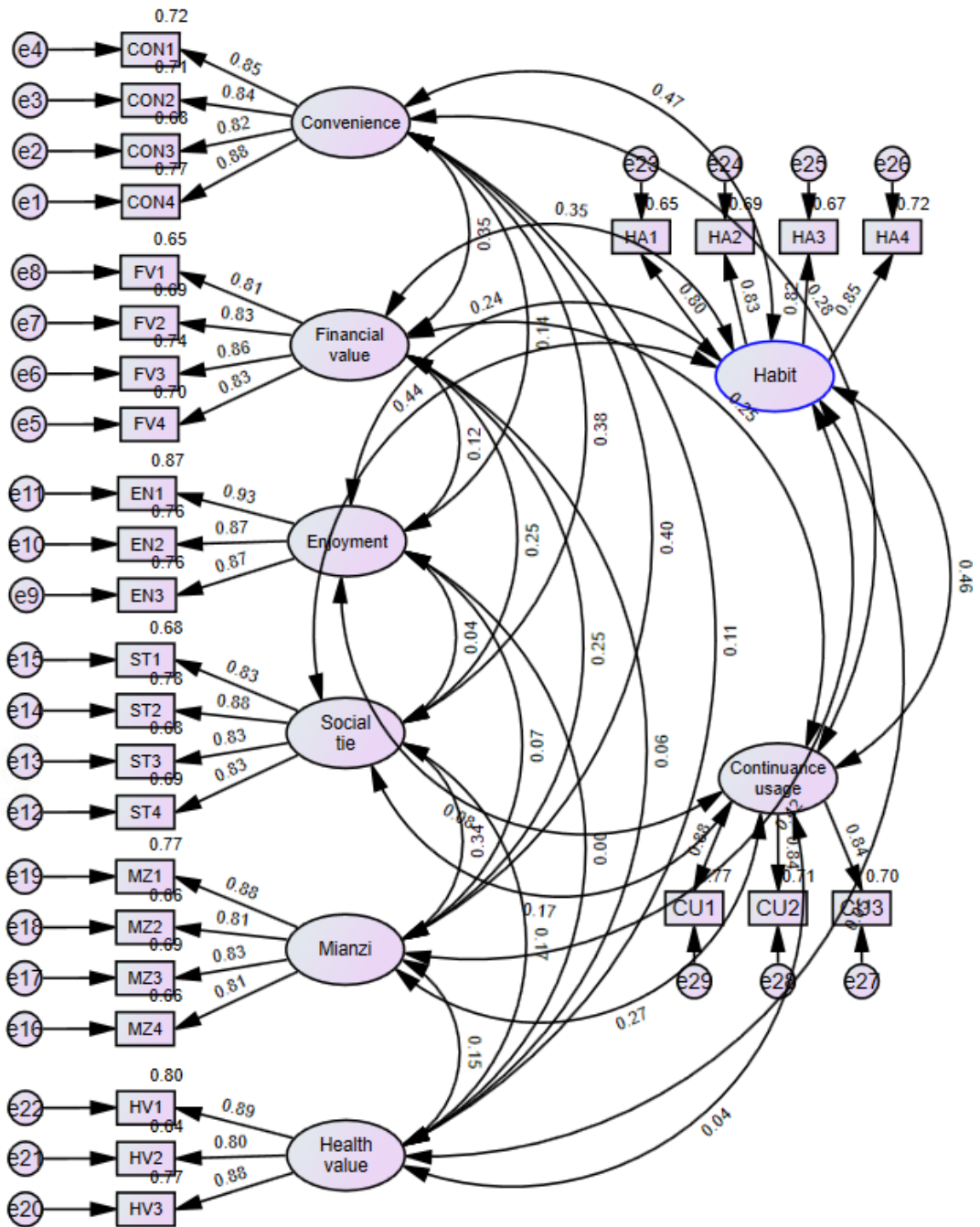


Figure 6.3 Standardized Parameter Estimates of the Measurement Model

Source: Calculated by the author based on the questionnaire data of this study using AMOS

Table 6.6 Results of Model Fit Indices of the Measurement Model

Fit indices	$\chi^2$	df	$\chi^2/df$	RMSEA	GFI	CFI	NFI	IFI	TLI
Recommended	-	-	<5	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9
Actual value	1426.300	349	4.087	0.064	0.900	0.930	0.911	0.931	0.919

## 6.6.2 Common Method Variance

Throughout this study, data has been collected at a single point in time. Common Method Variance (CMV) is the serious apprehension in the studies that use the self-reported method in data collection (Lu et al., 2005; Nuggehalli & Prokopy, 2009). The bias caused by CMV, known as common method bias, occurs when the estimated relationship between one construct and another is inflated. Hence, to address this issue, we employed Harman's single-factor test to check for possible common method bias in our data by using Podsakoff et al's (2003) recommendations. In this study, the amount of spurious covariance shared among variables was examined. Using SPSS 27, the results of an exploratory factor analysis of all constructs' items revealed that eight factors have eigenvalues greater than 1.0. The results in Table 6.7 show that the first factor accounts for 27.135% of the total variance, which does not exceed 50% for a single factor (Podsakoff & Organ, 1986; Eby & Dobbins, 1997; Hair Jr et al., 2021). Thus, the results suggest that no concern regarding the issue of common method bias in this study.

Table 6.7 Test of Common Method Bias

Factor	Eigen values			% of variance (Initial)			% of variance (Rotated)		
	Eigen	% of Variance	Cum. % of Variance	Eigen	% of Variance	Cum. % of Variance	Eigen	% of Variance	Cum. % of Variance
1	7.869	27.135	27.135	7.869	27.135	27.135	3.197	11.024	11.024
2	2.897	9.990	37.125	2.897	9.990	37.125	3.166	10.919	21.942
3	2.507	8.646	45.771	2.507	8.646	45.771	3.166	10.916	32.859

Factor	Eigen values			% of variance (Initial)			% of variance (Rotated)		
	Eigen	% of	Cum. % of	Eigen	% of	Cum. % of	Eigen	% of	Cum. % of
		Variance	Variance		Variance	Variance		Variance	Variance
4	2.447	8.438	54.208	2.447	8.438	54.208	3.137	10.818	43.676
5	2.259	7.789	61.998	2.259	7.789	61.998	2.995	10.326	54.002
6	2.077	7.161	69.158	2.077	7.161	69.158	2.634	9.081	63.084
7	1.930	6.654	75.812	1.930	6.654	75.812	2.573	8.872	71.956
8	1.401	4.833	80.644	1.401	4.833	80.644	2.520	8.688	80.644
9	0.454	1.566	82.210	-	-	-	-	-	-
10	0.417	1.437	83.648	-	-	-	-	-	-
11	0.408	1.406	85.054	-	-	-	-	-	-
12	0.394	1.360	86.414	-	-	-	-	-	-
13	0.352	1.213	87.626	-	-	-	-	-	-
14	0.327	1.128	88.755	-	-	-	-	-	-
15	0.320	1.104	89.859	-	-	-	-	-	-
16	0.302	1.040	90.899	-	-	-	-	-	-
17	0.284	0.978	91.878	-	-	-	-	-	-
18	0.274	0.944	92.821	-	-	-	-	-	-
19	0.252	0.868	93.690	-	-	-	-	-	-
20	0.228	0.788	94.477	-	-	-	-	-	-
21	0.219	0.756	95.233	-	-	-	-	-	-
22	0.201	0.694	95.926	-	-	-	-	-	-

Factor	Eigen values			% of variance (Initial)			% of variance (Rotated)		
	Eigen	% of Variance	Cum. % of Variance	Eigen	% of Variance	Cum. % of Variance	Eigen	% of Variance	Cum. % of Variance
23	0.196	0.674	96.601	-	-	-	-	-	-
24	0.191	0.659	97.259	-	-	-	-	-	-
25	0.175	0.605	97.864	-	-	-	-	-	-
26	0.174	0.601	98.466	-	-	-	-	-	-
27	0.165	0.570	99.035	-	-	-	-	-	-
28	0.147	0.506	99.541	-	-	-	-	-	-
29	0.133	0.459	100.000	-	-	-	-	-	-

Source: Calculated by the author based on the questionnaire data of this study using SPSS

Note: Total Variance Explained

### 6.6.3 Structural Model

The following section will discuss the results of the hypothesis proposed in the study. Before testing the hypotheses, should transition from a measurement model to a structural model.

Nevertheless, the observed covariance model is the same in CFA and SEM (structural model).

The structural model can be used to represent the structural theory or the structural relationships between the constructs through a set of structural equations, which can be illustrated with a visual diagram. The structural model's overall assessment is necessary to see how well the hypothesized model fits the data. The structural model is presented in Figure 6.4. To do so, goodness-of-fit indices are examined. The results output generated through AMOS are as follows;  $\chi^2/df = 4.083$ , RMSEA = 0.064, CFI = 0.928, NFI = 0.906, IFI = 0.928 and TLI = 0.919.

The normed chi-square value, which is the chi-square statistics divided by degrees of freedom, is 4.083. This value is between 2.0 and 5.0, indicating an acceptable model fit. The root mean square error of approximation (RMSEA) is another absolute fit index. As the criterion suggested, the RMSEA of the model in this study has a good fit, with 0.064 lower than 0.08 thresholds. Furthermore, Normed Fit Index (NFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Tucker Lewis index (TLI) are all higher than 0.90, thus indicating good fitness to model.

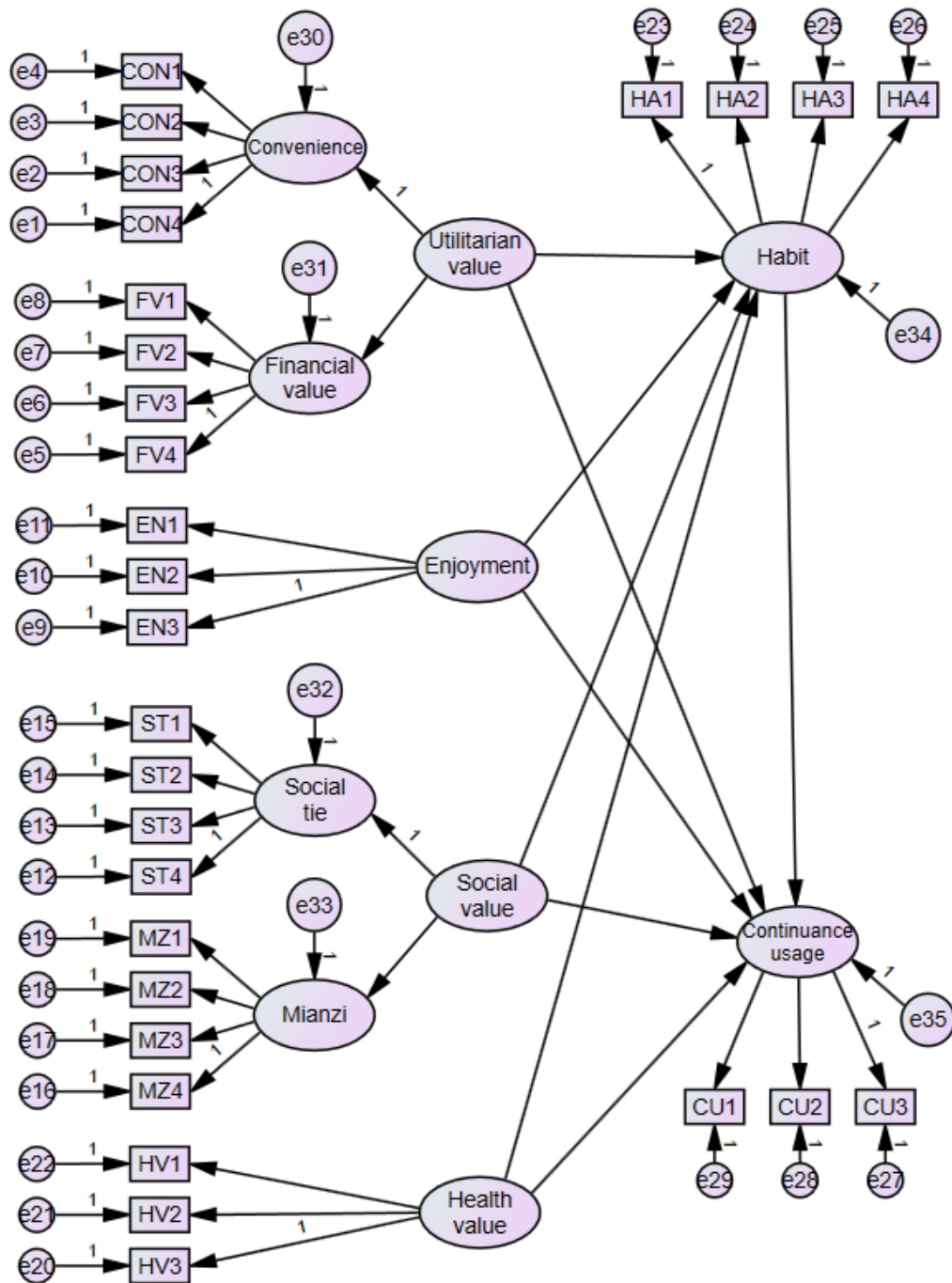


Figure 6.4 The Full Structural Model

Source: Calculated by the author based on the questionnaire data of this study using AMOS

Table 6.8 Results of Model Fit Indices of the Structural Model

Fit indices	$\chi^2$	df	$\chi^2/df$	RMSEA	CFI	NFI	IFI	TLI
Recommended	-	-	<5	<0.08	>0.9	>0.9	>0.9	>0.9
Actual value	1482.155	363	4.083	0.064	0.929	0.908	0.929	0.920



Overall, the results above indicate that the structure of the proposed model efficiently characterizes the relationships between constructs (Hair Jr et al., 2018).

#### 6.6.4 Results of Hypotheses

SEM was employed to test hypotheses. Figure 6.4 displays all path coefficients based on p-value results. In this analysis, the continuance intention to use was the dependent variable and all of the other constructs were independent variables. All the obtained VIF values range from 2.567 to 4.403, which is below the recommended threshold of 5.0, indicating no multicollinearity problems in the model (Bagozzi et al., 1981). However, after the model's acceptable goodness of fit was achieved, where the results of path analysis are displayed in Table 6.9. The data widely support our proposed research model.

Table 6.9 Results of Path Analysis

Hypotheses paths	Unstandardised Estimate	S.E.	z (C.R.)	p	Standardised Estimate	Results
H1a: UV→HA	0.301	0.037	8.052	0.000	0.270	Supported
H1b: UV→CU	0.140	0.044	3.154	0.002	0.122	Supported
H2a: EN→HA	0.125	0.024	5.294	0.000	0.160	Supported
H2b: EN→CU	-0.008	0.027	-0.279	0.780	-0.010	Not Supported
H3a: SV→HA	0.439	0.040	10.923	0.000	0.368	Supported
H3b: SV→CU	0.051	0.049	1.031	0.302	0.042	Not Supported
H4a: HV→HA	0.112	0.028	3.526	0.009	0.110	Supported

Hypotheses paths	Unstandardised Estimate	S.E.	z (C.R.)	p	Standardised Estimate	Results
H4b: HV→CU	0.015	0.031	0.348	0.728	0.012	Not Supported
H5: HA→CU	0.335	0.042	8.049	0.000	0.327	Supported

Source: Calculated by the author based on the questionnaire data of this study using AMOS

Results of hypotheses testing (Table 6.9) indicate that perceived utilitarian value (convenience and financial value) has a significant positive impact on the habit ( $\beta=0.301$ ,  $p<0.001$ ) and continuance usage of mobile payments ( $\beta=0.140$ ,  $p<0.01$ ), thus H1a and H1b were supported. Perceived hedonic value (enjoyment) has a positive effect on the habit ( $\beta=0.125$ ,  $p<0.001$ ), but its relationship with continuance usage of mobile payments was insignificant ( $\beta=-0.008$ ,  $p>0.05$ ), thus H2a was supported, and H2b was unsupported. H3a was supported in that perceived social value (mianzi and social tie) had a significant positive relationship with the habit ( $\beta=0.439$ ,  $p<0.001$ ) and H3b was not supported in that perceived social value (mianzi and social tie) was not significantly related to the continuance usage of mobile payments ( $\beta=0.051$ ,  $p>0.05$ ). H4a was supported because perceived health value was positively related to the habit ( $\beta=0.112$ ,  $p<0.01$ ) and H4b was not supported because perceived health value was not significantly related to continuance usage of mobile payments ( $\beta=0.011$ ,  $p>0.05$ ). H5 was also supported, wherein the habit had a significant positive relationship with continuance usage of mobile payments ( $\beta=0.335$ ,  $p<0.001$ ).

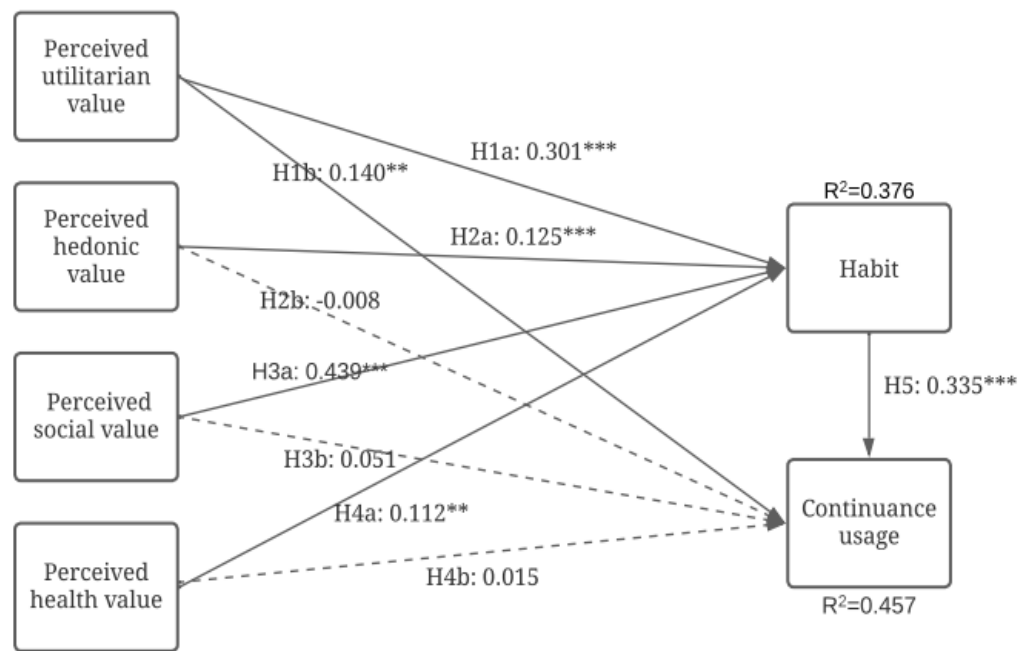


Figure 6.5 Confirmation of Research Model

Note: —→ Significant relationship. - - - - -→ Non-significant relationship.

\*\*\*Significant at  $p < 0.001$ ; \*\* Significant at  $p < 0.01$ ; \* Significant at  $p < 0.05$ .

Source: Calculated by the author based on the questionnaire data of this study using AMOS

Furthermore, Figure 6.5 also shows each dependent variable's predictive power ( $R^2$ ). In standard statistics, the value of  $R^2$  indicates the percentage of the total variance in the dependent variable explained by the independent variables. The value of  $R^2$  ranges from 0 to 1, where higher values represent higher predictive power. According to Chin (1998), the  $R^2$  values are at least 0.20, and ideally be above 0.30. In the current study, there were two dependent variables, i.e., habit and continuance usage of mobile payments. For habit, the  $R^2$  value is 0.376; for continuance usage of mobile payments, the  $R^2$  value is 0.457. This implies that the research model accounts for 45.7% of the total variance of continuance usage of mobile payments explained by perceived utilitarian value and habit. In addition, perceived utilitarian value, perceived hedonic value, perceived social value and perceived health value contributed 37.6%

of explained variance ( $R^2$ ) for habit. Thus, this result indicates that the conceptual framework is significant and sufficient for determining continuance usage of mobile payments.

### 6.6.5 Mediation Analysis

The purpose of mediation research is to help explain the mechanism of the relationship between independent variables and dependent variables and integrate the relationship between existing variables. Wen et al. (2012) put forward that although the structural equation model is used for management to analyze and study the mediation effect, the stepwise test and Sobel tests are generally adopted. However, the structural equation model based on the bootstrap method can test the mediation effect more accurately. Statistical reasoning of the bootstrap method is more powerful; this analysis method can better analyze multiple mediation models (Han & Fei, 2016). In addition, the bootstrap method does not require the distribution of mediating effects. Large samples and normality hypothesis also do not need standard error when estimating the interval of mediating effects, which can be applied to various mediating effects analyses (Wen & Ye, 2014; Fang et al., 2014). Therefore, the bootstrap method was mainly used in this study, and AMOS 28 was used to analyze the mediation effect.

Table 6.10 Results of Mediation Analysis

Hypothesized paths	Estimate	BootLLCI	BootULCI	P	Results
H1c: UA→HA→CU	0.244	0.067	0.145	0.000	Supported
H2c: EN→HA→CU	0.079	0.022	0.079	0.002	Supported
H3c: SV→HA→CU	0.526	0.083	0.170	0.002	Supported

H4c: HV→HA→CU	0.077	0.016	0.065	0.000	Supported
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Note: Confident Interval is 95% bootstrap confidence interval, bootstrap based on 5000 bootstrap samples. BootLLCI is Lower of 95% BootCI, BootULCI is Upper of 95% BootCI. \*\*\*P<0.001; \*\*p < 0.01; \*p < 0.05.

Source: Calculated by the author based on the questionnaire data of this study using AMOS

The mediation analysis results (Table 6.10) showed that the mediating effect of habit between perceived utilitarian value (convenience and financial value) and continuance usage of mobile payments was 0.244 (P<0.001), and the 95% confidence interval [0.067, 0.145] did not include 0. Therefore, habit had a significant mediating effect between perceived utilitarian value (convenience and financial value) and continuance usage of mobile payments. The mediating result of habit between perceived hedonic value (enjoyment) and continuance usage of mobile payments was 0.079 (P<0.01), and the 95% confidence interval [0.022, 0.079] did not include 0. Therefore, habit had a significant mediating effect on perceived hedonic value (enjoyment) and continuance usage of mobile payments. Habit had a significant mediating effect on perceived social value (mianzi and social tie) and continuance usage of mobile payments because the result was 0.526 (P<0.01), and the 95% confidence interval [0.083, 0.170] did not include 0. The mediating effect of habit between perceived health value and continuance usage of mobile payments was 0.077 (P<0.001), and the 95% confidence interval [0.016, 0.065] did not include 0. So, the data analysis supported the hypotheses H1c, H2c, H3c, H4c.

### 6.6.6 Demographic Variables

Demographic variables' effects on the consumer habit and continuance usage of mobile payments are assessed, shown in Table 6.10. The analysis of variance (ANOVA) in the Table

6.10 is used to determine if there is a significant difference in demographic variables among this study. The findings disclosed that age, marital status, education and income have significant influences on consumer habit and continuance usage respectively in the context of mobile payments. Only the gender did not show any significant impact on user habit and continuance usage. This is congruency with the finding from Wang et al. (2020) and Lin et al. (2018) who indicate gender was not a significant factor.

Table 6.11 Results of Demographic Variables

	Habit	Continuance usage
Control variables		
Age	0.000	0.000
Gender	0.052	0.053
Marital status	0.000	0.000
Education	0.000	0.000
Income	0.000	0.001

Note: \*\*\* Significant at  $p < 0.001$ ; \*\*Significant at  $p < 0.01$ ; \* Significant at  $p < 0.05$

Source: Calculated by the author based on the questionnaire data of this study using SPSS

## 6.7 Conclusion

Presented in this chapter are the main findings of the survey. Results of such empirical studies have been described and illustrated in the chapter in the form of figures and tables. This chapter reviews the results of construct measurements, along with the demographics of the respondents to the survey and illustrates the results of reliability analyses for the various constructs. Furthermore, the factorial validity of the scales has been discussed in detail in this chapter,

which also provides an illustration and justification of the factor analysis results. In addition, all of the hypotheses used in the study are discussed in-depth. It is evident from the results that there is a strong influence of customer perceived value that has a strong effect on the formation of habit in these analysis statistics. The customer perceived value (utilitarian value, hedonic value, social value, and health value) significantly influenced the habit. However, only perceived utilitarian value significantly impacts the continuance of mobile payments. Furthermore, the mediator (habit) was tested with a significant mediating effect between customer perceived value and continuance usage of mobile payments.

As part of the next chapter, the assessment of the final statistical model is explored by evaluating it using appropriate synthesis with the extant literature on consumer marketing. It is expected that, by doing so, an indication will be given as to whether the study follows, adapts, or rejects existing literature regarding the behaviour of consumers in the context of mobile payments.

## **Chapter 7 Discussion**

### **7.0 Introduction**

The current study aims to explore and explain the key factors influencing users' continuance intention to use mobile payments in China. To explain the factors of continuance intention of mobile payments, this study provides a theoretical model that integrates the VAM, ECM and habit theory. The data analysis and findings from the qualitative and quantitative phases of the study are presented in chapter 5 and chapter 6. Building on these findings, this chapter aims to present a synthesis of the overall findings of this study and its implications, in relation to the arguments of extant literature. Section 7.1 provides a summary of key findings from the quantitative and qualitative stages of the research project. The critical evaluations of each finding are developed, based on the results generated from the SEM, which is synthesised in support of additional relevant arguments from the existing literature of technology acceptance. Section 7.2 presents additional findings from the qualitative part of this mixed-method study. Next, section 7.3 discusses the demographic-related factors affecting mobile payments continuance usage in China. Section 7.4 then presents the chapter's conclusions and clarifies how the aim of this chapter has been achieved.

### **7.1 Discussion of Key Findings from the Quantitative and the Qualitative Studies**

This study examines a proposed conceptual framework presented in chapter 3 (Figure 3.1), which is developed based on the literature review and findings from the exploratory research. The following sub-sections (7.1.1, 7.1.2 and 7.1.3) discuss the key results drawn from the



empirical findings of the qualitative and quantitative phases of this study. The key findings include both supported and rejected hypotheses of the research model (see Figure 6.4), including 13 hypotheses: nine direct hypothesised relationships and four mediated hypothesised relationships. Each of the key findings related to the research questions and the results of the hypothesis testing, linking to the research model (Figure 6.4) is discussed in the following sub-sections of 7.1.1, 7.1.2 and 7.1.3.

### **7.1.1 Customer Perceived Value of Mobile Payments**

Customer perceived value factors have significant influence at the technology post-adoption stage in mobile services settings, which is extensively discussed in Section 2.2 of the literature review chapter. The qualitative research applied critical incident technique to generalise and extract the value dimensions and main connotation of mobile payments. The value-based adoption model (VAM) discussed in Section 2.3.2 provides a comprehensive understanding of what factors influence value perception and how value perception contributes to the post-adoption stage from the value maximisation perspective. The crux of VAM is the value construct, which is postulated to predict habit and post-adoption intention (Hellier et al., 2003; Kuo et al., 2009). From the perspective of users' perceived benefits, VAM contains the following dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value, health value. Surprisingly, in this research, some interesting findings diverge from previous studies.

### **7.1.1.1 Perceived Utilitarian Value**

The quantitative results (H1a and H1b) have confirmed the significant positive contribution of perceived utilitarian value towards mobile payments' habit and continuance intention. As considered earlier in Chapter 2 (Section 2.2.1) and Chapter 3 (section 3.2.1), utilitarian value is recognised as having a profound effect on the overall usage of mobile payments. Therefore, mobile payments' habit and continuance intention also increase alongside the increase in users' positive perceived utilitarian value. As previously stated in section 2.1.4, Chinese users were more inclined to continue using mobile payments if they believed them to add a greater degree of convenience and financial benefits to their day-to-day lives. These quantitative results are also congruent with the qualitative findings that suggest the importance of convenience and financial value as utilitarian value variables. Mainly because of the comparison to the payment in the physical environment, mobile payments provide service features, such as convenience, timesaving, additional discounts and bonuses. The qualitative in-depth interviews also highlighted that the productivity and speed for retailers to maintain a convenience experience: For example, some participants state that:

“The quickness of using the mobile payments... So, speed is important. You know, convenience.”

“It is quite convenient, because I am able to do things faster and more practically because of it.”

“A cinema ticket, for example, would be the perfect example. After I leave home and sit on a bus, I already have the ticket in the form of an SMS, so I just walk past the box office on the

way to the theatre and show them the SMS ticket I already have.”

Furthermore, the following respondent perceives more economic benefits in using mobile payments that help to save money.

“On that day, I went shopping in Supermarket. When I checked out at the cashier desk, I found that the supermarket union Alipay was engaged in an activity. I could enjoy 20% discount for mobile payment on that day, which saved me some expenses.”

This result on perceived utilitarian value as an influential factor affecting mobile payment usage continuance intention is supported by existing literature (i.e., Kim & Oh, 2011; Kim et al., 2007; Lin & Lu, 2015; Lin et al., 2018; Chuang et al., 2020; Handarkho et al., 2021) in section 2.2.2. Therefore, from a theoretical standpoint, such findings (i.e., the influence of utilitarian value) are seen to be well aligned with previous works in the field of mobile services, which have focused on testing and approving utilitarian value have come to garner insight into factors such as perceived convenience and financial value as pivotal factors establishing the continuance intention of a person to use mobile payments. However, this finding differs from the findings of extant literature, i.e., Raman and Aashish (2021), who stated convenience has no effect in determining consumers’ continuance intention using mobile payments. One possible reason is that it focused on continuous intention in the context of mobile payments in India. The current research is in the context of Chinese consumers in mainland China. As a consequence, the findings from the qualitative and quantitative research support the utilitarian value as a significant determinant of continuance usage of mobile payments.

In conclusion, the quantitative and qualitative findings highlight the importance of utilitarian

value that will impact the consumer's intention to continue to use mobile payments. In addition, the qualitative semi-structured interviews helped to understand the significance of the relationship between perceived convenience, financial value and the intention to continue to use mobile payments in the context of this research.

#### **7.1.1.2 Perceived Hedonic Value**

The qualitative results in this research that some consumers are likely to continue using mobile payments that they find enjoyable. For instance, some participants stated that “Now that I have discovered mobile payments, I simply can't do without them, my day is made more enjoyable because of it.” This result corresponds to the findings of previous studies related to the continuance intention of using mobile technologies and services (Kim & Han, 2009; Amoroso & Chen, 2017; Singh et al., 2020; Lisha et al., 2017). That is because users have an enjoyable experience using mobile payments due to the various functions (Hsiao et al., 2016; Lin et al., 2018; Gan et al., 2017; Khatimah et al., 2019). The semi-structured interviews explain that mobile payments provide lots of features for users to experience enjoyment. Users may regard mobile payments as an excellent way to experience emotions and pleasure, which finally help promote their continuance intention. For example, some participants state that:

“When I'm on my phone, I'm really familiar with it. Well, I enjoy using them.”

“...you get the enjoyment of the experience. I suppose using mobile payment makes me feel good.”

“As I said, I have a great deal of experience with it. It really is a pleasure to use.”

However, the hypothesised (H2b) perceived hedonic value was found to have no direct significant influence on the mobile payment usage continuance but (H2a) had a significant and positive influence in relation to the habit of using mobile payments. This result corresponds to the findings of previous studies, i.e., Hesamzadeh (2020) and Nan et al., (2020). This quantitative analysis result suggests that the perceived enjoyment of China customers has no impact on continuing to use mobile payments directly.

This is worth noting that the quantitative result is different from the qualitative result. In this current research that examines consumers' continuous intention of using mobile payments, hedonic value (enjoyment) does not influence consumers' continuous intention to use mobile payments directly. The main reason may be there is an indirectly through the mediation of consumers' habit. As an example, one participant stated that "It would just make my life easier, I already do it every time I pay".

#### **7.1.1.3 Perceived Social Value**

This research examined two perceived social value variables that play a role in motivating consumers to continue using mobile payment services. The two perceived social value variables are social tie and mianzi (Chinese face). The qualitative result of semi-structured interviews shows that consumers are likely to use mobile payments to create social networks and gain mianzi.

"All my friends around me are using mobile payments, and if I don't use them, I feel left behind."

This qualitative result highlights that perceived social value influences the adoption of mobile payments as in previous studies (Hsiao et al., 2016; Lee et al., 2019; Shelvia et al., 2020). In addition, users have developed and integrated various functions of red envelopes into their daily communication practices to continue using mobile payments. Some participants reported some similar practices with red envelopes, including using money to celebrate, to organize group dynamics, and to play games.

“My parents always send me some red envelopes on my birthday and Spring Festival.”

In some cases, the money itself can become a message. The following respondent stated:

“This year I sent 5.20 RMB to my wife on May 20 and she sent me 5.20 RMB back. There wasn't much money, you know, but the number meant a lot.”

However, the quantitative analysis (H3b) of this research finds that the perceived social value does not directly influence consumers' continuous intention to use mobile payments, but (H3a) perceived social value had a significant and positive influence in relation to the habit of using mobile payments. Maybe social value was the main factor for users' adoption, but it fades when users' online relationships tend to be steady. To support this notion further, although the qualitative in-depth interviews in this research indicate that social influence plays a role in motivating consumers to hold a positive intention to continue to use technology, maybe there is an indirect path through the mediation of consumers' habit. Furthermore, this is consistent with existing empirical studies in China and other countries (i.e., Shi et al., 2010; Hsiao 2016; Lu 2014; Gan et al., 2017; Chopdar et al., 2018; Tam et al., 2020).

#### **7.1.1.4 Perceived Health Value**

This qualitative analysis result consumer's perceived health value has a significant influence on the consumer's continuous intention to use the mobile payments. The result represents the use of mobile payments as preventive health behaviour to contain the spread of infections, especially during COVID-19, which is also supported by extant studies (i.e., Sze Wan et al., 2019; Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2021; George & Sunny, 2021) as reviewed in Chapter 2 (section 2.1.4). However, the findings related to H4b reveal the statistically insignificant influence of perceived health value on consumers' continuous intention to use mobile payments, but had a significant influence in relation to the habit of mobile payments. The finding is inconsistent with the qualitative study that using mobile payments is more reliable and safer in comparison to in-person payment options to reduce contacts among people and maintain social distancing to decrease the COVID-19 transmission risk. There is no doubt that as more and more people shop online, there will be a greater demand for payment convenience.

#### **7.1.2 Habit and Continuance Intention**

Regarding the factors affecting the continuance intention of mobile payments, the habit has the strongest effect. The significant relationship (H5) between habit and continuance intention is consistent with Hsiao et al. (2016), Gan et al. (2017), Lin et al. (2018) and Handarkho et al. (2021). As discussed in Chapter 2 (section 2.3.3), Consumers may convince themselves that

they cannot be bothered to disrupt their routine. Shiau and Luo (2013) have stated explicitly that once a habit has been formed, the individual performs it automatically, which results in the habit becoming a continuous usage. Regarding mobile payments, some previous studies (i.e. Yen & Wu, 2016; Lin et al., 2018) have used habit as a predictor of mobile payments continuance usage but not as a primary construct to explain the behaviour. Habit theory supports the habit–continuance intention relationship because prior habitual behaviours can produce favourable feelings toward the subsequent behaviour, thereby increasing continuance intention (Kim & Malhotra, 2005). When users establish habit for using mobile payments, it indicates that they use the services with a higher frequency and get benefits, thus promoting continuance intention.

### **7.1.3 Habit as Mediation**

One of the most important findings of this research is the indirect impact of perceived value on continuance intention that is mediated by habit. The results (H1c, H2c, H3c, H4c) from the mediation test show that habit has full or partial mediation effects on perceived value (perceived utilitarian value, perceived hedonic value, perceived social value, and perceived health value) and continuance intention of mobile payments. It indicates that these four perceived value impact on continuance intention for mobile payments via users' habits. According to the findings of this research, perceived utilitarian value directly impacts on continuance intention of mobile payments and indirectly relies on habit as a mediator. Contradict to the existing literature, discussed in Chapter 2 (section 2.2.1), perceived hedonic value, perceived social value and perceived health value does not directly impact continuance



intention but rely on habit as a mediator, as per the findings of this study.

## **7.2 Discussion of Additional Findings from the Qualitative Study**

### **7.2.1 Perceived Ecological Value**

The results of this study advance the research identifying perceived ecological value (e.g., related to the recycling issue of banknotes and the possibility of transmission of infections through banknotes during in-person payment) as a predictor of perceived value towards continual usage of mobile payments (as mobile payment options can significantly address the recycling and transmission concerns, related to banknotes). The interviewees described how mobile payments to create ecological value reduce resource waste and protect the environment.

One of the participants explained his opinion as: “Before the use the mobile payments, banknotes were widely used, but in the process of circulation of banknotes, it would worn out and broken. After a certain period of time, banks had to recycle the banknotes and destroy them. If they are destroyed in large quantities, they would undoubtedly cause damage to resources and the environment.”

The ecological factor has not been evaluated properly in previous studies of the post-adoption of mobile payments. However, Gong et al. (2020) and Zhang et al. (2020) confirmed ecological factor is a potential positive side-effect in consumer behaviour and provided evidence to support the idea that customers who care about the consequences in public of their purchasing

or consuming behaviours also find environmentally friendly products appealing (Gong et al., 2020; Zhang et al., 2020), and therefore, the ecological factor may also affect their habit and intention towards mobile payments.

### **7.2.2 Perceived Risk**

The participants of the qualitative study also mentioned the perceived risk of mobile payments, which are in line with literature discussed in Chapter 2 (section 2.1.3). There are three cost factors mentioned: 1) Privacy risk, represents the hazard-perception perceived by customers from the leaking of personal information and loss of finances (McKnight et al., 2002; Kim & Oh, 2011; Poromatikul et al., 2019; Shao et al., 2019; Kang & Namkung, 2019; Raman & Aashish, 2021); 2) Based on mobile (risk associated with using the mobile device itself); if the phone suddenly runs out of battery, goes missing or loses its internet connection, the transaction can't take place; 3) low-level pain of payment, using mobile payments results in reduced levels of pain when compared to cash, but also to cards (Pisani & Atalay, 2018).

### **7.3 Demographic Factors**

Despite demographic characteristics being an important determinant in mobile payments setting, which is discussed in extant literature (section 2.1.3), interestingly, some findings of this research differ from prior studies, i.e., Cao et al., (2018); Lin et al., (2018); Wang et al., (2020); Alhassan et al. (2020) and Lohana & Roy(2021) . In this study, the demographic factors age, marital status, education and income are found to be significant factors that affect the habit and continuance intention of mobile payments. Only gender is not as a strong factor that affects

the customers towards continuance intention of mobile payments.

### **Age**

The impact of age on habits and continued intention to use mobile payments in China is significant. The largest age group in terms of the number of participants in this study is 26-40 years old, which constituted 45.31% (338) of the respondents; the second group is 41-65 years old, which 25.74% (192) of the respondents belonging to this age group. The finding correlates with the extant empirical studies investigating mobile payments (i.e., Liébana-Cabanillas et al., 2018; Lohana & Roy, 2021). This can be explained by the fact that young users are more inclined to accept and use mobile payments than older consumers (Van de Watering 2007). A lot of elderly people are not willing to accept and learn new things, so they reject accepting mobile payments. Furthermore, it is still very common for elderly people to want to use mobile payment, but they do not understand how it works. This is match one interviewee said: “With the help of my daughter, I have learned how to use WeChat Pay and I remember which button to push for each step of the process. However, the operation interface of Wechat Pay changed with the update of WeChat and, as a result, I could no longer use it so I had to learn it all over again.”

### **Marital status**

In terms of marital status, the result shows that 118 (15.82%) of the total respondents are single, 628 (84.18%) are married among all survey participants. The study identified marital status as a critical factor determining customers’ continuance using mobile payments. This demonstrates

agreement with the limited studies that specifically consider marital status as a variable of mobile services adoption. For example, Oladejo & Oluwaseun (2015) argued that marital status influences customers' mobile payments adoption. Sarreal (2019) and Mattila et al. (2003) found that Internet banking adopters in the UK and Finland are more likely to be married parents. It may be the result of the fact that those with larger families, and especially those who have children, tend to spend more money on food, education, health care, etc.

### **Education**

The majority of survey respondents' education was diploma or bachelor degree (52.41%). With respect to education, education is identified as a critical factor that influences mobile payments post-adoption in China. This result concurred with the findings of Cao et al. (2018), Alhassan et al. (2020) and Lohana and Roy (2021), who also suggest that education is a pertinent factor that influences Chinese customers towards mobile payments continuance intention. Better educated users are more likely to be more comfortable using mobile payment services, since they are more familiar with mobile technologies and smart devices. With the growing level of education, there is also a growing level of financial literacy among users, who are more aware of the convenience of mobile payments, as well as more capable of identifying the risks associated with using them. In turn, this results in better educated users continuing to use mobile payments.

### **Income**

Income is identified as another major influencer of mobile payments continuance usage in

China. This finding corroborates with the findings of earlier studies that have investigated mobile payments adoption (i.e., Pal et al., 2020; Alhassan et al., 2020 and Lohana & Roy, 2021). Due to their low purchasing power, individuals who earn low income are concerned most about the ease of using mobile payment services. On the other hand, high-income earners are less concerned about the ease associated with mobile payments as they can withstand the potential financial impact. However, the finding does not fit prior studies like (Oladejo & Oluwaseun, 2015; Alkhowaiter, 2020), which claimed that income is an insignificant factor in mobile payments. Through mobile payments, users can carry out transactions from their mobile devices and regardless of their income levels, they patronize mobile payment services.

### **Gender**

In terms of gender, there are 53.49% (399) and 46.51% (347) of the survey respondents male and female, respectively. Gender is found not as a strong factor that affects the customers towards mobile payments post-adoption. The influence of continuance intention to use mobile payments did not differ between the male and female participants. This finding matches those of Wang et al. (2020) and Lin et al. (2018). However, the finding does not fit prior study like Cao et al. (2018), which found that females were more likely to continue using the mobile payments than males. Females tend to shop and consume more frequently than males, and mobile payments are designed to simplify the payment process (iResearch, 2017). Hence, policymakers and decision-makers have to factor this aspect in their decision-making process and promote mobile payments across both genders, which will increase adoption among this group.

## 7.4 Conclusion

This chapter presents a synthesis from the findings of both the qualitative and quantitative parts of this research for mobile payment service usage and habit, based on users'/customers'/participants' perceived value and habit. It identifies some factors that enabled customers' continuance intention of mobile payments. These factors include customer perceived value, habit, and demographic characteristics. The results from the path analysis shows that habit is the strongest factor that influences the continuous intention of mobile payments. The utilitarian variable of perceived convenience and financial value influence continuous intention directly and indirectly through habit. The hedonic variable of perceived enjoyment, the social variable of mianzi and social tie and perceived health value do not directly influence the continuous intention of mobile payments. Perceived hedonic value, social value and health value can influence consumers to continue using mobile payments mediation of habit indirectly. Therefore, the perceived social value plays an important role in increasing consumers' habit, causing an increase in their intention to continue using mobile payments. These results suggest that the effect of perceived value on VAM construction with external constructs is good in explaining the factors that influence the use of mobile payments to consumers in considering and arousing continued use.

The research discussed the unexpected finding regarding perceived ecological value. Perceived ecological value is found as one value-added dimension of the perceived value of mobile payments. Furthermore, the research also presents the demographic characteristics such as age, gender, income, marital state, and education unrelated to mobile payments' technical

characteristics. Only gender does not affect the habit and intention to continue using mobile payments. Based on these findings, Chapter 8 (the final chapter) discusses about the implications, theoretical and practical contributions, recommendations, generalisation aspects of this study, and the conclusion.

## **Chapter 8 Conclusions, Contributions and Recommendations**

### **8.0 Introduction**

Chapter 07 expands and synthesises the discussions of the findings of the qualitative and quantitative studies of this research. This final chapter aims to discuss how the research questions and objectives have been achieved, and to present the core contribution, recommendation and the generalisation aspects of this study. First, this chapter begins with the research objectives and questions, leading to a summary of the key findings that address each of the research questions and the significance of the thesis mobile payment post-adoption model provided in section 8.1. Next, section 8.2 discusses the research contributions from three perspectives, namely theoretical, methodological, and practical as well as their implications. The research generalisation, limitations and future research are presented in Section 8.3. Finally, section 8.4 provides the chapter conclusion.

### **8.1 Research Objectives and Questions Revisited**

This section discusses the extent to which the research objectives have been achieved and how the research questions have been answered. This thesis aims to investigate the factors affecting customers toward mobile payments post-adoption in China and to provide recommendations

in the interest of promoting mobile payments continuance intention. As stated in chapter 01, the research has five objectives and four questions which are thoroughly addressed. The summary of the research objectives, research questions, methods, and core findings are presented in table 8.1.



Table 8.1 Research Objectives, Research Questions and the Adopted Methods

No.	Research Objective	Research Questions	Method Adopted	Key Findings
1	To identify the dimensions and connotations of the perceived value of mobile payments.	What are the dimensions of consumers' perceived value in the context of mobile payments?	The secondary source (the literature review) and Qualitative method (semi-structured interview of mobile payments adopters)	Five dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value and health value
2	Based on a literature review, to develop a conceptual model that investigates the impact of factors relating to the continuance intention of mobile payments in China.	What are the key factors influencing users' intention to continually use mobile payments in China?	The secondary source (the literature review)	Habit and perceived utilitarian value play a significant direct positive role in the intention to continue to use mobile payment services.  The perceived hedonic value, perceived social value and perceived health value effect on consumers' continuous intention to use mobile payments directly is not significant.

No.	Research Objective	Research Questions	Method Adopted	Key Findings
3	To empirically examine the influence of the factors on mobile payments continuance use in the China consumer market and validate the results.		Quantitative and Qualitative methods (semi-structured interviews and survey questionnaire of mobile payments users)	The perceived hedonic value, perceived social value and perceived health value increase consumers' intention to continue to use mobile payments indirectly through the mediation of customers' habit.
4	To investigate the mediation of habit in the relationship between perceived value and continuance intention.	How will users habitually use the mobile payments which they are using now?	Quantitative method (survey questionnaire of mobile payments users)	Habit mediates the impact of perceived value on the continuance intention of mobile payments.

No.	Research Objective	Research Questions	Method Adopted	Key Findings
5	<p>To make recommendations based on the results from objectives 2, 3 and 4, both from consumers' and business decision-makers' perspectives, in order to increase the continuance use of mobile payment services, which will increase revenue for mobile payment services providers.</p>	<p>What can be recommended for improved and enhanced usage of mobile payments to keep existing users loyal?</p>		<p>Advises practitioners to improve users' continuance intention by incorporating the habit of mobile payments and the perceived utilitarian value in their decision-making process.</p> <p>The mobile payment services developers should strengthen the interactive experience between users to provide users with a more personalised service that can become habitually enacted.</p> <p>Mobile payments providers could use public relations to promote corporate social responsibility as a positive brand image by emphasising the concept of environmentally friendly mobile payments.</p> <p>For mobile payment providers, user segment for different target groups, to provide targeted services.</p>

The first objective is focused on identifying the dimensions and connotations of the perceived value of mobile payments in China, using the interview as the primary source of data. Objective two concentrates on a critical literature review to develop a conceptual model that investigates the impact of factors relating to the continuance intention of mobile payments in China using secondary sources. Objective three is focused on the influence of the proposed model (Figure 3.1) in Chapter 3 designed with value-based adoption model (VAM), and expectation-confirmation theory (ECM) constructs on mobile payments post-adoption in China. The objective three used the survey questionnaire and interviews as the main data sources. Objective four is pursued based on the quantitative method (survey questionnaire) to investigate the mediation of habit in the relationship between perceived value and continuance intention. Objective five is focused on how mobile payments post-adoption in China can be promoted.

### **8.1.1 Research Question (RQ) 1**

*What are the dimensions of consumers' perceived value in the context of mobile payments?*

RQ 1 has been answered through literature review and semi-structured interviews. The findings related to RQ 1 are presented in chapter five. Through critical incident technique (CIT) analysis, this study has identified dimensions of consumer perceived value, namely, user-perceived benefits and user-perceived sacrifices, in the context of mobile payments. From the perspective of user-perceived benefits, it contains the following dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value and health value. Few previous studies (e.g., Sreelakshmi and Prathap, 2020; Zhang et al., 2020) have involved health value and ecological value in mobile payments. From the perspective of user-perceived sacrifices, it contains three dimensions: privacy risk, based on mobile (Risk associated with using the mobile device itself) and low-level pain of payment.

### **8.1.2 Research Question (RQ) 2**

*What are the key factors influencing users' intention to continually use mobile payments in China?*

RQ 2 is concerned about the factors associated with mobile payments post-adoption and its impact on continuance usage of mobile payments. These relationships are examined in a quantitative survey. Furthermore, the semi-structured interview findings and theoretical insights from the literature review have been synthesised into a research model (Figure 3.1) in Chapter 3 and tested using quantitative data. So, to answer this question, firstly, based on a literature review, a conceptual model (Figure 3.1) was developed in Chapter 3, which outlines the relationships between factors related to users' intention to continue using mobile payments. This conceptual model is based on VAM, ECM, and habit-related mobile payments in mobile marketing studies (Wang et al., 2020). Quantitative research (see section 6.5 in Chapter 06) was conducted to explore the factors that have a significant impact on users' continuance to use mobile payments and explicate the exact extent of influential power that the factors have on continuance intention to use. Questionnaires were distributed and the data collected was analysed the structural equation modelling, path analysis, bootstrap analysis and the analysis of variance (ANOVA) using SPSS and AMOS. The results from the quantitative analysis of the survey responses confirmed habit and perceived utilitarian value play a significant direct positive role in the intention of continue to use mobile payment services. The perceived hedonic value, perceived social value and perceived health value effect on consumers' continuous intention to use mobile payments directly is not significant. Interestingly, the findings highlight that perceived hedonic value, perceived social value and perceived health value increase consumers' intention to continue to use mobile payments indirectly through the mediation of customers' habit.

### **8.1.3 Research Question (RQ) 3**

*How will users habitually use the mobile payments which they are using now?*

RQ 3 was addressed in Chapter 6, aiming to examine the role of customers' habit with mobile payments in influencing consumers' intention to continue to use mobile payments and testing the habit as the mediator between perceived value dimensions and continuance intention of mobile payments. The research findings highlight habit is significantly positively related to intention to the continuance of mobile payments. Specifically, this research found that habit mediates the impact of perceived value on continuance intention of mobile payments, extending the literature on the continuance usage of information systems. These findings also extend the relevant literature on the continuance usage of mobile payments. The habit has been integrated into the VAM and ECM model to examine the continuance usage of mobile payments in China. The result found a strong relationship between habit and continuance intention. This confirms earlier studies by Amoroso and Lim (2017), Polites and Karahanna (2012) and Limayem et al. (2007). However, it is notable that the current study found the habit effects on continuance usage as mediators between perceived value variables and continuance usage.

#### **8.1.4 Research Question (RQ) 4**

*What can be recommended for improved and enhanced usage of mobile payments to keep existing users loyal?*

RQ 4 will be addressed in section 8.2.3, i.e., the Practical Contributions and Implications section.

## **8.2 Contributions and Implications of the Study**

This research represents one of the initial efforts of using a mixed-method approach to understand the effect of perceived value and habit on mobile payments post-adoption of Chinese consumers. This study contributes to post-adoption research on mobile payments in several crucial ways. In particular, it contributes to the advancement of mobile payments post-adoption theories, focusing on understanding how perceived value dimensions impact on habit

and the intention of mobile payments continuance usage. The main contributions and implications of this research are outlined in sub-sections 8.2.1, 8.2.2, and 8.2.3.

### **8.2.1 Theoretical Contributions and Implications**

This study makes noteworthy contributions to current literature. First, several studies (Raman & Aashish, 2021; Shelvia et al., 2020) conducted on the investigation of mobile payment services usage continuance intention called for a comprehensive analysis of interrelationships between value perceptions, habit and continuance intention to use of mobile payments. In this regard, the present study bridges the gap by developing and testing a model (Figure 3.1) which concurrently examines the role of both habit-related factors and product-related factors (i.e., utilitarian, hedonic, social and health), informing the continued intention to use mobile payments.

Second, this study enriches our understanding, related to the scope of the value-based adoption model (VAM) and expectation-confirmation theory (ECM) in informatics usage by examining user perceptions from perceived value perspectives. Several studies (e.g., Sánchez-Fernández and Iniesta-Bonillo, 2007; Zauner et al., 2015) were conducted to review the various approaches used to conceptualise perceived value in marketing and social psychology research. However, little effort has been made to examine how such approaches are used in mobile services research (Huang et al., 2019; Karjaluoto et al., 2019; Jungkun Park et al., 2019; Hesamzadeh, 2020). This study provided a review of mobile services literature (sections 2.2) in Chapter 2 that specifically used perceived value as a theoretical foundation as part of the conceptual model development. Based on the exiting literature, this is the first research attempts to combine the theories used to build the current research model (VAM-ECM and habit) for examining the users' post-adoption behaviour of mobile payments.

Additionally, this research model is an evaluation of the consumer continuance intention of mobile payments in China. Therefore, the results obtained can be used as a theoretical and

empirical reference for further research on the subject of mobile payments in China. This will allow a comparison of the current findings with those in future research. During the research, a consolidative model (VAM-ECM) plays an important role in the outcome. According to the success of this model's application to the study of mobile payments continuing to be used in a developing nation, its implications are both theoretical and practical. As a result, this model (Figure 3.1) is a valid technology post-adoption framework that is theoretically justified and has the capability of validating statistics in the study of technology continuation intention. Based on the implementation of this model, researchers can list the determinants of the perceived value of mobile payments, associate it with the habit analyse how these variables affect consumer continuance behaviour while also examining the impact of demography.

Third, the role of health value and ecological value has been less frequently studied in the mobile marketing domain. The strong association of health value and ecological value perceptions bridges an unaddressed literature gap in Chapter 2 (section 2.4). There is a paucity of matching empirical investigations in the existing literature, which does not provide a comprehensive and in-depth analysis of the dimensions and connotations of mobile payments value (JungKun Park et al., 2019; Raman & Aashish, 2021; Shelvia et al., 2020). The qualitative of this study identified consumer perceived value dimensions that influence mobile payments. It has the following dimensions in terms of user-perceived benefits: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value, and health value.

In addition, the qualitative result highlights three perceived risks of mobile payments: privacy risk, based on mobile (risk associated with using the mobile device itself) and low-level pain of payment. To begin, privacy risk in mobile payments refers to the risk that customers perceive from the compromise of personal information and financial loss (McKnight et al., 2002; Kim & Oh, 2011; Poromatikul et al., 2019; Shao et al., 2019; Kang & Namkung, 2019; Raman & Aashish, 2021). Customers' apprehension about financial and privacy risks associated with mobile payments has been identified as a significant negative factor



influencing their intention to continue using the mobile payments (Yang et al., 2015; K. Y. Lin et al., 2020). Second, risk associated with using the mobile device, according to one interviewee, the transaction cannot take place if the phone runs out of battery, goes missing, or loses its internet connection, Third, the pain of paying is not the same for all payment methods. Three participants have said that because their pain levels are lower, they will spend more money using mobile payment options. There is existing research on the impact of mobile payments on payment pain, which indicates that when compared to cash, but also to cards, using mobile payments results in lower levels of pain (Pisani & Atalay, 2018).

Fourth, by using the Chinese consumer sample, testing the comprehensive model (Figure 3.1) which focuses on determining continuance intention, adds to the literature based on an under-explored consumer groups across the borders' empirical evidence from an emerging Asian economy (Chen & Li, 2017; Li et al., 2019; Moorthy et al., 2019; Shelvia et al., 2020; Patil et al., 2020; Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2021). In conclusion, this research shows the importance of perceived value perceptions beyond the users' habit and continuance intention. Therefore, to boost up continuance intention to use mobile payments via influencing consumers' habit and utilitarian values. Also, the perceived value perceptions play a critical role in increasing habit. The habit mediates the impact of perceived value on the continuance intention of mobile payments. Formed habit to change seem positively correlated to perceived value: as mobile payment services become more perceived value, customers feel habit (either forms habit or refrain from changing from the status quo), and vice versa. This confirms the study of mobile services, the user's value perception affects the degree of habit (Hsiao et al., 2016). With habit as a mediator, the effect of perceived utilitarian value on continuance intentions remained constant; however, the perceived hedonic value, perceived social value and perceived health value became insignificant as a predictor of continuance intention. This extends the literature on the continuance usage of information systems.

Finally, based on the questionnaires, the users were grouped into different categories including age, gender, marital status, education and income. Only gender is not a strong factor that

affects the customers towards continuance intention of mobile payments.

## **8.2 Contributions and Implications of the Study**

This research represents one of the initial efforts of using a mixed-method approach to understand the effect of perceived value and habit on mobile payments post-adoption of Chinese consumers. This study contributes to post-adoption research on mobile payments in several crucial ways. In particular, it contributes to the advancement of mobile payments post-adoption theories, focusing on understanding how perceived value dimensions impact on habit and the intention of mobile payments continuance usage. The main contributions and implications of this research are outlined in sub-sections 8.2.1, 8.2.2, and 8.2.3.

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Second, this study enriches our understanding, related to the scope of the value-based adoption model (VAM) and expectation-confirmation theory (ECM) in informatics usage by examining user perceptions from perceived value perspectives. Several studies (e.g., Sánchez-Fernández and Iniesta-Bonillo, 2007; Zauner et al., 2015) were conducted to review the various approaches used to conceptualise perceived value in marketing and social psychology research. However, little effort has been made to examine how such approaches are used in

mobile services research (Huang et al., 2019; Karjaluoto et al., 2019; Jungkun Park et al., 2019; Hesamzadeh, 2020). This study provided a review of mobile services literature (sections 2.2) in Chapter 2 that specifically used perceived value as a theoretical foundation as part of the conceptual model development. Based on the exiting literature, this is the first research attempts to combine the theories used to build the current research model (VAM-ECM and habit) for examining the users' post-adoption behaviour of mobile payments.

Additionally, this research model is an evaluation of the consumer continuance intention of mobile payments in China. Therefore, the results obtained can be used as a theoretical and empirical reference for further research on the subject of mobile payments in China. This will allow a comparison of the current findings with those in future research. During the research, a consolidative model (VAM-ECM) plays an important role in the outcome. According to the success of this model's application to the study of mobile payments continuing to be used in a developing nation, its implications are both theoretical and practical. As a result, this model (Figure 3.1) is a valid technology post-adoption framework that is theoretically justified and has the capability of validating statistics in the study of technology continuation intention. Based on the implementation of this model, researchers can list the determinants of the perceived value of mobile payments, associate it with the habit analyse how these variables affect consumer continuance behaviour while also examining the impact of demography.

Third, the role of health value and ecological value has been less frequently studied in the mobile marketing domain. The strong association of health value and ecological value perceptions bridges an unaddressed literature gap in Chapter 2 (section 2.4). There is a paucity of matching empirical investigations in the existing literature, which does not provide a comprehensive and in-depth analysis of the dimensions and connotations of mobile payments value (JungKun Park et al., 2019; Raman & Aashish, 2021; Shelvia et al., 2020). The qualitative of this study identified consumer perceived value dimensions that influence mobile payments. It has the following dimensions in terms of user-perceived benefits: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value

(mianzi and social tie), ecological value, and health value.

In addition, the qualitative result highlights three perceived risks of mobile payments: privacy risk, based on mobile (risk associated with using the mobile device itself) and low-level pain of payment. To begin, privacy risk in mobile payments refers to the risk that customers perceive from the compromise of personal information and financial loss (McKnight et al., 2002; Kim & Oh, 2011; Poromatikul et al., 2019; Shao et al., 2019; Kang & Namkung, 2019; Raman & Aashish, 2021). Customers' apprehension about financial and privacy risks associated with mobile payments has been identified as a significant negative factor influencing their intention to continue using the mobile payments (Yang et al., 2015; K. Y. Lin et al., 2020). Second, risk associated with using the mobile device, according to one interviewee, the transaction cannot take place if the phone runs out of battery, goes missing, or loses its internet connection, Third, the pain of paying is not the same for all payment methods. Three participants have said that because their pain levels are lower, they will spend more money using mobile payment options. There is existing research on the impact of mobile payments on payment pain, which indicates that when compared to cash, but also to cards, using mobile payments results in lower levels of pain (Pisani & Atalay, 2018).

Fourth, by using the Chinese consumer sample, testing the comprehensive model (Figure 3.1) which focuses on determining continuance intention, adds to the literature based on an under-explored consumer groups across the borders' empirical evidence from an emerging Asian economy (Chen & Li, 2017; Li et al., 2019; Moorthy et al., 2019; Shelvia et al., 2020; Patil et al., 2020; Sreelakshmi & Prathap, 2020; Zhao & Bacao, 2021). In conclusion, this research shows the importance of perceived value perceptions beyond the users' habit and continuance intention. Therefore, to boost up continuance intention to use mobile payments via influencing consumers' habit and utilitarian values. Also, the perceived value perceptions play a critical role in increasing habit. The habit mediates the impact of perceived value on the continuance intention of mobile payments. Formed habit to change seem positively correlated to perceived value: as mobile payment services become more perceived value, customers feel habit (either

forms habit or refrain from changing from the status quo), and vice versa. This confirms the study of mobile services, the user's value perception affects the degree of habit (Hsiao et al., 2016). With habit as a mediator, the effect of perceived utilitarian value on continuance intentions remained constant; however, the perceived hedonic value, perceived social value and perceived health value became insignificant as a predictor of continuance intention. This extends the literature on the continuance usage of information systems.

Finally, based on the questionnaires, the users were grouped into different categories including age, gender, marital status, education and income. Only gender is not a strong factor that affects the customers towards continuance intention of mobile payments.

### **8.2.2 Methodological Contributions and Implications**

The methodological contribution of the study is in three areas. Firstly, the study has contributed significantly to the limited mixed-method studies on mobile payments. The research methodology used for this research is not new but scanty in the literature. Many the mobile payments researchers such as Zhou (2014); Chen and Li (2017); Cao et al. (2018); Lin et al. (2018); Humbani and Wiese (2019); Shao et al. (2019); Shelvia et al. (2020); Pal et al. (2020); Handarkho (2020); Putri et al. (2020); Handarkho et al. (2021) mainly focused on quantitative study or qualitative study but not both. They completely do not take into account the mixed-method research. This study has been able to incorporate both methods to provide a more holistic understanding of the factors affecting mobile payments in China by using the mixed-method. This research confirms that the mixed-method approach in mobile payments allows for a greater understanding of the influencing factors of mobile payments. To conclude, the first objective of this thesis is related to conceptualising and identifying the dimensions of customer perceived value in mobile payments. At the conclusion of this qualitative research phase, Objective 1 was achieved. Quantitative research was used to explore the factors affecting users' intention to continually use mobile payments in China and to investigate the mediation of habit in the relationship between perceived value and continuance intention. At

the conclusion of the quantitative research phase, Objectives 2, 3, and 4 were achieved.

Secondly, qualitative research was used the critical incident technique (CIT) analysis identified dimensions of consumer perceived value that impact mobile payments. Recent developments in the value literature made the argument that this construct should be conceptualized at a higher level of abstraction and in various dimensions (i.e., multidimensional). In the field of mobile payments, few scholars (Jun & Palacios, 2016) have applied critical incident technique to analyse the dimensions and connotations of its service value. According to the CIT findings, from the perspective of the user-perceived benefits, it includes the following dimensions: utilitarian value (convenience value and financial value), hedonic value (enjoyment value), social value (mianzi and social tie), ecological value, and health value. From the perspective of users' perceived sacrifices, three dimensions are present: privacy risk, based on mobile (risk associated with using the mobile device itself) and low-level pain of payment.

Furthermore, the study also contributes provided statistical analysis such as: the analysis of variance (ANOVA) and the bootstrap method to contribute to methodological practice. The reason for using the statistical method has been made explicit in order to encourage future researchers and promote adoption despite the complexity in conducting the analysis. In addition, the statistical analysis had increased the researcher's insights into mobile payments continuance factors, thus allowing researchers to make valuable contributions from a statistical point of view.

### **8.2.3 Practical Contributions and Implications**

Continuance usage is associated with the development and prosperity of interactive mobile payments. The findings of this study provide several insights for practitioners, which may provide suggestions and guidelines for mobile payments services designers and managers.

First, one of the most important implications of the findings is in the development of a model

that can be employed by the China mobile payments practitioners to determine the habit-related factors and product-related factors that serves as a strong influencer on mobile payments continuance intention. The mobile payments providers in China, including the practitioners of mobile payments could make use of the model (Figure 3.1, Chapter 3) of this study: (i) to generate insight into the factors that affect mobile payments development in China; (ii) to get awareness about the various influences affecting mobile payments continuance intention in China. This model (Figure 3.1) can help mobile payments policymakers in China develop strategies that could help mobile payments providers understand why customers continue intention to use mobile payment services, and how to retain existing mobile payments customers. Once those insights have been obtained, mobile payments policymakers will be able to adjust their marketing strategy for mobile payments accordingly. By highlighting the aspects of mobile payments that users truly value during the process of considering the use, and/or educating users to remove any potential doubts, businesses can determine the probability of continued usage by consumers, maximising the return on investment in terms of advertising costs.

Second, this study advises practitioners to improve users' continuance intention by incorporating the habit of mobile payments and the perceived utilitarian value in their decision-making process. These findings may provide direction for companies and developers of mobile payment services to encourage users' continuance intention. The habit was found to be the strongest determinant of continuance intention of mobile payments. More specifically, the habit of mobile payments leads consumers to continue to use without seeking other alternative payment options. When Chinese consumers experience using mobile payments as a habit, they become more familiar with mobile payments. Ouellette and Wood (1998) predicted that in the contexts conducive to habitual behaviours, individuals' decision making would become instantaneous without requiring extensive calculation. This finding is essential to mobile payments developers because this shows that consumer continuance intention of mobile payments can be boosted by increasing their habit of mobile payments. Mobile

payment services providers should think of ways that could help to develop their habit in order that they would keep mobile payments customers. And this study noted that perceived utilitarian value, hedonic value, social value and health value affect the continuance intention of mobile payments through habit as mediator. Mobile payment service providers should strengthen the value of existing mobile payments. In order to achieve this, mobile payments practitioners should increase the establishment of habit through the utilitarian value, hedonic value, social value and health value. Let more consumers experience the benefits of the services, and bring convenience to life and work. Let consumers realise the value of mobile payments, so as to increase the attachment on mobile payments and form the use habit.

In addition, perceived utilitarian value has always proved critical to attracting and retaining customers. Perceived utilitarian value relates to convenience and financial value. Hence, it is important to provide as much convenience and monetary benefits. To fulfil users' utilitarian value, the mobile payments practitioners should improve and update the functions of mobile payments which leads to the continuance usage of mobile payments and the formation of habit. For example, increase the number of goods, channels and services that can be paid for by mobile payments. From paying most of the utility bills such as water, electricity, gas, internet and other public in daily life to pay the goods, entertainment services and other services; Further, it can also be developed into financial services such as stock trading. Also, the mobile payments practitioners collaborate with other businesses to provide discounts, exclusive access, or other benefits to customers that use mobile payment services as a payment option. The reason why mobile payments can get the favour of most people is that compared with the traditional payment options, the mobile payment option is more convenient and breaks through the original time and geographical restrictions. Therefore, mobile payments service providers should consider this time and geographical utilities as their core advantage and continue highlighting the feature of convenience so that users can truly feel the convenience of using mobile payment. Financial value is an important part of utilitarian value. For example, in China, major mobile payment systems providers (i.e., AliPay and WeChat pay). These major



Chinese mobile payment service providers usually give discounts to their users when they make payments from their platforms. Therefore, the merchant should continuously enhance and update the utilitarian value of mobile payments in a physical store.

Third, the significant construct found to be related indirectly to mobile payments continuance intention is perceived social value through the mediator of the habit. The mobile payment services developers should pay attention to the social tie and mianzi (Chinese face) of mobile payments, and strengthen the interactive experience between users to provide users with a more personalised service that can become habitually enacted. For example, sending money to friends and families and red envelopes have become popular social features. Therefore, when developing or improving mobile payment services, mobile payments providers and practitioners must incorporate the importance to the interaction between mobile payment users, innovate the service content, strengthen the interactive experience between users and the development of interpersonal financial products, strive to promote the real-name system, and emphasise the real social scene.

Fourth, from the qualitative of this study, the ecological value is one important dimension that influences mobile payments. Mobile payments providers could use public relations to promote corporate social responsibility as a positive brand image by emphasising the concept of environmentally friendly mobile payments. This will encourage eco-conscious customers to adopt mobile payments.

Fifth, this research has contributed to practice by revealing the five-demographic influence of mobile payments post-adoption (age, gender, marital status, educational level and income). This study finds that different age, marital status, income, and education level have different implications for mobile payments continuance intention. In this competitive global era, companies are engaging data mining techniques for determining customers' behaviours (Barnett et al., 2015). The model (Figure 3.1) of this study invites service providers to develop user-friendly marketing policies based on mobile payments. For mobile payment providers,

user segment for different target groups, to provide targeted services. In the service promotion to achieve targeted and focus on each, to achieve accurate marketing.

### **8.3 Generalisation, Research Limitations and Future Research**

#### **8.3.1 Generalisation**

A study's validity is investigated by attempting to generalise the results of research from a survey to a population (Byrne, 2002). According to Williams (2002), generalisation is a debatable issue in an interpretive study because investigators have their own way of thinking and measuring the situation, and he clarified that research generalisation could be classified into three types:

- Total generalisation: the results of a survey are representative of a population.
- Statistical generalisation: the research findings that apply to the entire population.
- Moderatum generalisation: the research findings which could be generalised to other related communities.

Williams (2002) stated that moderatum generalisation is widely used in qualitative studies because the findings from one investigation can be generalised to other studies, and that total generalisation occurs in quantitative research but may exist in qualitative analysis. According to Miller and Brewer (2003), a quantitative study dealing with numbers through a survey that represents the entire population is better suited for statistical generalisation.

This analysis used a mixed-method approach. For the qualitative findings employed moderatum generalisation. This means the wider significance of the findings that can be moderate in scope and has the potential for building future hypotheses in mobile payments. For the quantitative findings used statistical generalisation. A sampling technique was used in the quantitative study to identify a survey to explain the significant factors influencing mobile

payments continuance intention in China. As a result, the study's findings can be applied to all customers in China. Furthermore, because many developing countries share a similar culture, the study model and findings can be applied to other similar studies relating to mobile payment post-adoption in other developing countries. Furthermore, because mobile payment services are at different stages of development in different places, the current research findings may be appropriately applied to a similar context with similarly developed mobile payment services in a country with high mobile payment services adoption.

### **8.3.2 Research Limitations and Future Research**

The study achieved its aims and objectives, as well as provided answers to the research questions. However, the findings must be viewed in light of the study's limitations, which will be explained later in this section. The present research accepts several limitations which could be improved upon in future studies.

In the second phase of this research, the first limitation is related to the selection of the sample frame. It limited this study to one country and a cross-sectional questionnaire. In addition, there was no information available on the likelihood of including cases that reflect the whole population. Future studies should also collect longitudinal data so as to fully reveal the effect of habit in affecting user behavior. However, efforts were made to ensure that the study's samples were carefully evaluated. To achieve this, self-selected sampling was employed in order to collect quantitative data. Despite the growing acceptance of SurveyStar (wjx.cn) as a reliable technique, the adoption of self-selected sampling reduces the generalisability of the findings. For further research, the sample population size could be extended as well as geographical emphasis could be enlarged to include other countries and could involve other non-internet users by using a self-administered questionnaire (face-to-face) instead of an electronic one. Furthermore, our sample provides important insights into the boundaries and limitations of mobile payment systems in China, indicating a need for further research with senior citizens and citizens in rural and inland areas, both of which we believe are important

directions for future research.

Second, in regard to the customer perceived value, this study did not include the ecological value factors in the research model (Figure 3.1) of mobile payments. Moreover, this research model didn't consider the internal influence of perceived value dimensions. Future researchers would be encouraged to empirical explore ecological value in-depth in order to understand further how ecological value can influence the habit and usage continuance intention in mobile payments.

Third, the overall perceived value is formed by benefits and sacrifices in a trade-off mental evaluation. The current research proposed the conceptual framework, which is only focused on the benefits of mobile payments, because the perceived value is the primary influence of mobile payments (Liébana-Cabanillas et al., 2020). Further research can add the sacrifices (privacy risk, based on mobile and low-level pain of payment) to the model.

Fourth, the response of the questionnaires were collected during the COVID-19 pandemic crisis. It is possible that customers' thoughts may have changed temporarily or permanently due to the pandemic situation of COVID-19, as changing the habits of consumer spending as a result of the COVID-19 pandemic contributed to the spike in mobile payments because of lockdown and the fear of contracting the virus that kept consumers away from the touch. It is possible that after the virus has passed, the interview and survey data can be re-collected for further research.

Fifth, due to this study focus on mobile payments users' experience, the results were gathered solely from the end-user's perspective. In other words, this study does not include the perspectives of vendors, developers, managers, administrators, or representatives from parent companies. Future research could look at mobile payments in China from different stakeholders' perspectives; as well as use a variety of methods, including more grounded and embedded ethnographic observations.

## **8.4 Conclusion**

The current chapter presents an overview, of the core contents and findings of the preceding chapters. This research is designed to empirically test a customised VAM-ECM model to explain the mobile payments continuance intention at consumer level, with data from China. This study indicates that the customised research model has a substantial explanatory power and is robust under several conditions. SPSS and AMOS analysis enhanced the statistics of the results. New studies should be performed to complement these new findings. New relationships between perceived value factors, habit and continuance intention were analysed. In terms of results, the habit and perceived utilitarian value were found to be statistically significant in the continuance intention of mobile payments. All the perceived value factors (utilitarian value, hedonic value, social value, and health value) can influence consumers to continue using mobile payments mediation on habit indirectly. This study may provide scholars with inspiration for further studies of VAM-ECT in relation to mobile payment services in China. Lastly, this research also contributes to support managerial efforts of mobile payment service providers.

# Appendices

## Appendix A - Interview Guide

您好！感谢您接受今天的采访。我是宿广瑾。英国诺森比亚大学商学院博士生。我正在研究移动支付的持续使用问题。为了这个研究，我想了解一下您对使用移动支付的想  
法、经验和看。（Thank you for accepting the interview today. I am Guangjin Su, a PhD  
student at Newcastle Business School, Northumbria University. I am researching the  
continuance usage of mobile payments. For the interest of this research, I would like to obtain  
your thoughts, experiences and views on using mobile payments.）

我想强调的是，您对这项调查的参与是完全自愿的。此外，您的答案将被严格保密，并  
且不会储存任何个人数据。所有受访者都将有机会保持匿名。这项研究符合并通过了纽  
卡斯尔商学院制定的道德规范。（I want to stress that your participation in this survey is  
entirely voluntary. Further to that, your answers will be treated with the strictest confidence,  
and no personal data will be stored. All respondents will be offered the opportunity to remain  
anonymous. This research has complied and approved with the ethical code of practice set by  
the Newcastle Business School.）

本研究所指的手机支付是狭义上的通过手机对任何消费进行支付的服务方。（The mobile  
payments referred to in this study is defined service method of paying for any consumption  
through a mobile device.）

我有几个问题想问你。请随时让我知道你的答案。（I have a few questions would like to  
ask you. Please feel free to let me know your answer.）

1. 你的性别是什么？(What is your gender?)

男/女(Male / Female)

2. 你的年龄段是多少？(What is your age group?)

18 – 25 /26 – 40 /41 – 65 /41 – 50 />65

18 - 25 /26 - 40 /41 - 65 /41 - 50 />65

3. 你的职业状况是什么？(What's your occupational status?)

专业人员/学生/退休人员(Professionals/Students/Retired)

4. 你住在哪个城市? (Which city do you live in?)

5. 我使用过以下类型的移动支付。(I have used the following type(s) of mobile payment)  
支付宝/微信/手机银行/Apple Pay/其他 (Alipay/WeChat/Mobile banking/Apple Pay/Other)

6. 您平均多长时间进行一次移动支付? (On average, how often do you perform mobile payments?)

每天/每2-3天一次/每4-5天一次/每周一次/每两周一次/每月一次/每月少于一次  
(Everyday/Once every 2-3 days/Once every 4-5 days/Once every week/Once every two weeks/Once a month/Less than once a month)

7. 您使用过移动支付的哪些功能? (Which features of mobile payment have you used?)

8. 请描述您印象中的一些事件, 您觉得移动支付对您的生活或工作产生了积极影响。  
(请详细说明当时的具体环境或原因) Please describe some of the events in your impression that you feel that mobile payments have a positive impact on your life or work. (Please give details of the specific circumstances or reasons at the time)

9. 请描述您在使用移动支付时遇到的任何问题或担忧。(请详细说明当时的具体情况或原因) Please describe any problems or concerns you have encountered when using mobile payments. (Please give details of the specific circumstances or reasons at the time)

以上就是我想问你的所有问题。非常感谢您的参与。如果您有任何问题想问题, 随时跟我联系e-mail:guangjin.su@northumbria.ac.uk。(These are all the questions I would like to ask you. Thank you so much for your participation. If you have any questions you would like to ask me; please feel free to send me an e-mail:guangjin.su@northumbria.ac.uk.)



## Appendix B – Questionnaire (Chinese Version)

The English version of this questionnaire is shared in Appendix C.

### 手机支付用户持续使用调查

您好！欢迎 您参加本次社会调查并 抽出宝贵时间协助完 成此问卷。该问卷是英国诺森比亚大学商学院宿广瑾博士生关于中国手机支付用户持续使用研究课题的一部分。本研究所指的手机支付是狭义上的通过手机对任何消费进行支付的服务方式，具体包括以下几种情景：1、通过手机话费代缴QQ会员费、下载音乐、书籍及图片等手机代缴业务；2、通过手机内置芯片、手机短信、GPRS近距离感应等多种方式进行支付，如手机钱包、手机刷卡消费及手机银行等；3、使用第三方支付平台的手机终端进行消费，如支付宝、微信支付等。

本问卷为匿名调查问卷，自愿参加。请根据您的第一感觉选择最能表达您观点的选项。选项没有正误之分，也不会给予任何评价，回答内容绝对保密。调查结果仅供学术研究，不会给付其它用途或给予任何第三方。此外，研究人员从本次问卷中获得的所有数据将不会向任何第三方披露，仅用于本次研究的目的。本研究符合纽卡斯尔商学院(Newcastle Business School)制定的道德行为准则。以下是我的个人联系方式。请不要犹豫，如果你有任何问题或问题与此问卷或其结果联系我。最后，我也想感谢您花时间参与这个问卷调查。若有任何关于问卷调查的疑问，请您及时与宿广瑾联系。

谢谢

宿广瑾 邮箱：guangjin.su@northumbria.ac.uk

第1部分：关于手机支付的使用

1. 您之前使用过手机支付吗？ [单选题] \*
  - 是 (继续答题)
  - 否 (问卷结束)
  
2. 您之前经常使用的支付手段是什么？ [多选题] \*
  - 支付宝
  - 微信支付
  - 手机银行
  - Apple Pay

其他

3. 您平均使用手机支付的次数多少？ [单选题] \*

每天

2-3天一次

4-5天一次

一周一次

两周一次

一个月一次

少于一个月一次

4. 您会继续使用手机支付吗？ [单选题] \*

是（继续回答问卷）

否（问卷结束）

第2部分：关于用户对手机支付的态度

请针对您经常使用的手机支付方式回答以下问题。1代表非常不同意，7代表非常同意，每个问题有且只有一个答案。请根据您的第一感觉选择最能表达您观点的选项。

5. 使用手机支付是一种有效的方式来管理我的时间。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

6. 使用手机支付很方便，因为我可以随时随地使用它。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

7. 使用手机支付可以让我节省时间。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
--	---	---	---	---	---	---	---	--

非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意
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8. 使用手机支付将允许我立即使用服务交易。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

9. 使用手机支付可以帮助我节省开支。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

10. 使用手机支付购买商品可以享受到折扣优惠。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

11. 使用手机支付可以获得奖励或积分。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

12. 使用手机支付能让我获得经济收益。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

13. 使用手机支付是令人愉快的。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

14. 使用手机支付会很有趣。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

15.使用手机支付让我感觉很好。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

16. 手机支付提供的服务拉近了我与亲友间的关系。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

17. 手机支付提供的服务增强了我与亲友间的关系。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

18. 手机支付提供的服务丰富了我的社交生活。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同

意								意
---	--	--	--	--	--	--	--	---

19. 手机支付提供的服务改善了我现有的人际关系网络。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

20. 使用手机支付可以让我感觉有面子。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

21. 使用手机支付增加了我在别人面前的面子。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

22. 使用手机支付让我很容易被社会群体接受。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

23. 如果不使用手机支付，我担心在生活中会丢面子。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

24. 使用手机支付可以很容易地预防病毒疾病。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

25. 使用手机支付将降低冠状病毒的风险。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

26. 使用移动支付被认为是一种预防性的健康行为。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

27. 一旦我开始使用手机支付，我将继续使用它。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

28. 我发现一旦我开始使用手机支付，就很难停止。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

29. 对我来说，使用手机支付已经成为一种无意识行为。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

30. 我必须使用手机支付。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

31. 我会考虑长期使用手机支付。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

32. 从全面考虑，我期待未来继续使用手机支付。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

33. 如果可以的话，我想继续使用手机支付。

[矩阵量表题] \*

	1	2	3	4	5	6	7	
非常不同意	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	非常同意

第3部分：关于用户的个人资料

34. 您的性别 [单选题] \*

男

女

不想说

35. 您的年龄 [单选题] \*

18 - 25岁

26 – 40岁

41 – 65岁

66岁以上

36. 您的婚姻状况如何? [单选题] \*

已婚

未婚

不愿提及

37. 您所受的最高教育程度 [单选题] \*

高中或以下

大专或本科学历

研究生学位

博士学位及以上

38. 您的年薪(人民币)收入属于哪个群体? [单选题] \*

低于48000

48000 – 72000

72001 – 96000

96001以上



## Appendix C – Questionnaire (English Version)

### Questionnaire about Mobile Payments

I am Guangjin Su, a doctoral student at Newcastle Business School, Northumbria University, UK. I am researching Chinese users' continued usage of mobile payments. For the interest of this research, I would like to obtain your thoughts, experiences and views on using mobile payments.

Therefore, I have enclosed a survey questionnaire that includes a set of questions/statements asking you for your opinions. The findings of this research will hopefully contribute to both the theory and practice in marketing for mobile payments in China.

In order to express the strength of your feelings, please check the appropriate numbered box. There are no right or wrong answers to the questions and we would like to capture your first impressions and the immediate feelings about the questions. The questionnaire should take approximate 10-15minutes to complete. I want to stress that your participation in this survey is entirely voluntary. Further, your answers will be treated in the strictest confidence and no personal data will be stored.

I look forward to learning about your thoughts and experiences with mobile payments.

Sincerely,

Guangjin Su

PhD Researcher    Email: [guangjin.su@northumbria.ac.uk](mailto:guangjin.su@northumbria.ac.uk)

#### Part 1 Usage of Mobile Payments

1. I have used mobile payment before.

Yes

No

If yes, please continue. If not, please leave. Thank you.

2. I have used the following type(s) of mobile payments:

Alipay

- WeChat Pay
- Mobile Banking
- Apple Pay
- Other

3. On average, how often do you perform mobile payments?

- Everyday
- Once every 2-3 days
- Once every 4-5 days
- Once every week
- Once every two weeks
- Once a month
- Less than once a month

4. I intend to continue using mobile payments.

- Yes
- No

#### Part 2 General Attitude toward Mobile Payments

In this part, please based on with the most used mobile payment services you listed above indicate your agreement with these statements. Please read the following statements carefully. Only Check ONE for each statement that most accurately reflects how strongly you disagree or agree with the statements.

1=Strongly Disagree

2=Disagree

3=Somewhat Disagree

4=Neither Disagree nor Agree

5=Somewhat Agree

6=Agree

7=Strongly Agree

5. Using mobile payments is an efficient way to manage my time.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

6. Using mobile payments is convenient because I can use it anytime and anywhere.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

7. Using mobile payments would allow me to save time and effort.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

8. Using mobile payments would allow me to use service transactions instantly.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

9. Using mobile payments would allow me to save money.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

10. Using mobile payments would allow me to take advantage of promotional offers.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

11. Using mobile payments can earn rewards or points.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

12. Using mobile payment can let me get economic benefits.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

13. Using mobile payments would be enjoyable.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

14. Using mobile payments would be fun.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

15. Using mobile payments make me feel good.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

16. Using mobile payments, I develop friendship with some other members.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

17. Using mobile payments would allow me to enhance interactions with friends and family.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

18. Using mobile payments would allow me to enrich my social life.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

19. Using mobile payments would allow me to improve my existing relationships.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

20. Using mobile payments enables me to gain mianzi.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

21. Using mobile payments increases my mianzi in front of others.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

22. Using mobile payments enables me to get easily accepted in social groups.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

23. I worry about losing mianzi in daily life if I am not using mobile payments.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

24. The disease can be easily prevented by using mobile payments.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

25. Using mobile payments would reduce the risk of coronavirus.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

26. Using mobile payments is considered as a preventive health behaviour.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

27. Once I start using the mobile payments, I will continue to use it.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

28. I find it difficult to stop the mobile payments once I have started to use it.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

29. Using mobile payments has become automatic to me.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

30. I must use the mobile payments.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

31. I would consider using mobile payments in the long term.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

32. All things considered, I will expect to continue to use mobile payment in the future.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

33. If I could, I would like to continue my use of mobile payments.

	1	2	3	4	5	6	7	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly agree

Part 3 General questions about your background

34. What is your gender?

Male

Female

Prefer not to say

35. What is your age group?

18-25

26-40

41-65

66 and above

36. What is your marital status?

Married

Unmarried

Prefer not to say

37. Your highest level of education attended?

High school and below

Diploma or Bachelor's degree

Master or Postgraduate degree

Ph.D.or above

38. Your annual personal income (RMB)currently?

Less than 48000

48000-72000

72001-96000

96001 and over



## Appendix D – Research Ethics Approval Form

My Documents

### Amendments

+ Create New Amendment   Refresh

SUBMISSION ID	CREATED DATE TIME	CREATED BY	STATUS	DESCRIPTION	UPDATED DATE TIME	COORDIN...
No items to display.						

### Submission

Submission Ref: 28611  
Status: Approved  
Submission Coordinator: Kimberley Hardcastle   kimberley.hardcastle@northumbria.ac.uk

Name:     guangjin.su

Email:

Faculty:

Department:

Submitting As:

Externally Approved:  **Note: ONLY tick this box if your project has already received full ethical approval from an external organisation**

Module Level Approval:  *Tick this box if staff and this submission refers to an entire module.*  
**\*\* Only to be used for low or medium risk projects as categorised by the diagnostic risk question set \*\***

Module Code:

Module Tutor:

Titl...  
Dep...  
Em...

Research Supervisor

Riad Shams Find Help

Clear

Titl... Senior Lecturer  
 Dep... Business and Law  
 Em... riad.shams@northumbria.ac.uk

Ethical Risk Level Medium

[Click here to answer the ethical risk questions](#)

Ethical Risk Diagnostic Questions and Responses		
ID	QUESTION	ANSWER
1	Gathering data or information from human participants (e.g. via questionnaire / interview / survey / experiment / social media / VR)?	YES
2	Collecting personal data, i.e. name, email, home address, computer IP address, phone number etc?	YES
3	Analysis of secondary data NOT in the public domain (e.g. archive material that require organisational membership)?	NO
4	The collection or use of information which is 'commercially sensitive'?	NO
5	Financial inducements other than expenses and compensation for time?	NO
6	Ministry of Defence, EU Security Funding?	NO
7	Cybersecurity issues including cyberattack?	YES
8	The collection of data / information that might be confidential or classified (e.g. protected by the Official Secrets Act)?	NO
9	Gathering data / information at a location external to Northumbria University campuses and franchised locations?	YES
10	Collection of samples such as plants, soils etc, that might disturb the environment or archaeological remains?	NO
11	Research involving animals or materials derived from animals?	NO
12	Anything else which means that the research poses greater than minimal ethical risk?	NO
13	Sensitive topics e.g. bereavement; sexuality; sexual behaviour, drug use; abuse or exploitation; body image; trauma; pornography; physical or mental health; religious beliefs; gender, ethnicity, bullying; whistle-blowing; prisons; criminality; cybersecurity etc?	NO
14	Potentially vulnerable people or groups, for example children and young people (under 18's), those with a learning disability or cognitive impairment?	NO
15	Intrusive interventions: the use of drugs or other substances (e.g. food, drink, placebos or drugs); procedures involving physical distress (e.g. prolonged or repetitive testing); emotional distress (e.g. stress or anxiety)?	NO
16	Analysis or direct observation of activities during which criminal offences may occur (e.g. hunting; drug dealing)?	NO
17	Collection of data relating to extremism, radicalisation or terrorism?	NO

18	Funding from a source that may be controversial (e.g. due to the nature of the funder or a conflict of interest)?	NO
19	Covert methods of investigation or deception?	NO
20	International partners or research undertaken outside of the UK where there may be issues of local practice and political sensitivities. In these instances it will be necessary to act in accordance with the legal and ethics review requirements in the countries included in the research and demonstrate awareness of these?	NO
21	Research where participants or other individuals may be identifiable in the material used or generated either directly (images or sound recordings) or indirectly (through aggregating separate data sources)?	NO
22	Access to records of personal or sensitive confidential information, including genetic or other biological information concerning identifiable individuals?	NO
23	Participants recruited or identified through the internet 'closed' discussion groups where the understanding of privacy in these settings is contentious or where sensitive issues are discussed?	NO
24	Individuals or groups where permission of a gatekeeper is normally required for initial or continued access to participants (e.g. adult professionals, family member, community leader)?	NO
25	Sharing of data or confidential information beyond the initial consent given?	NO
26	Persons who lack capacity to make decisions, e.g. people with dementia or learning disabilities?	NO
27	Recruitment of patients, staff or volunteers through the NHS, or the use of NHS patient data?	NO
28	The collection of bodily tissue e.g. blood, saliva, urine samples from living or deceased persons?	NO
29	Will the study involve participants, or their data, from adult social care, including home care, or residents from a residential or nursing care home?	NO
30	Collection of data from patients or staff recruited via the NHS or Health and Social Care agencies?	NO
31	Funding from the Department of Health?	NO
32	A health related study or clinical trial of an investigational medicinal product or a medical device?	NO
33	Funding, sponsorship or the involvement of Ministry of Defence?	NO
34	Direct testing on animals or materials derived from animals?	NO
35	Other considerations that mean that this research should be treated as 'high risk'?	NO

### Co-investigators

 Add
  Edit
  Delete
  Save
  Refresh

NAME OF CO-INVESTIGATORS

*No items to display.*

### G1: General Aims and Research Design (Mandatory)

#### Title

*Title of your research project*

Determinants of Continuance Intention to Use Mobile Payments in China

#### Outline General Aims and Research Objectives

*State your research aims/ questions (maximum 500 words). This should provide the theoretical context within which the work is placed, and should include an evidence-based background, justification for the research, clearly stated hypotheses (if appropriate) and creative enquiry.*

The objectives of the research are to:

- (1) extend the current understanding of consumer continuance intention of mobile payment by examining the characteristics and the theoretical underpinning that supports this continuous behaviour.
- (2) identify the dimensions of mobile payment perceived value.
- (3) identify and evaluate the major factors influence users' post-adoption of mobile payment.
- (4) examine the effect of both perceived value and habit on continuance intention and the habit as a mediator between perceived value and continuance intention.

## G2: Research Activities (Mandatory)

### Please give a detailed description of your research activities

*Please provide a description of the study design, methodology (e.g. quantitative, qualitative, practice based), the sampling strategy, methods of data collection (e.g. survey, interview, experiment, observation, participatory), and analysis. Do sensitive topics such as trauma, bereavement, drug use, child abuse, pornography, extremism or radicalisation inform the research? If so have these been fully addressed?*

This study uses qualitative and quantitative research methodology, and the methods of data collection are the interview and an online survey.

For the qualitative method, I will use the interview; the participants' type is the general public who are 18 years old and above and use mobile payments. Their country of origin is China, and the participants' background is all education level and all income level. I will use social media channels for data collection. Under the covid19, so it will not be face to face interviews. I will use the video interview through social media (Microsoft teams, zoom or Skype) for approx. 30-45minutes. I can actually see each other adds a certain level of importance and professionalism to the 'call'. It removes the temptation for either party to multi-task or lose focus. With permission, I would audio-record this interview to make sure I remember everything participants talk about.

For the quantitative method, I will use a questionnaire survey; the participants' type is the general public who are 18 years old and above and use mobile payments. Their country of origin is China, and the participants' background is all education level and all income level. I will use an online survey questionnaire for data collection from March. I will use WJX.cn online data collection tool to collect the data, one of the most frequently used online data-collection platforms in China. Invitations will be sent to potential subjects, and responses solicited through social media and email.

Using WJX.cn, to ensure privacy, the first thing is to register for an account, provide a phone number to create a questionnaire account, verify the validity of identity by sending an SMS verification code, and improve the relevant grid identification information (login password). Then, upload the questionnaire's Microsoft forms file will be password protected, and only the participants will have the password to open the questionnaire's file. Since respondents could submit their answers only when all the questions are finished, this platform guaranteed the collected questionnaires' completeness. A link and QR code will be generated when you are ready to send the questionnaire. The participant will not fill in the questionnaire until it is in a running state. The link and QR can be shared directly on social media platforms or copied and distributed by email. To prevent multiple answers from the same individual, the questionnaire could only be accessed through WeChat, and each WeChat account could only answer once. When participants fill out the questionnaire, we will ask participants for authorization of the WeChat account information (avatar, nickname, region, gender). If participants refuse, they will not be able to participate in the answer. Questionnaires with incomplete responses, apparent errors, and atypical timestamps (<2 min or more than 30 min) will be considered invalid and excluded. The collected original questionnaires will be downloaded in Excel format (.xls) and will be password protected.

Follow the website's data protection guidelines, (1) use encryption to keep your data private while in transit (2) personal information of users is stored in an encrypted manner through the adoption of encryption technology and isolated through segregation technology (3) a strict data use and access system is established, and strict data access rights control and multiple identity authentication technologies are used to protect personal information and prevent unauthorized use of data (4) take technical measures to monitor and record the operational status of the grid and network security events, and retain relevant grid logs (including your login IP address, type and mode of access to the grid, operation logs, and service log information (service failure information) for at least six months (5) use various data desensitization techniques, including content replacement and encryption desensitization, to enhance the security of the use of personal information, to ensure the overall privacy of all participants by collecting data using this website.

Respondents will reassure that all identifying information will be anonymous and that the information is for noncommercial use. A brief introduction to the study will provide in the first part of the questionnaire, including the target population, study objectives, the time needed to complete the questionnaire, and the names and contact information of the investigators. Participation in the survey is voluntary, with neither reward nor penalty. All respondents will inform they will free to continue or quit at any time. To protect respondents' privacy, the survey will anonymous, and all the raw data will store in one author's computer and kept confidential.

## M1: People and/or Personal Data

Tick if your work involves people and/or personal data?

### Sample Groups

Provide details of the sample groups that will be involved in the study and include details of their location (whether recruited in the UK or from abroad) and any organisational affiliation. For most research studies, this will cover: the number of sample groups; the size of each sample group; the criteria that will be used to select the sample group(s) (e.g. gender, age, sexuality, health conditions). If the sample will include NHS staff or patients please state this clearly. If this is a pilot study and the composition of the sample has not yet been confirmed, please provide as many details as possible.

The sample groups recruited in China. The participants' type is the general public who is 18 years old and above and uses mobile payment. The sample size of the video interview is about 100. The sample size of the questionnaire survey is above 500.

During data collection, consent forms will be stored securely in a locked cabinet by the researcher collecting the data. All other data will be stored locally on a password protected laptop or tablet. Periodically (when internet access is available), the data will be backed up to a secure, encrypted storage platform or on a password-protected encrypted hard-drive accessible only by the research team. After data collection has ended, consent forms will be scanned to pdf and the originals securely shredded. These pdfs along with all other data will be stored on a secure, encrypted storage platform. Anonymous response data may be shared or made publicly available through these services.

### Nature of data pertaining to Living Individuals

If you will be including personal data of living individuals, including still or moving images, please specify the nature of this data, and (if appropriate) include details of the relevant individuals who have provided permission to utilise this data, upload evidence of these permissions in the supporting documentation section.

Details of any Special Category Data - If you will be collecting data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, data concerning health or data concerning a natural person's sex life or sexual orientation, please specify which categories you will be using.

Type a value

**Legal Basis for Processing:** [Further guidance can be found here](#)

If you require further information, please contact the Data Protection Officer by emailing [dp.officer@northumbria.ac.uk](mailto:dp.officer@northumbria.ac.uk)

Type a value

### Recruitment

Describe the step by step process of how you will contact and recruit your research sample and name any organisations or groups that will be approached. Your recruitment strategy must be appropriate to the research study and the sensitivity of the subject area. You must have received written permission from any organisations or groups before you begin recruiting participants. Copies of draft requests for organisational consent must be included in the 'Supporting Documentary Evidence'. You must also provide copies of any recruitment emails/posters that will be used in your study.

All participants will reply to recruitment materials on a voluntary basis.  
For the video interview, 1)clearly define my intended participants:18 years old and above and use the mobile payment  
2)create a screener survey 3) post on social media.  
For the questionnaire survey, 1)clearly define my intended participants:18 years old and above and use the mobile payment  
2)create a screener survey 3)use WJX.cn online data collection tool to collect the questionnaire.  
We will aim to recruit approximately 100 adults for an interview and over 500 participants for the questionnaire.  
Participation in the survey is voluntary, with neither reward nor penalty. All respondents will inform they will free to continue or quit at any time. To protect respondents' privacy, the survey will anonymous, and all the raw data will store in one author's computer and kept confidential.  
After data collection, consent forms will be digitised and stored securely on a password protected computer; paper originals will be securely shredded. In case we do share identifiable information with other researchers or the public, participants will be informed that their data - including audio recordings of their speech - will be used for research or teaching purposes, and may be shared with other researchers or with the general public, and they will be given the choice to consent or not to this option.

Remuneration

**Details of remuneration**

*Will you make any payment or remuneration to participants or their carers/consultees? If yes: Please provide details/justifications. Note that your Faculty may have specific guidelines on participant payments/payment rates etc and you should consult these where appropriate.*

Type a value

**Type of Consent**

Informed Consent

**Type of Consent Details**

*Please include copies of information sheets and consent forms in the 'G6: File Attachments' section. If the study involves participants who lack capacity to consent, procedures in line with sections 30-33 of the Mental Capacity Act will need to be put in place. If you are using alternative formats to provide information and / or record consent (e.g. images, video or audio recording), provide brief details and outline the justification for this approach and the uses to which it will be put:*

The sample consent forms attached include information about the nature of the project that I will give to participants. I will summarise the key points at the start of each interview. If participants raise any questions (whether at that stage or before or after the interview) then I will answer them.  
My consent form explains how data will be stored and contains written privacy notice:  
- Consent forms will be scanned and uploaded into a separate file on u drive from the password-protected spreadsheet and the original forms will be confidentially shredded.  
- I will ensure that any analysis of the data which is not stored on u drive only uses the aliases.  
- Data that includes confidential details (including contact details) may be kept for up to 5 years.  
- Anonymised data may be stored indefinitely.

**Researcher and Participant Safety Issues**

*If there any risks the research could cause any discomfort or distress to participants (physical, psychological or emotional) describe the measures that will be put in place to alleviate or minimise them. Please give detailsof the support that will be available for any participants who become distressed during their involvement with the research.*

- 1)Schedule the interview for as early in the day as possible and always within office hours and in daylight.
- 2)Research should only restart or start when safe to do.
- 3)The research must be able to be conducted in a way that aligns with local government guidance as a minimum.
- 4)Dress appropriately for the research setting.
- 5)Ensure your mobile phone is charged fully and has emergency contact numbers programmed in.
- 6)During data collection, consent forms will be stored in a locked cabinet by the researcher collecting the data.
- 7)Each participant will have an anonymous code associated with their data and this will be linked to their consent form to allow the researchers to identify data from a participant who later wishes to withdraw from the study.

### Data Gathering Materials Used

Provide a detailed description of what the participants will be asked to do for the research study, including details about the process of data collection (e.g. completing how many interviews / assessments, when, for how long, with whom). Add any relevant documentation to the 'Supporting Documentary Evidence' section of this form.





Type a value

### Potential Ethical Issues

Please describe any potential ethical issues the project may have which are not covered above, and how you have sought to minimise these.

Type a value

## M2: DBS Clearances Required

 Add  Edit  Delete  Save  Refresh

**Do not upload your DBS certificate to this system as this would be contravening General Data Protection Regulations.**

Further information relating to DBS Clearance can be found in the Ethics and Governance Handbook using the link below

[Ethics and Governance Handbook](#)

**\*\*\*\*\* All fields below relating to DBS certificates must be completed \*\*\*\*\***

NAME OF PERSON ON CERTIFICATE	TYPE OF DBS CLEARANCE	CERTIFICATE REFERENCE	ADULTS/CHILDREN	DATE OF DBS CERTIFICATE
-------------------------------	-----------------------	-----------------------	-----------------	-------------------------

(Add new row)

## M3: Secondary Data

Tick if you will be using secondary data NOT in the public domain?

## M4: Commercial Data

Tick if your work involves commercially sensitive data?

## M5: Environmental Data

Tick if your work involves the collection of environmental data?

## G3: Research Data Management Plan (Mandatory)

**Anonymising Data (mandatory)**

*Describe the arrangements for anonymising data and if not appropriate explain why this is and how it is covered in the informed consent obtained.*

Remove direct identifiers (e.g., personal information such as addresses, name). Aggregate the precision of variables that might be identifiable (such as postcode). Generalise text variables to reduce identifiability. Restrict continuous variables to reduce outliers, for example, age. Pay particular attention to anonymising relational data, because some anonymised variables may become identifiable when considered in combination. And anonymisation refers to the various techniques and tools used to achieve anonymity.

**Storage Details (mandatory)**

*Describe the arrangements for the secure transport and storage of data collected and used during the study. You should explain what kind of storage you intend to use, e.g. cloud-based, portable hard drive, USB stick, and the protocols in place to keep the data secure.*

*If you have identified the requirement to collect 'Special category data', please specify any additional security arrangements you will use to keep this data secure.*

Store data in line with the GDPR act. Backup of data that I will collect for my PhD by storing at least two copies in at least two different locations (personal PC and USB sticks). Encrypt or password protects my storage device and individual files. And the research data will be retained for a minimum of five years.

**Retention and Disposal (mandatory)**

I confirm that I will comply with the University's data retention schedule and guidance.

[Research Data Management link](#)

[General Data Protection Regulations including Data Protection link](#)

[Records Retention Schedule link](#)

**G4: Research Project Timescale (Mandatory) ▼**

Proposed Start Date  

Proposed End Date  

**G5: Additional Information ▼**

Externally Funded

External Funder

Please give details of your 'other' funder



Agresso Reference

Franchise Programme Organisation

Please give details of your franchise organisation

Type a value

NHS Involvement

Please give details of any NHS involvement

Type a value

Clinical Trial(s)

Please give details of any Clinical Trial(s)

Type a value

Medicinal Products

Please give details of any Medicinal Product(s)

G6: File Attachments



*Additional files can be uploaded e.g. consent documentation, participant information sheet, etc.*

*Please note: It is best practice to combine all documents into one PDF (This avoids the reviewer having to op...*

[Go To Attachments](#)

G7: Health and Safety (Mandatory)



I confirm that I have read and understood the University's Health and Safety Policy.

- I confirm that I have read and understood the University's requirements for the mandatory completion of risk assessments in advance of any activity involving potential physical risk. The University Health and Safety Policy can be accessed [here](#)  
The University Risk Assessment Code of Practice can be accessed [here](#)

Please confirm either:

- There are PHYSICAL risks associated with the research project work and I confirm that a risk assessment has been approved and attached to this ethics submission.

OR

- I can confirm that there are no physical risks associated with this project and so no risk assessments are required.

Students requiring assistance with completing their risk assessment should get in touch with their supervisor or module tutor as the first point of contact. If further assistance is needed, the Faculty Technician can provide further guidance.

For more specific risk assessments (e.g. lab work), especially where the project is Medium or High risk, you are required to consult the Faculty Technical Manager; your Supervisor/Module Tutor will be able to put you in touch.

If you have any questions or concerns, please contact the University Health and Safety Team by emailing

[CRHealthandSafety@northumbria.ac.uk](mailto:CRHealthandSafety@northumbria.ac.uk)

#### G8: Insurance (Mandatory) ▼

- I have read and understood the University Insurance guidance document (link below):

[Insurance Guidance link](#)

**If you think your activity may involve a High Risk rating or are unsure how to answer the statements - contact [fi.insurance@northumbria.ac.uk](mailto:fi.insurance@northumbria.ac.uk) with a copy of your research proposal for advice.**

I confirm my work is covered by University Insurance. I confirm an insurance risk level of:

Low ▼

If your insurance risk level is HIGH please attach details of exceptional insurance coverage:

[Click here to attach a file](#)

#### G9: Electronic Signature (Mandatory) ▼

- I confirm my supervisor has reviewed the contents of this document
- I confirm I have assessed the ethical risk level of my work correctly and answered the above sections as fully and accurately as possible.

**Appendix E – Consent Form (Interview & Questionnaire)**

**CONSENT FORM (Interview)**

Project Title: Determinants of Continuance Intention to Use Mobile Payments in China

Principal Investigator: Guangjin Su

Student ID No. (if applicable): 15045639

Please tick or initial where applicable -

I have carefully read and understood the Participant Information Sheet.

I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.

I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.

I agree to take part in this study.

I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

Name/Signature of participant..... Date.....

Signature of Parent / Guardian in the case of a minor.....

**CONSENT FORM (Questionnaire)**

Project Title: Determinants of Continuance Intention to Use Mobile Payments in China

Principal Investigator: Guangjin Su

Student ID No. (if applicable): 15045639

Please tick or initial where applicable -

I have carefully read and understood the Participant Information Sheet.

I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.

I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.

I agree to take part in this study.

I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

Name/Signature of participant..... Date.....

Signature of Parent / Guardian in the case of a minor.....

# Determinants of Continuance Intention to Use Mobile Payments in China

## Participant Information Sheet (Interview)

**You are being invited to take part in this research study. Before you decide it is important for you to read this leaflet so you understand why the study is being carried out and what it will involve.**

**Reading this leaflet, discussing it with others or asking any questions you might have will help you decide whether or not you would like to take part.**

### **What is the Purpose of the Study?**

I am conducting research on Chinese users' continuance usage toward the mobile payments. For the interest of this research, I would like to obtain your thoughts, experiences and views on using mobile payments.

### **Why have I been invited?**

It is important that we assess as many people as possible and you have indicated that you are interested in taking part in this study, and that you are an adult aged 18 and above and use the mobile payments.

### **Do I have to take part?**

No. It is up to you whether you would like to take part in the study. I am giving you this information sheet to help you make that decision. If you do decide to take part, remember that you can stop being involved in the study whenever you choose, without telling me why. You are completely free to decide whether or not to take part, or to take part and then leave the study before completion.

### **What will happen if I take part?**

You will be asked complete a short video interview with me, for approx. 30-45minutes. This interview will be informal and will be arranged for a day and time that suits you best, and will take place through social media(Microsoft teams, zoom or Skype). With your permission I would audio-record this interview, to make sure I remember everything you talk about.

### **What are the possible disadvantages of taking part?**

There are no known disadvantages or health risks associated with this research.

### **What are the possible benefits of taking part?**

By taking part in the study and telling us your views of mobile payments, you will help develop effective services based on consumers' views. Also, to exercise one's autonomy and take an active role in society.

### **Will my taking part in this study be kept confidential and anonymous?**

All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified or identifiable in any reports or publications. Your institution will also not be identified or identifiable. Any data collected about you in the online questionnaire will be stored online in a form protected by passwords and other relevant security processes and technologies.

### **How will my data be stored, and how long will it be stored for?**

All paper data, including the questionnaires, the typed-up transcripts from your interview and your consent forms will be kept in locked storage. All electronic data; including the recordings from your interview, will be stored on the University U drive, which is password protected. All data will be stored in accordance with University guidelines and the Data Protection Act (2018). And the research data will be retained for a minimum of five years.

### **What is the legal basis for processing personal data?**

GDPR requires researchers to be transparent about the legal basis for undertaking research which will collect and process personal data. GDPR provides a number of legal bases to choose from, but in most cases the legal basis for university research projects will in most cases be Article 6(1) (e)... “processing is necessary for the performance of a task carried out in the public interest”.

If the research is collecting special categories of personal data (this is mostly what used to be referred to as ‘sensitive’ personal data, e.g. racial or ethnic origin, political opinions, religious beliefs, sexual orientation) then an additional legal basis is required and this must be communicated to the data subject. Again, in most cases researchers should rely on Article 9 (2)(j) “processing is necessary for scientific and historical research purposes”. Researchers will need additional safeguards in place when processing special categories of personal data. Please consult [the Research Ethics and Governance Handbook](#) for further details of these.

### **Who are the recipients or categories of recipients of personal data, if any?**

All respondents will be offered the opportunity to remain anonymous. Moreover, all data obtained by the researcher from this questionnaire will not be disclosed to any third party and will be used solely for purpose of this research. This research has complied and granted approval with the ethical code of practice set by the Newcastle Business School.

### **What will happen to the results of the study and could personal data collected be used in future research?**

The general findings might be reported in a scientific journal or presented at a research

conference, however the data will be anonymized and you or the data you have provided will not be personally identifiable, unless we have asked for your specific consent for this beforehand. The findings may also be shared with other organizations/institutions that have been involved with the study. We can provide you with a summary of the findings from the study if you email the researcher at the address listed below.

### **Who is Organizing and Funding the Study?**

Northumbria University

### **Who has reviewed this study?**

The research project, submission reference 28611 has been approved in Northumbria University's Ethics Online system. It has been reviewed in order to safeguard your interests, and have granted approval to conduct the study.

### **What are my rights as a participant in this study?**

A statement outlining the [individual's rights under GDPR](#) should be included, including the following: a right of access to a copy of the information comprised in their personal data (to do so individuals should submit a [Subject Access Request](#)); a right in certain circumstances to have inaccurate personal data rectified; and a right to object to decisions being taken by automated means. Participants should also be informed that if they are dissatisfied with the University's processing of personal data, they have the right to complain to the Information Commissioner's Office. For more information see [the ICO website](#).

*Contact for further information:*

*Researcher email: [guangjin.su@northumbria.ac.uk](mailto:guangjin.su@northumbria.ac.uk)*

*Supervisor email: [riad.shams@northumbria.ac.uk](mailto:riad.shams@northumbria.ac.uk)*

*Name and contact details of the Records and Information Officer at Northumbria University: Duncan James ([dp.officer@northumbria.ac.uk](mailto:dp.officer@northumbria.ac.uk)).*

*You can find out more about how we use your information at:*

*[www.northumbria.ac.uk/about-us/leadership-governance/vice-chancellors-office/legal-services-team/gdpr/gdpr---privacy-notices/](http://www.northumbria.ac.uk/about-us/leadership-governance/vice-chancellors-office/legal-services-team/gdpr/gdpr---privacy-notices/)  
or by contacting a member of the research team*

# Determinants of Continuance Intention to Use Mobile Payments in China

## Participant Information Sheet (Questionnaire)

You are being invited to take part in this research study. Before you decide it is important for you to read this leaflet so you understand why the study is being carried out and what it will involve.  
Reading this leaflet, discussing it with others or asking any questions you might have will help you decide whether or not you would like to take part.

### **What is the Purpose of the Study**

I am conducting research on Chinese users' continuance usage toward the mobile payments. For the interest of this research, I would like to obtain your thoughts, experiences and views on using mobile payments.

### **Why have I been invited?**

It is important that we assess as many people as possible and you have indicated that you are interested in taking part in this study, and that you are an adult aged 18 and above and use the mobile payments.

### **Do I have to take part?**

No. It is up to you whether you would like to take part in the study. I am giving you this information sheet to help you make that decision. If you do decide to take part, remember that you can stop being involved in the study whenever you choose, without telling me why. You are completely free to decide whether or not to take part, or to take part and then leave the study before completion.

### **What will happen if I take part?**

You will be asked to complete a web-based questionnaire which we estimate will take you 15-20 minutes.

### **What are the possible disadvantages of taking part?**

There are no known disadvantages or health risks associated with this research.



### **What are the possible benefits of taking part?**

By taking part in the study and telling us your views of mobile payments, you will help develop effective services based on consumers' views. Also, to exercise one's autonomy and take an active role in society.

### **Will my taking part in this study be kept confidential and anonymous?**

All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified or identifiable in any reports or publications. Your institution will also not be identified or identifiable. Any data collected about you in the online questionnaire will be stored online in a form protected by passwords and other relevant security processes and technologies.

### **How will my data be stored, and how long will it be stored for?**

All paper data, including the questionnaires, the typed up transcripts from your interview and your consent forms will be kept in locked storage. All electronic data; including the recordings from your interview, will be stored on the University U drive, which is password protected. All data will be stored in accordance with University guidelines and the Data Protection Act (2018). And the research data will be retained for a minimum of five years.

### **What is the legal basis for processing personal data?**

GDPR requires researchers to be transparent about the legal basis for undertaking research which will collect and process personal data. GDPR provides a number of legal bases to choose from, but in most cases the legal basis for university research projects will in most cases be Article 6(1) (e)... “processing is necessary for the performance of a task carried out in the public interest”.

If the research is collecting special categories of personal data (this is mostly what used to be referred to as ‘sensitive’ personal data, e.g. racial or ethnic origin, political opinions, religious beliefs, sexual orientation) then an additional legal basis is required and this must be communicated to the data subject. Again, in most cases researchers should rely on Article 9 (2)(j) “processing is necessary for scientific and historical research purposes”. Researchers will need additional safeguards in place when processing special categories of personal data. Please consult [the Research Ethics and Governance Handbook](#) for further details of these.

### **Who are the recipients or categories of recipients of personal data, if any?**

All respondents will be offered the opportunity to remain anonymous. Moreover, all data obtained by the researcher from this questionnaire will not be disclosed to any third party and will be used solely for purpose of this research. This research has complied and granted approval with the ethical code of practice set by the Newcastle Business School.

### **What will happen to the results of the study and could personal data collected be used in future research?**

The general findings might be reported in a scientific journal or presented at a research conference, however the data will be anonymized and you or the data you have provided will not be personally identifiable, unless we have asked for your specific consent for this

beforehand. The findings may also be shared with other organizations/institutions that have been involved with the study. We can provide you with a summary of the findings from the study if you email the researcher at the address listed below.

**Who is Organizing and Funding the Study?**

Northumbria University

**Who has reviewed this study?**

The research project, submission reference 28611 has been approved in Northumbria University's Ethics Online system. It has been reviewed in order to safeguard your interests, and have granted approval to conduct the study.

**What are my rights as a participant in this study?**

A statement outlining the [individual's rights under GDPR](#) should be included, including the following: a right of access to a copy of the information comprised in their personal data (to do so individuals should submit a [Subject Access Request](#)); a right in certain circumstances to have inaccurate personal data rectified; and a right to object to decisions being taken by automated means. Participants should also be informed that if they are dissatisfied with the University's processing of personal data, they have the right to complain to the Information Commissioner's Office. For more information see [the ICO website](#).

**Contact for further information:**

**Researcher email: [guangjin.su@northumbria.ac.uk](mailto:guangjin.su@northumbria.ac.uk)**

**Supervisor email: [riad.shams@northumbria.ac.uk](mailto:riad.shams@northumbria.ac.uk)**

**Name and contact details of the Records and Information Officer at**

**Northumbria University: Duncan James ([dp.officer@northumbria.ac.uk](mailto:dp.officer@northumbria.ac.uk)).**

***You can find out more about how we use your information at:***

**[www.northumbria.ac.uk/about-us/leadership-governance/vice-chancellors-office/legal-services-team/gdpr/gdpr---privacy-notice/](http://www.northumbria.ac.uk/about-us/leadership-governance/vice-chancellors-office/legal-services-team/gdpr/gdpr---privacy-notice/)**

***or by contacting a member of the research team***

## **Appendix G - AM2022 Conference Competitive Short Paper (1)**

### **The Impact of Habit as Mediator on Customer Perceived Value and Continuance**

#### **Intention**

#### **Abstract**

This study builds on existing post-adoption literature and theories and extends to include consumer perceived value impact on habit and continuous intention based on mobile payments services. A mixed-method was selected in this study. Qualitative research employed the critical incident technique (CIT) method in exploratory analysis to explore the dimensions and connotations of the perceived value of mobile payments. From the perspective of user-perceived benefits, it contains five dimensions: utilitarian value, hedonic value, social value, ecological value and health value. From the perspective of user-perceived sacrifices, it includes three dimensions: risk cost, based on mobile and low-level pain of payment. Quantitative research was employed to identify the factors affecting the mobile payments continuance use in China under different constructs, both habit-related factors and product-related factors (i.e., utilitarian, hedonic, social and health). The structural equation models built from a survey of 746 mobile payments Chinese consumers revealed that habit was the strongest factor among all constructs in predicting consumers' continuance intention. However, only perceived utilitarian value significantly directly impacts the continuance usage of mobile payments. Furthermore, the mediator (habit) was tested with a significant mediating effect between customer perceived value and mobile payments continuance usage.

**Key Words:** habit-related factors, product-related factors, mediator

## AM2022 Conference Paper Decision

AM 2022 <no-reply@oxfordabstracts.com>

周一 2022/4/4 17:00

收件人: guangjin.su <guangjin.su@northumbria.ac.uk>

**CAUTION:** This email originated from outside of the University. Do not click links or open attachments unless you recognise the sender and know the content is safe.

### AM2022 Conference Paper Decision

Dear guangjin su,

I am pleased to inform you that your Competitive Short Paper, Submission ID 112, has been accepted to take part in Academy of Marketing Conference 2022.

You may log in to the Conference system <https://app.oxfordabstracts.com/> to view your review.

Please note, any papers not represented by an author/co-author will not be published in the Conference Proceedings. *All representatives must register for the AM2022 Conference and pay the registration fee by the required date (Friday 3 June 2022), or their paper will be withdrawn.*

Conference delegates should register by 20 May to benefit from the reduced Early bird fee, which includes membership of the Academy of Marketing for 2022-2023. The registration link is at the conference website <https://www.academyofmarketing.org/conference/conference-2022/am2022-registration/>

We look forward to seeing you at the AM2022 Conference in Huddersfield, 5-7 July.

With best wishes,

AM2022 Conference Team

## **Appendix H - AM2022 Conference Competitive Short Paper (2)**

### **Factors Driving Customers' Stickiness with Smart Assistants**

#### **Abstract**

This study developed and tested a model of the effect of perceived intimacy (Cordova & Scott, 2001) on smart assistants' stickiness and explained the formation of smart assistants' stickiness. Also, it proposed that hedonic value (Coursaris & Sung, 2012), utilitarian value (Asbjørn & Brandtzæg, 2017), and social value (Thackara, 2000) act as critical antecedents to smart assistant stickiness. The structural equation models built from a survey revealed that both hedonic value and social value impacted stickiness and intimacy. However, utilitarian value affected stickiness, it did not impact intimacy. This study's results help policymakers and designers of smart assistants to understand what value factors affect users' stickiness smart assistants.

**Key Words:** intimacy, stickiness, perceived value

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### Appendix I – Illustrative Prior Studies on Mobile Payments Continuance Behaviour in Detail

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Zhou (2013)	An empirical examination of continuance intention of mobile payment services	mobile payment services	IS success model Flow theory	questionnaire	1) service quality is the main factor affecting trust. 2) system quality is the main factor affecting satisfaction. 3) information quality and service quality affect flow. 4) trust, flow and satisfaction determine continuance intention.	1)results can be generalized to other regions of China. 2)need to be generalized to other countries. 3) onducted a cross- sectional study. 4) long- itudinal research	China	Decision Support Systems
Zhou (2014)	Understanding the determinants of mobile payment continuance usage	mobile payment	Trust theory	questionnaire	1) performance expectancy, trust in mobile payment and flow affect continuance usage, 2) system quality has strong effects on performance expectancy and flow.	1)future research can test our results in western cultures. 2) switching costs and perceived risk. 3)multiple-dimensional factors and second-order factors. 4) longitudinal research	China	Industrial Management and Data Systems

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Yuan et al. (2016)	An investigation of users' continuance intention towards mobile banking in China	mobile banking	TAM TTF ECM	questionnaire	1)satisfaction, perceived usefulness, perceived task-technology fit, and perceived risk are the main predictors of continuance intention.2)satisfaction,in turn,is determined by confirmation, perceived usefulness, and perceived risk. 3) Perceived usefulness is affected by confirmation, perceived ease of use, and perceived task-technology fit. 4) direct effect of perceived ease of use to continuance intention is not significant. 5)gender significantly moderates the effect of perceived risk to continuance intention.	1) across different regions or countries. 2) explore the possible effects of other factors (e.g. familiarity, intimacy) to users' continuance intention of m-banking services. 3) a longitudinal study	China	Information Development
Lu et al. (2017)	How do post-usage factors and espoused cultural values impact mobile payment continuation?	mobile payment	Expectationconfirmation model (ECM)  Cultural values	questionnaire	1)privacy protection and social influence beliefs drove user continuous intentions. 2)mobility belief had an indirect impact via user satisfaction. 3)The espoused cultural value uncertainty avoidance served as an antecedent of perceived social influence and mobility.	cross-sectional design instead of a longitudinal design	China	Behaviour and Information Technology



Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Chen and Li (2017)	Understanding Continuance Intention of Mobile Payment Services: An Empirical Study	Mobile Payment Services	IS success model IT continuance (ITC) theory	questionnaire	1)user satisfaction has a substantive positive impact on continuance intention. 2)the disconfirmation of preadoption perceived usefulness about mobile payment services positively impacts user satisfaction. 3)the disconfirmation of preadoption perceived risk about mobile payment services negatively impacts user satisfaction and positively impacts postadoption perceived risk. 4) perceived usefulness is positively associated with continuance intention. 5)user satisfaction positively impacts both institution-based trust	1)habits suggests that habitual responses may cause users to bypass such a cognitive process. 2)cultural differences through multinational data sampling	China	Journal of Computer Information Systems
Chen and Amorse (2017)	Constructs affecting continuance intention in consumers with mobile financial apps: A dual factor approach	mobile financial apps	dual-factor model	questionnaire	1) perceived enjoyment and personal innovativeness as dedication-based factors and habit as a constraint-based factor.	link on a broader social media network in order to attract a wider variety of respondents.	China	Journal of Information Technology Management

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Cao et al. (2018)	Understanding mobile payment users' continuance intention: a trust transfer perspective	mobile payment	Trust transfer theory	questionnaire	1) trust transfer process positively influences the continuance intention of mobile payment through satisfaction. 2) Satisfaction is an important factor affecting continuance intention, 3) trust in online payment, perceived similarity, and perceived entitativity between online and mobile payments can positively influence trust in mobile payment.	1) examine other trust-building mechanisms, such as institution-based and knowledge-based trust 2) collects cross-sectional data to examine mobile payment usage behavior	China	Internet Research
Kumar et al. (2018)	The effect of perceived security and grievance redressal on continuance intention to use M-wallets in a developing country	M-wallets	Technology acceptance model Expectation confirmation model (ECM)	questionnaire	1) perceived usefulness and perceived ease of use significantly affect user satisfaction and intention to continually use M-wallets. 2) The effect of perceived security on user satisfaction is significant. 3) grievance redressal mediates the effect of perceived security on intention to continually use M-wallets.	other factors affecting continuance and usage, such as flow system quality, information quality and switching costs, etc.	India	International Journal of Bank Marketing
Poromatikul et al. (2019)	Drivers of continuance intention with mobile banking	mobile banking apps	European Customer Satisfaction	questionnaire	1) satisfaction, trust and expectancy confirmation directly affecting continuance intention. 2) Image and perceived risk also have an impact,	1) questions about generalizability arise 2) trust and risk	Thailand	International Journal of Bank Marketing

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
	apps		on Index (ECSI) model					
Khayer and Bao (2019)	The continuance usage intention of Alipay: Integrating context-awareness and technology continuance theory	Alipay	Context-awareness theory Technology continuance theory	questionnaire	1)confirmation and perceived usefulness significantly influence the continuance intention of Alipay through satisfaction. 2)perceived usefulness, satisfaction, context and ubiquity have direct impact on the continuance intention of Alipay through attitude.	perform importance-performance map analysis (IPMA) to identify the critical factors	China	The Bottom Line
Shao et al. (2019)	Antecedents of trust and continuance intention in mobile payment platforms: The moderating effect of gender	mobile payment	Innovation diffusion theory	questionnaire	1)security is the most significant antecedent of customers' trust, followed by platform reputation, mobility and customization.2)Customers' trust is negatively associated with perceived risk and positively associated with continuance intention. 3) the relative influences of trust building mechanisms are contingent upon gender.	1)can incorporate customers' age, experience and nationality as moderators in the theoretical model 2)can examine the influence of other factors (easiness of use, readiness to adopt, perceived value, etc.) in	China	Electronic Commerce Research and Applications

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
						promoting customers' continuance usage of mobile payment		
Zhao and Bacao (2020)	A comprehensive model integrating UTAUT and ECM with espoused cultural values for investigating users' continuance intention of using mobile payment	mobile payment	UTAUT ECM				China	ACM International Conference Proceeding Series

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Itthiphone et al. (2020)	Determinants of Continuance Intention in Mobile Payment Services: Based on the IS Success Model	Mobile Payment Services	IS success model Trust	questionnaire	1)in the case of Korean consumers, system quality, information quality and service quality were shown to have a positive effect on trust and satisfaction. In addition, trust and satisfaction were shown to have a positive effect on continuance intention.2)in the case of Laotian consumers, system quality and service quality were shown to have a positive effect on trust, and system quality and information quality were shown to have a positive effect on satisfaction.	1)may establish the pre-acceptance stage of mobile payment usage in Laos.2), future research should also examine other variables. References	Korea and Laos	Journal of Internet Computing and Services
Alhassan et al. (2020)	Effect of gratification on user attitude and continuance use of mobile payment services: a developing country context	Mobile Payment Services	Uses and Gratification (U&G) theory	questionnaire	1)ease of use and usefulness gratifications were found to significantly influence attitude towards the use of mobile payment services. 2) user attitude significantly influences the continuance use intention of mobile payment services	1) conducted a developing country, it is difficult to generalize the results to encompass the developed economies. 2)similar research should compare the developed and developing economies by considering culture as	Ghana	Journal of Systems and Information Technology

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
						amoderating effect.		
Talwar et al. (2020)	Point of adoption and beyond. Initial trust and mobile-payment continuation intention	mobile payment	ISS model Transaction cost economics (TCE) theory IT continuance mode	questionnaire	1) information and service quality positively influence initial trust, which, in turn, has a positive association with confirmation and perceived usefulness.3) a positive relationship between perceived usefulness and continuation intention.	data collected from young-adult students between 18 and 28 years of age, so the findings may not be generalizable to other potential users of mobile- based payments. These	India	Journal of Retailing and Consumer Services
Handarkho (2020)	Understanding mobile payment continuance usage in physical store through social impact	mobile payment	Social impact theory Trust transfer	questionnaire	Perceived Herd behavior had the most significant contribution to Trust formation followed by Perceived Risk and Para-social interaction	use several factors from social experience not applied in this study to bring more insight into the influence of social experience on Trust	Indonesia	Asia Pacific Journal of Marketing and Logistics

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
	theory and trust transfer					formation in MP continual usage context.		
Marinković et al. (2020)	The moderating effects of gender on customer satisfaction and continuance intention in mobile commerce: a UTAUT-based perspective	mobile commerce	Unified Theory of Acceptance and Use of Technology (UTAUT)	questionnaire	Performance expectancy was found to be the strongest predictor of satisfaction and comparative value was identified as the main driver of continuance intention.	prove beneficial to further develop the concept of trust and privacy protection by using a greater number of variables.	Serbia	Technology Analysis and Strategic Management

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Sreelakshmi and Prathap (2020)	Continuance adoption of mobile-based payments in Covid-19 context: an integrated framework of health belief model and expectation confirmation model	mobile-based payments	Health Belief Model (HBM) Expectation confirmation model (ECM)	questionnaire	1) perceived severity, perceived susceptibility and self-efficacy significantly influenced adoption/confirmation of mobile-based payment services.2) The continuance intention was significantly predicted by perceived usefulness and perceived satisfaction. 3) the perceived health threat indirectly affects continuance intention through confirmation, perceived usefulness and satisfaction.	1)limited to the Covid-19 context.2)incorporate the trust in mobile payments into the present research model.	India	International Journal of Pervasive Computing and Communications
Shelvia et al. (2020)	Analysis of Factors Affecting Consumer 's Continuance Intention To Use Mobile Payments With a Value-Based Adoption Model ( Vam ) Approach	Mobile Payments	Value-Based Adoption Model ( Vam )	questionnaire	1) Perceived benefits such as enjoyment and usability as a form of customer satisfaction also have a positive effect on recommendations for the use of mobile payments. 2)the perceived benefit factor of consumers is the strongest determinant besides the perceived convenience factor dans	recognize the implications of cultural value on intentions	Indonesia	



Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Putri et al. (2020)	Environment factors affecting individual's continuance usage of mobile payment technology in Indonesia	mobile payment technology	Technological Personal Environmental (TPE) model Technology Continuance Theory (TCT)	questionnaire	1) satisfaction was a factor that positively influenced the continuance usage of mobile payment. 2) user satisfaction was directly influenced by environmental factors, consisting of Additional Value (VA), Payment Culture (PC), Lifestyle Compatibility (LC), and Facilitating Conditions (FC).	explore other environmental factors that encourage individuals' intention to use sustainable mobile payment services.	Indonesia	Cogent Engineering
Duy Phuong et al. (2020)	Examining Customers' Continuance Intentions towards E-wallet Usage: The Emergence of Mobile Payment Acceptance in Vietnam	E-wallet	Technology Acceptance Model (TAM)	questionnaire	1) mobile quality application and familiarity can significantly influence perceived ease-of-use (PEOU) and perceived usefulness (PU), but situational normality has an impact only on PEOU. 2) PEOU and PU are positively related to satisfaction. 3) payment security and feedback mechanism affect positively customer' trust. 4) positive effects that satisfaction	perceived benefit should be investigated further to find out how important these influence customers' E-wallet system continuance intentions	Vietnam	Journal of Asian Finance

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
					and trust have on electronic wallet continuance intention			
Andrea and Suharto (2020)	The role of trust and risk tolerance in mobile payment: post-adoption behavioral study	mobile payment	Technology Acceptance Model (TAM)	questionnaire	1) Risk Tolerance and Trust influence Continuance Intention using mobile payment.2) Risk Tolerance variable affects Continuance Intention directly. 3) Trust variable does not significantly affect Continuance Intention	the trust variable has a positive but not significant relationship with the intention to continue using mobile payment therefore for further research other variables need to be considered as	Bandung	International Journal of Economics, Business and Management Research
Andrea and Suharto (2020)	An integrated model combining the ECM and the UTAUT to explain users' post	mobile payment	UTAUT ECM	questionnaire	the integrated model has a higher predictive power to explain continuance intentions for using mobile payment systems with significant factors of satisfaction, trust, performance expectancy, and effort expectancy.	hedonic factors were not included in the theoretical model.	India	Australasian Journal of Information Systems

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
	adoption behaviour towards mobile payment systems							
Nan et al. (2020)	What motivates users to keep using social mobile payments?	Social Mobile Payments	TAM ECT	questionnaire	1)satisfaction strongly and positively affects users' continuance intentions. 2)atisfaction is influenced by perceived usefulness (PU), security, and enjoyment. 3)perceived ease of use (PEU) does not directly affect satisfaction,4)perceived ubiquity has strong effects on users' PU and PEU	1)should utilize larger sample sizes to compensate for this limitation. 2)verifying our model in the context of other countries and cultures	South Korea	Sustainability
Handarkho (2020)	Understanding mobile payment continuance usage in physical store through social impact theory and trust transfer	mobile payment	Trust transfer theory	questionnaire	Perceived Herd behavior had the most significant contribution to Trust formation followed by Perceived Risk and Para-social interaction	the influence of social experience on Trust formation in MP continual usage	Indonesia	Asia Pacific Journal of Marketing and Logistics

Date& Author	Title	Research contest	Theory	Research method	Key finding / contributions	Limitations / Research direction	Country	Journal/ Publisher
Handarkho et al. (2021)	Understanding proximity mobile payment continuance usage in Indonesia from a habit perspective	mobile payment	Habit Theory Continuance Theory	questionnaire	1) Satisfaction was found to have the most substantial direct influence on the establishment of habit to use MP followed by perceived usefulness and perceived compatibility. 2) Deal proneness and social ties were discovered to have a significant indirect effect on habit through the mediation of usefulness.	1) limit the generalization of the findings to other geographical locations with different cultures and attitudes toward MP usage 2) further research should combine factors from both habit's and MP's literature	Indonesia	Journal of Asia Business Studies
Raman and Aashish (2021)	To continue or not to continue: a structural analysis of antecedents of mobile payment systems in India	mobile payment	Trust Continuance Theory	questionnaire	1) service quality, attitude, effort expectancy and perceived risk act as influencing antecedents of continuance intention 2) perceived trust, convenience and social value have no influence on users' continuance intention.	1) longitudinal research study 2) few more determinants that may have a considerable effect on continuance usage, like information quality, flow experience, etc	India	International Journal of Bank Marketing

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