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Yu Zhao  
*The University of Melbourne*, y.zhao24@student.unimelb.edu.au

Sherah Kurnia  
*The University of Melbourne*, sherahk@unimelb.edu.au

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EXPLORING MOBILE PAYMENT ADOPTION IN CHINA

Yu Zhao, Department of Computing and Information Systems, The University of Melbourne, Australia, y.zhao24@student.unimelb.edu.au.
Sherah Kurnia, Department of Computing and Information Systems, The University of Melbourne, Australia, sherahk@unimelb.edu.au.

Abstract

With the development of the integration between mobile communication and Internet technology, China is expected to have a large number of M-payment users due to its population size with a large number of mobile users. However, the number of M-payment users in China is still low and currently there are limited in-depth studies exploring the adoption of M-payment in China. This study aims to explore reasons for individuals to use M-payment in China through a qualitative study. The research results indicated that M-payment adoption was influenced by various reasons related to system quality, service quality, usefulness, social influence, trust, among others. The study findings indicate that the influence of system quality and service quality on individual’s decision to use in China appear to be the most important. A particular individual lifestyle, need and promotion offered by service providers have also been identified as important reasons for using M-payment in China. The outcomes of this study enhance the current knowledge about the M-payment adoption particularly in China. They can also be used by service providers to devise appropriate strategies to encourage wider adoption of M-payment.

Keywords: Mobile Payment, Technology Adoption, Qualitative Study, China.
1 INTRODUCTION

With the explosive development of mobile communication technology and the rapid innovation of mobile devices, mobile commerce (M-commerce) emerges as a new approach to e-commerce. M-commerce is defined as “a subset of e-commerce where any transaction with a monetary value is conducted in a wireless environment by using mobile devices” (Yap & Hii 2009, P. 24). M-commerce enables individuals to conduct trading conveniently by using mobile devices anytime and anywhere (Yap & Hii 2009). The expansion of 3G mobile technology provides high speed Internet access via mobile devices and facilitates the launching of App stores, which contributes to the high growth of mobile commerce around the globe. Mobile commerce is expected to further grow in revenue with the introduction of 4G mobile technology (Tripathim 2012; Giaglis & Kourouthanassis 2012). ABI research indicates that M-commerce will reach $119 billion revenue worldwide in 2015 which is 6.5 times higher than the revenue in 2008 (Khalifa et al. 2012).

Mobile payment (M-payment) is a sub-set of m-commerce which provides a method for conducting micropayment to facilitate mobile commerce transactions. M-payment is a way of using a mobile device for transferring money from payer to receiver through an intermediary or directly (Mallat 2007). It has two types: remote payment and proximity payment. Remote payment includes banking and mobile internet payment service. Proximity payment means contacting payment via mobile phone with radio frequency identification (RFID) and near filed communication technologies (NFC) (Zhou 2013). The service of M-payment covers the digital contents such as ring tone, games and pictures, parking fees, public transport fares, tickets, etc. (Kim et al. 2010). Currently, some supermarkets, restaurants and gyms also support the mode of M-payment (iResearch 2011). A study by the Global System for Mobile Communication Association (GSMA 2013) shows that 163 mobile payments products are operating in developing economies, among which about 40 in the Asia-Pacific region. According to the latest data from Gartner (www.gartner.com), the number of M-payment users worldwide in 2012 would be three times of that in 2009, reaching 212 million. Moreover, the total number of global M-payment users will be 384 million by the year 2015 (Deloitte 1 2012). Renub Research also forecasted that Japan would continue to be the leader of the M-payment market in Asia, while China would have the largest number of M-payment users (Renub Research 2012).

China has a large population of mobile phone and mobile Internet users (Lu et al. 2011). China’s Ministry of Industry and Information Technology (MIIT) reported that the number of mobile phone users in China reached 1146 million by the year 2013, of which 3G network users reached 277 million. Along with the popularity of mobile phone and 3G network, mobile payment in China is expected to have a good development prospect. During the last two years, the development of M-payment especially remote payment has experienced a great progress due to various reasons, such as the maturity of mobile 3G network, the launch of the diversified APP and the unification of the payment standards (iResearch 2011; iResearch 2013; Deloitte 1 2012). The data from iResearch (2013) showed that market scale of mobile payment in China exceeded 28.5 billion USD (approximately 151 billion Yuan) by the end of year 2012, with an 89.2% annual growth. The research conducted by China Internet Network Information Centre (CNNIC 2013) indicated that the number of mobile online payment users in 2013 had increased by 43% compared with the year 2012.

However, the M-payment development in China is still in the initial stage. While iResearch (2013) indicates that mobile remote payment is entering the period of high-speed growth, accounted for 97.4% (51.7% on mobile Internet payment and 45.7% on SMS payment respectively), proximity payment only took up 2.6% of M-payment. Moreover, compared with the population of mobile user, the percentage of M-payment users is still low. The survey of Zol Data Centre (ZDC 2012) stated that the proportion of users who had no experience with M-payment was as high as 61.5%, and the percentage of users who used M-payment frequently only took up 18.9% of the whole M-payment users. While an enormous potential for the M-payment market in China has been widely predicted, the adoption and the use of M-payment has actually fallen behind the expectation. Since the consumer adoption of M-payment implies the success of the M-payment industry to some extent, it is therefore important to investigate the reasons why individuals adopt or refuse M-payment.
Currently, some research has been conducted to identify reasons why individuals in China do or do not use M-payment. The result of the survey taken by iResearch (2011) indicates that the main reason for using mobile remote payment is because the transaction could conveniently occur anywhere and anytime. Most people using mobile proximity payment because the transaction is quick. In addition, the pursuit of trying something new is another reason for a large number of people to use mobile proximity payment. On the contrary, the survey of ZDC (2012) shows some reasons why people are not willing to use M-payment which include the safety concern, distrust of M-payment process, unavailability and worries of losing mobile. Among them, the safety of M-payment is a major reason as cited by 36.3% respondents. Secondly, 17.6% of the survey participants are worried about possible problems that might occur during the transaction. Moreover, the report from MIIT (2010) indicates that 42.3% of people in China used to pay by cash. This kind of traditional payment is difficult to change since it has a culturally embedded behaviour. As a result, the popularity of M-payment in China is generally low.

A number of academic articles have explored factors affecting users’ intention to use M-payment such as compatibility, security, trust, social influence, etc. in various contexts (Lu et al. 2011; Yang et al. 2012; Zhou 2013). However, there are few empirical studies focusing on factors influencing the adoption of M-payment from users’ point of view in China. Since Chinese consumers have a unique behaviour affected by the long-standing culture and tradition, there is a need to further assess the relevance of factors identified in the literature in the context of M-payment adoption in China. Furthermore, these existing studies were conducted by using a closed questionnaire survey and quantitative research, which provided a limited understanding of the phenomenon of interest, and a limited access to grasp the actual perception of consumers. In addition, how the variables/factors affect the adoption of M-payment is not well explored.

Therefore, to extend the existing research effort into investigating factors affecting M-payment adoption, this study is aimed at exploring reasons why individuals use mobile payment in China from the consumers’ viewpoint. By employing a qualitative study, our study will complement the existing knowledge in this area by having more access to the context to better understand reasons for individuals decide to use or not to use M-payment. The following question is addressed in this paper: Why do individuals decide to use or not to use M-payment in China? To answer the research questions, a literature review was firstly conducted to identify a number of factors influencing the adoption of mobile payment. Based on the literature review and synthesis, we developed a research framework that is used to guide the qualitative empirical study. It is not the intention of this study to explore the relationships between factors using statistical analysis. The factors identified from the literature are used to guide the study in exploring possible reasons why Chinese individuals use m-payment. A qualitative study involving interviews with eighteen Chinese mobile payment users with different backgrounds and different ages was conducted to explore a number of reasons why individuals use M-payment in China.

The paper is structured as follows. Firstly, it provides a brief overview of mobile payment, including the definition, types and main suppliers in China, followed by a comprehensive literature review on the mobile payment adoption and factors affecting adoption. Then the research methodology for this study is briefly outlined. The research findings are then presented and discussed and finally, some limitations of this study and future research are outlined to conclude the paper.

2 LITERATURE REVIEW AND RESEARCH FRAMEWORK

Mobile Payment refers to a mobile financial business transaction operated via a mobile device based on a mobile network. Currently, mobile payment has various definitions. Different researchers and institutions have defined it from different perspectives. For example, Au and Kauffman (2008) defined M-payment as “any payment in which a mobile device is utilized to initiate, authorize and confirm a commercial transaction” (Kim et al. 2010, P.310). By contrast, Forrester’s and Gartner’s definitions of M-payment are much narrow. Forrester (2012) defines M-payment as a fund transaction initiated by a mobile phone without using the voice function. Gartner (2013) defines M-payment as transactions conducted using a mobile phone and payment instruments that include banking
instruments and stored value accounts, and exclude the transactions based on the telecom’s billing system and interactive voice response system. In this paper, a broader definition of Deloitte\(^4\) (2012, P. 4) is adopted, which specifies that mobile payment is “a form of payment where the user uses a mobile device to realize information exchange and complete fund transfer from the payer to the payee for the purpose of payment by way of accessing communication networks or using short-range communication technologies”.

Currently, there are four approaches to access M-payment, including message or browser payment, application based payment, contactless payment and hybrid payment (Deloitte\(^2\) 2012). The first two approaches use the technology of remote payment, while the last two use the proximity payment method. From the targets of transaction, M-payment can be classified into peer-to-peer payment, consumer-to-business payment and business-to-business payment (Deloitte\(^2\) 2012). Moreover, from the provider’s perspectives, M-payment can be classified into three types: mobile network operator centric, financial institution centric and third-party operator centric (Lu et al. 2011). Now in China, there are three main mobile network operators: China Mobile Communication Corporation (CM), China United Telecommunication Corporation (CU), and China Telecommunication Corporation (CT). All these three operators are authorized to provide mobile and data service. The most popular financial institution activating in M-payment is China UnionPay, which facilitates remote or proximity payment by storing information about a customer’s bank card into a chip of a mobile phone and using the mobile wireless communication technology and radio frequency technology (iResearch 2011). The third party centric payment is a way using “an intermediary which provides mobile payment service by integrating the function of the mobile network operators’ communication network with the financial institutions’ payment accounts” (Lu et al 2011, P. 394). The most successful third party of M-payment in China is Alipay.

In terms of M-payment adoption, there have been a large number of studies conducted which covers different aspects such as technologies, providers, and consumers. Among 57 conferences and 16 journals reviewed by Dahlberg et al. (2008), 20 publications addressed the consumer issues. Moreover, the result of reviewing another 28 different articles from the year 2007 to 2013 showed that the topic on consumer in the domain of M-payment raised the interests of many scholars. Among them, only one articles authorised by Mallt (2007) conducted a qualitative study, exploring the M-payment adoption factors by interviewing users of different ages in Finland. Most studies utilized a quantitative research approach, testing the effects of variables on users’ intention to use M-payment. Typical theories employed by the existing studies include Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and DeLone and McLean IS success model (e.g. Shin 2009; Kim et al. 2010; Zhou 2013).

Among the articles reviewed, four of them studied factors affecting M-payment adoption in China. For example, Lu et al. (2011) and Yang et al. (2012) conducted a study by assessing the influence of factors, such as compatibility, cost, security and social influence on M-payment adoption. Moreover, the influence of relative advantage, which refers to the convenience, efficiency and ubiquity on M-payment adoption, was also examined. Peng et al. (2011) conducted their study based on the UTAUT model. A number of factors were categorised into two groups for exploring barriers and drivers for M-payment acceptance. The results of this study indicate that risks and cost are important barriers, while performance expectancy (usefulness) and social influence are acceptance drivers. Zhou (2012) studying factors influencing users’ intention to continue use M-payment based on the D&M IS Success Model. System, service and information quality were found to have positive effects on the trust building. Furthermore, trust was found to have a role in promoting users intention to reuse M-payment. Although the above studies have considered various factors influencing users’ adoption in China, none of them consider the effects of individual differences in terms of their characteristics. Furthermore, these articles employed a quantitative method which did not allow for a rich exploration of the actual attitudes and perceptions of consumers regarding M-payment. To better understand how these factors affect the M-payment adoption, a qualitative analysis employing a series of interviews was conducted in this study to complement the existing understanding in this area.

All factors identified in our literature review and analysis are synthesized and summarized in Table 1 below. Each of the factors is briefly discussed below.
Users’ Characteristics including age, gender, educational background, occupation, and experience, are always considered as control variables that have influence on the M-payment adoption. Kim et al. (2010) compared the early adopters and late adopters of M-payment in their research. It was aimed to delineate the difference of factors that affecting the intention to use M-payment between these two classifications of users. Chandra et al. (2010) indicated the experience of users had a significant relationship with the adoption intention. Moreover, in the article of Shin (2009), the demographics such as age and income were found to have moderating effects on the relations of variables.

System Quality measures technical success in terms of ease of use, system reliability, compatibility and other system metrics (Petter & McLean 2009; DeLone & McLean 2004). Additionally, some other variables such as stability of software and hardware, accessibility, system architecture and response time are also suggested as part of system quality (Molla & Licker 2001; DeLone & McLean 2004). Massive articles highlighted that perceived ease of use had a significant effect on user’s behaviour or intention to use M-payment (Shin 2009; Schierz et al. 2010; Chandra et al. 2010). Lu et al. (2011) and Yang et al. (2012) indicated that the compatibility would influence user’s behavioural intention to adopt M-payment. On the other hand, poor system quality will increase the difficulty of using M-payment for users and then decrease consumers’ trust and satisfaction to the providers and the service (Zhou 2013).

Service Quality is a very important factor for the adoption of M-payment since the users are consumers rather than employees in the context of M-commerce. It is often measured by “the responsiveness, reliability and empathy of the support organizations” (Petter & McLean 2009, P. 161). The service of M-payment can take different forms, such as the capability of keeping confidentiality and privacy, the availability of accessing the service and the integrity of processing. Consumers’ satisfaction and intention to use will be affected by their experience in searching products, transaction and post-sale activities (Molla & Licker 2001). In a study conducted by Amoroso & Magnier-Watanabe (2012) and Meharia (2012), it was pointed out that availability, privacy and processing integrity all had significant influences on consumers’ attitudes towards use of M-payment. If M-payment is not stable and reachable when paying bills by mobile phones, users may not choose to use it anymore.

Cost is also considered as an important factor affecting the use of M-payment in a number of studies (e.g. Cheong et al. 2004; Mallat 2007; Peng et al. 2011). It includes access cost, transaction fees and mobile device cost (Lu et al. 2011). Compared with traditional payment, users’ intention to adopt M-payment would be negatively influenced by cost (Peng et al. 2011). In an article by Mallat (2007)
assessing M-payment in Finland, it is also stated that cost might have a significant influence on M-payment. People preferred to use cash payment because of the extra transaction costs charged by M-payment when purchasing on vending machines.

Perceived usefulness is defined as “the degree to which a person believed that using a particular system would enhance his or her job performance” (Davis 1989, P. 320). There are multiple benefits brought by M-payment related to location and time independent transactions (Chandra et al. 2010). Consumers will use M-payment if they think M-payment is a more efficient payment way to achieve their desired outcomes. Many articles indicated that perceived usefulness would affect users’ attitude to adopt M-payment dramatically (Kim et al. 2010; Amoroso & Magnier-Wantanabe 2012; Meharia 2012).

Venkatesh et al. (2003, P. 451) define social influence as “the degree to which an individual perceives that important others believe he or she should use the new system”. Wu et al. (2007) asserted that individuals’ behaviour is affected by social influence. In other words, people will use M-payment in some specific social situations in order to keep the interactions with others and enhance the statues in their social groups (Shin 2009).

Trust is willingness of consumers to take a risk to fulfil their demands based on the expectation towards service providers. During the transaction of M-payment, great uncertainty and risks are involved (Zhou 2013). For instance, the mobile network may suffer through hacking the transaction information may be interrupted. As a result, building trust plays a vital role in facilitating users’ intention to use M-payment (Lu et al. 2011; Zhou 2013). In a research conducted by Molla and Licker (2001), it was highlighted that trust was related to two issues: security and privacy. The ability of providers to ensure the security of M-payment transaction and keep consumers’ privacy is becoming one of the important factors influencing the adoption of M-payment. Extant research showed that trust can promote users’ intention to user and reuse the service (Zhou 2013).

User Satisfaction is considered as an important element for building a loyalty on M-payment service (Sanayei 2011). In the context of M-payment, user satisfaction includes three main facets: satisfaction with process and system used for transaction, satisfaction with the products and service, satisfaction with the information provided and updated (Molla & Licker 2001; Wang & Liao 2007). If the consumers are not satisfied with the interactions with the service providers, they may not use the M-payment anymore (Lin & Wang 2006, P. 273).

Based on our synthesis of factors affecting M-payment adoption, we develop a research model to guide the empirical study as shown in Figure 1. The model suggests that users’ characteristics, system and service quality, usefulness, social influence, trust and users’ satisfaction influence the intention of consumers to use or not use M-payment.

![Figure 1. Framework for This Study](image)

3 RESEARCH METHODOLOGY

The aim of this research is to identify reasons for using M-payment by individuals in China. A qualitative study involving audio interviews was used in this study since it is useful for obtaining in-depth information (Kumar 1996). Qualitative method is suitable to explore the “why” and “how” questions (Marshall 1996), which are appropriate for this study which explores why individuals adopt M-payment. Interviews enable the researchers to explore in detail the factors influencing the M-
payment adoption from consumers’ viewpoints and assess their influence in order to understand reasons for adopting. Besides, during the interview, the questions and information can be explained and supplemented when there is a misunderstanding between the interviewer and the interviewee (Kumar 1996), which helps to ensure the validity and accuracy of data.

The interviews were conducted over the telephone or through the use of online chatting tools (i.e. QQ and Skype) since the researchers and the study participants are in different countries. The participants were asked a series of open-ended questions regarding why they used M-payment. The interview protocol was developed based on our literature synthesis of factors influencing M-payment adoption. Each interview took about 30-40 minutes and was audio recorded with the permission of the participants. In total, there were eighteen participants with different background and age groups involved in the interviews. These participants are the volunteers from different cities (including Shanghai, Beijing, Shenzhen, Wuhan, Yangzhou, etc.) who have the experience with M-payment use, recruited from one of the researchers’ social network. Details about the sample are depicted in Table 2. Eighteen interviews were considered sufficient for qualitative research focusing on exploring a range of opinions (Bauer & George 2000). Moreover, Marchshall (1996) suggested that less than ten participants are adequate for a qualitative study with simple questions (Onwuegbuzie & Leech 2007).

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Age</th>
<th>Education Level</th>
<th>Occupation or Speciality</th>
<th>Types of M-Payment Used</th>
<th>Time of Use</th>
<th>Frequency of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>26</td>
<td>Post-graduate</td>
<td>IT consulting</td>
<td>Remote Payment</td>
<td>3-4 years</td>
<td>2-3 times per month</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>26</td>
<td>Under-graduate</td>
<td>Geographic Information System</td>
<td>Remote Payment</td>
<td>1 year</td>
<td>2-3 times per month</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>25</td>
<td>Post-graduate</td>
<td>Finance</td>
<td>Both</td>
<td>1 year</td>
<td>Almost every day</td>
</tr>
<tr>
<td>17</td>
<td>Female</td>
<td>25</td>
<td>Under-graduate</td>
<td>Manufacture</td>
<td>Remote Payment</td>
<td>&lt; 1 year</td>
<td>Once per month</td>
</tr>
<tr>
<td>18</td>
<td>Female</td>
<td>44</td>
<td>Secondary Education</td>
<td>Catering Service</td>
<td>Proximity Payment</td>
<td>1-2 years</td>
<td>Rarely</td>
</tr>
</tbody>
</table>

Table 2. Overview of the Participants

For data analysis, the interview records were firstly transcribed in English. Then the audio transcripts were coded through three passes, including open coding, axial coding and selective coding (Neuman 2006). During the open coding, critical terms and themes were picked up from the transcripts and grouped into categories. In the pass of axial coding, connections between categories were developed for expanding out the knowledge obtained from the literature review regarding reasons for using M-payment. In the selective coding stage, further evidence was identified that support the emerging themes related to reasons for using M-payment by the participants. Finally, a new model showing reasons for adopting M-payment was proposed.

In order to ensure the validity and reliability of this research data and analysis, the following measurements were taken according to the guideline proposed by Kumar (1996), Yin (2003) and Neuman (2006). Firstly, content validity was addressed in this paper. To ensure that the interview questions covered the full range of factors to be explored, a factor check list was developed for guiding the interviews. Construct validity, which aims to develop a correct set of measures for the relevant concepts, was ensured by reviewing the relevant articles related to the research topic. The thorough literature review helped us build a good base of knowledge before conducting the empirical study. In order to maintain reliability, interview protocol including interview questions and a factor check list were used during the interview. Furthermore, an interview repository was used in storing all related documents for each interview, including audio recording and interview notes.

4 RESULTS AND DISCUSSIONS

4.1 The Use of M-payment in China

Among the eighteen interviewees, only two of them had some experience with proximity payment. Others just had some experience with App-based payment. Over half of the interviewees thought M-
payment in China had not been widely spread, and the main users currently were concentrated on the age group between 25 to 29 years old. Some interviewees (e.g. Participant 8, 10, 12 and 13) perceived M-payment to be popular within their social networks now because of the popularity of smartphones and e-commerce. They also considered that it might be affected by the educational level (Participant 8) and specificity of the industries they work in (Participant 10 and Participant 13). Participant 10 asserted: ‘I think there are a lot of people around me using M-payment, even at the age level as mine (over 30 years old). I am running a China Mobile service hall now. Maybe the people I contact every day are influenced by my work. They are all the people who are interested in M-payment which is a kind of new functions available from mobile phones.”

Moreover, most participants had experience with remote payment only since proximity payment was not widely available. According to Participant 2, only a few cities have implemented proximity payment such as Nanjing and Shenzhen and it is mainly applied in public transportations. Almost every interviewee indicated that s/he would try the service of proximity payment once it was launched, even though they had some concerns (Participant 1) and thought it was less attractive (Participant 14).

“Actually, I think it is good to implement proximity payment. I would like to try it. But I have concerns related to whether or not the speed of the payment system can keep pace with Andriod and IOS system. I do not know whether the service can still be used once Android and IOS system are upgraded. Anyhow, I think I will use it if it is available” (Participant 1). Only two participants (Participants 6 and 13) showed the unwillingness of using proximity payment because they did not think they had a need for such a service.

4.2 Reasons for Using M-payment

To explore reasons for using M-payment, during the interview, various factors that influence the use of M-payment that have been identified in the literature were used as a guide. We argue that by exploring the influence of these factors on M-payment use through a qualitative study, we are able to identify reasons for using M-payment in a systematic way. The list of these factors is shown as our initial framework (section 2.4) which includes: users’ characteristics, system, and service quality, cost, usefulness, social influence, trust and users’ satisfaction. In addition, there are a number of factors identified from our empirical study which also explains the reasons for the participants to use M-payment, but have not been discussed in the previous studies. Firstly, users’ lifestyle which is part of users’ characteristics was found to have impacts on M-payment adoptions. Secondly, system reliability as part of system quality and promotion as part of cost are two factors that have also been identified as new factors affecting the use of M-payment to some extent. Another new factor identified from our study that may influence M-payment use is users’ need. Table 3 summarizes the study findings and indicates which factors have been found to affect M-payment adoption in this study. Using a similar approach used in Ali (2009), the influence of a factor is supported if there are at least half (N=9) of the study respondents agree on its influence. It is partially supported if there are less than half but at least 1/4 acknowledge the influence (5<=N<9), where it is not supported if there are less than 1/4 agree on the influence of that particular factor on the use of M-payment (N<5). Details of our key findings are discussed below.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Participants Provided Evidence (N=18)</th>
<th>Influence on Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users’ Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1, 5, 9, 11, 12, 13, 15, 16, 17 (N=9)</td>
<td>Supported</td>
</tr>
<tr>
<td>Gender</td>
<td>13 (N=1)</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Background (Education level and Occupation)</td>
<td>6, 9, 10, 12, 13 (N=5)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>Previous Experience</td>
<td>1, 2, 3, ..., 17, 18 (N=18)</td>
<td>Supported</td>
</tr>
<tr>
<td>*Lifestyle</td>
<td>6, 7, 8, 10, 11 (N=5)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>System Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Use</td>
<td>1, 4, 5, 8, 9, ..., 13, 15 (N=10)</td>
<td>Supported</td>
</tr>
<tr>
<td>Compatibility</td>
<td>1, 11, 12, 13 (N=4)</td>
<td>Not Supported</td>
</tr>
<tr>
<td>*System Reliability</td>
<td>3, 5, 6, ..., 16, 17 (N=14)</td>
<td>Supported</td>
</tr>
<tr>
<td>Service Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td>1, 2, 5, 6, 9, 11, 12, ..., 15, 16 (N=11)</td>
<td>Supported</td>
</tr>
<tr>
<td>Security and Privacy</td>
<td>1, 2, 3, ..., 17, 18 (N=18)</td>
<td>Supported</td>
</tr>
<tr>
<td>Cost</td>
<td>Transaction Fee 1, 2, 5, 6, 7, 15 (N=6)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>*Promotion</td>
<td>1, 2, 3, 6, 18 (N=5)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>Usefulness</td>
<td>1, 3, 4, 6, 7, 12, 14, 16 (N=8)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>Social Influence</td>
<td>3, 4, 8, 12, 14, 15, 16 (N=7)</td>
<td>Partially Supported</td>
</tr>
<tr>
<td>Trust</td>
<td>1, 3, 4, 8, 10, 12, 13, 16, 18 (N=9)</td>
<td>Supported</td>
</tr>
<tr>
<td>Users' Satisfaction</td>
<td>1, 2, 3, ..., 17, 18 (N=18)</td>
<td>Supported</td>
</tr>
<tr>
<td>*Users' Need</td>
<td>1, 2, 4, 6, 9, 12, 13, 14, 16, 17 (N=10)</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Table 3. Factors Influencing Users' Adoption of M-payment in China

4.2.1 Users' Characteristics

The analysis of the interviews indicates that users’ characteristics have influences on the use of M-payment. Through the recruitment of interview volunteers, it was hard to find individuals with some experience using M-payment who were over 30 years old. It can be seen that the number of participants aged between 25 to 29 years old takes up the largest percentage of people using M-payment, which is approximately 62% of total participants. Moreover, half of the participants mentioned that M-payment was more popular among young people than old people. As a result, age is considered to have an influence on M-payment adoption. Mallat (2007) also found middle aged group had less experience of M-payment than younger aged groups in his study. However, the impact of age on adoption is not absolute because there are some participants in our study who are not young but use M-payment.

During the interviews, only one participant pointed out that gender might have influence on the use of M-payment. Participant 13 thought female might be easier to accept M-payment than male. However, it is just a personal perception without any evidence. Therefore, in this study, there is no adequate evidence that suggest gender has an influence on M-payment adoption. This observation is consistent with the findings of Chandra et al. (2013). Moreover, users’ background regarding education level and occupation has impacts on the use of M-payment. According to the personal information of participants, thirteen out of eighteen interviewees have high educational degrees (undergraduate and above). Participant 9 also stated that individuals who are highly educated would be more receptive to accept new technologies and innovations because of their knowledge. Moreover, two participants (Participants 10 and 13) thought they were using M-payment because they worked in the related industries. Additionally, other three participants used M-payment due to the limitation of occupation such as frequent travelling (Participant 9) and Internet restriction at their workplaces (Participants 6 and 12): "The local area network (LAN) of my company has a limitation to access some websites such as stock investing website. Hence, I need to use mobile buying or selling my stocks." (Participant 6)

However, the influence of users’ background is very limited. Only five participants perceived that this factor had influence on the adoption.

In terms of previous experience, five participants pointed out their decisions to use M-payment were partly influenced by their previous experience with other services provided by the same providers. Furthermore, almost every participant declared that they would use M-payment continuously. Only Participant 18 said she would not use M-payment in the future due to the previous negative experience. Thus, there is enough evidence from our empirical study that previous experience has influence on users’ intentions to use or reuse M-payment. Those participants with positive past experience with M-payment (e.g. Participant 1, 5, 11, 16, etc.) indicate their intention to use the system in the future, while the participant 18 who has bad experience indicates her reluctance to use it in the future. However, this attitude can be changed by other factors and benefits obtained from the use of M-payment. For example, Participant 18 will change her decision of not using M-payment if the service providers offer some promotions. In the previous study, expressiveness regarding experience was also found to play an important role in facilitating M-payment adoptions (Padashetty & Krishna Kishore 2013).

Additionally, it was discovered that individual’s lifestyles would influence the use of M-payment. With the increase in the number of people in China who prefer to stay at home, the number of M-payment users has also increased. For example, Participant 8 is a person who has a stay-at-home
lifestyle and therefore, the main way for shopping for him is mobile shopping. However, overall there are only five participants acknowledge the influence of lifestyle on the use of M-payment.

To sum up, from the perspective of user’s characteristics, our study suggests that the participating individuals use M-payment because M-payment is popular among young people and they are familiar with the system from their previous experience with other applications. Another reason is because of users’ lifestyle which prefers to stay at home and therefore user’s lifestyle has also been found as a possible new factor impacting users’ decisions to use M-payment. However, in general, these factors related to users’ characteristic are not the primary reasons for consumers to use M-payment and, therefore they have often been considered as control variables (e.g. Shin 2009; Thakur 2013).

4.2.2 System Quality

In this study, System Quality is assessed based on the ease of use, compatibility and reliability of the M-payment service. According to the interviews, over half participants suggested that ease of use was one of the most critical reasons for them to use M-payment. Most users perceived that M-payment was easy to use and access. Participant 4 and Participant 15 asserted that even novice users can complete the transaction by just following instructions provided. Furthermore, the buffering time for page skipping is much shorter than Internet payment (Participant 8). Ease of use is also expressed in terms of convenience by a number of participants and it is one of the main factors that drove most of the study participants to use M-payment instead of other payment types (i.e. cash and credit card). Participant 11 highlighted this point in the interview excerpt as follows: "The advantages of M-payment, I think are convenient, convenient, and convenient. I use it just because it is convenient.” Previous studies also indicated that ease of use had a significant impact on the use of M-payment (Shin 2009; Schierz et al. 2010; Chandra et al. 2010).

Regarding the compatibility of M-payment, most participants did not consider this as an important reason for them using M-payment. Only Participant 1 was worried about the unavailability of using M-payment system when the operating system of mobile phone is upgraded due to incompatibility. However, most participants thought it was not a serious issue. They thought it would not take much time to wait for a new vision of M-payment system/app that is compatible with the updated mobile phone even though the code source of IOS is not open to public (e.g. Participants 11, 12 and 13). Therefore, there is no sufficient evidence to support the influence of compatibility on the use of M-payment, which challenges the findings of Yang et al. (2011), which suggested that compatibility influences users’ intention to adopt M-payment.

Moreover, in terms of reliability, over two thirds of participants mentioned that the unsuccessful transaction had an impact on their continuous use of M-payment. Half of these participants indicated that failed transactions definitely influenced their attitudes towards using M-payment. Three participants said that their attitudes to M-payment would not be affected if failed transactions happened infrequently (Participants 10, 15 and 17). Five Participants (Participants 6, 9, 10, 11, and 13) stated that they would consider the reason for those failed transactions in deciding whether or not to use M-payment. They indicated that if the reason was because of system bugs or system failure related to the problems of bank system, they might not use M-payment any more. Moreover, Participant 16 pointed out that once the failed transactions reached a certain range, he would stop using M-payment, at least for a period of time. However, having a successful transaction is not considered as an important reason for using M-payment because it is a basic requirement for any M-payment application to exist.

Thus overall, our study shows that system quality is an important factor that affects the use of M-payment and explains the reasons for the study participants to use M-payment. Our study further highlights the importance of easy-to-use and reliable systems, while a handful of our participants suggest that the compatibility does not seem to be a major concern.

4.2.3 Service Quality

In this study, service quality is addressed in terms of availability of M-payment service, security and privacy and reliability of service providers in terms of their capability and empathy in ensuring good
services to users of M-payment. One of the attractive features of M-payment is that the service is available anytime and anywhere. Eleven out of eighteen participants stated that availability was one of the main reasons for them to use M-payment. If users cannot access M-payment services due to the infrastructure constraints including poor connection, users might not be interested in using them. So, service availability is considered as an important factor to motivate consumers’ acceptance and continuous use of M-payment. The same observation was also identified in studies by Amoroso and Magnier-Watanabe (2012) and Meharia (2012).

During the interviews, every participant mentioned about security and privacy issues. Half of them indicated that they were worried about system security and information leakage. However, they understood that every kind of payment had its own risks (Participant 12). Moreover, they believed that there was a small chance of having information leak (e.g. Participants 3, 8, and 12). About half of the participants thought the use of passwords and message authentications could ensure security of their information and account (e.g. Participants 2, 5, and 7). Regarding security issues, many participants believed that the chance of losing their mobile phone would even be higher than having information leak (e.g. Participants 6, 14, and 15). This raises a serious concern among the participants since many of them have their bank account information stored in their mobile phones. If they lose their mobile phones, it may take some time to sort out the problems with their service providers and financial institutions. Therefore, the ability and empathy of service providers addressing security and privacy which are captured in the reliability concept/factor appears to be an important reason for using M-payment. Thus, incidents related to privacy and unauthenticated access and transactions have a strong influence on users’ intention not to use M-payment, as suggested by Participant 3: “I always suspect the security and privacy of M-payment, of course, E-payment as well. I will not completely believe that our privacy can be protected even though there is no accident happened. But I will not trust M-payment anymore once an accident happens due to the technology or system security problems...I think I will give up using M-payment if that happens.” Our findings are consistent with many previous studies that also discovered significant impact of security and privacy as well as reliability on users’ intentions to use M-payment (Linck et al. 2006; Mallat 2007; Peng et al. 2011).

To summarize, the influence of service quality on consumers’ intention to use M-payment is supported. The participants use M-payment because of the availability of M-payment system anywhere and anytime and the security and information privacy imposed by the service providers.

4.2.4 Cost

During the interviews, every participant was asked if there was extra cost for using M-payment, would they still consider using it. One third of the participants indicated they would not use M-payment if there was extra cost (Participants 1, 5, 7, and 15), while the rest thought it would still be reasonable and acceptable, especially at the early stage of offering M-payment services (Participants 8, 9, and 16). However, if there were extra costs such as operating fees for every transaction, most participants would reconsider their decision regarding the use of M-payment. Thus, cost is partially supported to have an influence on M-payment adoption from Chinese consumers’ viewpoints. The studies of Lu et al. (2011) and Yang et al. (2012) were also proved that perceived cost had influence on users’ adoption of M-payment.

In addition, another important factor related to costs that was observed to be important is promotion offered by service providers to encourage users to use M-payment. Four participants indicated that attractive promotion was one of the reasons for them to use M-payment (Participants 1, 3, and 6). For Participant 18, promotion is indeed the most important reasons for her to use M-payment: “...But if the service providers provide free trials or some promotions, I still will try it.”

4.2.5 Usefulness

In terms of the influence of perceived usefulness of M-payment on use, only eight participants mentioned that they expected to have an improvement of their life quality by using M-payment. For example, Participant 4 explained that he would perform mobile shopping (M-commerce including M-payment) to fulfil his needs when he did not have time to go shopping. Moreover, they can enjoy
some special offers only provided by using M-payment such as free delivery fee (Participant 1, 2, 6 etc.). Participant 14 also found it useful to use M-payment to purchase train tickets, as revealed below: “I am working in the different city with my home. If I want to go home suddenly, I can check the ticket information through M-payment and buy it immediately. There is no need for me to go to the local station specially. It always happens that when I go to the station, the ticket I need has been sold out or is not available. By using M-payment, it really saves me time and efforts.” (Participant 14)

However, the other half of the participants does not highlight the influence of perceived usefulness of M-payment on their decision to use M-payment. As a result, the influence perceived usefulness is only partially supported in our study and it contradicts the findings of many previous studies, such as Kim et al. (2010) and Meharia (2012).

4.2.6 Social Influence

Among eighteen interviewees, seven participants stated that they used M-payment partly because their friends introduced the service to them. Most participants pointed out they would consider the social influence in making decision regarding whether or not to use M-payment, but the effect would be very small. The decision would mainly depend on individual’s needs. Shin (2009) also pointed out people might use M-payment in special situations due to the influence from their social network. However, the study of Peng et al. (2011) showed that social influence had a significant impact on M-payment adoptions. Thus, the influence of social influence on the use of M-payment is still inconclusive.

4.2.7 Trust

As discussed by Molla and Licker (2001), trust is related to security and privacy related to the use of M-payment and also the reliability of the service provides in ensuring security and privacy protection and addressing any issues experienced by the users. During the interviews, about half of the participants were worried about the security and privacy issues of M-payment. This indicates that they did not trust the security of conducting M-payment transactions. For example, Participant 18 said she would not use M-payment anymore because she did not trust the system. However, her decision not to continue using M-payment could be partly because she used it only during the promotion period or special discounts offered to M-payment users. Nevertheless, almost every participant who had concern with security issues indicated that they would not use M-payment. Therefore, we conclude that individuals use M-payment because they trust the system and this is consistent with a study by Zhou (2013) that pointed out a significant effect of trust on users’ intention to use M-payment.

4.2.8 Users’ Satisfactions

According to the interviews, seventeen out of eighteen participants showed their satisfactions with the use of M-payment. All of them are willing to use M-payment continuously in the future. Consistently, dissatisfaction with M-payment use has a big influence on the intention not to use M-payment. If people are not satisfied with previous use of M-payment, they will not use it in the future. Lin & Wang (2006) also identified satisfaction as a strong predictor for users’ intention to reuse of M-commerce. In the article of Sanayei et al. (2011), it was addressed that users’ satisfaction had a significant influence on users’ loyalty of using M-payment.

4.2.9 Users’ Need

Finally, our study indicates that users’ need which has been ignored in previous studies appears to have important effect on users’ intention to use or not use M-payment. Over half of participants asserted that they used M-payment because they had a need for it. As a result, users’ need is considered as a strong reason for individuals to use M-payment.

“I will not use M-payment service except I have a need for it. I have to travel a long distance between home and work. Therefore, I often need to look for information online via my mobile phone. I also need M-payment for online transactions conducted during this time. So I use M-payment.” (Participant 13)
Based on the study findings discussed above, Figure 2 below shows a revised model of factors influencing the M-payment adoption which also explains reasons for using M-payment by individuals.

Figure 2. Influence of Factors on the Intention to Use or Not Use M-payment

5 CONCLUSION

In this study, we have explored reasons for individuals to adopt M-payment in China by considering a set of factors influencing M-payment identified from the literature. This study addressed the knowledge gaps in the area of M-payment adoption in general and in China specifically. The results of this research indicates users’ intention to use M-payment in China is affected by various factors, including users’ characteristics, system and service quality, usefulness, social influence and trust. Among them, system quality in terms of convenience and service quality regarding availability have strong impacts. Moreover, promotion by the service providers and users’ need and particular individual lifestyles have been found as new important factors affecting the M-payment adoption. By exploring the influence of these factors on M-payment adoption, we can better understand why individuals decide to use or not to use M-payment.

This research offers modest contribution to industry and research related to M-payment adoption. In regard to industry, the results of the study can potentially help service providers to better understand consumers’ expectations and factors that affect their decision to use M-payment. As a result, better services can be provided and better strategies for promoting M-payment can be devised. For example, M-payment providers can promote the service by offering discounts or other incentives. They can also improve the system quality and service quality by ensuring the success of transactions, keeping the operation easy and expanding the scope of availability. From an academic perspective, this study contributes to the existing M-payment literature which is currently dominated by quantitative studies and offers useful initial insights into reasons for individuals to adopt M-payment especially in China. It may also raise the interests of other researchers in similar areas to approach the study using a qualitative method to complement existing quantitative studies that currently dominate the literature.

Due to the scope and the timeframe of this research, there are few limitations of this study. Firstly, the size of research sample is small and therefore the findings cannot be generalized to the entire M-payment users. Moreover, only individuals who have experience in using M-payment were chosen as the sample. The people without the experience of using M-payment were not considered. It would be useful to include non-users in the future studies to further explore reasons for not using M-payment. Finally, the study only explored M-payment adoption in China. Different countries may be at different stages of M-payment development and therefore reasons for using M-payment may differ from what have been identified in this study. Future research conducted in different countries would therefore be valuable to further refine the current understanding in this area of M-payment adoption.
6 REFERENCES


