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Mobile payment in China

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by

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ABSTRACT

With the ever-accelerated updating of science and technology, mobile payment has become one of the major payment methods in China. In this thesis, I first analyze the development of mobile payment in China, the difference among different mobile payment applications and the security problem related to mobile payment. Then, I examine the factors that affect people's willingness to use mobile payment. This study uses an online survey to collect data from a sample of 93 WKU students. Based on the response, I use the multiple regression analysis as the methodology to examine the relationship between the independent variables and dependent variable. The result shows that there is a significant positive relationship between the perceived ease of use and people's willingness to use mobile payment, while there is a significant negative relationship between the service quality and people's willingness to use mobile payment. In addition, for the other two independent variables, the perceived usefulness and perceived risk, they do not have significant relationship with people's willingness to use mobile payment.

Keywords: Mobile payment, China, Willingness to use, Perceived usefulness, Perceived ease of use, Perceived Risk, Service quality

1 Introduction

In the wake of the high-speed social progress, our life-style has experienced a dramatic change during the recent year. With the development of technology, the payment methods go through from barter, coins in the past to the paper and bank card today. Recently, mobile payment appears as a totally new payment method. In general, mobile payment refers to the usage of mobile devices such as smartphone to complete the payment process.

The major features of mobile payment are the convenience and efficiency of the transaction. With the assistance of mobile payment, users can transfer money on their mobile devices in just seconds. Therefore, people can go outside without carrying any money and credit card. Meanwhile, mobile payment also offers people a safer way to hold their money. Since people do not carry money and credit cards outside, they are able to avoid the risk of cash being stolen or Credit Card fraud. In addition to its impact on personal lifestyle, with the increasing acceptance of mobile payment, it begins to make influence on not only the C2C platform but also B2C and B2B platforms. Nowadays, fintech seems to become a new trend in the financial service industry and that is the reason why it is significant to discuss about mobile payment. In the future, it is possible that mobile payment will lead us to the age of non-cash.

One of the interesting phenomena about mobile payment is that mobile payment is most popular in China instead of other developed countries such as the America and Japan. For people living in developed countries like Japanese and Americans, they do not show too much interest in mobile payment. Instead, it seems they prefer to choose the credit card as their major payment method. One of the most important reasons is that they do not trust the mobile payment and worry that they may lose money because of the usage of mobile payment. However, different from people living in developed countries, people living in China depend heavily on mobile payment. It is common that one Chinese undergraduate student will not use cash during his four-year college life at all. In addition, compared with other countries, the service provided by mobile payment platform in China is more diverse. People can not only use the mobile payment application for daily life payment, online money transfer but also purchase financial products and manage their assets in the application. In 2018, about 83% of payment in China was completed by using mobile payment. In addition, based on the study, the market size of mobile payment in China will achieve \$5.19 trillion in 2019 (Thibaud, 2019). Therefore, how can a developing country develop mobile payment at such a fast speed and why people live in China prefer to use mobile payment instead of other payment methods can be one of the significant questions to be discussed.

In this thesis, I will first introduce the development of mobile payment in China and try to find out the factors that lead to the rapid growth of mobile payment in China. Then, I will analyze different kinds of mobile payment applications in the current market and find the difference among them. Meanwhile, I will also examine the security risk related to the usage of mobile payment applications in China to evaluate the risk level of mobile payment applications. Finally, I will investigate four different factors that motivate people to use mobile payment applications in China by using an online questionnaire and use the multiple regression analysis as the methodology to find the relationship between independent variables and dependent variable.

The structure of the remained of this thesis is as follows. The second Section examines the existing literature on the research questions I set. The third Section introduces the sample, methodology and model I will use for my analysis. The fourth Section analyzes the findings after doing research and answers the research questions which are come up in this thesis. In the end, The fifth Section concludes the whole thesis.

2 Literature Review

In this section, I will discuss other researchers' answer to the research questions I come up with. Then, I will give some new ideas in the following sections based on the previous literature I read.

2.1 Development of Mobile Payment in China

Mobile payment is a relatively new payment method that allows people to use mobile devices such as the mobile phone to pay for the products and services. Actually, mobile payment first emerged in 1997. At that time Coca Cola offered a new service that encouraged the customers to buy their drinks in the vending machines by using the text message (Qasim and Abu-Shanab, 2016). However, according to Dai (2011), in China, the mobile payment was first introduced in 1999 with the collaboration of both the China Mobile Communication Corporation and Commercial bank.

Compared with other developed countries, the development speed of mobile payment in China is dramatically high. There are several factors that cause this phenomenon. The first factor is the rapid increase in the number of Internet users during the 1990s. Based on the study made by Huang (2017), the number of Internet users in China increases from 0.1 million in 1996 to 4 million in 1999. In 2000, the number of Internet users achieves 22.25 million. The large number of Internet users served as an effective springboard for the rapid development of mobile payment later.

The second factor is the appearance of Alibaba. According to Huang (2017), Alibaba is one of the earliest C2C websites in China and it gave a big push to the development of electronic commerce in China. In 2003, Alipay was launched by Alibaba, which is one of the major mobile payment applications in China today. Dai (2011) states that with the introduction of Alipay, mobile payment services began to show a growth trend. In addition, more people became interested in mobile payment and its coverage area became increasingly wide. In addition to Alipay, with the ever-accelerated updating of science and technology, several other mobile payment applications also serve as a catalyst for the development of mobile payment in China, like WeChat Pay and Apple Pay which were launched in 2014. Based on the study made by Huang (2017), the mobile payment market size in China increased to 5,992.47 billion Yuan in 2014, which is 391.3% higher than that in 2013.

The third factor is the emergence of 3G technology. According to Zhao and Shu (2013), with the assistance of 3G technology, the mobile Internet speed and communication rate increased a lot. At the same time, the appearance of smartphones also offered a reliable mobile terminal for mobile payment. Therefore, with the combination of both software and hardware, the mobile payment had the chance to experience rapid growth.

With the factors mentioned above, the rapid development of mobile payment in China can be explained. According to the People's Bank of China (PBOC), in China, the total transaction value of the mobile payment market increased to 277.4 trillion yuan in 2018. As the mobile-first nation, China's mobile payment continually develops.

2.2 Difference among the mobile payment applications

2.2.1 Alipay

Alipay is one of the biggest mobile payment platforms in China. It was first established in 2004 and based on the study made by Jacobs (2018), Alipay had around 54% market share of mobile payment in China. The requirement of using Alipay is one mobile device with an Alipay account. According to Liu (2015), the users of Alipay are

required to provide a variety of personal information such as name, phone number and ID card information. In addition, based on the study made by Liu (2015) Alipay is widely used in B2C and C2C areas.

Guo and Bouwman (2016) consider Alipay as a mobile wallet since most users will choose to link their bank accounts to their Alipay account. In addition, they are also able to pre-load cash into their accounts. According to Huang (2017), there are several payment methods for Alipay. The first payment method is QR-Code payment. The payee can pay the money by choosing either to show their own QR-Code to the seller or scan the seller's QR-Code. Werker (2017) states that it is the QR-Code that makes a big contribution to the development of offline payment. The second payment method is the online payment. The users can complete their payment directly through Alipay (Huang, 2017).

According to Gasimov, Phang and Sutanto (2010), Alipay offers several different services. One of the services is called escrow service. This service usually is used in the C2C platform such as Taobao. When the buyer pays the money, the Alipay will deposit the money in its account. Until the buyer confirms the quality of the product, the Alipay will pay the money to the seller. The purpose of this service is to ensure the buyer's right to enhance their trust in mobile payment. In addition, Alipay also offers other functions to its users such as transferring money, paying for tax and financial services.

2.2.2 Apple Pay

Apple Pay is the mobile payment application launched by Apple in 2014 (Huang, 2017). The requirement of using Apple Pay is having one Apple product such as the iPhone and iWatch. According to Liu and Mattila (2018), the users of Apple Pay should either use the camera or enter the card information by themselves to add their credit card and debit card to the Apple Pay system. In addition, based on the study made by Wang, Hahn, and Sutrave (2016), Apple Pay is mainly used in the B2C area.

The payment method of Apple Pay is NFC payment. The user can hold their phone close to the NFC-enabled POS to complete the payment (Wang, Hahn and Sutrave, 2016). The POS will recognize the card information, send the request to the issuing bank. Once the bank approves the request, the transaction will finish (Liu and Mattila, 2018).

2.2.3 PayPal

PayPal is one of the largest mobile payment platforms in the world, it was created in 1998 (Trautman, 2015). The requirement of using PayPal is having one smartphone with a PayPal account. Similar to the Alipay, in order to trade through PayPal, the user need to provide their bank account information. However, different from the two mobile payment applications mentioned above, PayPal is widely used in B2B, B2C and C2C areas (Huang, 2017).

The payment method of PayPal is the online payment. The users are able to transfer money to others and pay for online shopping through this application (Trautman, 2015). The focus of PayPal is international trading. Based on the study made by Huang (2017), "More than 90 percent sellers and over 85 percent buyers used the PayPal online payment business in international transactions until 2012". In addition, PayPal also allows its users to trade in more than 25 different currencies such as the Japanese yen, Euro and Mexican peso.

2.3 Risk Associated with the Mobile Payment in China

2.3.1 Private Data Security

The first kind of risk associated with mobile payment is private data security. According to Yam and Xu (2017), in China, mobile payment firms are regulated by the telecom sector instead of the financial sector. As a result, the risk of information security and money laundering is not been considered carefully. In addition, the accuracy of information and the presence of viruses are monitored by the mobile payment platforms themselves instead of a third party. Therefore, it is highly possible to have some problems related to data security. Meanwhile, Liu (2015) states that it is also possible that the employees inside the mobile payment company may sell users' personal information in order to earn some profit. To sum up, since there is no well-established "systems' security, reliability, standards, and communication protocols", the users' private data security cannot be guaranteed (Liu, 2015).

2.3.2 Technology Security

According to Yam and Xu (2017), the encryption of QR-Code is relatively weak. Therefore, the QR-Code can be reset as a phishing QR-Code by some digital thieves easily. By scanning the phishing QR-Code, the system may be attacked by the virus and the users' data information such as name, password and ID card number may be stolen. In addition, when the users choose to connect to a public network to pay through the mobile payment application, it is also possible that their personal information may be acquired by the hacker (Kadhiwal, Saleem and Zulfiquar, 2007). However, based on the study made by Margraf, Lange, and Otterbein (2016), Apple Pay's security level with the usage of TouchID is similar to the level of traditional credit card payments.

2.4 Factors that motivate people to use mobile payment

2.4.1 Perceived Usefulness

According to Zhu, Lan and Chang (2017), perceived usefulness can be the factor that affect people's willingness to use mobile payment. Based on their findings, there is a significant positive relationship between perceived usefulness and people's willingness to use mobile payment (Zhu, Lan & Chang, 2017).

Similar to the study made by Zhu, Lan and Chang, Fiedler (2015) also concluded that greater perceived usefulness will result in a stronger willingness to use mobile payment. Based on his findings, he stated that the perceived usefulness should be considered as one of the significant factors in order to improve people's willingness to use mobile payment (Fiedler, 2015).

2.4.2 Perceived Ease of Use

In the study made by Kim, Mirusmonov and Lee (2009), they assume that the perceived ease of use will be a factor that affects people's willingness to use mobile payment. They use mobility, reachability, compatibility and convenience as the indicators of perceived ease of use. The result shows that there is a significant positive relationship between perceived ease of use and the willingness to use mobile payment. Mirusmonov and Lee (2019) state that the easier to use mobile payment, the more useful the consumers will feel about mobile payment, which eventually results in the increasing willingness to use mobile payment.

Similar to the study made by Kim, Mirusmonov and Lee, Fiedler (2015) also finds a positive relationship between perceived ease of use and people's willingness to use mobile payment. Based on his findings, he makes the conclusion that PEOU is one of the most important reasons that make Apple Pay successful (Fiedler, 2015).

2.4.3 Perceived Risk

According to Xie and Lin (2014), perceived risk is people's concern when they face some uncertain products. They will worry about the possible serious consequence of purchasing the product and the worries may impede their purchase behavior. In the study made by Xie and Lin (2014), they find there is no significant relationship between perceived risk and people's willingness to use mobile payment. At the end of the study, they give an explanation that the risk of mobile payment today is already at a low level and that is why the perceived risk does not affect people's willingness to use mobile payment.

However, different from the study mentioned above, based on the study made by Zhu, Lan and Chang (2017), they find a significant negative impact on the perceived risk toward the willingness to use mobile payment. In the study, they state that when people are convinced that the mobile payment platform is safe and has a very low-risk level, they will intend to continuously use the mobile payment (Zhu, Lan & Chang, 2017).

2.4.4 Service Quality

In the study made by Mallat and Tuunainen (2005), they consider the service quality as one of the important factors that affect consumers' willingness to use mobile payment. They use product quality and user satisfaction as the indicators of the service quality. Eventually, they find there is a strong positive relationship between the service quality and people's willingness to use mobile payment.

Similar to the conclusion made by Mallat and Tuunainen, Zhu, Lan and Chang (2017) also find that higher service quality will lead to a stronger willingness to adapt the mobile payment. The result shows that when people are convinced that mobile payment can promote the quality of their life, they will have a stronger willingness to use mobile payment.

3 Methodology & Data

3.1 Data

My data comes from an online survey. In the survey, I examine different factors that may have an impact on the consumer's willingness to use mobile payment. The questionnaire will be divided into six parts. In the first part, I ask for respondents' basic information such as gender and their choice of mobile payment. In the second part, I examine respondents' perceived usefulness related to mobile payment. In the third part, I examine respondents' perceived ease of use related to mobile payment. In the fourth part, I examine respondents' perceived risk related to mobile payment. In the fifth part, I examine the respondents' satisfaction with the mobile payment service quality. In the last part, I examine respondents' willingness to use mobile payment.

For the online survey, I choose students in Wenzhou-Kean University as my sample and the sample size is 93. There are two reasons why I choose WKU students as the sample. Firstly, it is convenient for the researcher to collect data from WKU students. Secondly, most of WKU students use mobile payment, which will make the results more accurately. In addition, this study will be conducted during the fall semester, 2019.

3.2 Methodology & Model

Since this thesis will determine the factors that affect people's willingness to use mobile payment, I will choose multiple regression analysis as the methodology. Multiple regression generally explains the relationship between multiple independent or predictor variables and one dependent or criterion variable (Edwards, 1985). I plan to

use perceived ease of use, perceived usefulness, perceived risk and service quality as the factors that influence people's willingness to use mobile payment.

In this thesis, the model I will use is:

$$\text{Willingness to Use} = \alpha + \beta_1 \text{ Perceived Usefulness} + \beta_2 \text{ Perceived Ease of Use} + \beta_3 \text{ Perceived Risk} + \beta_4 \text{ Service Quality}$$

In the model, the dependent variable is people's willingness to use mobile payment, the first independent variable is perceived usefulness, the second independent variable is perceived ease of use, the third independent variable is perceived risk, the fourth independent variable is service quality. The reason why I choose to use this model is based on the model used by Xie and Lin (2014). These factors are most widely used as the factors that affect people's willingness to use mobile payment.

The researcher thinks that when people feel it is easy to study and use mobile payment, they are more willing to use mobile payment. In addition, when people feel that by using mobile payment, they can improve their quality of life, they may prefer to use mobile payment. Besides, if people think using mobile payment is risky and there is a possibility to lose money, they will not use mobile payment. In the meantime, if people are satisfied with the service provided by mobile payment, they may tend to continually use mobile payment in the future. Therefore, in this thesis, the researcher comes up with four null hypotheses:

(1)H₀: There is no significant relationship between perceived usefulness and people's willingness to use mobile payment.

(2)H₀: There is no significant relationship between perceived ease of use and people's willingness to use mobile payment.

(3)H₀: There is no significant relationship between perceived risk and people's willingness to use mobile payment.

(4)H₀: There is no significant relationship between service quality and people's willingness to use mobile payment.

4 Analysis & Findings

In this thesis, the researcher comes up with four research questions. For the first three research questions, the researcher will answer them by using in-depth analysis based on the literature review the researcher does in the previous section. For the fourth research question, the researcher will use the multiple regression analysis as the methodology to answer it. The researcher will set the "willingness to use" as the dependent variable, set the "perceived usefulness", "perceived ease of use", "perceived risk" and "service quality" as the independent variables and use the 90% confidence level. In order to collect data, the researcher does an online survey and uses a sample of 93 students in Wenzhou Kean University.

4.1 Development of Mobile Payment in China

In general, there are three factors that boost the development of mobile payment in China. The first factor is China's large population. These large populations shifted to a large number of Internet users later, which paves the way for mobile payment to develop. The second factor is one Chinese company called Alibaba. It not only launched the earliest C2C website in China but also offered one of the most popular mobile payment applications in China. It is Alibaba that boosts the demand for online purchasing in China, which gave a big push to the development of mobile payment. The third factor is the

development of network technology. China pays a lot of attention to the development of China. As the basis of mobile payment, the network technology equips China with the ability to develop mobile payment.

In addition to the three major factors, there are also some other factors that make mobile payments in China develop at such a fast speed. For instance, people's concept of mobile payment varies among different countries. People in the United States or Japan get used to using a credit card, which is also very convenient. The reason why they do not prefer mobile payment is that they still have doubt on the security problem related to mobile payment. However, the credit card in China is not so popular, the payment method in China seems to go through from cash to mobile payment directly. Since the mobile payment does not face the competition with credit cards in China, it develops much faster than any other countries.

4.2 Difference among the mobile payment applications

The difference among mobile payment applications mainly covers several aspects which are the payment method, device requirement, target market and service. Take Alipay Pay, Apple Pay and PayPal as an example. For the payment method, Alipay uses both QR-code payment and online payment, Apple Pay uses NFC payment while PayPal uses online payment. For the device requirement, both Alipay and PayPal require one mobile payment with their mobile payment application and related account, while Apple Pay only supports Apple products. For the target market, Alipay focuses more on the C2C market, Apple focuses on the B2C market, while the PayPal focus not only B2C market but also C2C and B2B market. For the service, Alipay offers a series of services such as financial services, transferring money and escrow service. For Apple Pay, it mainly offers the service of using the credit card on the Apple products, while for PayPal, its major service is international trading.

4.3 Risk Associated with the Mobile Payment in China

Although mobile payment develops very fast in China, actually it only goes through around ten years after the emergence of mobile payment in China. Therefore, it is unavoidable that the security system related to mobile payment in China are not well established, which cause potential security problems. There are mainly two kinds of security problems in China. The first kind of problem is private data security. Due to the imperfect security system and related standards, the users' private data faced the risk of being stolen and traded. The second kind of problem is technology security. Compared with credit cards, mobile payment is relatively less secure. Payment method like the QR-code payment is easy to be attacked. In addition, sometimes the user's wrong actions on the Internet will also leak the information about their account and password. To sum up, currently, mobile payment still has a variety of security problems. However, the possibility that users will lose their money due to these security problems is relatively small and with the ever-accelerated updating of science and technology, in the future, mobile payment will become a payment method that is even much safer than the credit card.

4.4 Factors that affect people's willingness to use mobile payment

4.4.1 Profile of the Respondents

Figure 1 presents Students' Distribution by Gender. Of the 93 respondents in this study, 52 or 55.91% were female, while 41 or 44.09% were male.

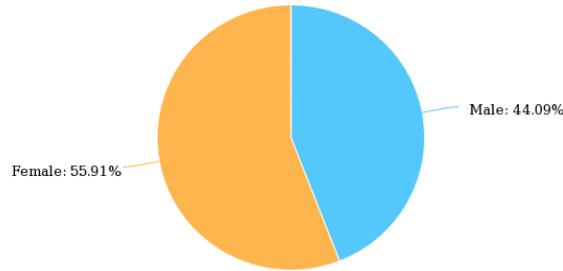


Figure 1 - Students' Distribution by

Figure 2 presents Students' Choice of Payment Method. Of the 93 respondents in this study, 86 or 92.47% choose to use the mobile payment, 24 or 25.81% choose to use cash, 2 or 2.15% choose to use other payment method, while no student chooses to use a bank card.

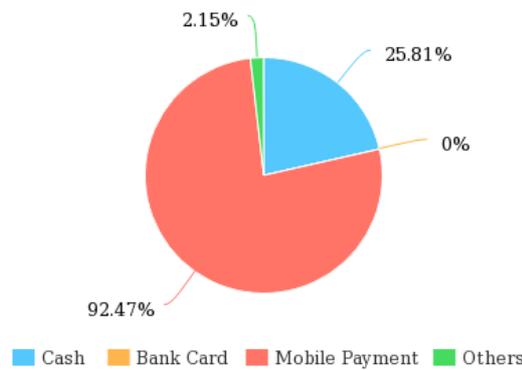


Figure 2 - Students' Choice of Payment

Figure 3 presents Students' Choice of Mobile Payment Applications. Of the 93 respondents in this study, 78 or 83.87% choose to use the WeChat Pay, 70 or 75.27% choose to use Alipay, 22 or 23.66% choose to use Apple Pay, 8 or 8.6% choose to use other mobile payment applications, while 3 or 3.23% choose to use PayPal.

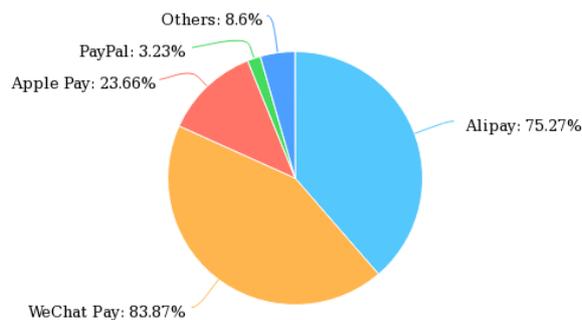


Figure 3 - Students' Choice of Mobile Payment

4.4.2 Perceived Usefulness

Table 1 presents the degree of perceived usefulness ranked from highest to lowest. Students responded "strongly agree" on the following: "By using mobile payment, I can save time by completing daily transactions quickly." ($\bar{X} = 4.22$). Students responded "agree" on the following: "By using mobile payment, I can improve my life efficiency." ($\bar{X} = 4.06$); "By using mobile payment, I can avoid the inconvenience of paying in cash." ($\bar{X} = 3.71$).

The general mean of 4.00 and standard deviation of .90 revealed that the degree of students' perceived usefulness of mobile payment is high. It indicated that most of the students think they can improve the quality of their life by using mobile payment.

Table 1
The Degree of Perceived Usefulness

Item No.	Degree of Perceived Usefulness	Mean \bar{x}	SD	Scaled Responses	Descriptive Interpretation	Rank
5	By using mobile payment, I can save time by completing daily transactions quickly.	4.22	.87	Strongly Agree	Very High	1
6	By using mobile payment, I can improve my life efficiency.	4.06	.96	Agree	High	2
7	By using mobile payment, I can avoid the inconvenience of paying in cash.	3.71	.87	Agree	High	3
General Mean		4.00	.90	Agree	High	

4.4.3 Perceived Ease of Use

Table 2 presents the degree of perceived ease of use ranked from highest to lowest. Students responded “strongly agree” on the following: “It is easy for me to use mobile payment.” ($\bar{X} = 4.24$). Students responded “agree” on the following: “It is easy for me to use mobile payment efficiently.” ($\bar{X} = 4.20$); “It is easy for me to study how to use mobile payment.” ($\bar{X} = 3.89$).

The general mean of 4.11 and standard deviation of .74 revealed that the degree of students’ perceived ease of using mobile payment is high. It indicated that most of the students think there is no difficulty for them to complete the trading by using mobile payment.

Table 2
The Degree of Perceived Ease of Use

Item No.	Degree of Perceived Ease of Use	Mean \bar{x}	SD	Scaled Responses	Descriptive Interpretation	Rank
8	It is easy for me to use mobile payment.	4.24	.65	Strongly Agree	Very High	1
10	It is easy for me to use mobile payment efficiently.	4.20	.68	Agree	High	2
9	It is easy for me to study how to use mobile payment.	3.89	.88	Agree	High	3
General Mean		4.11	.74	Agree	High	

4.4.4 Perceived Risk

Table 3 presents the degree of perceived risk ranked from highest to lowest. Students responded “neutral” on the following: “I’m worried that others will steal my

account number and password which will cause property loss.” ($\bar{X} = 3.34$) got the highest mean; “I’m worried that I will be defrauded and lose money when using mobile payments, such as visiting fake websites” ($\bar{X} = 3.10$); “I’m worried that my mobile payment account information will be leaked or resold.” ($\bar{X} = 2.95$).

The general mean of 3.13 and standard deviation of 1.24 revealed that the degree of students’ perceived risk is normal. It indicated that most of the students realize that there is a possibility that they will lose money by using mobile payment, however, they do not worry too much about this problem.

Table 3
The Degree of Perceived Risk

Item No.	Degree of Perceived Risk	Mean \bar{X}	SD	Scaled Responses	Descriptive Interpretation	Rank
12	I’m worried that others will steal my account number and password which will cause property loss.	3.34	1.13	Neutral	Normal	1
11	I’m worried that I will be defrauded and lose money when using mobile payments, such as visiting fake websites.	3.10	1.34	Neutral	Normal	2
13	I’m worried that my mobile payment account information will be leaked or resold.	2.95	1.24	Neutral	Normal	3
General Mean		3.13	1.24	Neutral	Normal	

4.4.5 Service Quality

Table 4 presents the degree of service quality ranked from highest to lowest. Students responded “agree” on the following: “I’m satisfied with the service provided by the mobile payment.” ($\bar{X} = 3.57$) got the highest mean; “The mobile payment has a high service efficiency.” ($\bar{X} = 3.41$). Students responded “neutral” on the following: “I’m worried that my mobile payment account information will be leaked or resold.” ($\bar{X} = 2.80$).

The general mean of 3.26 and standard deviation of 1.11 revealed that the degree of service quality is normal. It indicated that most of the students think although the mobile payment works well, there are still some problems that it needs to solve.

Table 4
The Degree of Service Quality

Item No.	Degree of Service Quality	Mean \bar{x}	SD	Scaled Responses	Descriptive Interpretation	Rank
16	I'm satisfied with the service provided by the mobile payment.	3.57	1.10	Agree	High	1
14	The mobile payment has a high service efficiency.	3.41	1.11	Agree	High	2
15	When a dispute arises, related websites and banks can help me solve the problem properly.	2.80	1.14	Neutral	Normal	3
General Mean		3.26	1.11	Neutral	Normal	

4.4.6 Willingness to use mobile payment

Table 5 presents the degree of students' willingness to use mobile payment ranked from highest to lowest. Students responded "agree" on the following: "I will continue to use mobile payment in the future." ($\bar{X} = 4.08$) got the highest mean; "I will use the mobile payment frequently in the future." ($\bar{X} = 3.82$). Students responded "neutral" on the following: "I will recommend others to use mobile payment in the future." ($\bar{X} = 3.34$).

The general mean of 3.75 and standard deviation of 0.88 revealed that the degree of willingness to use is high. It indicated that most of the students have strong willingness to use mobile payment in the future.

Table 5
The Degree of Willingness to Use

Item No.	Degree of Willingness to Use	Mean \bar{x}	SD	Scaled Responses	Descriptive Interpretation	Rank
17	I will continue to use mobile payment in the future.	4.08	.91	Agree	High	1
18	I will use the mobile payment frequently in the future.	3.82	.86	Agree	High	2
19	I will recommend others to use mobile payment in the future.	3.34	.88	Neutral	Normal	3
General Mean		3.75	.88	Agree	High	

4.4.7 Multiple Regression Analysis

By using excel to do the multiple regression analysis, the researcher gets the results showed in Table 6 by setting the "willingness to use" as the dependent variable, setting

the “perceived usefulness”, “perceived ease of use”, “perceived risk” and “service quality” as the independent variables and using the 90% confidence level.

Table 6
Multiple Regression Analysis Result

	Coefficients	Standard Error	t Stat	P-value
Perceived usefulness	0.01254	0.10422	0.12037	0.90446
Perceived ease of use	0.31852	0.12687	2.51054	0.01388
Perceived risk	-0.06196	0.06623	-0.93551	0.35209
Service quality	-0.14922	0.08012	-1.86246	0.06587

For the first independent variable “perceived usefulness”, it can be seen from Table 6 that its coefficient is 0.01254 and its p-value is 0.90446. Since its p-value is more than 0.1, the first null hypothesis “There is no significant relationship between perceived usefulness and people’s willingness to use mobile payment” is accepted.

The findings imply that perceived usefulness has little influence on people’s willingness to use mobile payment. The weak positive correlation suggests that people who think mobile payment can improve their quality of life may have a stronger willingness to use mobile payment. However, there is no significant difference between people who think the mobile payment is useful and people who think mobile payment is not useful. Thus, by increasing the degree of perceived usefulness, people’s willingness to use mobile payment will not improve a lot.

The findings of the study are not in accordance with Zhu, Lan and Chang (2017), who stated that there is a significant positive relationship between perceived usefulness and people’s willingness to use mobile payment. In addition, the findings also contradict Fiedler’s (2015) statement that greater perceived usefulness will result in a stronger willingness to use mobile payment.

For the second independent variable “perceived ease of use”, it can be seen from Table 6 that its coefficient is 0.31852 and its p-value is 0.01388. Since its p-value is less than 0.1, the second null hypothesis “There is no significant relationship between perceived ease of use and people’s willingness to use mobile payment” is rejected.

The findings imply that perceived ease of use has a significant influence on people’s willingness to use mobile payment. The strong positive correlation suggests that people who think it is easy for them to use mobile payment will have a stronger willingness to use mobile payment. Thus, by increasing the degree of perceived ease of use, people’s willingness to use mobile payment will improve a lot.

The findings are in accordance with Kim, Mirusmonov and Lee (2009), who stated that there is a significant positive relationship between perceived ease of use and the willingness to use mobile payment. In addition, the findings are also supported by the studies conducted by Fiedler (2015), that there is a positive relationship between perceived ease of use and people’s willingness to use mobile payment.

For the third independent variable “perceived risk”, it can be seen from Table 6 that its coefficient is -0.06196 and its p-value is 0.35209. Since its p-value is more than 0.1, the third null hypothesis “There is no significant relationship between perceived risk and people’s willingness to use mobile payment” is accepted.

The findings imply that perceived risk has little influence on people's willingness to use mobile payment. The weak negative correlation suggests that people who think they may lose money by using mobile payment may have weaker willingness to use mobile payment. However, there is no significant difference between people who think mobile payment is risky and people who think mobile payment is not risky. Thus, by decreasing the degree of perceived risk, people's willingness to use mobile payment will not improve a lot.

The findings are in accordance with Xie and Lin (2014), who stated that there is no significant relationship between perceived risk and people's willingness to use mobile payment. However, the findings contradict Zhu, Lan and Chang's (2017) statement that there is a significant negative impact on the perceived risk toward the willingness to use mobile payment.

For the fourth independent variable "service quality", it can be seen from Table 6 that its coefficient is -0.14922 and its p-value is 0.06587. Since its p-value is less than 0.1, the fourth null hypothesis "There is no significant relationship between service quality and people's willingness to use mobile payment" is rejected.

The findings imply that service quality has a significant impact on people's willingness to use mobile payment. The strong negative correlation suggests that people who think the service provided by the mobile payment is good will have a stronger willingness to not use mobile payment. Thus, by increasing the degree of service quality, people's willingness to use mobile payment will decrease a lot.

The findings contradict Mallat and Tuunainen's (2005) statement that there is a strong positive relationship between service quality and people's willingness to use mobile payment. In addition, the findings are also not in accordance with Zhu, Lan and Chang (2017), who stated that higher service quality will lead to a stronger willingness to adapt the mobile payment.

Based on the findings of the service quality, people who are not satisfied with the service provided by mobile payment still have the willingness to use mobile payment, which seems to contradict the common sense. Based on the researcher's opinion, the situation that there is a significant negative relationship between service quality and people's willingness to use mobile payment is caused by the unique phenomenon in China. In China, mobile payment has already replaced cash as the major payment method. In some stores, they will even not accept any other payment method except mobile payment. Therefore, for some Chinese people, they may not be satisfied with some service provided by the mobile payment. However, in order to lead a normal life in China, they have to use mobile payment. In addition, increasing the service quality will also lead to an increase in the cost of the users of mobile payment application, which the users may not be willing to accept.

To sum up, among these four independent variables, the perceived ease of use is the most significant variable that affects people's willingness to use mobile payment and there is a positive relationship between them. The service quality is the second significant variable that affects people's willingness to use mobile payment and there is a negative relationship between them. However, for the other two variables, perceived usefulness and perceived risk,

5 Conclusion

In this thesis, I firstly review the development of mobile payment in China and analyze the factors that make mobile payments develop at such a fast speed in China. Then, I discuss the difference among mobile payment applications and the security problems related to the application of mobile payment. After that, I use the multiple

regression analysis to analyze the factors that affect people's willingness to use mobile payment and collect data by using online survey. The results of this thesis demonstrate that the perceived ease of use and service quality are two factors that significantly affect people's willingness to use mobile payment. In addition, the results also show that the perceived usefulness and perceived risk have little influence on people's willingness to use mobile payment.

For the study in this thesis, there are several limitations. The first limitation is the survey questions in the questionnaire which aim to measure the degree of each variable. Since I only use three different survey questions to measure each variable, the results may not be accurate. The second limitation is the sample. The sample size in this study is 93, which is a little small and may affect the accuracy of the final result. In addition, this study only does a survey among university students. However, in real life, the users of mobile payment also contain a variety of other different groups except the university students. Therefore, the result of the survey cannot reveal the real situation of mobile payment in China.

For future research, there are a lot of things I can do to improve the accuracy of my findings. For instance, I can choose other methodologies in addition to multiple regression analysis to test my hypotheses. In addition, I can also do more literature review and use about ten questions to measure the degree of each variable in order to reveal the real situation. Meanwhile, I can also do a survey among different groups of people and find more respondents in addition to students to make the results more reliable.

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Appendix A: Questionnaire

1. What is your gender?
 - A. Male
 - B. Female
2. What is your academic year?
 - A. Freshman
 - B. Sophomore
 - C. Junior
 - D. Senior
3. Which payment methods do you choose to use
 - A. Cash
 - B. Bank Card
 - C. Mobile Payment
 - D. Others
4. Which mobile payment applications you currently use?
 - A. Alipay
 - B. WeChat Pay
 - C. Apple Pay
 - D. PayPal
 - E. Others
5. By using mobile payment, I can save time by completing daily transactions quickly
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
6. By using mobile payment, I can improve my life efficiency
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
7. By using mobile payment, I can avoid the inconvenience of paying in cash)
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
8. It is easy for me to use mobile payment
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
9. It is easy for me to study how to use mobile payment)
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree

- E. Strongly Disagree
10. It is easy for me to use mobile payment efficiently
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 11. I'm worried that I will be defrauded and lose money when using mobile payments, such as visiting fake websites.
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 12. I'm worried that others will steal my account number and password which will cause property loss)
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 13. I'm worried that my mobile payment account information will be leaked or resold.
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 14. The mobile payment has a high service efficiency
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 15. When a dispute arises, related websites and banks can help me solve the problem properly
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 16. I'm satisfied with the service provided by the mobile payment)
 - A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
 17. I will continue to use mobile payment in the future.
 - A. Strongly Agree
 - B. Agree
 - C. Neutral

- D. Disagree
 - E. Strongly Disagree
18. I will use the mobile payment frequently in the future.
- A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree
19. I will recommend others to use mobile payment in the future.
- A. Strongly Agree
 - B. Agree
 - C. Neutral
 - D. Disagree
 - E. Strongly Disagree

Appendix B: Multiple Regression Analysis Result

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.329673046							
R Square	0.108684317							
Adjusted R Square	0.068169968							
Standard Error	0.678275831							
Observations	93							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	4	4.936631263	1.234157816	2.68261293	0.036599442			
Residual	88	40.48511306	0.460058103					
Total	92	45.42174432						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 90.0%	Upper 90.0%
Intercept	3.065973478	0.572802987	5.352579416	6.82156E-07	1.927647908	4.204299049	2.113772125	4.018174832
Perceived usefulness	0.012544362	0.104215357	0.120389615	0.90446476	-0.19456176	0.219650485	-0.160698456	0.18578718
Perceived ease of use	0.318515678	0.126871406	2.510539517	0.013882399	0.066385419	0.570645937	0.107610485	0.529420871
Perceived risk	-0.061956509	0.066227868	-0.935505111	0.352088184	-0.193570479	0.069657462	-0.172050671	0.048137654
Service quality	-0.149222239	0.08012098	-1.862461491	0.065874866	-0.30844585	0.010001372	-0.282411672	-0.016032806