



温州肯恩大学
WENZHOU-KEAN UNIVERSITY

Risks and benefits of mobile banking

In Partial Fulfillment of the Requirements
for the Bachelor of Science in Finance

by

Liu, Ziyi

1098527

December 2021

Risks and benefits of mobile banking

December 2021

1098527

Liu, Ziyi

Abstract

With the popularity of intelligent mobile devices, mobile banking has become the development trend of electronic finance in today's society. With the advent of the era of mobile intelligence, mobile banking has ushered in opportunities, but various challenges also come one after another. Mobile banking has brought convenience to people's life, but at the same time, the immature market environment has brought some troubles to the development of mobile banking. In this paper, it is starting from the benefits and risks of mobile banking. Through literature review summarized convenience, fast, simple procedures and other benefits, and the legal, credit, operation, technology and other risks in the development of mobile banking. Then through the questionnaire from the user's point of view to see which benefits and risks customers attach importance to. And combined with the above information, it put forward some mobile banking risk prevention measures, put forward the risk prevention optimization suggestions. If this study is successfully completed, it can provide reference suggestions for the existing banking industry to develop mobile banking, and provide users with more assured and better experience by reducing existing risks and improving benefits.

Acknowledgements: I would like to thank my thesis advisors William Cheng for his advice and support throughout the thesis writing process. I would also like to thank other faculty and friends for their helpful guidance.

TABLE OF CONTENTS

Introduction	1-2
Literature Review	3-7
The main benefits of mobile banking	
The main risks of mobile banking	
Technical risk	
Credit risk	
Information security risk	
Legal risk	
Research Design	8-11
Methodology	
Questionnaire survey	
Model	
Preliminary findings	
Results	12-25
Descriptive Statistical Analysis	
Descriptive Statistical Analysis of Respondent	
Descriptive Statistical Analysis of Questions	
Test of questionnaire item	
Independent-samples t Test	
Correlation analysis	
Reliability and validity tests	
Construct validity test	
Reliability analysis of the scale	
Evaluation of global fit of equation model	
The test results of the research hypothesis	
Further analysis of two risks of mobile banking	
Technical risk	
Legal risk	
Conclusion	26-27
Limitations and Contributions	
References	28-29
Appendix A: Questionnaire questions	30-31

Introduction

Mobile banking is the act of making financial transactions on a mobile device, such as cell phone, tablet, and so on. (James C., 2020). Mobile banking is the product of the cross-border cooperation of banking and telecommunications is a combination of electronic currency and a new type of banking, it refers to the commercial banks with the aid of mobile Internet and mobile terminal based on mobile communication technology to provide customers with various banking financial services is a new type of financial services. The world's first mobile banking service was launched in Czechoslovakia in 1996, and commercial banks have followed suit. Now, after 25 years of improvement, mobile banking has become a very common financial service provided by many financial institutions. So far, China has many banks such as Bank of China, Construction Bank and Industrial and Commercial Bank of China to carry out mobile banking services. In China, mobile banking basically realizes the basic functions of bank account inquiry, transfer and remittance, payment, mobile payment, financial management and so on.

With the rapid development of mobile Internet and intelligent terminals, customers' demand for safe and convenient mobile payment is increasing day by day. Mobile finance in China's banking industry has developed rapidly and attracted extensive attention from all parties. A lot of banking business can be done on mobile phones, such as: transfer, deposit, buy financial management and so on. But then there are the risks behind it, such as overheated market competition, increasingly rampant network crimes and so on, which have brought obvious or potential risks to the development of mobile banking. In this paper, I want to go further into this research, which will provide some information and research support for my future work in the banking field.

This paper will focus on the benefits and the risks of using advanced mobile banking technology, and further discuss how to reduce risks. Firstly, I will review relevant domestic and

foreign literature and analyze the benefits and risks of mobile banking technology. I will also collect data through questionnaire survey, then conduct validity test and reliability test on the data through SPSS, and conduct hypothesis test by establishing structural equation model (SEM) through AMOS, analyze the influence of users' perceived benefits and perceived risks on customers' usage intention. Literature review and questionnaire survey will help me research the topic from a professional and user perspective. Finally, This paper will put forward some risk prevention measures of mobile banking, and puts forward some optimization suggestions of risk prevention.

Literature Review

Literature on mobile banking technology has been studied both at home and abroad. I will review relevant domestic and foreign literature and analyze the benefits and risks of mobile banking technology.

The main benefits of mobile banking

Mobile banking allows its customers to conduct financial transactions remotely using a Mobile device. And both bank and other financial institution can provide mobile banking to their customers. Mobile banking always Mobile banking typically takes the form of apps, which are provided by the financial institutions. Otamurodov (2017) posits that mobile banking is usually available all day. Mobile banking extends the time and space of financial services, greatly reducing the cost of network construction and small transaction processing, and realizing the formal financial services for low-income people and remote areas. Financial institutions that offer mobile banking services can ensure security by limiting the number of accounts accessed by mobile banking and the amount of money that can be traded.

Lee, Lee, and Kim (2007) also have similar opinions, they think that the integration of telecom and banking services creates opportunities for the emergence of mobile commerce, especially mobile banking. Mobile banking offers customers time independence, convenience and timeliness, while also saving costs. Mobile banking offers banks the opportunity to expand their market penetration through mobile services. Chen (2013) also thinks that by integrating mobile communication technology and banking financial services, mobile banking will become more and more flexible. Users can obtain financial services without time and space restrictions.

Chandran (2014) reveals that mobile banking is safer than online banking. Generally speaking, mobile banking apps have verification procedures, such as sending a verification code

to your phone for verification, or even checking your fingerprint and face if the phone's capabilities allow it.

Otamurodov (2017) shows that it is usually faster to do business on mobile banking than to go to the bank, and queuing in offline banking can be time-consuming, especially on payroll days. With mobile banking, users can access their accounts at any time without waiting in line. Based on research into Chinese Internet users' attitudes towards mobile banking, AC

Nielsen Consult (2002) found that mobile banking has increased the adoption of mobile banking by providing convenience, security, high standards and cost savings.

The main risks of mobile banking

Technical risk

Mobile banking is a banking institution that provides banking services to customers with the help of mobile communication technology. In this process, information system, mobile terminal, wireless communication channel and other carriers that have not appeared in traditional banking services will be involved, which also changes the flow form of traditional banking services. Its innovation in business, management and organizational model has changed the risks faced by financial services. As Amir Herzberg (2003) concludes that mobile intelligent terminals play the most important role in mobile banking. The unstable performance of intelligent terminals, the lack of compatibility between application software and mobile phone platform, and the invasion of mobile phone viruses are external causes of technical risks, mainly manifested in: First, a wide variety of mobile phone Trojan horses and viruses, increasingly arrogant. Second, smartphone apps can be downloaded and used by users around the world, making it possible for the virus to spread.

Credit risk

As Karnouskos (2004) studied, mobile banking introduced network technology, mobile communication technology and other technologies, which changed the original business process. Credit risk arises from misunderstanding of transactions. In mobile financial services, as both sides of the transaction exchange through the information system, the transmission, interaction and confirmation of information is through electronic channels, and the information is electronic information. The generation and transmission of electronic information in electronic channels are easy to be attacked and tampered with, so that the authenticity of the transaction will be damaged, and the counterparty's misunderstanding of the transaction will cause credit risks. Credit risks also include the failure of the mobile banking party to disclose the required information, resulting in information asymmetry between the bank and the customer. Zhou Chao (2014) shows that when banks fail to disclose the potential risks of mobile banking to customers, they bury hidden dangers for banks. Once users suffer losses due to accidents, they are likely to sue the bank for compensation.

Information security risks

As Dahlberg, Mallat, Ondrus, and Zmijewska (2008) point out in their review of the history of mobile finance, the demand for security is inherent in mobile financial services. Technical security risks come from the demand for security in mobile financial services, including customers' demand for security in mobile financial services and financial institutions' own demand for security in operation. Similarly, information security is the primary problem that mobile banking needs to consider. Banks are responsible for providing security for mobile banking customers in order to protect the exchange of information between the bank and the customer. In the operation of mobile banking, it is necessary to ensure that customers' confidential information is not stolen or tampered with, and transactions are successfully completed. Sadiku, Tembely, Musa, and Momoh (2017) conclude that network attacks that may

affect the security of mobile banking include unauthorized use, hacking, eavesdropping, information loss, malware, and PIN Recovery attacks. Password authentication can be used to protect mobile devices from unauthorized users. This requires the user to provide a previously set security password before accessing the mobile device. Other authentication technologies include physical devices, one-time passwords, transaction profile scripts, face recognition and fingerprint recognition, and so on.

Legal risk

As mobile banking has developed gradually in recent years, there are still some legal gaps in this field. Weber and Darbellay (2010) defined the risks of mobile banking from a legal perspective. The authors believe that the development of mobile banking changes with each passing day. This growth owes as much to improved customer confidence as to technological advances. Therefore, in order to give customer protection and industry competition order, legally, it is necessary to establish relevant supervision system as soon as possible to cater to this speed of development. Mobile banking is theoretically within the scope of banking services, so the regulation should focus on the integration of financial markets and banks. Moreover, they argue that legal aspects have also played an important role in the evolution of mobile banking, which has had a significant impact on the consolidation of customer trust in focused services. In the regulatory process, the main issues that need attention are data security and customer protection. Some key parts, such as mobile operators, also deserve further attention.

Most of the literature related to mobile banking focus on the risks of mobile banking, and the benefits of mobile banking are almost the same, mainly focusing on the convenience of mobile banking, that is, users can use online banking services instantly, anytime, anywhere. These literatures discussed various risks of mobile banking, such as technical risk, legal risk,

credit risk and so on. All the risks of mobile banking are not well discussed in these literatures, and only one or part of the risks of mobile banking are mentioned. Especially the legal risk, no one has discussed it too much. Therefore, in this paper, I will discuss more about risks and make my article more comprehensive to discuss the risks of mobile banking. I will further analyze how to reduce some of these risks.

Research Design

This paper intends to list the benefits and risks of mobile banking in a more complete way by comparing and integrating the perceived benefits and risks of mobile banking users with those found in literature review. Firstly, this research will combine information security risks and technical risks. Secondly, because offline banks also have a certain degree of credit risk and are prone to problems with low discrimination, they will not be studied in this research. In order to analyze the risk more comprehensively, the questionnaire questions and model refer to Fan Jihong (2011) Research on mobile payment usage behavior based on perceived risk, which introduces time risk and behavior risk for this paper. So perceived risks will include perceived time risk, perceived behavioral risk, perceived technical risk and perceived legal risk. And perceived benefits will include perceived usefulness and perceived ease of use. Through the influence of perceived benefits and perceived risks on users' usage intention, the importance of users to different benefits and risks is studied. It provides the direction for the following preventive measures.

Methodology

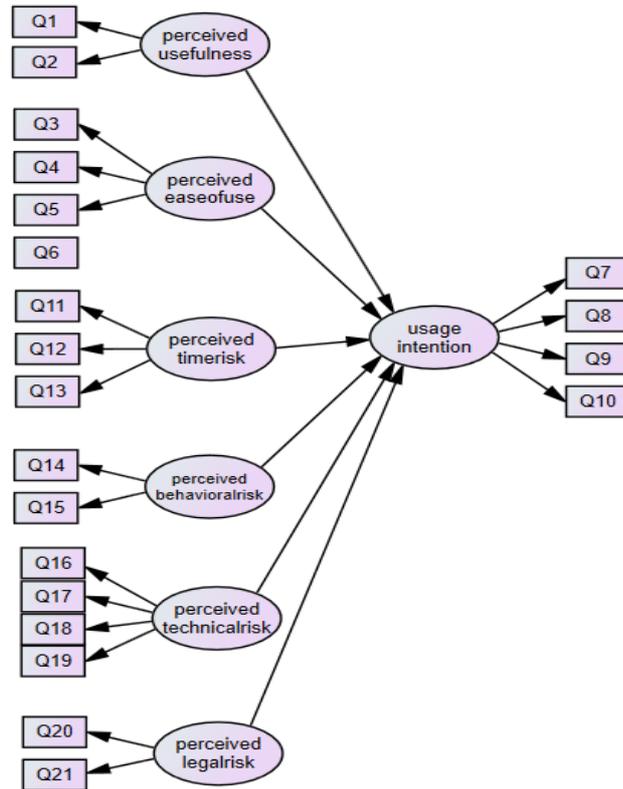
This paper will verify and elaborate the benefits and risks of mobile banking technology by analyzing the influence of users' perceived benefits and perceived risks on customers' usage intention, so as to provide data support for my paper. In this paper, 202 respondents were surveyed by questionnaire survey. Then conduct validity test and reliability test on the data by SPSS 28.0 software, and conduct hypothesis test by establishing structural equation model (SEM) by AMOS 26.0.

Questionnaire survey

The target population of the questionnaire survey is random. I will post a questionnaire online and invite random people to fill it out. In order to reduce the error, two hundred questionnaires are expected to be released. The questionnaire questions are shown in the appendix A. The questionnaire was investigated by Likert scale.

Model

In this research, Structural Equation Modeling (SEM) is used to analyze the data. Ullman and Bentle (2012) figure out that SEM is a set of statistical techniques that allow the examination of a set of relationships between one or more independent variables, whether continuous or discrete, and one or more dependent variables, whether continuous or discrete. SEM can be used to explain the relationship between one or more independent variables and one or more dependent variables. SEM has the function of verification. Usually, researchers use certain statistical means to deal with complex theoretical models and make appropriate evaluation of the theoretical models according to the consistency of the relationship between models and data, so as to confirm or falsify the theoretical models assumed by researchers in advance. Moreover, SEM allows the correlation between its dependent variables, because these correlations do not affect the analysis results of the overall model path, so it has more outstanding advantages than the general linear model statistical programs. In this study, AMOS 26.0 software is used to realize the verification process of SEM. AMOS (Analysis of Moment Structures) is a fully functional statistical analysis tool that can implement path analysis, covariance structure analysis, and regression analysis. The following is the model of the research:



Preliminary finding

Hypothesis:

Perceived benefits:

H1: Customers' perceived usefulness will positively influence their usage intention.

H2: Customers' perceived ease of use will positively influence their usage intention.

Perceived risks:

H3: Customers' perceived time risk will negatively affect their usage intention.

H4: Customers' perceived behavioral risk will negatively affect their usage intention.

H5: Customers' perceived technical risk negatively affects their usage intention.

H6: Customers' perceived legal risk will negatively affect their usage intention.

The results of questionnaire survey will not reject H1, H2, H3, H4, H5 and H6. Both perceived usefulness and perceived ease of use will positively influence their usage intention.

And perceived time risk, perceived behavioral risk, perceived technical risk and perceived legal risk will negatively affect their usage intention. Perceived technical risk and perceived legal risk might be the risks that users of mobile banking value most. Therefore, how to reduce these two risks will be analyzed in the following paragraphs.

Results

Descriptive Statistical Analysis

The formal questionnaire survey of this study was conducted from October to November 2021, and the questionnaire was distributed online. A total of 206 questionnaires were distributed in this study. After the questionnaire is returned, there are two main criteria for rejecting the questionnaire: one is to reject those who have too many missing answers; The second is to check whether the respondents fill in the questionnaire carefully. After eliminating invalid questionnaires, 202 valid questionnaires were obtained, and the effective questionnaire rate was 98.1%. The following is a descriptive statistical analysis of these 202 valid questionnaires.

Descriptive Statistical Analysis of Respondent

The composition of subjects in the questionnaire is shown in Table 4-1 below

Table 4-1 Descriptive Statistical Analysis of Respondent							
	Gender		Age				
	Male	Female	Below 18	18~25	26~35	36~45	Above 45
Population	75	127	21	148	29	2	2
Percentage	37.1	62.9	10.4	73.3	14.3	1.0	1.0

Descriptive Statistical Analysis of Questions

The sample size, minimum value, maximum value, mean value and standard deviation of each question were calculated for the 21 questions of 202 questionnaires collected from the survey, and the calculation results were shown in Table 4-2.

Table 4-2 Descriptive Statistical Analysis of Questions									
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Sample size	202	202	202	202	202	202	202	202	202
Maximum	4	4	4	4	4	4	4	4	4
Minimum	1	1	1	1	1	1	1	1	1
Average	1.72	1.62	1.72	1.83	1.83	1.82	1.77	1.84	1.96
Standard deviation	0.54	0.56	0.66	0.72	0.69	0.70	0.76	0.76	0.79
	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18

Sample size	202	202	202	202	202	202	202	202	202
Maximum	4	5	5	5	5	5	5	5	5
Minimum	1	1	1	1	1	1	1	1	1
Average	1.97	3.26	3.48	3.39	2.84	2.82	2.79	2.60	2.52
Standard deviation	0.85	1.02	1.00	1.01	1.06	1.19	1.07	1.00	1.06
	Q19	Q20	Q21						
Sample size	202	202	202						
Maximum	5	5	5						
Minimum	1	1	1						
Average	2.50	2.74	2.86						
Standard deviation	1.03	1.03	1.09						

It can be seen from Table 4-2 that the minimum value of each problem is 1; The maximum value of Q1~Q10 is 4, and the maximum value of Q11 ~ Q21 is 5. From the mean value of scale questions, it generally varies in a wide range from 1.62 to 3.48. The average values of perceived usefulness, perceived ease of use and usage intention (Q1~Q2, Q3~Q6, Q7~Q10) are all small, generally below 2; Secondly, the average values of perceived behavioral risk, perceived technical risk and perceived legal risk (Q14~Q15, Q16~Q19, Q20~Q21) are basically 2~3. The average value of perceived technical risks (Q11~Q13) is above 3. The mean distribution of the above 21 scale questions shows that customers have a high usage intention mobile banking, but the actual awareness of perceived risks is not obvious, among which the awareness of perceived technical risks is the lowest.

From the standard deviation of scale questions, it generally varies from 0.54 to 1.20, all of which have varying degrees of variability. Among them, the standard deviations of perceived time risk (Q11~Q13), perceived behavior risk (Q14~Q15), perceived technical risk (Q16~Q19) and perceived legal risk (Q20~Q21) are larger, all above 1; The standard deviation of the remaining questions is less than 1. The smaller standard deviation indicates that the measurement accuracy of this questionnaire is higher. The standard deviation characteristics of the above 40 scale questions show that the values of each scale question have good variability and high accuracy, which is suitable for further statistical analysis.

Test of questionnaire item

Identification test of questionnaire items

Arrange the original total scores of each questionnaire from low to high, and take 27% of the total number of subjects as the high group and the low group at both ends of the high score and the low score, respectively, and conduct independent sample T test. The results are shown in Table 4-3 below.

Question	t	Question	t	Question	t
1	-3.278	8	-4.562	15	-7.704
2	-2.141	9	-5.093	16	-9.212
3	-2.471	10	-4.891	17	-7.398
4	-2.561	11	-7.005	18	-8.747
5	-3.351	12	-7.135	19	-8.557
6	-2.881	13	-6.736	20	-7.748
7	-4.293	14	-8.112	21	-8.246

According to the results in the above table, for Q1~Q21, there are significant differences between the scores of high and low groups at the level of $P = 0.05$, that is, the degree of differentiation is high, and all questions can be retained.

Correlation analysis

The correlation coefficient between item scores and the total score of the questionnaire was calculated to test whether the questionnaire questions were well correlated. The test results of correlation coefficient are shown in Table 4-4 below.

Question	r	Question	r	Question	r
1	0.298**	8	0.336**	15	0.574**
2	0.194**	9	0.391**	16	0.613**
3	0.237**	10	0.359**	17	0.552**
4	0.263**	11	0.548**	18	0.571**
5	0.303**	12	0.543**	19	0.580**
6	0.277**	13	0.532**	20	0.533**
7	0.324**	14	0.581**	21	0.552**

** means at 0.01 level (double tail), the correlation is significant.

The results showed that the correlation coefficients between all the questions and the total score were significantly correlated at the level of 0.01, indicating high homogeneity of the items.

Combined with the results of independent sample T test and correlation analysis, all questionnaire data have passed the test, and the reliability and validity of the questionnaire will be tested next.

Reliability and validity tests

Construct validity test

Construct validity testing is an important link in the process of empirical research. Only empirical analysis that meets the validity requirements can the results be convincing. In this section, SPSS 28.0 will be used for factor analysis to evaluate the validity of the measurement model and to verify the validity of the theoretical structure of the questionnaire.

With reference to the general standards of academia and combined with the research requirements of this article, we plan to carry out a structure validity test on the 21 scale questions (Q1~Q21) that have passed the discrimination test in accordance with the following four criteria:

Criteria for construct validity 1 -- Factor extraction quantity criterion: The number of factors to be extracted requires that the cumulative explanation proportion of all factors to the total variance reaches 70%, and the initial characteristic value of each factor should preferably exceed 1 or be near 1.

Criteria for construct validity 2 -- The criterion of overall construct validity: KMO value of all scale questions is ≥ 0.70 , and Bartlett's sphere test is significant at the 0.05 level, then the whole scale question is suitable for factor analysis as a whole.

Criteria for construct validity 3 -- Single-item structure validity: the factor commonality of the single-item scale problem is ≥ 0.50 , and the absolute value of the maximum factor load

after the maximum variance is rotated is greater than or equal to 0.50, then the single-item scale problem is suitable for carrying out Factor classification.

Criteria for construct validity 4-- Factor composition criterion: All the scale questions that constitute a factor should have similar physical meanings, and the situation of single question factors should be avoided as far as possible.

Results of the first construct validity test

For the aforementioned 21 scale questions, according to the construct validity criterion 1, 7 factor numbers were set when the principal component method was used for extraction. The cumulative explanation proportion of the 7 factors to the total variance is 80.627%, the KMO value is 0.813, and the Bartlett sphere test is significant. It shows that the 40 scale questions are suitable for factor analysis as a whole. According to the construct validity criterion 3, in the variable common degree table after factor analysis, the common degree of all questions is greater than 0.50.

The variance maximization rotation is performed on the 7 extracted factors, and the orthogonal factor loading matrix of the 21 scale problems mentioned above is obtained. Among them, the maximum factor load of Q16 is 0.471 less than 0.50, indicating that the reason why the Perceived technical risk is constituted by Q16 is insufficient. Based on this, we plan to eliminate Q16 with poor structure validity, and conduct a second structure validity test on the remaining 20 scale questions (Q1~Q15, Q17~Q21).

Results of the second construct validity test

For the aforementioned 20 questionnaires, according to the construct validity criterion 1, 7 factor numbers were set when the principal component method was used for extraction. The cumulative explanation proportion of these 7 factors to the total variance is 86.173%, the KMO value is 0.802, and the Bartlett sphere test is significant, indicating that the 37 scale questions

are suitable for factor analysis as a whole. According to the construct validity criterion 3, in the variable common degree table after factor analysis, the common degree of 20 variables are all greater than 0.50. It shows that the variable space is transformed into the factor space and retains more information. Therefore, the effect of factor analysis is significant.

The variance maximization rotation is performed on the 7 extracted factors, and the orthogonal factor loading matrix of the above 20 scale problems is obtained. The maximum factor loadings of all 20 scale questions are positive and are all >0.50 (see Table 4-5), and the scale questions that constitute the same factor have similar physical meanings. Based on this, it is believed that the 20 scale questions passed the construct validity test.

	1	2	3	4	5	6	7
Q1	0.785						
Q2	0.880						
Q3		0.821					
Q4		0.836					
Q5		0.919					
Q6		0.924					
Q7			0.775				
Q8			0.812				
Q9			0.870				
Q10			0.901				
Q11				0.901			
Q12				0.899			
Q13				0.937			
Q14					0.912		
Q15					0.926		
Q17						0.842	
Q18						0.934	
Q19						0.910	
Q20							0.855
Q21							0.867

Reliability analysis of the scale

Since the scale of this study is designed by drawing on the results of the predecessors, it is necessary to analyze the reliability of the scale. The reliability of the questionnaire examines the reliability of the questionnaire measurement, which refers to the degree of internal consistency of the measured results. The internal consistency coefficient is most suitable for

homogeneity testing, to test whether each item in each factor measures the same or similar characteristics. This study adopts the measurement standard Cronbach's Alpha value, which is consistently used in academia. The main judgment standards are shown in Table 4-6.

Cronbach's Alpha 值	Standard
Cronbach's Alpha ≤ 0.3	Untrustworthy
$0.3 < \text{Cronbach's Alpha} \leq 0.4$	Preliminary research, barely credible
$0.4 < \text{Cronbach's Alpha} \leq 0.5$	Slightly credible
$0.5 < \text{Cronbach's Alpha} \leq 0.7$	Credible
$0.7 < \text{Cronbach's Alpha} \leq 0.9$	Very credible
Cronbach's Alpha > 0.9	Most credible

This study uses statistical analysis software SPSS 28.0 to analyze the reliability of the recovered effective questionnaires. The reliability analysis of each part of the scale of this study is shown in Table 4-7.

Latent variable	Observable Variable	Cronbach's Alpha
Perceived usefulness	PU1 (Q1)	0.821
	PU2 (Q2)	
Perceived ease of use	PE1 (Q3)	0.931
	PE2 (Q4)	
	PE3 (Q5)	
	PE4 (Q6)	
Usage intention	UI1 (Q7)	0.904
	UI2 (Q8)	
	UI3 (Q9)	
	UI4 (Q10)	
Perceived time risk	PT1 (Q11)	0.925
	PT2 (Q12)	
	PT3 (Q13)	
Perceived behavioral risk	PB1 (Q14)	0.972
	PB2 (Q15)	

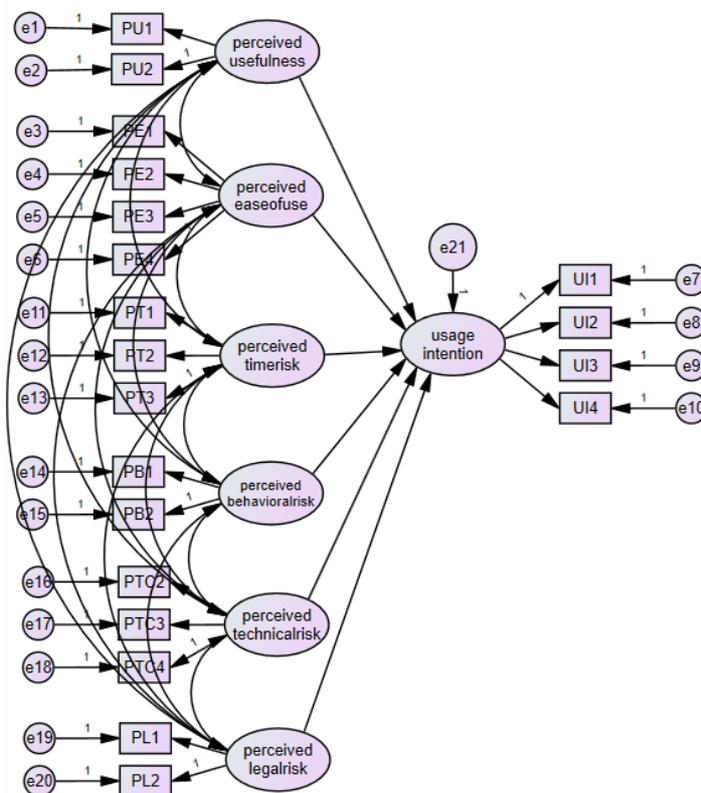
Perceived technical risk	PTR2 (Q17)	0.932
	PTR3 (Q18)	
	PTR4 (Q19)	
Perceived legal risk	PL1 (Q20)	0.843
	PL2 (Q21)	

The Cronbach's Alpha value of each variable module is greater than 0.8, which is very credible, and the middle five variable modules have reached the most credible. Each variable module has passed the reliability test.

Evaluation of global fit of equation model

Figure 4-8

Final model



To test the fit of the structural model, that is, to judge whether the various fitting indicators output by the model meet the measurement standard, to test the degree of fit between

the proposed correlation pattern between variables and the actual data. Enter the structural equation model in Figure 4-8 into the AMOS 26.0 software, and after calculation and estimation, the various index values reflecting the degree of fit are shown in Table 4-9. It can be seen from Table 4-9 that, compared with the recommended value of a given fitness index, the fitted values of all fitness indicators of the model except GFI are within the recommended value range. Although GFI is less than the ideal value standard of 0.9, it is greater than the reference value of 0.8 and very close to 0.9. Therefore, from the perspective of the overall model fit, it is considered that the fit between the model and the data is acceptable, and the overall model fit test is passed.

Fit indices	Recommended value	Fitted value
X ²	Smaller is better	227.8
X ² /df	<3	1.529
GFI	>0.9	0.895
AGFI	>0.8	0.851
RMSEA	<0.08	0.051
NNFI	>0.9	0.941
IFI	>0.9	0.979
CFI	>0.9	0.978

The test results of the research hypothesis

Hypothesis	Relationship	Estimates	P	Conclusion
Customers' perceived usefulness will positively influence their usage intention.	PU→PI	0.743	***	Support
Customers' perceived ease of use will positively influence their usage intention.	PE→PI	0.214	0.01	Support
Customers' perceived time risk will negatively affect their usage intention.	PT→PI	0.031	.417	Nonsupport
Customers' perceived behavioral risk will negatively affect their usage intention.	PB→PI	-0.063	.112	Nonsupport
Customers' perceived technical risk negatively affects their usage intention.	PTR→PI	0.021	.663	Nonsupport

Customers' perceived legal risk will negatively affect their usage intention.	PL→PI	0.012	0.840	Nonsupport
---	-------	-------	-------	------------

*** means smaller than 0.001

Through testing and the results shown in Table 4-10, customers' perceived usefulness and perceived ease of use both have a positive impact on customers' usage intention. The p value is a decreasing indicator of the credibility of the result. The larger the p value, the less we can think that the variables in the sample are related. It is a reliable indicator of the correlation of various variables in the sample. For the four perceived risks, the P-value is too high, so this association is unreliable, and the data results are not statistically significant and cannot support the establishment of the hypothesis. This shows that customers' perceived risks will not have a positive or negative impact on their usage intention, and that customers do not pay attention to the risks of mobile banking. The reason behind this may be that customers do not know much about the risks of mobile banking. I will further analyze the risks of mobile banking in the following article. I further surveyed the subjects' attention to bank risks in the questionnaire survey. The results of the survey showed that 202 respondents ranked legal risk, technical risk, time risk, and behavioral risk in terms of their importance to time risk, behavioral risk, technical risk, and legal risk. I will focus on the analysis of the two risks that customers attach the most importance to, and make some suggestions to reduce these risks.

Further analysis of two risks of mobile banking

Technical risk

Technical risk is the risk caused by technical reasons. Mobile banking technology is based on modern information technology. The wireless transmission of information in mobile communication technology makes mobile financial services independent of time and location. Internet IP technology enables data between banking service entities to be quickly transmitted among various systems for information exchange. However, it is precisely because of these open

and shared technologies that mobile banking technology is born with the security risks of these technologies. This makes technical risk the first type of risk that mobile financial services pay attention to. Technical risks include technical imperfections, service software bugs, and technical operation errors. At present, commercial banks will provide mobile banking services. Once the operating equipment and network fail, and are invaded by exogenous viruses or abnormal events, there will be great risks in the mobile banking business. If the operating computer equipment has loopholes and is invaded by viruses, it will lead to the complete collapse of the network host system of the entire mobile banking operation, serious data loss and damage, or hacker intrusion into the network system, or virus intrusion on the user's mobile phone. To a certain extent, it will lead to the modification and theft of information data, which will lead to economic losses, and the overall brand image and reputation of the bank will also suffer losses.

How to reduce technical risks

Banks need to invest funds to develop mobile banking technology to make it more complete and sound. Introduce relevant technical talents to build a safe platform. In the operation of mobile banking, technical operations are generally used to ensure the confidential management of the data in operation. Relevant security technology and network technology need to be fully matched according to the situation. However, the encryption technology of the wireless transmission structure is relatively simple, and there is a risk of being decrypted. It is necessary to use end-to-end application layer encryption management, which is conducive to the security of sensitive information transmission. The relevant application layer security mechanism performs data encryption processing from the beginning of the transmission of the information to the receiving end, which can effectively avoid the information security problems caused by the transmission of the server, network system and other devices in the process of

information transmission. At the same time, all encrypted information needs to be decoded by professional technology and equipment to ensure the security of its operation.

Where wireless signal coverage is incomplete, information delay or incomplete data will occur, which can be avoided by strengthening the corresponding operation mechanism. Related technologies and equipment can effectively avoid malicious mobile phone attacks such as malicious collection codes and viruses. Banks can cooperate with corresponding firewalls, monitoring systems, intrusion detection systems, and quick recovery functions to ensure complete data security. Corresponding records will be made for the transmission failures and data incompleteness in the transmission, and then the corresponding security omissions will be found and repaired in time.

In the mobile banking information input, the user identity and password information will be automatically generated encrypted code, while the confidential information maintains a one-way transmission mode. Sensitive information will not be displayed on the mobile phone client, so as to avoid being seen by others. If the signal is interrupted during the operation, the identity will be re-identified. Therefore, the mobile banking operation instructions must be confirmed by the customer to reduce the risk of information theft. For information loss, users should be instructed to change their personal information regularly.

In the operation of mobile banking, backup technology and other methods can be used to ensure the recovery and processing of information and materials, thus effectively reducing the technical risks caused by other data loss and damage.

Legal risk

Legal risks are mainly reflected in the imperfect legislation related to mobile banking. The current legal systems related to mobile banking in my country are mainly the "Administrative Measures on Electronic Banking" and "Guidelines for E-banking Security Evaluation" promulgated by the China Banking Regulatory Commission in February 2006, and

the "People's Bank of China on Improving Personal Payment and Settlement Services" on May 11, 2007. "Notice" and the "Administrative Measures for Non-Financial Institutions Payment Services" promulgated by the People's Bank of China in June 2010. The above documents are departmental rules and statutory documents at the legal level, and their effectiveness is far lower than that of laws and administrative regulations. Moreover, there are many qualitative clauses for mobile banking, and there are few quantified and standardized clauses for specific operations. This leaves a lot of gray space in the payment and settlement and fund management of mobile banking business, which is manifested by too rough legislation, strong policy colors and poor operability.

Another thing worth paying attention to is the extreme lack of protection for financial customers in the banking-related legislation. In reality, when disputes occur, banks always evade responsibilities. Since there is no law to rely on, financial customers as a vulnerable group are helpless, resulting in a tense relationship between banks and customers, which can easily lead to the loss of bank customers and funds. In fact, protecting the interests of financial customers and safeguarding the interests of commercial banks are inherently consistent. This suspicion and distrust need to be reduced by a specific financial customer protection system.

How to reduce legal risks

First, we need to improve the legal system for mobile banking supervision. The normal operation of mobile banking requires a complete system of laws and regulations to regulate. The current mobile banking business can use the current Contract Law, Bills Law, Accounting Law, Payment and Settlement Measures, etc. Although there is no targeted management legal content developed by mobile banking, other legal provisions can be used as a reference to protect the interests of both users and the bank. The state and relevant legal departments should actively revise traditional laws and regulations, and increase the content of mobile banking supervision to

adapt to the development requirements of mobile banking business. Where necessary, supporting regulations and implementation rules can be formulated to make the content of mobile banking supervision laws and regulations systematic and operability, thereby reducing the legal risks of mobile banking. Secondly, in order to reduce legal risks, it is also necessary to establish a mobile banking supervisory department, which can complement the legal system to maximize the safe and orderly development of mobile banking. Discover and deal with network illegal acts in time, prevent the risk of mobile banking operation, and provide a good environment for the healthy operation of mobile banking.

Conclusion

This paper summarizes the benefits and risks of mobile banking and the four risks to mobile banking through literature review and the actual development of mobile banking in my country. Benefits are mainly convenience and not limited by time and space. Risks include technical risks, credit risks, information security risks and legal risks. A total of 202 valid questionnaires were collected through questionnaires of 206 respondents. After independent sample t test, correlation analysis, construct validity test, scale reliability test, evaluation of the overall fit of the equation model, and final hypothesis test, the following main conclusions are drawn:

First, the main factors that affect the intention of individual users to use mobile banking are the two dimensions of perceived usefulness and perceived ease of use. It shows that the perceived usefulness has a greater impact on the intention of individual users to use mobile banking.

Second, the perceived risk, that is, the perceived time risk, the perceived behavioral risk, the perceived technical risk, and the perceived legal risk, do not affect the intention of mobile banking users. The reason behind this may be that users don't know much about the risk of mobile banking. So again, the 202 respondents were surveyed on the importance of risk, that is, to investigate which risk in their minds would affect their willingness to use mobile banking. The final survey results show that the top two are legal and technical risks. In the end of this paper, it focus on the analysis of these two risks and analyze how to reduce these two risks.

Contributions

Most of the previous studies still remain at the technical level or the analysis of the industry development status and business models. From the perspective of individual users, there are not many studies specifically on the intention or behavior of using mobile banking.

Moreover, most of the existing research on the intention of using mobile banking is based on the expansion and improvement of the technology acceptance model. The technology acceptance model is a model specifically used to study the acceptance or behavior of individuals for technology or services, but its interpretation rate of intention to use is only 41%. Therefore, the use of SEM as a basic model to analyze the influencing factors of mobile banking use intention has a high degree of credibility. It can contribute to a more accurate survey of the influence of mobile banking benefits and risks on customers' willingness to use. This paper also points out targeted measures to reduce risks based on users' attention to different risks. It will provide targeted suggestions for the current banking industry to better launch mobile banking services.

Limitations

This research is mostly conducted from the subjective perspective of users, ignoring the influence of objective factors, which will lead to insufficient disclosure of the results, which is a limitation of this article. In addition, due to the time and difficulty in sorting out, this research chose to collect 202 questionnaires. The number of questions in the questionnaire is not enough, and there may be some limitations in the analysis. There are limits to professionalism.

Reference

- AC Nielsen Consult (2002), China Online Banking Study, available at:
<http://estore.chinaonline.com/chinonlbanstu.html>
- Chandran, R. (2014). Pros and cons of Mobile banking. *International journal of scientific and research publications*, 4(10), 1-5.
- Chen, C. (2013). Perceived risk, usage frequency of mobile banking services. *Managing Service Quality: An International Journal*.
- Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewska, A. (2008). Past, present and future of mobile payments research: A literature review. *Electronic commerce research and applications*, 7(2), 165-181.
- Fan Jihong. (2011). Research on mobile payment usage behavior based on perceived risk.
Retrieved from
<https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD2011&filename=1011281135.nh>
- Herzberg, A. (2003). Payments and banking with mobile personal devices. *Communications of the ACM*, 46(5), 53-58.
- James Chen (2020). *Mobile Banking*. Retrieved from
<https://www.investopedia.com/terms/m/mobile-banking.asp>
- Karnouskos, S. (2004). Mobile payment: a journey through existing procedures and standardization initiatives. *IEEE Communications Surveys & Tutorials*, 6(4), 44-66.
- Lee, K. S., Lee, H. S. and Kim, S. Y. (2007). Factors influencing the adoption behavior of mobile banking: A South Korean perspective. *Journal of internet banking and commerce*, 12(2).
- Otamurodov, H. H. (2017). Mobile banking: advantages and disadvantages. *Экономика и бизнес: теория и практика*, (5).

Sadiku, M. N., Tembely, M., Musa, S. M., & Momoh, O. D. (2017). Mobile banking.

International Journals of Advanced Research in Computer Science and Software Engineering, 7(6), 75-76.

Ullman, J. B., & Bentler, P. M. (2012). Structural equation modeling. Handbook of Psychology, Second Edition, 2.

Weber, R. H., & Darbellay, A. (2010). Legal issues in mobile banking. Journal of Banking Regulation, 11(2), 129-145.

Zhou Chao (2014). Research on risk prevention of bank A mobile banking. Retrieved from <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201501&filename=1014367762.n>

h

Appendix A: Questionnaire questions

Perceived usefulness	Q1: Compared with offline banking, it is more convenient to use mobile banking.
	Q2: Compared with offline banking, mobile banking can improve efficiency.
perceived ease of use	Q3: Compared with offline banking, the transaction time is shorter using mobile banking.
	Q4: Compared with offline banking, it's easier to learn to use mobile banking.
	Q5: Compared with offline banking, the procedure of mobile banking is simpler.
	Q6: Compared with offline banking, mobile banking is easier to operate.
Usage intention	Q7: Compared with offline banking, I prefer to try mobile banking.
	Q8: Compared with offline banking, I will probably use mobile banking a lot in the future.
	Q9: Compared with offline banking, people around me prefer mobile banking.
	Q10: I would rather recommend mobile banking to others.
Time risk	Q11: I think mobile banking takes time.
	Q12: I think using mobile banking takes time.
	Q13: I think it is easy for mobile banking to fail to transfer money, purchase wealth management products and so on, which will take time.
Behavioral risk	Q14: I think using mobile banking, mobile phone loss is easy to cause property losses.

	Q15: I think using mobile banking, my improper operation may cause property losses.
Technical risk	Q16: I think it's easy for the password of bank card to be stolen when using mobile banking.
	Q17: When using mobile banking, the interruption of transaction data transmission is more likely.
	Q18: When using mobile banking, it is easy to have poor mobile network.
	Q19: When using mobile banking, it is easy to have unstable mobile network.
Legal risk	Q20: Disputes over mobile banking cannot be properly resolved.
	Q21: Existing laws cannot protect the interests of mobile banking users.