Risk Prevention and Management of Mobile Financial Business of Commercial Banks in China

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Abstract: The rapid development of mobile internet technology and the increasing popularity of intelligent terminal devices have fastened the formation of a new financial service pattern, which is mobile finance, of commercial banks. The mobile financial business of commercial banks involves many stakeholders. Long industrial chain, sophisticated technology, fierce competition and demanding safety requirements are its characteristics. According to theory of financial risk management and stakeholders, this article identifies risks, which are systematic risk, credit risk, operational risk, technical risk, policy risk and legal risk, etc., of mobile finance business in Chinese commercial banks. Combined with facts of Chinese economy development, this article also proposes measures of risk prevention and management.

Key Words: mobile Internet, intelligent terminal devices, mobile finance, risk management

1. Preface

Economic globalization and financial integration have made market competition fiercer and urged commercial banks to make business innovations constantly. With the rapid development of intelligent terminal devices and mobile internet technology, relying on mobile internet technology, commercial banks have united mobile communication operators and third-party payment agent to implant finance business and invented a new mode of financial service, which is mobile financial service.

Mobile finance changes patterns of traditional financial service and forms into new development strategy of commercial banks. At present, most commercial banks in China have opened up mobile financial business, therefore the business scale has been expanded rapidly and commercial banks are facing increasingly fierce competition in mobile finance fields. Mobile financial business involves banks, mobile communication operators, mobile equipment manufacturers, device chip manufacturers, payment agents, commercial tenants and bank clients. In that case, stakeholders come from different industries and regions. Therefore, the industrial chain is relatively long and technology is sophisticated. The terminal goal of mobile finance is to realize safe, convenient and efficient fund flow, and to balance and coordinate the relations of stakeholders. In fierce market competition, commercial banks must adopt measures of preventing risks aiming at mobile financial business.

In China, studies of mobile finance in commercial banks are still at primary stage and the research findings are relatively scarce. Most of the existing research are focusing on modes
of mobile financial business and consumer behaviors in commercial banks. This article studies various risks that commercial banks are faced with when they operate mobile financial business. Apart from that, this article also puts forward corresponding risk management measures.

2. Literature Review

Practices of mobile financial business in China have been conducted well, but theoretical studies are relatively insufficient. There are only about 80 pieces of research papers, of which research theme is mobile finance, in China CNKI database. Moreover, there are only 8 relevant research papers of which key words contain mobile finance in China CNKI database. Using knowledge venation analysis for papers take mobile finance as one of the key words in China Wanfang database, results points out that the popularity of studying mobile finance in China have been greatly increased since 2011.However, the number of relevant classic documents is 10 and relevant scholars 9. In existing researches, scholars mainly pay attention to mobile banks, customer location of mobile financial business, business modes, development prospect, strategies for response and Internet safety.

LiLin and QianFeng are the scholars who have studied mobile finance in most systematic and deep way in China. They have co-published the first treatise studying mobile finance field in China. In the book, they systematically put forward theoretical system of mobile finance for the first time and pointed out that the four key fields of establishing mobile finance mode of commercial banks in China are business modes, customer location, product innovation and business channels. This book has played an forerunner role in the study of mobile finance innovation.(JiXiaohui, 2012) Industrial experts have also made deep research of mobile payment in mobile finance. For example, ChenXiaoqing and LiFeng, who are technical experts in mobile payment field and also hold positions in China Telecom Limited Company, co-published treatise: mobile payment changes life-mobile financial innovations and practices of mobile communication operators, combining their practicing experience with theoretical knowledge. They have made all-round analysis of mobile payment from different angles of technical innovation, business innovation, business mode innovation and institution and mechanism innovation, thus comprehensively elaborates innovations and practices in mobile payment field of mobile communication operator like China Telecom.(ZhuXiaoming, 2012)


To sum up, there are hardly any existing papers paying attention to risk prevention and management of mobile financial business of commercial banks. This article will exploit theories of risk management and stakeholders to make standard study of risk prevention and manage-
3. Methodology

This article uses theories of stakeholders and financial risk management to study risk prevention and management of mobile finance business of commercial banks.

Theory of stakeholders was proposed by Freeman in book Strategic management: analyzing methods of managing stakeholders in 1984. It defines a kind of management activity the management of an enterprise conduct to comprehensively balance various requirements of profits from different stakeholders. The theory argues that the development of any company cannot deviate from participations of different stakeholders. Apart from that, an enterprise pursues the overall interests of stakeholders, not individual interests. Stakeholders include shareholders of enterprise, creditors, employees, consumers and trading partners like suppliers, and also include government departments, local residents, local communities, media, and pressure groups like environmentalists. Even objects that are influenced directly or indirectly by business operation of the enterprise, such as natural environment and human offsprings are also part of stakeholders. These stakeholders have intimate relations with the survival and development of an enterprise. Some of the stakeholders share operational risks, some pay prices for business operations of the enterprise, and some supervise and restrict behaviors of the enterprise. Therefore, an enterprise must take into account interest and restrictions of stakeholders when they make operating decisions. (Baidu Wenku)

Theory of financial risk management originated in 1970s. At the start of 1970s, the collapse of Bretton Woods System led the International Monetary System step into the era of floating exchange rate. The intrinsic fragility of financing institutions, the rapid conductivity of financial risks have made consequences of financial risks more destructive. Thus, risk prevention and management have become themes of financial enterprise management. In 1960s, Efficient Markets Hypothesis proposed by Fama, Capital Asset Pricing Model put forward by Sharpe and Lintner, Arbitrage Pricing Theory proposed by Ross, and Black-Scholes Option Pricing Model have all laid solid theoretical foundations for development of financial risk management theory and instruments. The rapid development of computer hardware and software technology equipped people with abilities to use mathematical models and analogue simulation to deal with various kinds of financial risk management problems.

4. Risk Identification of Mobile Finance Business of Commercial Banks

4.1 Mobile Finance Business of Commercial Banks

Taking mobile internet as platform, intelligent terminal devices can realize various financial service which is iconically called mobile finance. The emergence of mobile finance is the result of innovation of commercial banks. They efficiently exploits modern high-technology to meet the increasing demanding requirements of consumers and to realize profit maximization.
Mobile intelligent terminal devices and mobile information technology are two necessary conditions of realizing mobile finance, a viewpoint which most of the scholars and industrial experts in China agree (Ji Xiaohui, Shi Chenglu, 2011; Qian Feng, Liu Xiaocui, 2012; Li Lin, Qian Feng, 2012, etc.).

The application of mobile information technology have exerted great influence on means of commercial banks financial services, and help promoted revolutionary transform of patterns of commercial banks financial services in conveniency, flexibility, safety and low cost. The development of mobile information technology have made financial services start to show characteristic of mobilization, thus changing the traditional fixed site mode of financial industry and efficiently breaking the constraints of time and geography. Mobile finance can provide all-round 24/7 financial services for customers from different regions. (Li Lin, Qian Feng, 2012)

Industrial experts generalizes the application areas of mobile financial business. They hold the view that mobile finance using mobile terminal and wireless internet technology, is the solution to financial enterprise internal management and external product service. (Ji Xiaohui, 2011) According to Ji Xiaohui, mobile finance represents the direction of future development of banks.

Overseas scholars define mobile finance similarly. For example, Tiwari, R & Buse, S. (2007) argue that mobile finance forms when consumers take advantage of mobile devices to visit computer media internet to realize any transactions involving ownership and right to use of objects and service. This kind of definition points out not only the process and form of mobile financial service, but also the terminal results of the service.

Mobile finance subverted the traditional financial service activities which take physics dots as sites. For customers, mobile finance realized 3A (Anytime, Anywhere, Anyhow) high quality service. Users can get the financial service they need at anytime anywhere with their hand mobile terminal devices. For banks, mobile finance can largely save service cost, not only the cost of constructing fixed facilities like physics dots, but cost for single business of mobile finance. The transaction cost of mobile bank is only 1/45 of the cost at counter in China Merchants Bank. In recent years, the business visitor volume of mobile bank at China Merchants Bank equals the number of non-cash transactions conducted by 37 sales points, among which every point occupies more than 1,000 square meters. Mobile finance will lead human society enter a new era of “Bank anywhere anytime” (Ma Weihua, 2012) And for society, mobile finance help reduces transaction cost and promotes public welfare.

4.2 Practices of Mobile Finance Business of Commercial Banks in China

In 1999, the launch of first intelligent mobile phone in the world by Motorola marked the start of the rapid development of mobile finance. With the constant progress of terminal devices and basic Internet and basic facilities, the mobile finance business of commercial banks develops fast. Mobile finance of commercial banks can be divided into two main fields, which are mobile payment using mobile device as means of payment and mobile banking service dealing with high level account management behaviors. (Li Lin, Qian Feng, 2012)

The development of mobile payment in China started from mobile banking service cooperation between banks and mobile communication operators. According to research report of payment industry of China Mobile in 2011 by a consulting company called iResearch, the activity of “buying coke by mobile phone” brought out by China Mobile Guangzhou Branch marked the
start of mobile payment in China. Since 2009, the development of mobile finance in China has accelerated obviously. After 2009, the permeating rate-ratio between mobile payment users in banking industry and mobile communication users-of mobile payment business in banking industry achieved 24%. Mobile payment business provides various kinds of business, and the using habits of users are mature and stable, meaning mobile payment enters industrial mature period. (LiLin, QianFeng, 2012) In 2012, the year-round turnover of mobile payment in China achieved 120 billion yuan, growing 151.2% compared with same period last year. In the next few years, the mobile payment market will keep the trend of rapid development. (MaCuilian, 2013)

The macro-economy environment in China determined that commercial banks opened up mobile financial business. The policies passed at the 18th CPC National Congress stepped forward the reform of interest rate liberalization, therefore, the era that banks relying on interest differential between deposits and loans to make huge profits is about to end. Commercial banks must conduct business innovations constantly to expand market, attract customers and keep customers to the best of their abilities.

At present, China has possessed good environment to conduct mobile financial business. According to statistics published by MIIT, from 2008 to 2012, the number of netizens, the popularizing rate of Internet and the number of mobile Internet have increased stably. (See Fig. 1 and Fig. 2)

Fig. 1 number of netizens and popularity rate of Internet in China from 2008 to 2012

![Fig. 1 number of netizens and popularity rate of Internet in China from 2008 to 2012](Data source: MITT website)

In 2012, China has made breakthroughs in many core technologies in electronic information field. Equipped with domestic processor and softwares, Sunway Bluelight petaflops computer technology has stepped into world advanced level class. Shipment volume of independent developed 8GbDDRII memorizer chip has surpassed 43 million. The number of users of independent developed mobile browser has been more than 300 million. And, domestic chips of intelligent terminal devices have been sold more than 40 million.
Till April 2013, the number of mobile users in China has achieved 1.155 billion. The number of users of mobile Internet has achieved 808 million, and the permeating rate nearly 70%. With the constant enhancement of functions of intelligent terminal devices getting online and processing documents, the number of mobile users getting online will continually keep rapid increasing trend. In April 2013, the number of mobile users getting online has achieved 778 million, taking up 96.3% of mobile internet users. Mobile phone has become the biggest terminal device of getting online. The permeating rate of 3G mobile users in China has kept high growth. From January to April in 2013, the number of 3G users has a net increase of 55.939 million and hit 289 million in total. The 3G permeating rate for the first time achieved 1/4 of the overall permeating rate. And the getting online data flow of 3G Internet has been around 50% stably. Fig. 3 and Fig. 4 explain the dynamic changes of 3G users and mobile getting online users in China.

Commercial banks have vigorously developed electronic banking and mobile banking business in mobile finance field. In China, the substitution rate of electronic banking (online banking, telephone banking and mobile banking) for counter transactions has been over 50% (several have passed 70%). (QianFeng, 2012) By the end of 2012, the number of users of mobile banking in China Everbright Bank has achieved 2.71 million, seeing a year-on-year rise of 185%. The distributary rate of electronic transactions is 64%. Industrial and Commercial Bank of China has seen a year-on-year rise of mobile banking of 54.5%, and the yearly turnover has increased by 16 times. The transaction volume of mobile banking in Bank of Communications saw a year-on-year rise of 312.29%. The total number of signed clients of mobile banking in China Merchants Bank has achieved 9.6649 million, making a year-on-year rise of 435.19%. The accumulative transaction amount of money is 10.878 billion RMB, year-on-year rise at 347.29%. In 2012, China Merchants Bank took the lead in launching “Mobile Wallet of China Merchants Bank” to provide the newest mobile payment service which combining credit card and mobile phones. It also launched new service of iPad banking, which has been downloaded for over 600 thousand times. Picture 5 explains usage condition of mobile banking in different banks.
The prosperous development of mobile finance has attracted active participation of mobile communication operators and third party payment agents. The three big mobile communication operators in China and important payment agents all want to cooperate with banks to get a place in the mobile finance field. In 2010, China Mobile initiated and became a shareholder of Shanghai Pudong Development Bank to become the first mobile communication operator, which has shares from bank in China. The two have also collaborated to co-develop payment system of next generation. China Mobile has already successfully developed functions of mobile phone that can substitute for bank cards, and became the one and only mobile communication operator that can implant credit card into SIM card of mobile phone completely and realize many in-flight services. The jointly signed mobile payment card invented by Shanghai Pudong Development Bank and China Mobile has already met with success. The number of mo-
Mobile payment users and mobile payment supported by ATM in Shanghai Pudong Development Bank has been ranked 1st in China (MaCuilian, 2013). China Mobile has also united China Unionpay to establish subsidiary companies to grab interaction advantage and make arrangements of mobile payment field.

Fig. 5 Usage conditions of mobile banking in different banks in 2011

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<th>Bank of China</th>
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<td>Bank of China</td>
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<td>CMB</td>
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<td>SPD Bank</td>
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<td>CEB</td>
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<td>China Citic Bank</td>
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<td>Industrial Bank</td>
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<td>ABC</td>
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<td>CCB</td>
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Data source: 3G gateways

4.3 Risk Identification of Mobile Financial Business of Commercial Banks

The particularity of financial business makes risks and consequences of them banks faced with bigger than other ordinary enterprises. In mobile finance field, there are mainly 6 kinds of risks that commercial banks are faced with from the angle of risk identification.

(1) Systematic Risk

Systematic risk is general market risk. It indicates adverse impact of environmental factors, such as overall politics, economy and society, on mobile finance. Systematic risks include policy risk, periodic fluctuating risk of economy, etc. It attaches greatly to the overall running state of macro-economy of a country.

The development of macro-economy in China has brought uncertainties for operating environment of commercial banks. The acceleration of promoting interest rate liberalization and the development of finance disintermediation have directly shrunk operating profit of commercial banks. In the era of mobile Internet, commercial banks will be faced with more challenges. YanQingmin, assistant of chairman of CSRC (China Securities Regulatory Commission), points out that in the era of mobile Internet, banks will be faced with challenges from seven aspects, namely, resources allocation methods, operation philosophy, developing strategic mode, payment
approach, protections of laws and regulations, practice of regulatory theory. Apart from that, the original competition pattern of banking industry will be changed ultimately, which means that network platform and mobile communication operators have the possibility to join finance industry. Thus, mobile Internet changes financial system, and Internet finance marks a new era of transformation in finance industry. Financial mobilization and the trend of e-commerce will become the mainstreams of developing directions of finance industry, while commercial banks will be faced with greater systematic risk.

(2) Credit Risk

Credit risk is also called default risk. It indicates risk of financial losses caused by failure of the counter party to perform obligations of contract. Mobile financial business involves many stakeholders, and features virtuality, paperless, intangibility. Therefore, commercial banks will lose their monopoly position in the traditional banking industry. In the Internet era, the invention of cloud computing and the establishment of cloud platform makes both parties of an transaction attach more importance to the goodwill and reputation of the counter party. At present, the Internet credit system in China is still weak. Commercial banks maintain complicated interest relationships with customers, mobile communication operators, terminal device manufacturers, chip manufacturers, system integrators, third-party payment agents and commercial tenants. Therefore, the default behavior of any party will make commercial banks confronted with complicated credit risk.

(3) Operational Risk

The Basel Committee on banking supervision defines operational risk as possibility of direct or indirect losses caused by incomplete or problematic internal operational process, employees, system or external event. This definition contains legal risk, but not contain tactical risk and reputational risk. Mobile financial business involves terminal devices, operating system, network operation, transmission and receiving of voice message and data information, information identification and judgment, third-party payment, business process, business compliance, safety precautions, etc. Error of any part might cause losses of banks, operational risk, thus further causing credit risk and bringing great adverse impact on commercial banks.

(4) Policy Risk

Market economic system is a competitive mechanism. Commercial banks run various kinds of business to expand business space and realize profit maximization, but some of the business might be violations of government policies. Government policies exert strong constraining force on enterprises’ behaviors. Besides, government will change its policies according to changes in the macro-economy environment at different times, which will definitely affect economic interest of commercial banks. Therefore, the adjustments of government policies will bring losses to economic interest of banks, and hence cause policy risk. As mobile financial business involves various industries and fields, it is likely that mobile financial business is influenced by policies from different industries. In special period, polices from different industries might exert influence on one another and engender superimposed effect of policies.
(5) Technical Risk

Technical risk refers to risk threatening production and life of people caused by the development of scientific technology and changes of production mode. Mobile finance is the organic combo of modern high technologies. The involved technologies mainly are mobile communication technology, terminal devices manufacturing technology, terminal operating system, chip designing and manufacturing technology, mobile payment technology, particularly, mobile payment technology and payment safety technology, etc. Commercial banks must ensure the safety of clients’ capital during transfer, transaction and payment process. For mobile finance clients, compared with convenience of a service, capital safety is more important. According to a survey conducted by finance and economics section of NetEase, 57% of the interviewees state that the reason why they do not use mobile banking client-side is safety concerns. Hackers can wiretap usernames and passwords during transmission through Internet and decipher them from files kept in client-side. Problematic networking protocol easily leaves security holes which are opportunities for criminal offenders. Lawbreakers have also invented many swindling means aimed at Internet, for example, phishing websites, smashing texts, which lead to leak of usernames and passwords, stealing money of clients. These consequences might become more serious in mobile finance field. Therefore, mobile financial business is confronted with relatively great technical risk.

(6) Legal Risk

Commercial banks should comply with relevant business principles and rules of law in daily operating activities and various transactions, and operate compliantly. In this process, violation of relevant laws might lead to default of contract and cause disputes, lawsuits and other legal disputes. Legal risk is possibility of economic losses of commercial banks caused by these disputes. Mobile financial business involves many law clauses, for example, Law of Electronic Signature, Electronic Payment Guide, Consumer Protection Act, Law of Negotiable Instrument, Payment Clearing and Settlement Act, Administrative Measures of Electronic Banking Business, Payment Administrative Measures for Non Financial Institutions, etc. Subjects of mobile finance industrial chain belong to different industries. Operating business are regulated and supervised by different departments, which mainly are MIIT, Ministry of Commerce, Central Bank, CBRC, etc. Every department has its own supervision rules and standards. Also, there are interest restraints within supervision departments, therefore, motive of focusing on single interest can be reasonably inferred as cracking down competitors from outside its industry. Consequently, mobile financial business of commercial banks is faced with legal risk.

5. Conclusions and Suggestions

5.1 Research Conclusions

Mobile finance represents the future developing direction of banking industry. In the trend of mobile Internet technology and financial informatization, commercial banks must face up competition, be bold in making innovations, especially for mobile financial business innovation, in order to remain invincible in the developing trend of mobile finance. MaWeihua, former pres-
ident of China Merchants Bank, once said that if traditional banks did not change, they would become a flock of dinosaurs doomed to become extinct in 21st century. This article agrees with his opinion.

Mobile finance have brought development opportunities for commercial banks while it make commercial banks to be confronted with greater risks, namely, systematic risk, credit risk, operational risk, technical risk, policy risk and legal risk. These risks are more complicated than ones that traditional banks once were faced with. Also, the adverse impact s and perniciousness of them are more destructive. Therefore, commercial banks must take sound measures to prevent and control various risks.

5.2 Risk Prevention Measures of Mobile Finance Business of Commercial Banks

Risks are everywhere. According to theory of risk management, risks can be prevented and controlled. Risk management is an important part of enterprise operation and management. Enterprise management is risk management. And commercial banks must strike a balance between cost and effect of risk management. For mobile finance of commercial banks, it can take measures of risk prevention and management as follows.

(1) Accelerating speed of innovation to seek development

In mobile Internet era, commercial banks should accelerate the speed of innovation to seek greater development and prevent various risks. Commercial banks should enhance product innovation, make efforts to break the bounds between electronic activities and physics activities, and build the development mode of cement +mouse+ thumb, thus forming the channel system in which mobile banking, physics sites and Internet banking are complementary to one another, and enhancing Internet security to rigorously prevent all kinds of information technical risks. (Ma Weihua, 2012) Innovations of commercial banks include not only product innovation and channel innovation, but also institution innovation, management innovation, brand innovation, technology innovation, service innovation, etc. Only innovation can solve existing problems in the developing process and prevent various risks.

(2) Strengthen Internal Control and Run Disciplinary Business

Internal control means that all levels of management in an economic subject coordinate economic behaviors, control economic activities, and exploit the interrelation and inter-restriction of internal labor division for the purpose of ensure the safety and completion of its economic resources and the validity and reliability of economic information, thus forming a series of methods, measures and procedures that perform controlling function, further becoming standardization and systematization, and finally turning into a relatively rigorous and complete system. The number of service of mobile financial business in commercial banks are large; The work-flow is complex; Departments and employees involved in business are extensive; Technology is advanced; And the need of safety is demanding. Therefore, all business departments must enhance their cooperation and to form the mutually conditioned internal mechanism and conduct disciplinary business, in order to prevent technical risk, operational risk, policy risk and legal risk.
(3) Improve Service Quality, Enhance Customer Loyalty, And Maintain Customer Stability

Commercial banks must improve their service quality to win them customers and enhance customer loyalty to maintain customer stability. According to Investigation Report of Mobile Banking in China in 2011, the development environment for mobile Internet has gradually taken shape. All kinds of enterprises of the mobile Internet industrial chain have been providing better services. Usage rate of mobile banking in mobile phone users has been significantly increased. Consumers have gradually accepted and even loved to use mobile phone to serve their lives. Many banks have been popularized mobile banking business, improved user experience of mobile banking and introduced various favorable activities to attract customers. Commercial banks must improve their service quality to give customers satisfying service and make customers more loyal to them. Also, they should develop enterprise customers of mobile banking to maintain stable customer resources and prevent market risk.

(4) Increase Research Input, Emphasize Technology Development and Product Design, and Realize Diversified Competition

According to Investigation Report of Mobile Banking in China in 2011, Different groups of mobile banking users showed obvious tendency when using mobile banking. Students at school prefer to use payment function of mobile banking. Cadres in state-owned enterprises like administrative institutions prefer to use remittance function, credit card function and especially money management function of mobile banking. Medium and senior executives of foreign-owned or private enterprises prefer to use credit card function. Private entrepreneurs constantly use credit card function of mobile banking. The investigation also points out that more than half of users hope that mobile banking can provide complete shopping mall purchasing service. When mobile banking users use their mobile phones to make payments, 56.1% of the users would take WAP page as their first choice, 44.4% of the users would choose client-side of mobile phones, and remaining 17.3% would choose Near Field Communication (swiping mobile phone). Commercial banks should increase research input, emphasize technology development and product design, build brand image, realize diversified competition and prevent risks.

6. Peroration

Commercial banks have not shown obvious edge in the industrial chain of mobile finance. The cooperation of Internet finance, third-party payment agents, and mobile communication operators has invaded business of commercial banks, thus accelerating the step of financial dis-intermediation. Therefore, commercial banks must face up competitions, actively participate in activities and conform to the historical trend to remain invincible in the Internet finance field. Commercial banks now are faced with 6 kinds of risks in mobile financial business such as technical risk and policy risk. Only after taking sound measures of risk prevention and management, can they avoid and mitigate risks. This article analyzes risks commercial banks are confronted with in mobile financial business and put forward corresponding measures of risk prevention and management. Due to the limitation of time and research level, the research in this article is not thorough enough. Quantification and estimation of mobile financial risks are the author's
future research direction.

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