Countermeasures of Chinese Traditional Commercial Banks to Meet the Challenges of Internet Finance Based on Big Data Analysis——Evidence from ICBC

Wei Li1,*, Guohua Chen1, Xiaolian Liao1

1College of Mathematics and finance, Hunan University of Humanities, Science and Technology, Loudi, Hunan, China, 417000

*Corresponding author e-mail: 409786710@qq.com

Abstract. With the development of computer information technology, network finance based on computer technology has become a hot topic at present, and has quickly penetrated into the banking industry, which has a certain impact on the deposit business, loan business and intermediary business of commercial banks, affecting the profitability of banks. Computer Internet finance has experienced a wave of credit crisis due to poor risk control and supervision. Traditional commercial banks have the advantage of developing financial Internet. Therefore, this paper takes industrial and Commercial Bank of China as an example to analyze the countermeasures and financial innovation measures of industrial and Commercial Bank of China to cope with the challenges of computer internet finance. Traditional commercial banks should accept the challenge brought by computer internet finance, strive to develop online business, strengthen financial innovation, speed up the development of computer internet financial business, so as to establish a stronger competitive advantage.

Keywords: Internet Finance, Financial Internet, Financial Innovation

1. Introduction
The launch of Yu'E Bao in 2013 marked the advent of the Internet financial age. In 2014, “China Financial Stability report (2014)” formally defines Internet finance: Internet finance is a new financial business model in which traditional financial institutions and Internet financial enterprises use Internet technology and information communication technology to realize financing, payment, investment and information intermediary services. In a broad sense, Internet finance should include Financial Internet and Internet financialization, while the narrow sense of Internet finance only refers to Internet financialization. At present, the main products of Internet finance include: Third-party payment, Internet lending, Crowdfunding, Internet funds, Internet trust and Internet consumer finance and so on. Whether from the perspective of broad sense or narrow sense, the analysis of Internet finance has brought some challenges to the traditional business of traditional commercial banks, on the one hand, it affects the profit of traditional commercial banks, and on the other hand, it also promotes the reform and innovation of traditional commercial banks. Internet finance has been integrated into people's lives and changed people's living habits and financial habits. However, the main business of China's
traditional financial industry is deposit and loan business, and profitability depends on interest rate spread. The development of Internet finance has caused a certain reduction on interest rate spread. As the result, deposits have been lost, loan costs have risen and profitability has declined. In order to maintain the market competitiveness, traditional commercial banks need to strive to develop intermediate business, while accepting the challenges brought by Internet finance, and continue to innovate, develop online finance, and improve profitability.

The essence of Internet finance is finance. The development of Internet finance is the need of market economy reform and the inevitable outcome of financial innovation. However, due to factors such as inadequate risk control and lack of supervision, Internet finance has endured in a wave of credibility crisis. Traditional financial institutions have the advantages of policy protection, strong capital and high credibility. At the same time, they have many years of development foundation and a large number of professional financial personnel. Therefore, traditional financial institutions have hardware and software for developing Financial Internet. However most traditional commercial banks have not yet realized the urgency of financial innovation, and still rely on traditional deposit and loan business.

Cao(2015) pointed out that the emergence of Internet finance will bring great challenges to traditional finance, and will give birth to a new type of finance which is different from direct financing and indirect financing. Commercial banks need to transform as soon as possible, vigorously develop Internet finance by taking advantage of the improvement of customer, network, and information and credit system. It is necessary to strengthen the supervision of Internet finance, reform the financial supervision system and guarantee the healthy and standardized development of Internet financial[1].

Based on the theory of "The Long Tail ", Wang(2015) analyzed the feasibility of solving the financing difficulty of small and micro enterprises by internet finance, and probed into the position of the "Arm Bend" supply curve of traditional finance changed by Internet finance. To a certain extent, it reduces the degree of credit rationing and promotes the rational allocation of financial resources[2]. Li(2015) established an Internet economic analysis framework including industrial integration, financial innovation and financial deepening[3]. Hao and Chen (2015) analyzed the short-term impact of Internet finance on commercial banks from the perspective of deposit business, loan business and intermediate business respectively. At the same time, after analyzing the advantages of Internet finance model, the far-reaching influence of Internet finance on commercial banks are put forward, including innovating financial concepts, perfecting financial products, promoting interest rate marketization and so on[4].

Wang(2017) holds that Internet finance directly challenges the traditional business of commercial banks, and the traditional business service model is facing the requirements of reform. Commercial banks need to make use of traditional advantages, and take multi-faceted financial innovation as a foothold to build Internet financial service brand[5].

With the development of Internet finance, the analysis of Internet finance and its impact on commercial banks has become a hot topic, but the focus of the analysis was mainly the impact on the traditional deposit and loan business of commercial banks made by Internet finance. Therefore, we select the annual data of ICBC from 2016 to 2018, and deeply comprehend the major platforms and financial products of ICBC, analyze the important measures and achievements in addressing the challenges of Internet finance. At the end, some suggestions for improvement are put forward[6].

2. Countermeasures for Traditional Commercial Banks to meet the challenges of Internet Finance—Take ICBC as an example

ICBC is a typical traditional state-owned commercial bank with a long history. China's state-owned commercial banks have basic customers of state-owned enterprises, central enterprises with strong funds, rely on interest income, and do not pay attention to innovation. Interest income in 2018 of ICBC accounted for 74%, Interest income of ICBC accounted for 77.3% in 2017, and the proportion of intermediary business is less than 30%, which is too far behind banks in western developed countries. In order to meet the challenges of Internet finance, ICBC has focuses on building intelligent banks, building network finance departments, developing financial science and technology, improving
service quality, comprehensively implementing the Internet financial development strategy, and promoting the intelligent transformation of traditional financial services, and building world class modern financial enterprises with global competitiveness[7].

2.1. Constructed the core platform, and configured deposit products with multi-channel and multi-interval allocation

ICBC accelerated financial innovation and upgraded and improve the overall structure of internet finance covering and linking financial services, e-commerce, payment and social life with three major platforms(ICBC Mobile, ICBC Mall, ICBC Link) as the core.

ICBC Mobile. Focusing on the open, intelligent and personalized concept, ICBC conducted a comprehensive upgrade of the brand, function and service of ICBC Mobile for ICBC and non-ICBC customers. The Bank carried out in-depth product innovation, introduced such functions as code-sweeping withdraw, registration of friends and relatives and remittance to other overseas banks, used live broadcast and other new platforms to carry out various social marketing activities. In 2018, customers of ICBC Mobile exceeded 313 million, and the degree of activity has been greatly improved[8].

ICBC Mall. The e-commerce platform “ICBC Mall” helped the Bank to gather together customers and merchants connect trading and financing and innovates in the new-typed customer relationships featuring the integration of finance and commerce. The Bank accelerated the mobile-side construction of ICBC Mall and the customers with transaction concluded in the mobile side accounted for about a half. In 2018, ICBC Mall achieved an accumulative transaction amount of over RMB 1.11 trillion.

ICBC Link. The Bank introduced the first welfare public platform of “Public Welfare Version of ICBC e-Security” to prevent telecommunications fraud[9]. The Bank completed the switch of ICBC Messenger and used data mining method to position target customers and carry out precise marketing. In 2018, the customers of ICBC Link exceeded 150 million.

In view of the deposit loss caused by Internet finance, ICBC continued to improve the user experience of “ICBC Mobile”, introduced QR code payment, innovated the function such as “one-button payment”, no login inquiry account balance and other convenient functions[10]. In view of the challenge of Yu'E Bao, ICBC has launched a “Balance-financing” product, which users can buy and redeem at any time by downloading “ICBC Mobile”, and can quickly redeem to their bank cards without any service charge. As we know part of the funds of Yu'E Bao cannot be transferred to the bank card, the withdrawal of bank cards also need to charge fees. As a result, as soon as the Balance-financing was launched, it was enthusiastically sought after, due to the limitation of the total degree, there is even a restriction that “Redemption is easier than repurchase”. Therefore, the bank raised the total quota to 110 billion to meet the needs of investors. Secondly, ICBC strengthened the innovation of deposit products, and built a deposit product system including the base, the inclusive, the structure, the exclusive and the exclusive series, and implemented the differentiated services for different customer groups. At the same time, ICBC strengthened the cooperation in banking and government, banking and enterprises, created the interconnection of political and banking systems firstly, launched county-specific deposit products, improved business efficiency and customer convenience. At the end of 2018, ICBC had 607 million individual customers, an increase of 39.67 million. The total amount of deposits was RMB 21.1864 trillion, an increase of RMB 1.9601 trillion.

![Deposit Graph](image-url)

- Personal deposit
- Other deposit
- Company deposit

- 2018: 114811, 94364, -2689
- 2017: 105577, 83801, 2885
- 2016: 94485, 81403, -2365
Figure 3-1. Deposit structure (unit: RMB 100 million).

Figure 3-2. Trend chart of return on Yu'E Bao and Balance-financing (unit %).

Figure 3-3. Investment structure of Yu’E Bao and Balance-financing (unit %).

2.2. Developed inclusive finance, helped small and micro enterprises, and broadened credit channels

The loans of traditional commercial banks are mainly aimed at state-owned enterprises, central enterprises and large private enterprises, with large loans and relatively low interest rates. In 2018, ICBC set up a new mechanism for investment and financing integration, developed inclusive finance, and supported private and small-scale enterprises with precision, adhered to development concept of “ICBC has no future without serving small and micro enterprises” and the principle of fair credit, and preliminarily built the “Operation Quick Loan” product system and innovated the “e-Mortgage Quick Loan”, in order to “Quick Loan for Operation, Online Revolving Loan, and Online Supply Chain Financing”. Also, ICBC built an investment and financing risk monitoring platform with the technology innovation of big data and block chain to realize centralized monitoring of all processes from access to post-lending, omni-directional drawing of risk view and dynamic monitoring of
financing risks\textsuperscript{[11]}. Compared with the Internet credit platform, the bank has the characteristics of more capital and less risk. At the end of 2018, the loan of the private enterprise has increased by RMB 1.137 billion, inclusive farmers operating loans and inclusive loans for small and micro-enterprises related to agriculture were RMB 89.134 billion, RMB 9.547 billion in new loans, loans for small and micro enterprises were RMB 321.685 billion, RMB 49.203 billion in new loans. The average lending speed of inclusive credit doubled, which really solved the problem of financing difficulties and expensive financing for small and micro enterprises. For personal credit business, ICBC launched ICBC e-loan by the use of credit collection, provident fund, personal tax information and other data combined with face recognition and other risk prevention and control means to issue unsecured RMB loans to individuals who meet specific conditions, the maximum amount is RMB 800000. There were pledge loans, online mortgages, personal housing loans and other products to meet the needs of different uses of capital. At the end of 2018, personal loans totaled RMB 5.636574 trillion, an increase of RMB 691.116 billion, and an increase of 14 percent, the number of personal loan clients was 13.29 million, an increase of 1.03 million. The total amount of loans was RMB 15.4196 trillion, an increase of RMB 1.1865 trillion. Among them, the company loans were mainly project loans and working capital loans, and personal loans were mainly personal housing loans and credit card overdrafts. Affected by the Huabei, the credit card business growth rate has declined slightly\textsuperscript{[12]}. The growth of loan balance was mainly due to the rapid development of high quality brands such as ICBC e-loan.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{credit_structure.png}
\caption{Credit structure (unit: RMB 100 million)}
\end{figure}

2.3. Innovated online service mode and established Internet payment intermediary platform
Although mobile payment occupies the third party payment market with unshakable market share, banks also have a large customer base and should strengthen the construction of third party payment means. ICBC made innovations of the online channel service model, published ICBC e-wallet, cooperated with third-party platforms in the fields of government and people's livelihood, Internet enterprises, new rural construction, and committed to provide fund management, payment and settlement, investment and financial management and microfinance, and other basic financial services. ICBC e-payment not only has the payment functions such as Alipay, but also can withdraw money on ATM through scanning code. ICBC has optimized and upgraded ICBC e-payment, launched “Bank-Campus pass”, “Intelligent Property” and “Party Membership Dues Cloud”, which can provide the functions of paying personnel information management, bill introduction, accounting processing and statement statistics, at the same time, speed up the scene construction of ICBC e-payment, such as “Intelligent Campus”, “Intelligent Scenic Spot”, and “Intelligent Transportation” and so on.

2.4. Enriched network financial products and provided quality differentiated financial services
With the development of interest rate marketization and the challenge of Internet finance, the net
interest rate spread continues to narrow, the net interest rate spread of ICBC was 2.16% in 2018, it was down 14bp compared with the year of 2015, and the net interest yield was down 17bp, so banks can no longer rely solely on spread income. In order to cope with the impact of narrow spread on profitability, ICBC has stabilized its intermediary business and maintained the steady development of handling fees and commission income. ICBC launched the product portfolio of “M & A loan + M & A debt”, actively expanded the business of M & A restructuring consultant, debt financing consultant and equity financing consultant, and vigorously developed investment banking business. In 2018, ICBC has 1600 bond projects both inside and outside the border, with a total scale of RMB 1.324818 trillion. With regard to financial management business, ICBC issued “Xindeli”, “Xinwenli”, “Tianlibao” and other financing products, the balance of non-capital preservation wealth management products was RMB 2.575857 trillion. In view of the ecommerce platform, taking e-commerce as the core and finance as the foundation, ICBC released “ICBC Mall” which was a one-stop commercial finance service platform with e-commerce as the core and finance as the foundation, paying attention to the construction of the brand while highlighting the characteristic development. At the end of 2018, the transaction value of “ICBC Mall” platform was RMB 1.11 trillion. On the other hand, ICBC launched pension and enterprise annuity and other business, to provide a full range of one-stop low-cost quality services for the vast number of enterprises and institutions. At the same time, ICBC increased investment in asset management business, private banking business, asset escrow business, settlement business and so on to enhance market capacity.

The intermediate business data of bank is not well collected, but it is the handling fee and commission income account for an important proportion in the intermediate business. As shown in figure 3-5, in 2018, the net income of ICBC from fees and commissions was RMB 145.3 billion, up 4.1%, accounting for 18.78% of operating income, and down 44bp. It can be seen from the chart that the higher proportion is bank card business, personal finance and private banking business, settlement, liquidation and cash management.
3. Conclusion
To sum up, the rise of Internet finance is a great challenge for traditional commercial banks, but it is also an opportunity for reform. In order to meet the challenge of Internet finance, ICBC have made a series of effective countermeasures. Here are some suggestions:

Traditional commercial banks must attach importance to online business, enrich and improve the Internet financial business service system. At present, most banks basically have online banking, mobile banking and so on, but the interface is rough, the design is not reasonable enough, this area of talent is also very scarce, generally outsourcing business, pure use of Internet technology, and did not achieve a good combination with the financial business.

Traditional commercial banks must build an integrated platform, and develop financial science and technology. ICBC has launched “ICBC Mobile”, “ICBC Mall” and “ICBC Link” to realize mobile banking business, financial products retail and information services, but for customers, the installation of three software is not only troublesome but also memory, it will also cause resistance in the hearts of customers to a certain extent. Therefore, building an integrated platform is a major problem that needs to be overcome in the development of financial science and technology in banks.

Traditional commercial banks must innovate financial products from aspect of product types and sales methods, increase sales channels, expand customer sources, make full use of big data analysis and quantitative management, and enhance competitiveness. Although the Balance-financing, ICBC Mall and other products have certain innovation and achievements, but compared with the Internet typical similar products, there was still a big gap. Also, banks should increase products promotion. Taking the class taught by the author as an example, 42 students in the class downloaded ICBC Mobile, less than 5% of the students who knew the Balance-financing and ICBC e-payment, but all of them knew Alipay and WeChat payment. ICBC handling fees and commission income maintained a relatively stable level, but the overall proportion was relatively low, intermediate business development was weak[13].

Traditional commercial banks should reduce outlets and personnel input to cut costs. Banks have always wanted to reduce the investment in outlets, but the results are minimal. Some basic business of the bank has begun to use fully automatic machine operation, but the operation is complicated, the authorization procedure is troublesome, which in turn increases the customer's time cost. Therefore, how to handle basic business without using labor is a question that banks need to think about.

Traditional commercial banks should make full use of the unique advantages of large banks with strong funds and a large customer base, to develop intermediary business such as personal financial management, private banks, asset custody, enterprise annuities and pensions. It is also necessary to enrich and improve financial poverty alleviation products, increase the intensity of inclusive finance, truly achieve online and offline integration to provide people with quality differentiated financial services, optimize the allocation of financial resources, and promote financial innovation and financial deepening.

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