The transformation of banks to cope with the impact of Internet finance in the era of big data

Fangchen Lu*

School of Economics, Southwest Minzu University, Chengdu, China

*Corresponding author: lufangchen001@163.com

Abstract. In the era of big data, the financial industry has gradually entered the state of information, data and network development, and realized the transformation to form a new model of Internet finance, which not only brings new opportunities and challenges to banks, but also has a huge impact on the transformation and development of banks, so in order to promote the transformation and healthy development of banks, we must combine the new trends and requirements of the development of Internet finance to develop new strategies for bank transformation. In this regard, this paper discusses in depth the transformation of banks in the era of big data to cope with the impact of Internet finance based on relevant literature. Since the reform and opening up, China has made great progress in economy and technology, and the level of social economy and science and technology has been improved, so that China has entered the information network and big data era in advance. In the context of the big data era, China's financial industry has gradually transformed into Internet finance with the support of Internet and big data technology. According to the literature, the formation of Internet finance not only brings many opportunities to banks (a representative industry in the financial sector), but also brings many challenges and impacts to banks. In order to cope with the impact of Internet finance, as a relevant staff, not only should we have an in-depth understanding of the considerations for the transformation of Internet finance, but also need to develop a transformation strategy on how banks can cope with the impact of Internet finance according to the development needs of banks and the transformation requirements of Internet finance, so as to promote the healthy and sustainable development of banks.

Keywords: big data era; Internet finance; impact; bank transformation.

1. Introduction

1.1 The connotation of Internet finance

In the era of big data, the financial industry gradually integrates with high-tech technologies such as big data technology, Internet technology, cloud computing technology and computer information technology, and gradually transforms into Internet finance, which realizes the efficient integration of various data and information resources and accelerates the pace of informatization, data and network development of the financial industry [1]. The Internet financial system can also achieve rapid analysis and mining of customer transactions and consumption and other information, so as to grasp customer consumption habits and then achieve accurate predictions of specific consumption habits.

1.2 Characteristics of Internet finance

(1) Data-based. Internet finance itself is a product of the era of big data, and all major industries in the background of the era are gradually moving toward the development of informationization, data and networking. In the case of the financial industry, after years of development, it has accumulated a lot of business and user consumption information and data, and with the support of the Internet, these information and data have gradually become the main driving force for the transformation of traditional finance into Internet finance, which has enhanced the data-based characteristics of Internet finance.

(2) Technicality. In addition to the application of big data technology, Internet finance also applies to Internet technology, Internet technology is the basic premise and foundation of Internet finance. In order to improve the function of Internet finance system and improve the data analysis ability of Internet finance system, many financial enterprises will apply to cloud computing technology and

data modeling technology when establishing Internet finance system or digital system, so Internet finance has very strong technical characteristics.

(3) High risk factor. Internet finance is different from traditional finance. Compared with traditional finance, Internet finance started late and the relevant laws and regulations are not perfect, and the current industry standard requirements are not high and the business positioning is vague, resulting in Internet finance facing not only many policy risks, but also many legal risks.

(4) Weak supervision. The unsoundness of the relevant legal system has led to weak supervision of Internet finance, and a perfect supervision system and system has not been established, resulting in Internet finance has not been reasonably effective supervision, increasing the incidence of various illegal acts and financial risks.

(5) Low cost and high efficiency. Internet finance is the transformation of traditional finance with the help of Internet technology, computer information technology and big data technology, the application of these technologies has not only significantly reduced the cost of financial services, but also improved the efficiency of financial services, for example, many financial products can be purchased directly through the online Internet platform; suppliers and consumers can also establish a bridge between the Internet to achieve the communication of financial product information For example, many financial products can be purchased directly through online Internet platforms; information such as service fees and certification fees of financial products can be obtained through Internet platforms [1-2].

2. Impact of Internet finance on banks

It is mainly reflected in banking business, bank business model, bank revenue sources, and bank profitability, as follows.

2.1 The impact of Internet finance on banking business

It includes two major aspects of responsible business and asset business, namely.

(1) The impact on liability business. The survey found that many banks, especially local banks, have a single liability business, most of which are active liabilities, including a large number of mortgages, guarantees, increasing deposits in financial institutions, etc. This not only raises the entry threshold for loans to small and medium-sized enterprises, but also increases the burden of enterprises, which is not conducive to the healthy and sustainable development of small and medium-sized enterprises. Internet finance, on the other hand, can realize diversified lending and financing, including long-term financial investment, financial investment in fixed assets, long-term loans, short-term loans and credit loans, etc., which can meet the lending and financing needs of various small and medium-sized enterprises, which has caused a huge impact on the liability business of many banks and reduced the overall efficiency of traditional banks [2].

(2) Impact on asset business. Asset business is the core business of banks and the key to traditional banks to go to benefit, but in the context of the big data era and the network era, many traditional banks do not upgrade their asset business systems in a timely manner, nor do they establish a perfect information management system, resulting in a low level of their own information technology, which prevents them from monitoring and checking the asset business network in a large area and in all aspects, thus increasing the incidence of various asset risks. Internet finance, on the other hand, has established a perfect risk management system, asset business supervision system and fund management system with the help of high-tech technologies such as big data technology, computer information technology and Internet technology, which can realize real-time monitoring and control of asset business and thus reduce the occurrence of various asset risks, which has caused a huge impact on the traditional bank asset business [2-3]. In addition, in the context of big data and network era, many traditional banks have not formulated effective asset risk management measures and response strategies in a timely manner, nor have they established perfect management systems, decision-making processes, authorization mechanisms, bond investment management methods, and

bond investment operation authorization management offices according to relevant management policies, making it difficult to cope with many opportunities and challenges brought by Internet finance.

2.2 Impact of Internet finance on the business model of banks

Before the emergence of Internet finance, the traditional settlement business of commercial banks had to be completed only through banks, but with the development of Internet finance, this situation has been completely changed. At present, Internet finance has been involved in many fields of people's life, such as consumption, finance and personal applications, etc. Since 2012, the number of non-cash payments in China has been growing at a rate of over 20%. The public is more and more inclined to choose Internet payment methods, and the full layout of third-party payment platforms for online and offline scenarios has met people's life payment, credit card repayment, travel, hospital medical treatment, etc. The full coverage of banking and cash payment functions has been realized. The traditional business model of commercial banks has been difficult to meet people's individual needs [3].

2.3 The impact of Internet finance on banks' income sources

Intermediate business income and carry income are the main sources of income for banks, but in the impact of Internet finance, the traditional banking business model has been transformed and is no longer a monopoly business model, which means that banks have fewer channels to rely on monopoly business for huge income, thus reducing intermediate business income. Internet finance also promotes the development of many lending businesses, such as online lending, which has caused a huge impact on traditional bank credit, leading not only to the loss of a large number of customers by banks, but also to a significant reduction in spreads, thus causing huge economic damage. Relevant data show that after the formation of Internet finance, except for the business income of Bank of China is rising, the business income of Industrial and Commercial Bank of China, Agricultural Bank of China, Construction Bank and Bank of Communications in 2016 is declining compared with 2015, and the data statistics are shown in Table 1.

Table 1. Business income of each bank in China in 2016 [4]

Banks	Operating income	Comparison with 2015
Industrial and Commercial Bank	675.9 billion yuan	Decline of 3.12%
Agricultural Bank	506 billion yuan	Decrease of 5.62%
Bank of China	483.6 billion yuan	Increase of 1.96%
Construction Bank	605.1 billion yuan	down 0.02%
Bank of Communications	193.1 billion yuan	down 0.36%

On the contrary, Alipay, a third-party payment platform derived from Internet finance, alone made more than 3.2 billion payments in 2016, an increase of 344% over 2015, and the lending business, which is used for borrowing, served more than 1 million users and lent more than 300 billion yuan, which has a huge impact on the business of traditional banks. This has caused a huge impact on the business depth of traditional banks.

2.4 Impact of Internet finance on banks' profitability

The advent of the big data era brings both opportunities and adjustments to banks, so Internet finance based on the background of the big data era will have an impact on all aspects of banks, including profitability. The formation of Internet finance has given rise to many third-party financial institutions and platforms, such as Alipay Debit and Jingdong White Stripe, which are third-party lending platforms based on Internet finance, and the emergence of these platforms has made the financial market more and more competitive, thus causing a huge impact on the profitability of

traditional banks [5]. Taking agricultural banks as an example, from 2015 onwards (after the formation and rise of Internet finance), the active liabilities of agricultural banks show a trend of year-on-year growth, while the total bank income, except for a significant increase in 2016, shows a significant decrease in 2017 and a slow increase in 2018 and 2019, but cannot match the continuous growth of liabilities, thus reducing profitability. The business development of Agricultural Bank of China is shown in Figure 1.

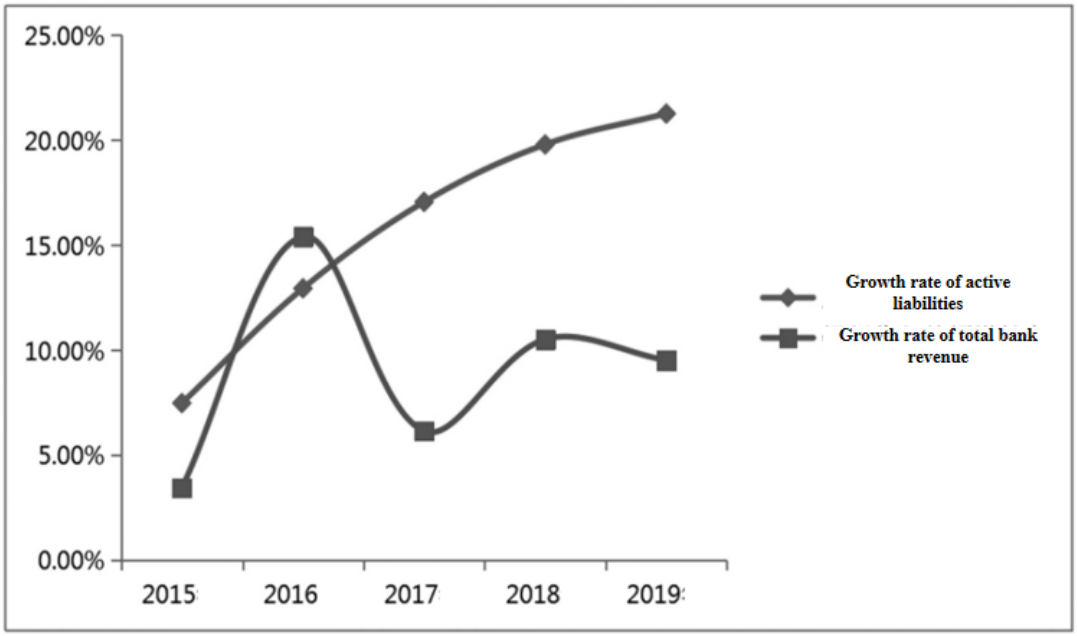

Figure 1. Agricultural Bank's revenue growth rate versus active liabilities growth rate from 2015 to 2019

3. Transformation ways for banks to cope with the impact of Internet finance in the era of big data

3.1 Introducing advanced transformation concepts

For example, transformation concepts such as "iterative effect, long tail effect and convergence effect" can be used to promote bank transformation, as follows.

(1) The "iterative effect" transformation concept. The principle is to use the network financial system to adjust and optimize the traditional bank's operation mode and service system, and optimize and upgrade the bank's financial service system and new business system in response to the original business changes, so that the bank can connect with the network financial system.

(2) The "long tail effect" transformation concept. The principle is to use big data technology to effectively collect various data and information, and then break through the limitations of traditional banks in terms of human resources and resource acquisition efficiency, and finally optimize and establish data information management systems, investment management systems and asset risk management systems, and follow the long-tail effect to summarize and improve various types of data.

(3) "Convergence effect" transformation concept. The principle is to establish a coordinated communication mechanism between banks and customer groups, and then build a convergence effect mechanism on the basis of this, and finally establish a new service model according to the customer's capital risk control requirements and interest demands to achieve personalized services and efficient management for different user groups [6].

3.2 Use of big data technology for risk control of banking business

First, with the help of big data technology to establish a bank supervision system, and combined with computer information technology and cloud computing technology and other corresponding information management system, in order to real-time monitoring of bank business transactions, bank operations in the process of various capital flows, to achieve the monitoring and control of capital risks. Secondly, with the help of big data technology, we establish anti-fraud and credit scoring models to monitor and analyze the credit situation of customers in real time and reduce the incidence of business risks caused by customer credit. Third, with the help of big data technology, we establish a perfect online lending system and improve the corresponding loan process (see Figure 2) to ensure the standardization and safety of bank online loans [7]

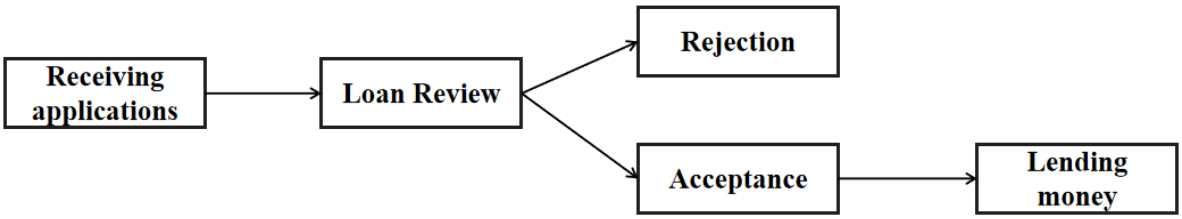

Figure 2. Schematic diagram of bank online lending process

3.3 Change the service mode

First, integrate Internet finance and traditional finance, find the opportunity to transform the bank service system in the mutual integration of the two, and then optimize, upgrade and transform the bank service system with the help of Internet technology and big data technology, etc. to realize the transformation of the service mode. Secondly, we should pay attention to and introduce the Internet platform, and establish bank business management system, operation management system and service system with the help of the Internet platform, and then gradually realize intelligent service on the basis of that to improve customer satisfaction. Third, pay attention to information exchange and data resource sharing, for example, a data information sharing platform can be established with the help of the Internet and big data technology in order to achieve efficient mining and sharing of customer data and information resources, industry data and information resources, product resources, etc., and then develop into multi-disciplinary, all-round and high-level financial services [8].

3.4 Key points of bank transformation operation

First, a unified management system, interest control system, and market data analysis system must be established to achieve a high degree of unity for bank business operations, service platform management operations, and customer group precision monitoring operations. Second, various cooperative relationships need to be clarified before the transformation operation, such as the relationship between banks and third-party Internet financial platforms, banks and individual customers, etc., and then establish a platform for sharing bank transformation experience and data on that basis, and finally realize the transformation. Thirdly, the implementation of multi-party negotiation in the transformation, such as allowing online financial platforms to negotiate directly with banks, but in the process of negotiation need to comply with the requirements and regulations to avoid and reduce the occurrence of irregularities and promote the smooth transformation of banks [9].

4. Conclusion

The formation of Internet finance has had a huge impact on banks in China, for example, in terms of business, revenue and profitability, so banks must continuously optimize their service systems and improve their data and information networking. In order to cope with the impact of the Internet, banks also need to actively use information technology, big data technology, Internet technology and cloud

computing technology to achieve transformation, such as transformation into digital banking, network banking and electronic banking, etc., both to achieve the development of data and information technology, and to improve the level of banking services. Therefore, the above first briefly outlines the connotation and characteristics of Internet finance in the era of big data, then analyzes the impact of Internet finance on banks; finally analyzes the transformation ways of banks to cope with the impact of Internet finance in the era of big data.

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