

## Research of Internet Financial Credit Evaluation for the Small and Medium Enterprises based on Big Data

Yiqing Lu

School of Information Management, Beijing Information Science and Technology University,

Beijing, 100192, China

Email: luyiqing@126.com

---

*Abstract: In this paper, a credit evaluation system based big-data is designed to change the information asymmetry between the finance institutions and enterprises, reduce the credit risk of internet financial institutions and investors, by utilizing the information and technology advantages. The research objective of this project have important theoretical and application value to the development of small and medium-sized enterprises (SME) credit evaluation system.*

*Keywords: Internet financial; Credit Evaluation; Big data.*

---

### 1. INTRODUCTION

In short, in many developing Asian economies, it is not easy for SMEs to do business, and one element of that is that getting credit is quite difficult in many countries.

There are many reasons why access to finance is difficult in developing Asia:

Large numbers of SMEs are in the informal sector. They are not registered, they do not have all the necessary documentation. It can be difficult for potential lenders to distinguish the financial situation of the company from that of its owners. They are less able to provide collateral.

Financial markets are underdeveloped in many Asia countries. They do not offer a complete range of financial products and services. They may also suffer from regulatory rigidities.

The fixed costs of all the paperwork mean that it is easier for banks to make bigger loans to larger enterprises.

In many countries, large enterprises enjoy privileged access to finance from banks. Many of these banks are state-owned or have close links with the government which uses bank lending as an instrument of industrial policy to develop specific sectors. Banks may also have ownership and other ties to industrial interests and will tend to favor affiliated companies. This means that it is difficult for SMEs to obtain finance.

So, even in normal economic conditions governments have recognized that, to survive and grow, SMEs need specific policies and programs especially to facilitate their access to finance.

Let's move on to the crisis. SMEs and their financing have been especially hard hit by the global crisis leading to massive job losses. For example, Lim reports that over 100,000 factories in southern China alone have closed.

This has occurred as revenues have fallen, and the credit crunch has reduced access to finance for SMEs, which are perceived as riskier, more than for large enterprises. [1-3]

## **2. INTERNET FINANCIAL**

Different from the indirect financing among commercial banks and the direct financing of stock and bond markets, the internet finance is a new thing generated from the combination of internet and finance in recent years, and is a new financial service mode which realizes funds allocation, payment and information intermediary depending on internet technology and mobile communication technology.

In recent years, new internet finance institutions have been emerging continuously in many regions of China and the market scale has been growing increasingly.

Under such new financial mode, internet and relevant software technology have replaced the professional services of financial and security institutions, complicated transactions such as risk pricing and immunization hypothesis are not only simplified greatly but are also easy to operate. Loans, issuance and transactions of stocks and bonds, and delivery versus payment can be done online directly.

Currently people are lack of investment channels. Being a financing service platform with low risk and high return and easy to participate and operate, internet finance can be easily accepted by the public. Common people can make financial transactions through the internet, the market participants are more popular and the huge benefits brought by the transactions can bring more benefits to the public [4-5].

## **3. INTERNET FINANCIAL CREDIT EVALUATION BASED ON BIG DATA**

Concerning the traditional financial institution, there is no difference on the operational cost between the large loan and small loan [6]. For the financial information in the small and medium enterprise tends to be imperfect, it is hard for the bank to accurately evaluate the credit condition of the small and medium enterprise, thus causing the bad debt of small loan is higher and the non-performing loan ratio with the good governance maintaining 3%. Due to the high cost and high bad debt rate, the bank does not pay attention to the small loan for a long term. However, under the Internet finance, using the technical means of big data, cloud computing, data mining and social network can integrate various related data and set a more accurate credit ranking indicator to evaluate the enterprise's credit condition. On the basis, the credit evaluation model based on the big data can be established, as shown in figure 1.

### **Large data collection**

Under the traditional financial model, the credit institution can obtain limited data, and the accuracy to evaluate the credit of the small and medium enterprise is insufficient. However, under the Internet financial model, the credit institution can collect large amounts of data through the technical means to comprehensively judge the credit condition of the credit object and make a more accurate credit evaluation. There are three main means for the source of big data: 1) when submitting the loan application, the demand side shall perfect the data, submit the information including the company,

family, spouse, education and housing. 2) In order to further improve the data, enhance the data dimension, and improve the risk control level, the external data shall be introduced, such as customs, taxation, electricity, water, telecommunication, central bank credit system and other data, the Internet information of the loan enterprise can be collected and integrated, such as the consumer interaction data and search data in the social platform, etc. 3) Concerning the enterprise developing e-commerce, the e-commerce data can be collected, such as upstream and downstream transaction, consumer data, logistics data, reputation evaluation, certification information, recent trading dynamic, real-time operating condition, platform tool usage status, etc., the data can be integrated and processed.

Design credit evaluation indicator

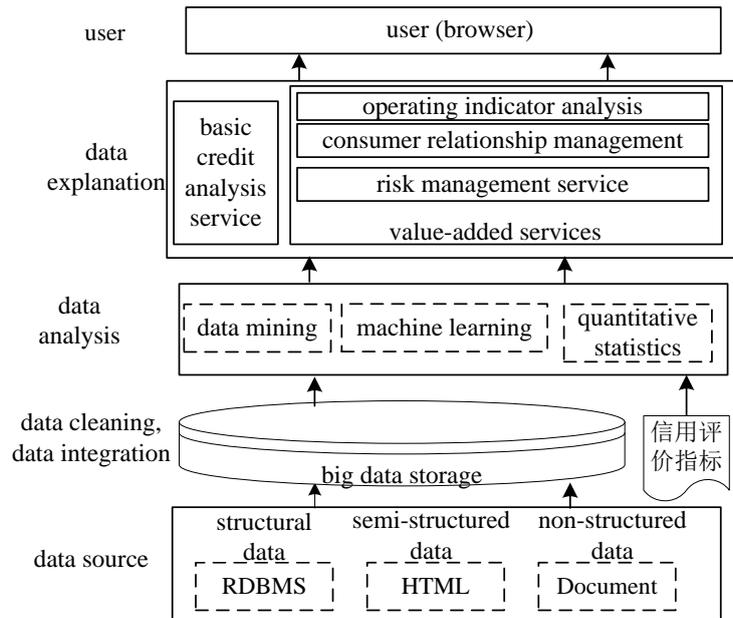


Figure 1. Internet financial credit evaluation

The small and medium enterprise's credit evaluation indicator under the Internet financial environment can be established according to the collected big data. Concerning the small and medium enterprise developing the e-commerce, in addition to consider the indicators reflecting the enterprise operating capacity, profitability, solvency and development capacity, the indicators reflecting the enterprise network marketing, network service capacity and network management capacity shall be considered. The credit data shall be analyzed and calculated with the data mining, machine learning, metering statistics and other mathematical methods and models to finally form the credit report of the enterprise.

According to the credit evaluation indicator, the collected big data shall be analyzed with credit evaluation algorithm. In addition to provide the basic credit analysis service, the result can be used for the operating indicator analysis, consumer relationship management, risk management service and historical data management and other value-added services.

On the one hand, it is necessary to study the regulatory policies related to Internet finance, clarify the nature and legal status of Internet financial institutions, and standardize their organizational forms, qualifications, business models, risk prevention and supervision and management. Establish financial supervision departments and relevant departments of local governments to perform their duties and cooperate with each other, and supervise the establishment of Internet financial institutions, business operations, funds deposit and remittance, as well as the daily management of the website. On the

other hand, we should promote the construction of self-discipline organizations in the Internet financial industry and give full play to the role of self-discipline management. Considering the fact that Internet finance innovation is fast and legislation and law revision is relatively slow, we can draw lessons from the experience of Japan and Britain and adopt the method of establishing self-regulatory organizations such as Internet Financial Industry Association to fill in the gaps of regulation and supervision in the process of legislation and revision, and let self-regulatory organizations act as "quasi-government agencies". To assume the regulatory functions of some governments, through strengthening industry self-discipline management, standardize and guide the behavior of Internet financial institutions, to create a good market environment and order.

Because the credit evaluation system based on large data requires high technology and cost, it should be established by professional third-party credit agencies to provide services for P2P network lending platform and crowd financing platform. For companies that have both large e-commerce platforms and Internet financial services, they generally have their own credit evaluation system. Because of the law and policy reasons, a large number of business data of enterprises in the E-commerce platform are not easy to be directly disclosed, but the enterprise credit information should be included in the credit system, that is, the E-commerce platform to establish a credit system.

Credit investigation systems established by credit institutions and e-commerce platforms should be cross-validated with existing central bank credit investigation systems to share data. But we should also pay attention to that the state should clarify the scope of collecting credit information and prevent the excessive collection of information.

## REFERENCES

- [1] SME financing and the crisis. <http://www.mrglobalization.com/finance/329-sme-financing-and-the-crisis>
- [2] Cash a, Hughes A, Bullock A, et al. SME finance and innovation in the current economic crisis [J]. Centre for Business Research ([http://www.car.cam.ac.uk/pdf/crcr\\_econcrisis.pdf](http://www.car.cam.ac.uk/pdf/crcr_econcrisis.pdf)), 2009.
- [3] Takes K, Udall G F. Lending channels and financial shocks: The case of small and medium-sized enterprise trade credit and the Japanese banking crisis [J]. *Monetary and Economic Studies*, 2007, 25(2): 1-44.
- [4] China embracing Internet finance boom. [http://en.ce.cn/Insight/201311/14/t20131114\\_1752466.shtml](http://en.ce.cn/Insight/201311/14/t20131114_1752466.shtml).
- [5] Narayanasamy K, Sariah D, Tan T M. The adoption and concerns of e-finance in Malaysia [J]. *Electronic Commerce Research*, 2011, 11(4): 383-400.
- [6] Yan G. Contents and Measures for Supervision on Internet Finance [J]. *Advanced Science Letters*, 2013, 19(4): 1197-1201.