Research on Risk and Prevention of Internet Financial Products based on Big Data Analysis

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Abstract. In recent years, with the rapid development of the Internet, Internet financial products (hereinafter referred to as IFP) have developed rapidly, which not only improves the efficiency of capital utilization, but also promotes the development of finance. However, there are still many problems in the use of IFP, which not only cause great losses to financial institutions, but also seriously damage the property safety of ordinary people. Internet finance is a new form of finance, which has higher investment risk. Therefore, in the context of big data, we should analyze the risks of IFP through data mining and other technologies, which will better ensure the safety of investors. Through various measures, we can prevent the risks of IFP, which will promote the healthy development of Internet finance. Firstly, this paper analyzes the related concepts. Then, this paper analyzes the classification and risk categories of IFP. Finally, some suggestions are put forward.

Keywords: Big Data Analysis, Internet Finance, FP, Risk

1. Introduction
At present, Internet finance has been fully and deeply integrated into people's daily life, which has become a part of investors' daily work and life. Internet finance is a combination of financial industry and Internet technology, which has changed the operation mode of traditional financial institutions, such as third-party payment, P2P, crowdfunding and so on[1]. With the launch of IFP, the traditional financial products (hereinafter referred to as FP) of Chinese banks have been greatly impacted, which also makes up for the blank in the field of Internet Finance in China. However, the Internet is a high-risk sharing technology, which will increase the risk of FP. At present, there are many problems in China's IFP, such as imperfect regulatory system, difficult information security assurance, etc., which have caused people's fear of Internet financial management[2]. Although IFP have many risks, it not only improves the efficiency of capital utilization, but also promotes the progress of China's financial industry. Therefore, we can reduce the risk of IFP through a variety of preventive measures, which will better protect the security of China's financial system.

2. Big data analysis technology

2.1. Big data mining process
Big data is a kind of complex and diverse data, which requires us to screen out the risk data of IFP that can be used. The workflow of big data mining of IFP can be divided into education data collection, preprocessing, data mining, visualization, etc., as shown in Figure 1. Through the automatic analysis of the data, we can find the risk categories and levels of IFP[3].

![Figure 1. The big data mining process.]

### 2.2. IFP mining process

Through in-depth learning, we can supervise the learning of Internet financial product data, which can carry out training set and verification set for big data. By optimizing the model parameters, we can improve the accuracy of the risk model. Through clustering analysis, we can use unsupervised learning to identify the rules and anomalies of Internet financial product data[4]. We should select deep learning mode according to the purpose of big data mining of IFP, as shown in Figure 2.

![Figure 2. IFP mining process.]

### 3. Classification and risk identification of IFP

#### 3.1. Classification of IFP
Traditional FP are classified into bank FP, securities FP, fund FP and insurance FP according to the capital flow direction. However, IFP have different characteristics. This paper classifies FP from financing methods, issuers and Internet platform functions, as shown in Figure 3.

Figure 3. Classification of IFP.

3.2. Risk classification of IFP

Internet finance is the combination of Internet and traditional finance. Therefore, Internet financial risk has both Internet technology risk and traditional financial risk. This paper analyzes the risk classification of IFP, as shown in Figure 4.

Figure 4. Risk classification of IFP.

4. Suggestions on strengthening the prevention of IFP

4.1. Improve the legal system of Internet Finance
The development of Internet financial enterprises cannot leave the restriction and guarantee of laws and regulations. Compared with western developed countries, China's legal system of regulating Internet finance is not very sound, which hinders the healthy and stable development of Internet finance. This paper believes that we can improve the legal system construction of Internet Finance in China from two aspects. First, in the depth of legislation. Legislators should try their best to find out the illegal behaviors and regulations of Internet finance. Second, in the scope of legislation. Legislators should try to include the industries involved in Internet finance. As far as legislation itself is concerned, the formulation of law is lagging behind, which can only judge the existing behavior, but it is difficult to interfere too much with the unknown behavior in the future. Therefore, we must maintain the integrity and stability of laws and regulations. By increasing the depth and breadth of legislation, we can formulate measures for all violations of the law, which will reduce the fluke mentality of offenders.[7]

4.2. Clarify the regulatory mechanism of Internet Finance
At present, China's Internet finance is in the primary stage of development. Therefore, the operation of China's Internet Finance presents a mixed state, which leads to the imperfection of China's legal system and regulatory system. At present, China's Internet financial regulators are prone to "blank area" and "multiple regulatory areas", which requires us to clarify the regulatory mechanism. First, clear the regulatory body for the "blank area". Government departments should be given regulatory responsibilities, which can make the "blank area" of Internet finance have laws to follow and master to manage. Second, for the "multiple management areas", we should clarify the primary and secondary supervision. Through the integration of regulatory bodies, government departments can make multiple subjects jointly enforce the law, which will avoid repeated law enforcement in the process of comprehensive law enforcement in the past. Third, the supervision should be moderate. In terms of supervision, government departments need moderate supervision, which will maintain the innovation ability of enterprises and the development of financial industry.

4.3. Establish internal risk control mechanism
Financial institutions should establish internal risk control mechanism and control them according to risk severity. Financial institutions shall establish the severity level of classified risks. When the risk is identified, different risk control and prevention measures are taken according to the severity of the risk. At the same time, according to the probability of risk occurrence, financial institutions can take steps to resolve the impact of risk, which will avoid and transfer various risks. By prioritizing various prevention and control measures, financial institutions can minimize the risk. In this paper, the risk severity level coordinate method is developed, as shown in Figure 5.

![Figure 5. Risk mapping.](image-url)
4.4. Internet Financial encryption technology
Unlike traditional payment methods, Internet financial transactions need to be transmitted through the
network, including order, account information, credit card password, identity certificate and other
data. Once the customer information data is stolen, tampered and embezzled, it will affect the normal
payment of financial customers' network, even cause huge losses. This Jianghu seriously threatens the
personal property security of users. Therefore, we must protect the sensitive information data of
Internet Financial users, which requires us to strengthen the security of private data in the network
payment. By preventing sensitive information from being stolen, Internet financial institutions need to
use encryption technology to encrypt the transmitted data. Encryption technology is a security
technology used in the process of Internet finance transaction, which can ensure the integrity,
availability and security of information in network transactions. Encryption technology is adopted in
many key links, such as digital signature encryption, system data storage encryption, etc., which will
protect the data security and payment security of user account system. Encryption technology is the
key technology of Internet finance to ensure information security, which requires financial institutions
to strengthen the encryption technology level.

5. Conclusion
This paper believes that financial institutions should identify and evaluate the high risk of the whole
process. Through big data analysis technology, we can better improve the service ability. At the same
time, the government should continue to perform its regulatory duties, which will provide a safe
financial environment for the financial industry.

References
[1] Liu Zhiyang, Huang Kehong. Tirol's financial regulation theory and China's Internet financial
supervision ideas [J]. Comparison of economic and social systems, 2015 (02): 64-76.
[2] Shen Yue, Guo pin. Internet finance, technology spillover and total factor productivity of
commercial banks [J]. Financial research, 2015 (03): 160-175.
[3] Wang Da. The development of Internet Finance in the United States and the comparison of
Internet finance between China and the United States [J]. International finance research,
2014 (12): 47-57.
[4] Yang Dong. Legal regulation of Internet Finance: from the perspective of information tools [J].
Chinese Social Sciences, 2015 (04): 107-126.
[5] Zeng Jianguang. Risk perception of network security and asset pricing of Internet finance [J].
Economic research, 2015,50 (07): 131-145.
[6] Zhang Yanliang. Driving factors and strategies for the development of Internet Finance --
Based on the perspective of long tail theory [J]. Macroeconomic research, 2015 (02): 86-93.
[7] Zheng Zhilai. The path of Internet banking to China's commercial banks: Based on the
perspective of "Internet plus" impact on retail industry [J]. Finance and economics, 2015
(05): 34-43.