International Journal of Mobile Computing and Multimedia Communications
Volume 11 • Issue 2 • April-June 2020

Intelligent Early Warning of Internet Financial Risks Based on Mobile Computing

Mu Sheng Dong, Collaborative Innovation Center for Green Development in the Wulin San, Yangtze Normal University, China
https://orcid.org/0000-0002-2735-3565

ABSTRACT

In order to establish the early warning model of internet finance, K-means algorithm improved by quantum evolutionary is used in this paper to divide risk early-warning interval by combining with the given initial value and the value-at-risk measured by China's well-known internet finance company. With the characteristics of parallelism and randomness, quantization algorithm is introduced into K-means algorithm to improve the search efficiency of original algorithm on the basis of maintaining the diversity of population. The sample is conducted with optimal segmentation by using improved algorithm to obtain the accurate early-warning interval and then the risk prediction model for internet financial institutions will be established by using the advantages of GMDH predictive mining and combining with the value-at-risk measured by "Renren Loan" Company. The effectiveness of early-warning model will be illustrated by comparing the actual situation of internet financial companies with more than 40,000 data of "Renren Loan" Company from January 2017 to October 2018.

KEYWORDS

Big Data, Intelligent Early-Warning, Internet Finance, Risk

1. INTRODUCTION

As the combination of "Internet +" spirit and traditional finance, internet finance collects various data and adopts internet technology to mine and analyze the logical relationship under data, thus breaking the information barrier and revolutionizing traditional finance. Internet finance has been rapidly developing in China. By the end of July 2018, the cumulative number of internet financial institutions had reached 6,385, and the cumulative turnover of P2P(peer to peer lending) internet financial industry had reached 7,478.941 billion yuan, while the numbers of active investors and active borrowers were 3.3434 million and 3.7517 million, respectively. On the other hand, there are many problems occurred in the development of internet finance. By the end of August 2018, the number of internet financial institutions with normal operation had dropped to 1,595, a decrease of 50 compared to the end of July, while the numbers of and 2.6053 million and 3.0175 million, respectively, in which, the numbers of active investors and active borrowers dropped 22.08% and 19.57%, respectively. According to incomplete statistics, there were 63 failed and problematic institutions in August 2018,

DOI: 10.4018/IJMCMC.2020040104

in which, 13 of them were newly discovered, not the ones of the 1,645 institutions with normal operation in last month. Among the 63 failed and problematic institutions, there are 58 problematic institutions, in which, 44 institutions have the difficulty in raising cash, 8 institutions escaped with money, and 6 were involved in economic investigation (institutions with loan extension and some overdue projects that are still in bid issuing period are not included in problematic institutions); there are 5 failed institutions for transformation.

Therefore, how to ensure the healthy and steady development of internet financial industry is of great practical and theoretical significance for the research on early warning of internet financial institutions.

2. LITERATURE REVIEW

Early warning of internet financial institutions has always been a hot topic at home and abroad, with different views from different perspectives, mainly including the following.

KLR model put forward by Kaminsky is a signal analysis model with monthly or quarterly data, whose prediction features are as follows: The historical data are used to synthesize leading indicators; crisis is defined as exceeding the threshold value, namely, critical value; model accuracy is high, but the design of indicators has a tendency (Kaminsky & Reinhart 1999). The artificial neural network model proposed by Nag breaks through the linear normal form of traditional model, whose advantages lie in the flexible rules and the ability to capture complex relationships among variables (Nag 2012). Zhao, N.et al pointed out that with the development of Internet finance, higher requirements have been put forward for the unification of its supervision, including the unified supervision over cross-industry internet financial institutions, cross-market financial activities and trading procedures across time and space. He believed that it is essential to make a clear distinction between the powers and responsibilities of the central and local financial supervision in a timely and reasonable manner, and to strengthen the supervision and coordination between the central administrative departments and local governments, as well as between local governments, in order to meet the challenges of new finance (Zhao et al., 2018). Mollick argued that public financing refers to that individual entrepreneurs or business groups with cultural, social or commercial purposes attract a considerable number of individuals to invest relatively small amounts of money through the internet without resorting to the intermediary role of traditional financial institutions, in order to achieve their creative behaviors (Mollick 2014). Samreen found that borrowers' credit and transparency of information play an important role in the internet financial P2P lending model. They pointed out that the lower a borrower's credit, the higher his or her loan and default rates; and the higher the openness and transparency of information, the lower the corresponding default rate of bad debt. Lin also found that borrowers' credit and transparency of information play an important role in the internet financial P2P lending model (Samreen 2018).

Scholars in China have also done some researches. At the Third Global Financial Technology (Beijing) Summit sponsored by Financial City and China Financial Forty Forum in 2018, Fan Wenzhong, head of the International Department of the China Banking and Insurance Regulatory Commission, pointed out that P2P is the financial information intermediary, with risk pricing of core function, while the pricing interest rate of risk is the core function, rather than a simple information intermediary, and it's a financial information intermediary. The distortion of interest rate pricing will lead to the emergence of interest rate risk. Liu Shiyu believed that there are three main risks in internet finance, namely, the unclear legal position of institutions, the possibility of crossing border and touching legal bottom line; the lack of the third-party depository system for funds, with hidden danger; the imperfect internal control system may possibly lead to operational risks, but the relationship between the two has not been summarized (Shiyu 2018). Mahenge et al. (2019) pointed out the following particularity of internet financial risk relative to traditional financial risk: The first is the information technology risk. Because of the internet penetration into finance, information technology risk is very prominent in internet finance, which is the field that traditional financial supervision