Using Weighted Similarity to Assess Risk of Illegal Fund Raising in Online P2P Lending

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ABSTRACT

Peer-to-peer (P2P) lending is an important internet financial mode, which has a greater risk of illegal fund raising. From the risk research on P2P lending platforms has focused on policy and law, and the existing risk assessment is mainly aimed at borrowers’ credit. Since it cannot meet the needs of effective supervision, this article proposes a risk alarm model from the perspective of illegal fund raising based on similarity weighted case. Through the investigation of P2P illegal fundraising cases, this article has extracted the risk features to build a risk feature matrix. A case to be evaluated needs to be transformed into a feature vector in the data preprocessing stage. Then, the similarity vector can be obtained by comparing a feature vector with the vectors in the risk feature matrix. The following selected the TOP K similarity to calculate the risk value by weighting. The experiments show that under the condition of even a small sample, it can reasonably evaluate the risk of the P2P lending platform, to achieve a certain risk alarm effect, and has a good feasibility.

KEYWORDS
Case Similarity, Crime Prevention, Illegal Fund raising, Internet Financial, lending Risk Assessment, Online P2P

INTRODUCTION

The development of Internet financial will provide the public with rich and convenient financial products and services. However, in China some criminals commit the illegal activities due to the ignorance of some people and regulatory gaps on internet financial. The illegal fundraising behavior is a serious problem of network economic crime. Only in the first quarter of 2017, the amount of illegal fund-raising crime is up to more than 2,300.

Peer-to-peer (P2P) lending is a business model created by Yunus, it allows individuals to directly lend to and borrow from each other on an online platform (Bachmann, Becker, & Buerckner, 2011). The first P2P network lending platform in the world is UK Zopa of London. There are lots of P2P lending platform emerging in China since Paipai lending established in 2007. The network lending involves a large number of people, a wide geographical area, and a regulatory vacuum. Illegal fundraising crime through the P2P lending platform is an important form of Internet financial crime (Xu, Luo, &Chen, 2015). According to incomplete statistics in May 31, 2017, the number of P2P lending network platform in China reached 4950; and at the same time, the number of problematic platform is 3168. P2P lending has entered a high-risk status. It not only has a serious impact on the healthy development of the Internet financial industry, but also infringes the investor’s property rights and affects the Social stability. The network illegal fund-raising crimes have a long incubation period. It
is important that the public security department should strengthen the network financial management, detect the clues timely. In order to effectively monitoring P2P lending, a risk assessment model of illegal fund-raising crime should to be established. In some developed counties, it has a perfect and strict legal system for the illegal financing. For example, the “integrated second-hand and bank fraud charges and taxpayers’ recourse law” in United States provides that illegal business continuity of financial enterprises will take life imprisonment. Many cases can corroborate that United States has a serious crackdown on crime, and the most classic is the Nasdaq President Madoff investment fraud in 2008 (Chaffee & Rapp, 2011). Most P2P in United States always act as a pure online information intermediary platform, and maintain a certain degree of independence in the process of capital transactions. Once the P2P lending platform enters into bankruptcy proceedings, there will be a third party to take over the operation of the platform to continue providing services to customers, and ensure the interests of investor (Rogers & Clarke, 2016). The development of internet financial is mainly relying on a controllable risk under a complete credit system in developed country. In China, many P2P lending platform has not been effectively regulated. It has various forms of illegal behavior, and lack of a stable and effective credit assessment system, so a risk assessment is also a focus problem.

RELATED WORK

The research of economic crime caused by illegal fund raising in China mainly focuses on the legal, including the legalities of fund-raising behavior, policy and regulations, illegal fund-raising prevention and control opinions. The key words in the study of fund raising in 2013 and 2014 are mainly “Internet Finance”, “Risk Prevention”, “Financing”, “Risk” and so on. Especially to the problem of “risk”, although the existing research results are few, it has become a new research hotspot since 2014(Li, 2016; Meng & Yu, 2016). The frontier issues of behavior research indicating that scholars are no longer limited to the traditional perspective of fundraising research, they also hope to seek a new way to solve the problem by expanding the new perspective.

The research pointed out that the development of internet finance brought more prominent technical risk, business risk and legal risk (Guo & Shen, 2016). We should to control the financial risks of the Internet from the risk management system, legal system and supervision system. There are many scholars have done a lot of useful research on P2P lending risk evaluation. The perspective of these researches can be divided into three directions, including investors, borrowers, and regulators of P2P platform. (1) For investors, Collier and Hampshire had shown that the members of the loan group can better supervise each other, so the more members of the group, the lower the risk of the loan (Collier & Hampshire, 2010). It hinted the importance of decentralized investment in network lending. Guo designed an instance -based P2P credit risk assessment model to assess the return and loan risk of each investor (Guo, Zhou, & Luo, 2015). In addition, a P2P lending investment optimization decision-making system is developed through the boundary constraints; and the model can effectively improve the investment performance proved by experiments. (2) For the borrowers, Wu designed a system to provide the borrower with advice on personal risk assessment, searching qualified bank, loan and loan portfolio (Wu & Xu, 2011). Puro used the Logistic regression model to develop a tool for anticipating the likelihood of a successful lending based on the borrower’s credit rating status, the borrower’s debt / income ratio, the amount of lending, the borrowing rate and the current overdue amount as independent variables (Puro, Teich, & Wallenius, 2010). Li studied a credit model to predict the potential borrowers with a bad credit score. It used the outlier detection method to find the abnormal credit with a very high possibility (Li, 2016). Malekipirbazari proposed a classification based on random forest (RF) to predict borrower status (Malekipirbazari & Aksakalli, 2015). The results of the data from the Social Loan Platform Loan Club (LC) showed that the RF-based approach is superior to the FICO credit score, and better than the LC scores for good borrower identification. Zhang used PPDai’s public data set for researching loan default in their article; and PPDai is a famous leading P2P platform in China (Zhang, Jia, & Diao, 2016). They built a credit rating model by integrating social
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