Identification of Financial Risks based on Artificial Intelligence

Yang Pengbo[1], Zhang Hanyu[2]

[1]Xidian University, School of Economics and Management, Xi Feng Road, Xinglong Section 266, Xi'an, Shaanxi Province, China

[2]Xidian University, School of Economics and Management, Xi Feng Road, Xinglong Section 266, Xi'an, Shaanxi Province, China

Abstract: *The development of artificial intelligence has brought in the revolution of computer technology. At present, there are many researches on the combination of artificial intelligence and financial market. But there is a long way to recognizing financial risk around Internet efficiency. This paper studies the identification of financial risks under the characteristics of Artificial Intelligence.*

Keywords: Artificial Intelligence, financial risk, characteristics of artificial intelligence, risk identification

1. Introduction

The development of Internet and artificial intelligence technology has accelerated the pace of innovation in traditional industries, also, it promoted the optimal allocation of resources in the social development of the real economy through the network environment [1].

In recent years, artificial intelligence has changed the development of the world with its unique and innovative ways. It has became a entrance for human beings to understand and transform the world. [2].

Meanwhile, with the innovation of Internet technology, the entity enterprise transformation under the NET, and the development of the emerging economic forms, put forward more and higher requirements for the financial risks identification. Recognizing the financial risks by advantages of artificial intelligences has been put on a new level.

2. The necessity of artificial intelligence for financial risk identification

2.1 Types of financial risks in the Internet environment

Analyzing the reasons of financial risks, they would be classified into the following five categories: policy risk, legal risk, interest rate risk, market competition risk and business risk.

First, policy risk
Policy risk refers to the risk of all financial factors related to the enterprise, which leads to the risk of financial loss. Such as the adjustment of national policies, the replacement of leaders, the changes in diplomatic relations, and the outbreak of war. In recent years, industrial policies about the emerging Internet industry are also constantly updated.

Second, legal risk
Legal risk refers to risk of legal factors that cause losses to the enterprise. In nowadays of knowledge economy, there're more and more legal norms and regulations to governing the enterprise. The prevention of financial risks will be a great part of the country's policy for the Internet crimes occurred from time to time.

Third, interest rate risk
Interest rate risk, also known as the market risk, which refers to the risk of asset prices dynamics caused by changes of interest rates.

Fourth, the market competition risk
Market competition risk refers to the risk that the external market environment changes will bring losses to the company finances. Competition is the pressure and motivation for the survival and development of enterprises. It will bring great risks to the financial goals and financial returns of enterprises.

Fifth, business risks
The business risk is caused by some factors within the enterprise, such as major investment failure, key litigation failure, and adjustment of major management decisions of the enterprise.

2.2 Status of financial risk identification

The current status of financial risk identification are as follows in China: Risk prevention awareness and self-risk awareness were weak; network information leakage occurs frequently. Personal information security was difficult to guarantee. The false information brought by some new industries lead to financial risks. There was few connection between financial work and the Internet.

3. Characteristics of artificial intelligence

3.1 Learning ability

Learning ability and knowledge representation. Receive external information and effectively translate it into logical information, such as external image, sound, text and other information which formalized logical concept information. Memorize the transformation process and results during the transformation process, means getting valid information from the data or past experience. Artificial intelligence completes the computer's self-learning process through different

computer algorithms, then, the system can learn from the environment interaction and l the process of interacting with the users.

3.2 Knowledge application ability

Information can be sorted and extracted effectively through the learning ability. Computer can output logically information when people use the keyword or through the usage habits. The current artificial intelligence semi-automatic production technology is a good example. Computers can easily analyze thinking and calculations, but human thoughts are more abstract. Therefore, computer logic thinking work more effectively only if it can analysis knowledge. The intelligent system of artificial intelligence based on learning ability fundamentally turn to the deeper performance of human logical reasoning.

3.3 Uncertainty processing capability

Input information stimulates self-learning, information retrieval, logical judgment, decision making and corresponding responses. AI translates the reactions which need to be output into body motion and media information. Traditional computers dealing with specific problems or previously problems more empirically, however, when encounter unexpected problems they are not timely enough. Therefore, artificial intelligence needs to get the ability to deal with uncertainty situations and the uncertainty of the model decision.

4. Application of artificial intelligence to risk identification

4.1 Application of artificial intelligence

4.1.1 Mesh search
With the development of network technology in recent years, Internet has become the primary channels for people to get information. The NET is the largest information carrier in nowadays. The traditional search engine cannot satisfy the needs of different customers. Keywords searching will still generate a large amount of invalid information. The limited search engine is not match with the increasingly unlimited network resources. resource information categories are numerous, traditional search engines is not good at find large and complex information.

The development of web crawlers has played a key role in solving the above problems. The advantage is the search target is more accurate, and the analysis the webpage or the data is more scientific, and the recording of the obtained results has guiding significance for the subsequent crawling process.

At present, social information is complicated Take the advantages of data collection to rationally screen financial raw data, it can avoid repeated reading. More structured the fragmented financial information and customer information, more strengthen the ability of analysis financial data Identification efficiency of financial risks is improved.

4.1.2 Data analysis
Financial data changes at any time, it can analyze financial time series through data mining. Dealing with large-scale data requires big data-based discovery of potentially valuable rules and information. Collection financial high-frequency data and ultra-high-frequency data, the higher the acquisition frequency, the higher the accuracy of the acquisition of important information. Therefore, it is possible to understand the price operation law and information transmission mechanism contained in the financial market more deeply and accurately.

Through the deep learning system of artificial intelligence, the machine can continuously improve the knowledge system, based on the knowledge and case knowledge accumulated, it can effectively judge the situation encountered is financial risk or not.

4.1.3. Semi-automated production
Learning ability is the core competence of artificial intelligence. With continuous learning, network data acquisition, artificial intelligence can complete semi-automatic production. For example, the press release editors that have been used at present, according to the writing characteristics of the previous manuscripts, when people input key characters, the system collect relevant news trends online, and edit the corresponding press releases.

When a new financial policy is introduced, the semi-automated production function of artificial intelligence will immediately generate relevant financial notices to be submitted client after being reviewed by the financial staff and extract the valid information according to the spirit of the new policy.

4.2 Risk Identification Process Design

Artificial intelligence technology is used to serve customers at the front to the end. The background is used for analysis and decision-making risk prevention and control. The identification of risk by artificial intelligence will greatly change the pattern of risk control, making the judgment and identification of financial risks more humanized, even operable.

Combining the advantages of artificial intelligence, the financial risk identification process is divided into two sections, it can be shown in Chart1:
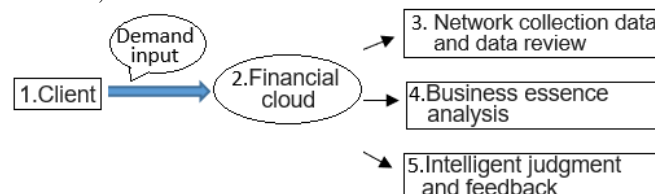

Chart 1: Risk identification process model

Section one: Client
The client mainly completes the following identification requirements:

a) Smart feedback. Through deep learning, the intelligent customer service system is improved. The system can get the precise questions for customers by provide keywords.

b) Identify the operator. According to the artificial intelligence reasoning, data capture and computing capability development which corresponding face recognition system, the users entering electronic signature notes by compare with electronic authorization background, it can reduce the artificial financial risk operation.

c) Information Release. When the national policy is adjusted, the data database is updated at the first time.AI will remind client users. If the corresponding policy is not found, the new policy prompt will be displayed on the client, and the financial personnel will be submitted to re-determine the business type according to the policy instructions.

Section two: Financial cloud

a) Review of financial information. The computer checks the financial original documents through the identification of artificial intelligence. Which can guarantee the authenticity and validity of the original document for the ticket. When all the information is correct and it will judge whether the business is legal, or it meets the financial requirements or not.

b) Financial cloud reserve. Utilizing the learning and data capture capabilities of artificial intelligence to store financial raw documents in the financial cloud, colleagues who enhance the authenticity and correctness of information, ensure the security and stability of information.

c) Intelligent judgment. The financial personnel input the same type of financial business processing into the computer, the artificial intelligence judges the feasibility of the new business according to the recorded business processing method. If a new business type or homogeneous business is encountered, it cannot be judged by itself, the artificial intelligence computer will automatically submit a manual audit.

5. Conclusion

In recent years, the combination of artificial intelligence and various industries has made remarkable progress. The identification of financial risks is critical to the type of financial business innovation. With the development of the network and the computer system, artificial intelligence has a new inspiration for the identification of financial risks. Through the process design of financial risk identification, client instructions, financial cloud analyzes and makes judgments, it can improve the recognition efficiency of financial risks. It is a new direction for researching and identification financial risks with the technical means in the future.

References

[1] Liu Sisi " "Internet +" thinking about some issues of China's real economy development" Journal of Hubei University of Economics(Humanities and Social Sciences) Apr.2017 Vol.14 No.4, p26,2017

[2] Li Deyi "AI-Accelerator for the development of human society" CAAI Transactions on Intelligent Systems. Oct.2017, Vol.12 No.5,p583-584,2017

Author Profile

Yang PengBo works as an associate professor in school of Economics and Management, XIDIAN University. His specialization lies in consumer finance and behavioral finance.

Zhang Hanyu is now pursuing Master degree since 2016 under the guidance of Prof. Yang. Her specialization area is Finance.