Frontiers in Business, Economics and Management
ISSN: 2766-824X | Vol. 13, No. 3, 2024

Internet Financial Information Security Risk and Prevention in the Age of Artificial Intelligence

Centong Tao

Amazon.com Service LLC, Miami, 33143, United States

Abstract: With the progress and development of science and technology, artificial intelligence technology and its convenient, fast, and efficient performance characteristics have been widely applied in various fields, which has brought great changes to the financial industry and unprecedented breakthroughs and development. Although artificial intelligence brings huge development opportunities for the Internet financial industry, it also brings some potential risks and challenges, causing Internet financial information to face severe security risks. How to use artificial intelligence technology to effectively prevent and control financial information security risks is a major problem facing the financial industry. This paper analyzes the security risks of Internet financial information in the era of artificial intelligence and puts forward relevant preventive measures to effectively deal with various security risks, ensure the information security management of financial cloud platforms, and promote the healthy and stable development of the financial industry.

Keywords: Artificial intelligence, Internet finance, Information security, Risks and Precautions.

1. Introduction

The rapid development of big data Internet information promotes the effective combination of artificial intelligence technology and the financial field. It not only improves the work efficiency and user experience of financial institutions but also saves labor costs to a certain extent, improves data security, and meets the growing expectations and demands of users. In particular, the implementation of innovative applications such as intelligent investment, fraud detection, data analysis, and investment decision-making has pushed the financial field to a new height and promoted the digital development of financial platforms. The intersection of the financial industry and artificial intelligence needs a large amount of data support. Therefore, the protection of financial information security under the background of the rapid spread of the Internet is the foundation of the industry's progress and development.

2. The Development of the Internet Finance Industry in the Era of Artificial Intelligence

2.1. Internet finance and its performance model

Internet finance refers to a new type of financial business model that combines Internet technology with the traditional financial industry to achieve financing, payment, investment, and information intermediary services. Internet finance is different from the traditional financial business and it is more transparent, collaborative, low intermediate cost, and convenient to operate than the traditional financial business. In addition, it is mainly reflected in the following aspects.

A. P2P network borrowing platform

It mainly includes Lufax, Hongling Venture Capital, FinVolution Group, Renren Loan, Yooli Net, Yiren Loan, and other personal loan platforms.

B. Third-party payment

It is a payment method established among merchants, consumers, and financial institutions. The most representative are Alipay, WeChat payment, credit card payment, etc.

C. Crowdfunding

It simply refers to financing, which is a kind of legal fund-raising behavior initiated through Internet platforms. Common forms include equity crowdfunding and charitable crowdfunding.

D. Big data credit checking

It is a tool to record personal credit history based on information such as Ant Credit Pay, JD Credit and the online borrowing model. For example, Sesame Credit is based on huge data accumulation.

E. Information-based financial institutions

It is a banking, securities, and insurance financial institution that uses information technology represented by the Internet to transform or reconstruct traditional financial operation service products in order to achieve comprehensive information management. It aims to enable people to enjoy the services available offline on the Internet.

F. Internet wealth management platform

It is mainly used as a platform for issuing loan fund products, wealth management products or insurance products, such as Tenpay, Lufax, JD Finance, and Yu 'e Bao.

2.2. The main features of Internet financial information in the era of artificial intelligence

A. High efficiency and low cost

The development of Internet and data platforms has diversified the financial industry. Its operating cost is low, many transactions can be completed within a few seconds, and the geographical limit is broken through. Moreover, customers can experience financial services anytime and anywhere, and realize a financial model of global communication without leaving home. Also, it improves the service efficiency. The deposit and payment services of Alipay and WeChat are most commonly used in China, which can enable users to obtain revenue in a short time, and can also realize transfer and remittance and living payment, etc., greatly improving the user experience.

B. Personalized service

Through data collection, storage, and analysis of a large number of user data, artificial intelligence Internet identifies potential users, carries out accurate marketing, and provides more personalized financial services to users according to their preferences and needs.

C. Openness

Internet finance is based on Internet technology. Its main characteristics are openness and sharing. It extends financial services to a wider group of users through the connection between users and financial institutions.

D. Innovation

Internet finance upgrades and innovates the traditional business model of financial institutions through the development of Internet and artificial intelligence technology, and introduces new products and businesses. At the same time, it promotes a new type of financial business represented by P2P peer-to-peer lending and crowdfunding, which enables users to enjoy various and diversified investment services.

E. Risk controllability

Through big data analysis and intelligent technology applications, Internet finance can understand users' credit status and risk preferences more comprehensively so as to conduct more accurate risk assessment and control to protect users' legitimate rights and interests and fund safety.

2.3. Financial fields and applications in the era of artificial intelligence

The development of artificial intelligence technology has brought the development of Internet finance to a new height. In banking and even the whole financial field, artificial intelligence has been applied more and more widely in Internet finance with its characteristics of intelligence and humanization. Internet finance is based on a huge data platform for effective analysis and utilization of data. The application of artificial intelligence technology can greatly improve data processing and analysis capabilities. It can make investment forecasts by identifying patterns or analyzing historical trends. It can also optimize asset allocation according to user preferences with high accuracy of data analysis. Artificial intelligence technology can realize intelligent customer service through natural language processing technology and machine learning algorithms, provide more rapid, convenient and personalized customer service for financial institutions, optimize customer service processes, and improve customer service efficiency.

Risk assessment and risk control management is one of the important applications of artificial intelligence in the field of finance. Through data analysis and learning, customers' credit coefficients can be efficiently assessed, potential financial risks can be effectively identified, and changes in financial markets can be predicted and analyzed based on the data to help financial institutions make more accurate decisions. Through the analysis and processing of big data, an alarm system can be provided for abnormal transactions or potential risk factors, reducing financial risks and ensuring the healthy and stable operation of financial institutions. Through artificial intelligence technology, it analyzes and predicts the investors' risk preferences and investment objectives, and provides more comprehensive and personalized investment advice and portfolio management services for investors.

Financial fraud is a common problem in daily life. Artificial intelligence technology can quickly identify and solve fraud behaviors when detecting large-value transactions, off-site transactions, abnormal transfers, etc. through the data learning model established by users, and take corresponding defense measures to ensure the safety of customers' funds. Intelligent marketing collects and analyzes customer behavior data through artificial intelligence technology for in-depth learning and model building, which realizes personalized and accurate marketing, broadens application scenarios, and improves marketing effect.

2.4. The importance of Internet information security analysis

The establishment of financial institutions inevitably requires the storage of a large number of sensitive information of customers such as personal identity information, bank account information, telephone information and home address, etc. The security of this network information relates to the security of sensitive information and funds and plays a vital role in the development of the financial industry. It relates to the storage and transmission security of the financial industry and is the basis for ensuring the upgrading and innovation of the financial industry. When artificial intelligence technology is widely used, it will have a certain impact on the security of this sensitive information. Once this information is leaked or attacked by the network, it will bring huge economic losses to customers, not only making financial institutions lose credit but also seriously lagging the development of the financial system, affecting the stability of the financial industry system and the development of business continuity. If the financial industry wants to move forward steadily on the road of development, it needs to understand the security risks of Internet financial information, establish the security system guarantee of financial information, and strengthen technical protection and management measures.

3. Security Risk Analysis of Internet Financial Information in the Age of Artificial Intelligence

3.1. Internet financial information with data security risks

Whether it is an intelligent financial platform or software, the transaction center of a financial institution is based on the real information of users. In the application process of Internet financial information, artificial intelligence builds a large number of database platforms for training and analysis. It is to achieve the handling of information exchange, capital flow, and transaction processing. The Internet platform has the characteristics of fast transmission speed, anonymity, sharing, and flexibility. The imperfect network supervision system and the absence of information protection mechanisms in some financial business platform systems cause system vulnerabilities that are easy to cause data loss or malicious tampering, forming new fraud methods. Once information is leaked, it will seriously threaten users' capital safety and the steady development of the financial industry. On the other hand, based on the learning and analysis of artificial intelligence systems, massive data are needed to provide decision-making and support, which will correspondingly face the risk of data abuse and affect the stability and transparency of financial markets [1].

3.2. Internet financial information with the risk of privacy leakage

In the Internet financial business, users' personal information, property information, and transaction information will all face the risks of stealing, leaking, tampering and so on, which will bring great security risks and threats to users and the development of finance. Especially with the extensive application of artificial intelligence technology, illegal users will lure and invade users' financial platforms and accounts by means of hacker attacks, malicious software, and phishing, etc., to implant users' computers or equipment and disguise legitimate websites or platforms, steal personal information and property. Therefore, it causes a large number of users' property to be stolen or personal information to be leaked or abused. Also, it leads to malicious operations such as fraud and money laundering and seriously hinders the development of the Internet financial industry.

3.3. Internet financial information with technical security risks

Internet financial platform has multiple operation modes such as capital integration and credit stratification. This mode of operation is relatively complex so there are some frequent security risks such as website vulnerabilities, database vulnerabilities, and system vulnerabilities in the process of use. These bugs will lead to the leakage of users' information and induce users to handle loans or investments and conduct false transactions. In addition, Internet financial platforms involve a large amount of capital flow, and some platforms are suspected of illegal fund-raising, which makes users invest a lot of money in a short time. However, the instability of the platforms leads to serious security risks for users' funds.

3.4. Internet financial information with unstable security emergency technical risks

Internet finance is not a simple integration of Internet and finance. It is an emerging field that integrates traditional banking business with Internet technology through Internet and security technology based on big data, cloud computing, and mobile payment. The changes in the financial market are dynamic and complex. Therefore, the development of Internet finance needs the support of security emergency technology, especially in new technology fields such as blockchain. Because Internet finance focuses on the expansion of financial business and ignores the innovation and upgrading of security emergency technology, financial products, and services in China have become increasingly rich in recent years, and financial consumption disputes have occurred frequently. Once the information security risk problem occurs, the judgment and decision-making ability of artificial intelligence technology will decline, which will lead to inaccuracy or even failure of the model, and put users have risk of improper decision-making and capital loss [2].

4. Precautions against Internet Financial Information Security Risks

4.1. The establishment of an Internet financial information risk management system

Establishing a complete information risk management system is of great significance to the healthy development of the Internet financial platform. Internet financial platforms can effectively identify potential risks and formulate risk control policies by establishing a complete risk assessment mechanism and using artificial intelligence technology so that investors can have a clear understanding of the risks related to financial products, reasonably evaluate their risk resistance capacity, and reduce investment risks. It is very important to formulate risk control policies. Financial institutions timely assess and control the privacy risks of data leakage and data abuse as well as the risks existing in the process of data processing or storage to ensure that the information of data is not leaked in the process of transmission processing and storage, fundamentally safeguard the legitimate rights and interests of users and ensure the safety of users' funds.

4.2. The enhancement of safety awareness and training

Strengthening security awareness and training, regularly scanning and detecting network security vulnerabilities with the help of artificial intelligence technology, and conducting data access and learning of financial transactions are important measures to enhance the defense capabilities of financial institutions. Internet financial platforms should regularly carry out security education and training to improve users' security level, strengthen employees' awareness of privacy protection, correctly handle privacy data within their jurisdiction, pay attention to information security control, and improve risk awareness and prevention capabilities.

4.3. The realization of improving information security coefficient by optimizing artificial intelligence technology

A more secure data analysis process can eliminate private information, reduce the risk of accessing private data and other data, and reduce the use of private data by upgrading and optimizing the calculation algorithm of artificial intelligence technology. In the process of avoiding data leakage, tampering, or abuse by using differential privacy and homomorphic encryption technology [3]. In addition, the encryption and desensitization technology of artificial intelligence technology can effectively protect personal privacy data, avoid the risk of information leakage and abuse, and enhance the confidentiality of data.

4.4. The enhancement of supervision and management of technology risks

The technical safety management of Internet financial platforms is the safety guarantee for users to invest and use so the technical risk management should be strengthened. Financial institutions such as banks, trust companies, or financial technology companies improve the safety industry standard of financial institutions and users' sense of security and trust by means of perfect artificial intelligence encryption technology, user three-level authentication, intelligent early warning, data mining, and other means to promote the healthy and sustainable development of financial markets.

5. Conclusion

Under the background of the artificial intelligence era, the development of Internet finance has driven the opening and innovation of the financial market, pushing the development of the financial industry. However, attention should be paid to

the security risks of Internet financial information. Measures such as establishing an Internet financial information risk management system, improving the safety factor of information management, strengthening the safety awareness and training, and strengthening the supervision and management of technological risks, etc. will expand the application scope and depth of artificial intelligence in the financial market, prevent and resolve security risks, and realize the safe, stable and healthy development of Internet financial industry.

References

[1] Jiao, L. (2021). Analysis on the Development Countermeasures of Internet Consumer Finance in the New Era. Trade Fair Economy, 34(13). https://doi.org/10.12245/j.issn.2096-6776.2021.13.22

[2] Yang, Z. (2017). The Application Status and Security Risk Analysis of Artificial Intelligence in Financial Field. Finance Economy, 36(2), 147-148. https://doi.org/10.14057/j.cnki.cn43-1156/f.2017.02.066

[3] Zhang, R. (2021). The Credit Risk of Internet Finance in China and Its Prevention. Management & Technology of SME, 14(5), 98-99. https://navi.cnki.net/knavi/journals/ZXQX/detail