Chapter 11
Utilizing Big Data Technology for Online Financial Risk Management

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ABSTRACT

The rise of cloud computing, internet of things and information technology has made big data technology a common concern for many professionals and researchers. A financial risk control model, known as the MSHDS-RS model, was creatively suggested in response to the present state of inappropriate feature data design in big data risk control technology. The concept is built on multi source heterogeneous data structure (MSHDS) and random subspace (RS). This model is novel in that it uses a normalized sparse model for feature fusion optimization to create integrated features after extracting the hard and soft features from loan customer information sources. Subsequently, a base classifier is trained on the feature subset acquired via probability sampling, and its output is combined and refined by the application of evidence reasoning principles. The accuracy improvement rate of the MSHDS-RS method is approximately 3.0% and 3.6% higher than that of the current PMB-RS methods under the conditions of soft feature

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indicators and integrated feature indicators, respectively, according to an observation of the operation results of MSHDS-RS models under various feature sets. As a result, the suggested optimization fusion approach is trustworthy and workable. This study has helped to reduce financial risks associated with the internet and may be useful in helping lenders make wise judgments.

1. OVERVIEW

As social technology advances, the Internet is gradually impacting every facet of human existence. Internet finance has discreetly infiltrated the Chinese market during the last ten years, coinciding with the increasing encroachment of online retail platforms like Taobao and JD.com into people's lives. Numerous online financial services, including P2P, credit, online banking, and third-party payment, have progressively surfaced since its inception. Due to its great speed and ease, the number of people using the Internet for financial investments is also growing daily. Internet finance is a two-edged sword that has increased dangers while also fostering the growth of China's financial sector (Lyu & Zhao, 2019). There is an information imbalance between lenders and borrowers in online credit transactions. Small and medium-sized microbusinesses will have financial challenges as a result, and borrowing costs are still high (Liu, 2021). Lenders will also be taking on more risk. For instance, the borrower's credit report is not full, making it difficult to distinguish between good and poor clients, as well as to calculate the borrowing limit and other risks associated with the payback cycle. As a result, businesses confront challenging problems that both lenders and borrowers cannot control: business risks. This significantly impedes the growth of businesses. Thus, the development of efficient technology to manage financial risks associated with the internet is imperative. Big data technology is crucial to the management of financial risk. Large-scale, dynamic change, and great processing efficiency are features of big data. The primary sources of the data are visitors, e-commerce, and social media sites. The internet finance business may assist practitioners make choices by enabling them to extract information from diverse incomplete, fuzzy, and enormous data sets that has guiding relevance for current financial behavior via the application of big data analysis technologies (Wang & Wang, 2022). Nonetheless, there are several obstacles facing the big data risk management technologies of today, chief among them being the irrational feature data design (Dutta & Saha, 2021). This study creatively mixes multi-source heterogeneous data structures and random subspaces, and it suggests a big data-based financial risk management model based on the aforementioned analytical findings. Through faster identification of new clients and a higher loan review pass rate, the initiative seeks to help lending firms more broadly.

2. CONNECTED WORK

The banking industry and Internet technology are becoming more and more integrated due to scientific and technical breakthroughs. People may find opportunities in internet finance, but there are also a lot of dangers and challenges involved. The conflict between simplicity of use and security in online finance has been the focus of several scholarly debates. Yan X et al. used the entropy weight Topsis technique and report data from four businesses to assess the risks associated with Internet insurance providers in 2019. The results showed a significant relationship between the financial risks that insurance companies confront and asset liquidity and online operating capabilities. Online insurers have to increase capital