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Accurate Construction of Intelligent Investment Advisory System Based on the Integration of AI Algorithms and Financial Regulatory Framework

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Abstract: *This article thoroughly and systematically studies the financial risk management and standardization path based on artificial intelligence (AI) technology and intelligent investment advisory regulatory framework. By comparing and analyzing the current situation and differences in financial regulatory legal systems at home and abroad, this paper points out the inapplicability of directly drawing on foreign experience, and emphasizes the need for flexible innovation in combination with China's actual situation. This article proposes a hierarchical and phased regulatory strategy, including integrating existing regulations, innovating intelligent regulatory agencies, building case databases and precedent mechanisms, and clarifying the regulatory framework and requirements for intelligent investment advisors. Through the comprehensive use of literature review, comparative analysis, and logical analysis, this article prospectively explores the integration point of AI technology and financial regulatory legal system, and proposes a new intelligent financial regulatory model that combines legal regulation and technological governance. This model aims to achieve stable, sustainable, and healthy development of the financial market through the organic combination of technological innovation and legal system, providing theoretical support and practical guidance for the intelligent transformation of China's financial market.*

Keywords: *Artificial Intelligence (AI) Technology, Intelligent Investment Advisory Supervision, Financial Risk Management, Standardization Path, Legal Regulation and Technological Governance*

1. Introduction

With the rapid advancement of technology, especially the widespread application of big data, cloud computing, and artificial intelligence, the operational efficiency and complexity of financial markets have reached unprecedented heights. However, this technological innovation has also brought about a significant increase in financial risks, posing severe challenges to the traditional financial regulatory legal system. From the Internet financial crisis and stock market crash and other events in recent years, we can clearly see the limitations and lag of traditional regulatory means in dealing with the impact of new technologies. At the same time, the rapid iteration of small financial products and the disorderly expansion of loan and credit lending markets have further exacerbated the chaos and legal risks in the financial market. Since the reform and opening up, China's financial legal system has gradually been established and improved. However, in the face of new technologies and challenges, the traditional regulatory model has become inadequate. Experts and scholars are actively exploring feasible paths for intelligent financial regulation, emphasizing the potential of artificial intelligence in improving regulatory efficiency, accuracy, and addressing complex risks. They pointed out that although artificial intelligence financial regulation has broad prospects, attention should also be paid to the risks of default, violation, and operational errors it brings, and systematic construction should be strengthened. Internationally, the rapid development of artificial intelligence technology has provided new solutions for financial regulation. Scholars have found that the application of artificial intelligence models in financial regulation, such as text parsing, algorithm analysis, and expert assisted systems, can significantly improve regulatory efficiency and accuracy. Meanwhile, a hybrid model combining multiple intelligent technologies has also been proposed to better cope with complex and ever-changing financial risks. In view of this, this article aims to innovate the traditional financial regulatory legal system and build an AI based intelligent financial regulatory system by integrating artificial intelligence and big data analysis technology. This study will use various research methods such as

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literature review, comparative analysis, and logical analysis to deeply analyze the integration points between artificial intelligence and financial regulatory legal systems, and explore the role and implementation methods of artificial intelligence in financial regulation. We hope to provide strong support for addressing the challenges of the new era financial market and ensuring its stability and development by proposing an intelligent financial regulatory model that combines legal regulation with technological governance.

2. Correlation Theory

Theory Related to Data Assets:

Artificial intelligence financial regulation, as a model of the integration of new technologies and old topics in the era of big data, has a wide and diverse connotation, presenting various forms based on different academic perspectives and translation methods. The mainstream view is that relying on the three pillars of big data, blockchain, and cloud storage computing, artificial intelligence is leading the innovation revolution in the field of financial regulation, ensuring financial security and stability. This process utilizes the reasoning and cognitive computing capabilities of artificial intelligence to closely connect computational reasoning models with legal texts, achieving cross domain self-learning, transforming from weak to strong, breaking through traditional regulatory limitations, and constructing a comprehensive regulatory system with multiple levels, facets, and levels. Intelligent financial regulation emphasizes the use of logical chain supervision methods [1], with data as the core and pursuing principles of transparency, openness, and equality. It establishes a dynamic and real-time regulatory system, and through the integration of algorithm code and financial legal rules, managers can obtain data and risk solutions in real time, promoting the development of functions such as market monitoring, automatic protection of participants, and prudent supervision. Its legal foundation is rooted in important proposals and principles at home and abroad, such as China's artificial intelligence development plan and the specific legal framework of the European Union, which clarify risk levels and regulatory measures to ensure technological security, information transparency, and regulatory fairness. At the same time, the level of legal ethics also pays attention to its ethical foundation, proposing the "Asiloma Artificial Intelligence Principles", emphasizing responsibility, safety, and transparency, providing timely guidance for intelligent financial regulation, and ensuring that technological development conforms to the core values and moral bottom line of human society

3. Research Method

3.1. The Current Status of Legal System for Artificial Intelligence Financial Regulation

With the changes in the main social contradictions in our country and the deepening of the construction of the rule of law in the new era, the contradiction between the surge in financial cases and the limited judicial resources has become increasingly prominent, forcing judicial and regulatory departments to actively explore the application of intelligent technology to improve efficiency and alleviate pressure. In the practice of financial regulatory legal system, artificial intelligence has shown great potential, but also faces many challenges.

At the central government level, guided by the "New Generation Artificial Intelligence Development Plan", China is accelerating the research and application of intelligent regulatory technology, aiming to promote the improvement of the financial legal system through technological innovation. In this process, we not only focus on algorithm integration and innovative regulatory models, but also actively promote the optimization and upgrading of the intelligent industry chain [2], providing solid support for the construction of the legal system for intelligent finance. Local governments such as Shenzhen have taken the lead in conducting policy pilot projects for artificial intelligence regulation by formulating local regulations such as the "Shenzhen Special Economic Zone Artificial Intelligence Industry Promotion Regulations (Draft)". This draft provides institutional guarantees for the application of artificial intelligence in financial legal supervision from multiple dimensions such as data resource openness, computing algorithm platform construction, and public service platform layout, and explores innovative measures such as cross-border data circulation [3] and hierarchical opening of regulatory data [4].

In terms of domestic enterprises, emerging financial companies such as Ant Financial and Baidu Finance have taken the lead in actively exploring the field of artificial intelligence financial regulation.

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They rely on their technological advantages in big data, cloud computing, and other fields to build intelligent learning frameworks and risk control models, achieving precise identification and effective prevention and control of financial risks. At the same time, the traditional securities industry is also transforming towards intelligent regulation, improving regulatory efficiency and reducing regulatory costs by introducing intelligent regulatory tools. In the process of promoting the construction of a legal system for artificial intelligence financial regulation in the future, it is necessary to comprehensively consider various factors such as technology, law, and market. On the one hand, we need to continue to increase our technological research and development efforts to enhance the application level of artificial intelligence in financial regulation; On the other hand, it is necessary to improve the relevant legal and regulatory system, clarify the legal status and responsibility boundaries of artificial intelligence in financial regulation; At the same time, it is necessary to strengthen cross departmental and cross disciplinary collaboration, and form a joint force to promote the healthy development of intelligent financial supervision.

3.2. Construction and Practice of Artificial Intelligence Financial Regulatory Path under the Legal Operation Paradigm

In the construction of artificial intelligence financial regulatory pathways under the legal operation paradigm, the logical model of the law and the legal expert system still play an important role in helping institutions comply with relevant regulations. Although most legal reasoning involves complex interpretation and argumentation issues, in many cases, the main goal of regulatory agencies is to design business processes to ensure that daily operations do not violate laws and regulations. Simulating legal rules through intelligent algorithms can effectively solve practical problems without relying on comprehensive legal interpretation models. For example, the Supreme People's Court's "Several Specific Issues in Current Commercial Trial Work" may be more used for administrative assistance rather than litigation processing, helping regulatory agencies comply with complex requirements of the Company Law. Artificial intelligence has demonstrated strong compliance protection capabilities in such financial regulation, especially in business process expert systems, which can warn managers of potential regulatory violations and ensure that daily operations comply with regulations. In addition, standardizing the graphical processing of legal texts and the application of automated process systems also provide regulatory agencies with more intuitive and effective compliance tools. This method can reduce legal risks and ensure that business processes run smoothly in compliance with regulatory requirements. In order to further enhance the effectiveness of financial regulation, artificial intelligence technology should continue to develop, enabling seamless integration between compliance rules and business process models, thereby achieving more accurate regulation and risk control.

4. Results and Discussion

4.1. Challenges in Financial Business Processes under AI Regulation

The exploration of financial risk management and standardization path based on AI technology and intelligent investment advisory regulatory framework requires us to delve into its enormous potential and accompanying multiple challenges, and propose corresponding response strategies accordingly.

At the level of financial law making, the introduction of AI technology aims to optimize the legal reasoning and argumentation process through intelligent algorithms, and enhance the logic and rationality of law making. However, in this process, AI models face challenges such as ambiguity in rule selection, openness and uncertainty in legal texts. To address these issues, it is necessary to continuously optimize the computational model to ensure its applicability and accuracy in complex legal environments. At the same time, given the insufficient regulation of AI in the existing legal system, it is urgent to accelerate the legislative process, improve laws and regulations related to criminal responsibility, property ownership, information security, privacy protection, etc., and provide solid legal protection for the healthy development of AI technology in the financial field. In the practice of intelligent financial regulation, big data analysis has become an important means to improve regulatory efficiency. However, for predicting losses in extreme financial events, relying solely on data analysis is still insufficient. It is necessary to supplement theoretical and statistical parameters to enhance the scientific and accurate nature of predictions. In addition, intelligent text annotation technology needs to be further improved to accurately distinguish between judge conclusions and party statements, ensure the creativity and novelty of legal arguments, and avoid misjudgments caused by

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mechanical application of precedents. The regulation of artificial intelligence has had a profound impact on the legal behavior of various participants in the financial market. On the one hand, it improves service efficiency and reduces labor costs; On the other hand, it also brings potential risks such as information leakage, technological dependence, and market monopoly. Therefore, while promoting intelligent financial regulation, it is necessary to attach great importance to data security and privacy protection, strengthen cooperation and supervision between regulatory authorities and third-party technology providers, and ensure the legality and security of technology applications. At the same time, attention should be paid to the stability and fairness of financial markets to prevent market imbalances and unfair competition caused by technological monopolies.

To address the above challenges, we need to establish a clear positioning of regulatory authorities, clarify their responsibilities and authorities in intelligent financial regulation, and promote the flow and integration of professional talents in the financial industry and AI technology field. In addition, it is necessary to continuously improve the legal system and regulatory technology to ensure the compliant application of AI technology in the formulation and supervision of financial laws, providing strong support for the healthy, stable, and sustainable development of the financial market.

4.2. Optimization Measures

In the process of building a standardized path for financial risk management, a regulatory framework based on AI technology and intelligent investment advisors is crucial. Financial regulation, as an important means for the government to respond to financial risks, although traditional financial regulation faces many challenges, intelligent financial regulation is also difficult to avoid these problems in the formulation process. Firstly, the upper level laws should be adjusted to provide reasonable legal standards for regulating artificial intelligence, ensuring that emerging financial platforms driven by big data operate within the legal bottom line, while providing a fair and sustainable environment for the financial market. Secondly, scientific and flexible standard setting methods should be explored in the legal formulation process and participation mechanism, drawing on international standards and combining them with China's actual situation to develop multi-level intelligent regulatory standard procedures, ensuring the timeliness and diversity of legislation. To this end, a specialized supervisory agency should be established to manage artificial intelligence financial regulation, ensure judicial openness and transparency, and accept supervision from all parties. The intelligent law enforcement system [5]generates law enforcement reports and establishes a law enforcement model framework by deriving legal rules and financial logic trees, ensuring data uniqueness and the security of financial participant information. Intelligent law enforcement also achieves information management and ensures the discipline of law enforcement activities through innovative regulatory tools such as intelligent warnings, confiscation program robot assistance, and intelligent warehouse seizure.

The intelligent law enforcement system records the law enforcement process, monitors the behavior of law enforcement personnel, prevents improper behavior, and ensures the integrity and accuracy of law enforcement activities. In addition, the intelligent law enforcement system enhances the risk prevention and control capabilities of the financial market, achieving comprehensive supervision through modular supervision, especially for financial risk control of small and medium-sized enterprises and individual investors. The intelligent assistance system integrates law enforcement cases into a large database, disperses and eliminates risks through algorithmic logic circuits, and ensures the clarity and purposefulness of law enforcement under the principle of prudence. At the same time, intelligent auxiliary systems [6] have promoted financial regulatory reform, challenged traditional regulatory assumptions, prevented cyclical regulatory failures caused by information delays, avoided stifling innovation, and ensured economic growth and social welfare improvement. This intelligent auxiliary system has played an important role in financial risk management, further promoting the standardized development of financial regulation

5. Conclusion

Based on AI technology and the construction of an intelligent investment advisory regulatory framework, China should adopt a comprehensive strategy for financial risk management and standardization that is both in line with international trends and adapted to domestic realities. This strategy focuses on gradually building a systematic and multi-level legal regulatory framework for artificial intelligence financial supervision through a combination of flexible departmental regulations

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and algorithmic legal regulations. Firstly, we need to comprehensively examine the current development status both domestically and internationally, recognize the differences, and avoid directly applying foreign models. Secondly, in the exploration and innovation of intelligent regulatory models, it is necessary to integrate existing laws and regulations to clarify the legal status of AI technology, innovate intelligent financial regulatory agencies to enhance regulatory efficiency, and continuously optimize regulatory technology through case driven technological upgrades. For the field of intelligent investment advisory, a comprehensive regulatory framework should be established, including setting entry thresholds, enhancing algorithm transparency and interpretability, and establishing sound risk management and prevention mechanisms. Finally, in order to achieve a standardized path, it is necessary to promote legislation and regulation simultaneously, strengthen technological support and talent cultivation, and actively participate in international cooperation and exchanges. Through these measures, we will gradually establish a robust artificial intelligence financial regulatory system [7], providing strong guarantees for the healthy development of China's financial market.

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