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CHINA DIGITAL CREDIT SUPERVISION: BALANCING EFFICIENCY, FAIRNESS, AND TRUST IN MODERN GOVERNANCE[1]

With the rapid development of digital technology, the limitations of traditional credit supervision methods have become increasingly apparent. It is difficult to cope with the challenges of accelerating information flow and increasingly complex social behavior. Digital credit supervision was introduced to provide a comprehensive credit portrait of stakeholders' behavior, improving supervision efficiency and enhancing social equity and resource allocation. However, the practice of digital credit regulation faces many problems, including how to balance the relationship between regulatory efficiency and privacy protection. Moreover, the misuse of technology may result in risks such as algorithmic bias and social injustice. Hence, it is essential to study the logic and application path of digital credit regulation and clarify its development. Based on theoretical logic and application paths, this study discusses digital credit regulation and its internal logic at the economic, technological, and social levels, and analyzes specific cases to identify the key links and mechanisms of digital credit regulation in practice. Through theoretical analysis and case studies, the specific practices of digital credit supervision in data collection, classification management, and risk early warning are clarified. This study argues that, as an important innovation in credit governance, digital credit regulation integrates technical, economic, and social logic, providing a new path for realizing trust mechanisms in modern society. Meanwhile, the intervention of intelligent technology has made digital credit supervision more accurate and forward-looking, opening up a broader space for credit management. Findings show that digital credit supervision has significant advantages for social development. It improves the efficiency of resource allocation and promotes the standardization of economic activities, playing an irreplaceable role in the reconstruction of the trust system. However, it faces multiple challenges, including technology, systems, and internationalization. This study argues that, in the future, it is necessary to promote the sustainable development of digital credit supervision through technological optimization as well as legal protection to better

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serve social governance and economic operations. Only through multiparty cooperation and continuous optimization of regulatory models and data governance can digital credit supervision become a key force in promoting social progress.

Keywords: Digital credit regulation; Data governance; Trust mechanisms
JEL classification: ***G28, O38, D73, H83, P48***

Зі швидким розвитком цифрових технологій обмеження традиційних методів кредитного нагляду стають дедалі очевиднішими. Важко впоратися з викликами прискорення потоку інформації та ускладнення соціальної поведінки. Цифровий кредитний нагляд був запроваджений для забезпечення комплексного кредитного портрета поведінки зацікавлених сторін, підвищення ефективності нагляду та посилення соціальної справедливості та розподілу ресурсів. Однак практика цифрового кредитного регулювання стикається з багатьма проблемами, зокрема з тим, як збалансувати взаємозв'язок між ефективністю регулювання та захистом конфіденційності. Крім того, неправильне використання технологій може призвести до таких ризиків, як алгоритмічна упередженість та соціальна несправедливість. Отже, важливо вивчити логіку та шлях застосування цифрового кредитного регулювання та уточнити його розвиток. Ґрунтуючись на теоретичній логіці та шляху застосування, це дослідження розглядає цифрове кредитне регулювання та його внутрішню логіку на економічному, технологічному та соціальному рівнях, а також аналізує конкретні випадки для визначення ключових зв'язків та механізмів цифрового кредитного регулювання на практиці. За допомогою теоретичного аналізу та тематичних досліджень уточнюється конкретна практика цифрового кредитного нагляду у зборі даних, управлінні класифікацією та ранньому попередженні ризиків. У цьому дослідженні стверджується, що як важлива інновація в управлінні кредитами, цифрове кредитне регулювання інтегрує технічну, економічну та соціальну логіку, забезпечуючи новий шлях для реалізації механізмів довіри в сучасному суспільстві. Тим часом, втручання інтелектуальних технологій зробило цифровий кредитний нагляд більш точним та перспективним, а також відкрило ширший простір для управління кредитами. Результати дослідження показують, що цифровий кредитний нагляд має значні переваги для соціального розвитку. Він підвищує ефективність розподілу ресурсів та сприяє стандартизації економічної діяльності, відіграючи незамінну роль у реконструкції системи довіри. Однак він стикається з численними викликами, такими як технології, системи та інтернаціоналізація. У цьому дослідженні стверджується, що в майбутньому необхідно сприяти сталому розвитку цифрового кредитного нагляду шляхом технологічної оптимізації, а також правового захисту, щоб краще служити соціальному управлінню та економічним операціям. Тільки завдяки багатосторонній співпраці та постійній оптимізації регуляторних моделей та управління даними цифровий кредитний нагляд може стати ключовою силою у сприянні соціальному прогресу.

Ключові слова: регулювання цифрового кредиту, управління даними, механізми довіри
JEL classification: ***G28, O38, D73, H83, P48***

In the context of the rapid development of digital technology, the credit system has gradually become an important foundation for social governance and economic operations. With the wide application of big data and artificial intelligence technologies, the limitations of traditional credit supervision methods have become increasingly apparent, making it difficult to cope with the challenges of accelerating information flow and increasingly complex social behavior. Digital credit supervision was introduced, which collects, analyzes, and uses credit data through technical means to provide a comprehensive credit portrait of the behavior of individuals, enterprises, and governments. This type of supervision not only improves the efficiency of oversight but also promotes social equity and the optimal allocation of resources to a certain exten.

However, the practice of digital credit regulation faces many problems. On the one hand, balancing regulatory efficiency and privacy protection has become the focus of attention. However, the misuse of technology may result in risks such as algorithmic bias and social injustice. Therefore, it is of great practical significance to lation in terms of tools, data sources, and governance effects, this paper identifies the core characteristics of

digital regulation and provides a theoretical basis for the innovation of regulatory models. Finally, this study proposes that digital credit regulation, by quantifying credit behaviors and establishing an open and transparent evaluation system, can promote the shift of the foundation of social trust from traditional interpersonal relationships to technology-driven institutional rules, thereby enriching trust theory in the field of sociology. The findings can provide new insights and references for both theoretical development and practical application in digital credit supervision.

1 The Theoretical Logic of Digital Credit Regulation

1.1 The core connotation of digital credit

Digital credit is the process of collecting, processing, evaluating, and applying the credit information of individuals, enterprises, and organizations based on big data and digital technology. It represents an extension and upgrade of the traditional credit system in the context of digitalization [1]. By definition, digital credit encompasses the behavioral records of subjects in the digital space and the resulting credit evaluations, characterized by the dynamic, multi-dimensional, and traceable nature of information.

The characteristics of digital credit are mainly reflected in the following aspects. First, a high degree of real-time capability. Digital credit is based on a constantly updated data stream, and its assessment results can quickly reflect the latest changes in subjects' behavior [2]. Second, it has a wide range of data sources. Digital credit relies not only on traditional credit data, such as bank credit history, but also on unstructured data, such as social media activity and online transaction history [3]. Third, the evaluation is multi-dimensional. The evaluation criteria for digital credit have expanded from a single economic dimension to a comprehensive consideration of multiple dimensions, such as behavior and social impact [4].

From a historical development perspective, digital credit has evolved from information silos to data sharing. Early credit assessments relied on limited data and a single institutional processing model to achieve a comprehensive evaluation. With the popularization of the Internet and big data technologies, cross-industry and cross-domain data integration has become possible, laying the foundation for the formation of digital credit. Simultaneously, the intervention of artificial intelligence technology has further improved the accuracy of data analysis, making the digital credit system increasingly robust and sophisticated.

In a digital society, digital credit plays an important role in trust building and risk avoidance. First, it provides a credible basis for interactions between strangers. Whether in e-commerce transactions or online leasing, digital credit can effectively reduce information asymmetry and improve transaction efficiency. Second, digital credit helps financial institutions and regulators identify potential risks, optimize resource allocation, and reduce social operating costs through early warning functions. Moreover, in social governance, digital credit has gradually become an important tool for curbing undesirable behavior and promoting a culture of creditworthiness.

In general, the core connotation of digital credit is reflected not only in the efficiency improvements brought about by technological progress but also in its reshaping of the social trust system. In the future, how to better leverage the positive role of digital credit while avoiding possible privacy and ethical issues will become an important topic for further research and practice.

1.2 The logical basis of digital credit regulation

1.2.1 From technical logic

The core of digital credit regulation relies on the support of advanced technologies, such as big data and artificial intelligence. These technologies provide powerful tools for the collection, processing, and application of credit data. Big data collects massive, multi-source behavioral information to form a credit information network with extensive coverage. This information includes not only traditional financial data but also unstructured data, such as consumption records and social

interactions, providing a more comprehensive basis for credit assessment. Artificial intelligence employs algorithms to mine and analyze data, uncovering credit risk patterns that are difficult to detect using traditional methods [5]. For example, machine learning models can predict the potential default risk of individuals or enterprises and assist regulators in formulating targeted policies.

In addition, the intervention of technology makes credit supervision more real-time and accurate. Traditional credit supervision mostly relies on periodic assessments, which makes it difficult to respond quickly to behavioral changes. In contrast, big data technology can update the credit status of entities in real time, providing the possibility for dynamic supervision. The automated processing power of artificial intelligence has also greatly reduced the cost of credit assessment, making digital credit supervision more widespread. With the support of technology, credit supervision is no longer limited to the financial field but extends to broader social activities, forming a comprehensive credit ecology.

1.2.2 From economic logic

In the era of the digital economy, credit capital has become an important basis for resource allocation and transactions. The circulation of digital credit not only affects the financing ability of individuals and enterprises but also directly determines their competitiveness in the market. Credit supervision optimizes the efficiency of credit capital circulation by standardizing the use of credit data.

On the one hand, the transparency and standardization of digital credit improve the credibility of transactions, thereby reducing transaction costs in the market. By making credit histories public and reliable, businesses can more easily obtain financing support, while individuals can access more convenient services for consumption, borrowing, and other activities. On the other hand, digital credit regulation promotes precise resource allocation. For example, when granting credit, financial institutions can offer differentiated loan conditions based on credit ratings, allowing funds to flow more efficiently to high-credit entities.

Simultaneously, credit supervision maintains the normal order of the market by restraining credit abuse. In the context of the digital economy, dishonest behavior may lead to unfair competition in the market and even the collapse of trust, and effective credit supervision can establish a reliable trust mechanism for economic operations. Digital credit regulation is not only a tool of constraint but also an important driving force for promoting economic circulation and innovation.

1.2.3 From social logic

The digital credit system is not only a product of technical and economic logic but also plays an important role in rebuilding public trust at the social level. In traditional societies, trust mainly relies on long-term interactions between people or specific social bonds, whereas in digital societies, online interactions gradually replace face-to-face interactions. This shift creates a fault line in trust that needs to be addressed by new mechanisms to ensure social order. The digital credit system helps rebuild the foundation of public trust by quantifying and disclosing credit information [6].

First, digital credit makes honest behavior more visible to others. Whether it is an individual's compliance record or an enterprise's ability to fulfill a contract, it can be clearly reflected through digital credits. This kind of transparency not only enhances the credit awareness of the participants but also positively shapes the social atmosphere. Second, digital credit regulation deters untrustworthy behavior through punishment mechanisms, which helps improve the overall level of social creditworthiness. For example, restricting the rights of untrustworthy individuals in areas of high consumption not only serves as a direct consequence for their behavior but also raises awareness among members of society about the importance of integrity.

Additionally, the digital credit system promotes the equitable distribution of public resources. In areas such as social welfare and educational opportunities, credit assessment can provide a scientific basis for policy formulation, more effectively

benefiting high-credit subjects. By reshaping public trust, digital credit regulation is facilitating the transformation of society from "interpersonal trust" to "rule-based trust," providing new possibilities for social governance in the digital age.

1.3 Previous digital credit regulation research

In the current era, when the digital economy is deeply reshaping the rules of social operation, the traditional credit regulation model centered on financial data has become increasingly inadequate in addressing the challenges of information explosion and behavioral complexity [7]. Digital credit regulation reconstructs mechanisms for credit assessment, risk early warning, and social trust building. It has thus become a focal point of attention in global academic and policy circles [8, 9].

On the one hand, from the perspective of theoretical foundations and system construction, existing studies generally agree that digital credit regulation represents an upgrade of the traditional credit system in the context of digitalization [10]. For instance, research has pointed out that the construction of a credit system in the digital economy era needs to integrate multi-dimensional behavioral data, such as consumption records and social activities, break through the singularity of traditional financial data, and build a dynamic credit portrait [11]. Moreover, from a technical perspective, research emphasizes that artificial intelligence algorithms significantly enhance the accuracy of risk assessment by mining unstructured data. However, it is necessary to remain vigilant against decision-making biases caused by the "black box" nature of algorithms [12]. Furthermore, at the level of social trust reconstruction, digital credit can promote the transformation of society from "interpersonal trust" to "institutional trust" [13], and its quantitative mechanisms enhance the collaborative efficiency of a society of strangers. However, it may also weaken the trust elasticity within the community.

On the other hand, research on practical applications and core mechanisms focuses on the innovation of data governance and regulatory tools. In terms of data quality, blockchain technology ensures the authenticity and traceability of credit data, but cross-departmental data sharing still faces institutional barriers [14]. In the innovation of regulatory tools, credit scores can dynamically constrain enterprise behaviors in anti-monopoly efforts on digital platforms, such as by incorporating monopolistic behaviors into credit ratings [15]. Research on risk early warning models indicates that big data technology can identify abnormal financial signals of enterprises, but the index weights need to be optimized in combination with industry characteristics [16].

1.4 Comparison of digital credit regulation with traditional regulation

There are significant differences between digital credit supervision and traditional supervision methods in terms of regulatory tools, data sources, and governance effects, reflecting the innovation of regulatory models in the digital age.

First, in terms of the use of tools, traditional credit supervision mainly relies on manual review and periodic data collection, emphasizing post-event management. This approach is inefficient and makes it difficult to detect potential risks in a timely manner. In contrast, digital credit regulation relies on big data and intelligent algorithms to achieve real-time collection and dynamic updating of credit information [17]. This technology-driven model not only improves the efficiency of supervision but also enables refined management. For example, by monitoring credit behavior in real time, digital credit supervision can quickly identify abnormal situations and issue early warnings, thereby enhancing risk prevention and control.

Second, in terms of data sources, traditional supervision mainly relies on data from a single domain, such as banks' loan records or enterprises' financial statements, and the scope of the data is relatively narrow. In contrast, digital credit supervision integrates multi-source data, including consumption records, social behaviors, and performance history, to make credit evaluations more comprehensive. This broad

data coverage helps build a multidimensional credit profile, improving the accuracy of regulatory decisions.

However, the advantages of digital credit regulation are accompanied by challenges. Compared with traditional regulation, its high dependence on technology may lead to problems such as algorithmic bias and privacy leakage. For example, some algorithms may discriminate against specific groups of people due to improper design, and large-scale data collection has raised public concerns about the security of personal information. In addition, digital credit regulation requires cross-domain and cross-industry collaboration; however, in practice, interdepartmental information barriers may limit the circulation and sharing of data.

Overall, digital credit regulation is superior to traditional regulatory approaches in terms of efficiency, coverage, and real-time performance; however, it also faces new technical, ethical, and collaborative challenges. In the future, it will be necessary to strengthen the construction of regulations and systems while optimizing technical tools to ensure that digital credit supervision achieves both efficient oversight and the maintenance of social equity and public trust.

2. The application of digital credit supervision

2.1 Core mechanisms for digital credit regulation

2.1.1 Data collection and analysis

The foundation of digital credit supervision lies in the efficient collection and accurate analysis of data. Using advanced technical means, credit data collection spans multiple dimensions and scenarios, including financial transactions, e-commerce records, and the use of public services. This integration of multi-source data enables the construction of a comprehensive credit information database. The key to effective data collection is achieving both breadth and depth while ensuring the authenticity and legitimacy of the data. Technical tools, such as crawlers and blockchain technologies, are employed to guarantee the reliability and immutability of data sources.

In the data analysis stage, meaningful credit characteristics can be extracted from complex datasets using artificial intelligence and big data mining techniques. For example, machine learning models can predict credit risk based on behavioral patterns and assist in accurately assessing an entity's credit rating. Compared to traditional methods that rely on manual evaluation, this automated data processing significantly improves efficiency and reduces the subjectivity of human intervention. The accuracy of data analysis not only enhances the scientific basis of supervision but also provides a solid foundation for subsequent credit ratings and early warning systems [18].

2.1.2 Classification of regulatory objects

A distinctive feature of digital credit regulation is the implementation of categorical management across different types of subjects. Personal credit mainly focuses on behavioral records, such as consumption habits and performance ability. Through the credit scoring mechanism, an individual's credit status can be comprehensively evaluated and provided as a reference for financial institutions or service providers. Corporate credit supervision emphasizes business conditions, legal compliance, and social responsibility [19]. For example, a company's tax records and contract performance are important indicators in credit evaluations. Government credit supervision, in turn, focuses on policy transparency, the efficiency of public resource management, and the integrity of governance behavior.

The significance of this type of classified management lies in formulating differentiated regulatory strategies for different entities, thereby improving the efficiency and fairness of supervision. For example, personal credit information can be used to streamline the loan approval process, corporate credit assessments can provide a basis for market access and regulation, and government credit data can serve as a reference for public supervision and evaluation. This classification mechanism not only enables refined management of

credit supervision but also guides the rational application of credit information.

2.1.3 Early warning mechanism

The early warning mechanism in digital credit regulation is a key component in the prevention and control of credit risk. By monitoring credit data in real time, these mechanisms can identify potential risks and enable timely intervention. For example, when an individual's or business's credit score drops significantly, the system can trigger an early warning alert, allowing regulators or relevant parties to intervene promptly and prevent further risk escalation [20].

The construction of an early warning mechanism relies on the dynamic analysis of data and the continuous optimization of risk models. Based on historical data, machine learning algorithms can continuously refine risk identification criteria, such as detecting high-risk behaviors, including deterioration in financial status and contract breaches. At the same time, when combined with expert judgment, the results of data analysis can be manually verified to ensure the accuracy and relevance of the early warnings.

In addition, the early warning mechanism must be supported by a reasonable risk management plan. For example, for enterprises with abnormal credit scores, measures such as rectification within a specified time frame and increased audit efforts may be implemented. In cases where personal credit declines, further penalties can be avoided by reminding individuals to correct their behavior. A sound early warning mechanism allows digital credit supervision to not only control credit risks effectively but also provide a crucial guarantee for the healthy development of the credit system.

2.2 Key links in digital credit regulation

2.2.1 Data quality management

Data quality is the core of digital credit regulation, and its authenticity and legitimacy directly affect the reliability of credit assessments. Ensuring data quality requires strict control over data collection, processing, and storage. In the data collection stage, trusted channels such as government departments and financial institutions should be preferred, and data encryption technologies should be used to reduce the risk of information tampering. In the data processing stage, the raw data are cleaned and verified, invalid information is eliminated, and standardized rules are established to improve the efficiency of data analysis. During storage, privacy regulations are strictly adhered to, and in particular, a high level of protection is ensured for sensitive data. Strengthening data quality management can improve the scientific basis of supervision and enhance the public's sense of trust.

2.2.2 Legal and ethical safeguards

A sound legal and ethical framework is the foundation of digital credit regulations. The law needs to clarify the boundaries of data collection and use to prevent information misuse, such as the Personal Information Protection Law, which provides an important basis for this issue. The law also needs to regulate data trading and sharing to avoid illegal profit-making. At the ethical level, it is necessary to ensure the fairness of algorithm evaluation and prevent discrimination due to data bias. This requires strengthening the transparent management of algorithms and expert supervision. Simultaneously, the punitive measures of credit regulation should consider reasonableness and social acceptance to avoid excessive punishment causing injustice. Improving legal and ethical safeguards can make digital credit regulations more efficient and credible.

2.2.3 Multi-agent collaboration

The advancement of digital credit regulation requires the joint participation of the government, enterprises, and individuals. The government is responsible for formulating policies and regulations, overseeing the credit assessment process, and punishing untrustworthy behavior. As the main data providers, enterprises must fulfill their data provision obligations, participate in credit information sharing, and comply with data use specifications. Individuals need to have a sense of credit and maintain their own credit, while simultaneously exposing untrustworthy behavior through

credit reporting. The key to multi-agent collaboration is to clarify the allocation of responsibilities, ensure that the rights and responsibilities of all parties are clear, and ultimately maximize the efficiency of resource integration and project supervision.

2.3 Analysis of typical cases of digital credit regulation

The practice of digital credit supervision on a global scale has achieved initial results, and typical cases cover three dimensions: personal, corporate, and government credit supervision. These practices provide lessons for digital credit regulation, but they also expose problems that need to be addressed.

2.3.1 Typical domestic cases: China's Social Credit System

Taking China's "credit information system" as an example, the Credit Information Center of the People's Bank of China has established a national personal credit record database by integrating data from financial institutions, providing important support for financial services [21]. On this basis, some enterprises have further explored innovation in digital credit supervision, such as Alipay's Sesame Credit system. Sesame Credit calculates personal credit scores based on users' behavioral data (such as consumption records and repayment history) and applies them to loan approval, housing leasing, and other fields. The advantage of this mechanism is that it reduces the cost of trust in the transaction process while encouraging honest behavior among the public.

However, this model has also sparked controversy regarding privacy protection. Some users have their data used for credit scoring without their knowledge, which can even affect their daily lives. This case illustrates the need to strike a balance between efficiency and privacy protection in digital credit regulation, while enhancing transparency to earn public trust.

2.3.2 International Typical Cases: Practice of Enterprise Credit Regulation

When it comes to corporate credit regulation, the European Union's General Data Protection Regulation (GDPR) sets a strict legal framework for the use of credit information. Businesses must take responsibility for the credit data they collect and store, ensuring data security. Some European Union countries have established corporate credit assessment mechanisms on this basis [22]. For example, Germany cooperates with credit rating companies through public databases to conduct multi-dimensional credit evaluations of enterprises' financial status, performance capability, and market behavior [23].

This model is characterized by a wide range of standardized data sources, which can effectively reflect the credit status of enterprises and provide a reference for business decisions. However, barriers to sharing credit data between MNEs in different countries exist, and some small businesses are marginalized due to the lack of a complete credit history. This case illustrates the need for deeper international cooperation in legal protection and data sharing for corporate credit supervision.

2.3.3 Summarize experience and enlightenment

The above cases show that the practice of digital credit supervision in individuals, enterprises, and governments has established an effective mechanism. Whether it is China's Sesame Credit [24] or the EU's corporate credit rating [25], these explorations show the potential of digital credit regulation to improve credit efficiency, reduce transaction costs, and improve governance structures. However, practices in various fields have also exposed some common problems, including barriers to data sharing, insufficient privacy protection, and inconsistent standards.

In the future, the practice of digital credit supervision needs to further improve technical support and legal guarantees and find the optimal balance between efficiency and fairness. Simultaneously, international exchanges and cooperation should be strengthened, especially in corporate credit supervision and cross-border data sharing, to provide more solutions for credit supervision in a globalized context. By summarizing these practical experiences, digital credit regulations can be more widely applied.

2.4 Innovative Directions of Digital Credit Regulation

2.4.1 Application prospects of smart contracts and blockchain technology in credit supervision

Smart contracts and blockchain technology offer new possibilities for regulating digital credit. With their decentralized, immutable, and transparent characteristics, blockchain systems can effectively address the data asymmetry and credibility problems in traditional credit supervision. As self-executing digital agreements, smart contracts can embed the rules of credit supervision into code, reducing human intervention and improving both efficiency and fairness.

In credit regulation, blockchain can be used as a storage and verification tool for credit data. By putting credit information on the chain, the authenticity and integrity of the data can be ensured. At the same time, the information can be shared transparently, reducing information barriers among all parties. For example, in corporate credit supervision, blockchain can track enterprise transaction records and contract performance, forming a complete credit file for reference by relevant parties. Smart contracts can automatically enforce credit rules, such as triggering penalties for defaults.

Despite their promise, blockchains still face performance bottlenecks and high energy consumption, and the execution security of smart contracts must be verified. In addition, the acceptance of blockchain varies greatly across industries and countries, and policy support and cooperation are needed to promote its wider application.

2.4.2 The impact of cross-border data flow on digital credit regulation and responses

Globalization has facilitated the cross-border flow of data, promoting international trade and cross-border investment, but it has also brought challenges related to privacy protection, data sovereignty, and regulatory coordination. In particular, differences in data protection laws between countries complicate the use and sharing of cross-border credit data.

The impact of cross-border data flow on credit supervision is mainly reflected in two aspects: first, the diversification and complexity of data sources make it more difficult for credit assessment to process information; second, the flow of data across multiple legal systems increases compliance costs. For example, the credit information of multinational enterprises may be distributed across several countries, making it difficult to unify evaluation criteria.

To address these challenges, it is necessary to develop a framework for international cooperation, promote legal consensus on data sharing, and clarify the scope and responsibilities of data flows. Simultaneously, data encryption and privacy computing technologies can be used to improve management security and ensure privacy protection and compliance in data circulation. In addition, the establishment of cross-border credit data exchange platforms should be encouraged to improve the efficiency of data exchange and provide more reliable support for credit regulation. By optimizing technologies and rules, the challenges of cross-border data flows can be transformed into innovative opportunities for digital credit regulation.

3 Challenges and future prospects of digital credit regulation

3.1 Main Challenges of Digital Credit Regulation

3.1.1 Technical Challenges

Digital credit regulation is highly reliant on big data and artificial intelligence technologies, but these technologies also raise issues such as data security and algorithmic bias. In terms of data security, large-scale data collection and storage may lead to privacy breaches, especially in the absence of strict protection measures, making user privacy vulnerable to such threats. Algorithmic bias is reflected in the fact that machine learning models may cause decision-making bias owing to imbalanced training data, which can have an unfair impact on specific groups. These technical problems directly affect the fairness and credibility of digital credit regulation and must be addressed by continuously optimizing technical means.

3.1.2 Institutional challenges

The lack of institutional coordination is another major problem in digital credit regulation. Barriers to cross-departmental collaboration make it difficult to share regulatory information, and different departments may have varying definitions and standards for the use of credit data, which reduces regulatory efficiency. In addition, the unclear definition of the powers and responsibilities of regulatory bodies can lead to data misuse or regulatory vacuums. Regulators in some places have a limited understanding and mastery of digital technologies, which further complicates the enforcement of regulations. These issues must be addressed through a clear division of responsibilities and the establishment of uniform standards.

3.1.3 International challenges

In the context of internationalization, cross-border credit regulation faces both legal and technical dilemmas. There are significant differences among countries in terms of data protection laws and credit assessment standards, which make cross-border data flows and regulatory coordination difficult. For example, the European Union's General Data Protection Regulation (GDPR) imposes strict restrictions on cross-border data transfers, whereas other countries may have more lenient rules. This discrepancy not only increases the cost of corporate compliance but may also hinder the establishment of an international credit regulatory system.

3.2 Future Prospects

In the future, the development of digital credit supervision will focus on model innovation and diversified data governance. In terms of the supervision mode, it is necessary to explore the combination of real-time monitoring and hierarchical management and achieve more efficient supervision by dynamically adjusting credit assessment strategies. In terms of data governance, the security of data sharing can be improved through technical means, such as the use of privacy computing and data encryption, to ensure the legitimacy and compliance of data during use. In addition, strengthening international legal cooperation and promoting the formation of a unified cross-border credit regulatory framework can help address the challenges brought about by globalization. Through technological optimization and institutional improvement, digital credit regulation will find a better balance among efficiency, fairness, and trust.

4 Conclusion

As an important innovation in credit governance, digital credit regulation integrates technical, economic, and social logic and provides a new path for the realization of trust mechanisms in modern society. From data collection and analysis to risk early warning and multi-agent collaboration, its application highlights the improvement of regulatory efficiency and the pursuit of social equity. Simultaneously, the intervention of intelligent technology has made digital credit supervision more accurate and forward-looking, opening up broader possibilities for credit management.

Digital credit regulation is of far-reaching significance for social development. It not only improves the efficiency of resource allocation and promotes the standardization of economic activities, but also plays an irreplaceable role in reconstructing the trust system. For individuals, businesses, and governments, digital credit regulation can help promote a culture of integrity and optimize public services and the business environment.

In the future, all sectors should pay greater attention to and conduct more research on digital credit regulation and promote the simultaneous improvement of technology and legal frameworks. Only through multiparty cooperation and the continuous optimization of regulatory models and data governance can digital credit supervision become a key force in promoting social progress.

References

1. Liu Cheng, Xia Jiechang, Building a Credit System in the Digital Economy Era, Exploration and Contention, no.6(2023):120–129.

2. Francis, Eilin, Joshua Blumenstock, and Jonathan Robinson. Digital credit: A snapshot of the current landscape and open research questions. CEGA White Paper (2017): 1739–76.

3. Karami, Amin, and Chukwuemeka, Igbokwe. The impact of big data characteristics on credit risk assessment. International Journal of Data Science and Analytics (2025): 1–21.

4. Liu, Yang, et al. Can digital financial inclusion promote China's economic growth? International Review of Financial Analysis 78 (2021): 101889.

5. Chen Qianru. Analysis of Credit Supervision Path under the Background of Digital Economy, Gansu Finance, no.1(2023):65–67.

6. DU Guangqin. How to strengthen the construction and supervision of the credit system of market entities under the digital economy system, Modern Business Research,no.3(2023):29–31.

7. González Páramo, José Manuel. Financial innovation in the digital age: Challenges for regulation and supervision. Revista de Estabilidad Financiera/Banco de España, 32 (mayo 2017), p. 9–37 (2017).

8. Le, Tu DQ, Thanh Ngo, and Dat T. Nguyen. Digital credit and its determinants: a global perspective. International Journal of Financial Studies 11.4 (2023): 124.

9. Upadhyaya, Radha, Keren Weitzberg, and Linda Bonyo. Digital credit providers, regulatory frameworks, and structural power: A case study of digital microcredit regulation in Kenya. Finance and Society (2025): 1–23.

10. N. Kutsuri, G., et al. Features of financial and credit regulation of the economy in the context of digitalization. IV International Scientific and Practical Conference. 2021.

11. Xu, Ruowen. Big data credit scoring in China: organisation of work, state aspiration and impact on financial inclusion. Diss. University of Warwick, 2020.

12. Wischmeyer, Thomas. Artificial intelligence and transparency: opening the black box. Regulating artificial intelligence. Cham: Springer International Publishing, 2019. 75–101.

13. Mahad, Murat, Shahimi Mohtar, and Abdul Aziz Othman. Disposition to trust, interpersonal trust and institutional trust of mobile banking in Malaysia. Journal of Management Info 8.1 (2015): 1–14.

14. Akindotei, Odunayo, et al. Blockchain Integration in Critical Systems Enhancing Transparency, Efficiency, and Real-Time Data Security in Agile Project Management, Decentralized Finance (DeFi), and Cold Chain Management. International Journal of Scientific Research and Modern Technology (IJSRMT) Volume 3 (2024).

15. Jin, Sun. Anti-monopoly regulation of digital platforms. Social Sciences in China 43.1 (2022): 70–87.

16. Korol, Tomasz. Early warning models against bankruptcy risk for Central European and Latin American enterprises. Economic Modelling 31 (2013): 22–30.

17. CHEN Zixuan. Research progress on the quality and safety supervision of agricultural products from traditional supervision to credit supervision: Bibliometric analysis based on CiteSpace, Journal of Anhui Agricultural Sciences, no.19(2024):211–217.

18. GUO Na, MENG Tingting, XIE Nalin. Exploration on the construction of social credit system and regulatory mechanism in Xiong'an New Area–Based on the perspective of digital development, Credit Information, no.7(2023):6–13.

19. HUANG Hongyu. Application of credit supervision tools in the field of digital platform anti-monopoly, China Credit, no.4(2024):85–90.

20. ZHANG Jun. Research on enterprise credit early warning mechanism based on big data technology, Market Weekly,no,10(2021):3–461.

21. DAI Yan. Construction of China's Credit Information System,Banker,no.11(2004): 34–37.

22. LIN Ling, LI Zhaoyi. Dual-track Mechanism of Personal Information Protection: Legislative Implications of the EU General Data Protection Regulation, University of Journalism,no.12(2019):1–15.

23. Flögel, Franz. Distance, rating systems and enterprise finance: ethnographic insights from a comparison of regional and large banks in Germany. Routledge, (2018).

24. Mac Síthigh, Daithí, and Mathias Siems. The Chinese social credit system: A model for other countries? The Modern Law Review 82.6 (2019): 1034–1071.

25. Thomos, Konstantinos, Aristidis Bitzenis, and Nikos Koutsoupias. Credit Rating in Business and Economics Research: Europe (2000-2022). Global Business & Economics Anthology (2023).

CHINA DIGITAL CREDIT SUPERVISION: BALANCING EFFICIENCY, FAIRNESS, AND TRUST IN MODERN GOVERNANCE

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With the rapid development of digital technology, the limitations of traditional credit supervision methods have become increasingly apparent. It is difficult to cope with the challenges of accelerating information flow and complicating social behavior. Digital credit supervision was introduced to provide a comprehensive credit portrait of stakeholders' behavior, improving supervision efficiency and enhancing social equity and resource allocation. However, the practice of digital credit regulation faces many problems, including how to balance the relationship between regulatory efficiency and privacy protection. Moreover, the misuse of technology may result in risks such as algorithmic bias and social injustice. Hence, it is essential to study the logic and application path of digital credit regulation and clarify its development. Based on theoretical logic and application path, this study discusses digital credit regulation and its internal logic at the economic, technological, and social levels and analyzes specific cases to identify the key links and mechanisms of digital credit regulation in practice. Through theoretical analysis and case studies, the specific practice of digital credit supervision in data collection, classification management, and risk early warning is clarified. This study argues that as an important innovation in credit governance, digital credit regulation integrates technical, economic, and social logic, providing a new path for realizing trust mechanisms in modern society. Meanwhile, the intervention of intelligent technology has made digital credit supervision more accurate and forward-looking and opened up a broader space for credit management. Findings show that digital credit supervision has significant advantages for social development. It improves the efficiency of resource allocation and promotes the standardization of economic activities, playing an irreplaceable role in the reconstruction of the trust system. However, it faces multiple challenges, such as technology, systems, and internationalization. This study argues that in the future, it is necessary to promote the sustainable development of digital credit supervision through technological optimization as well as legal protection to better serve social governance and economic operations. Only through multiparty cooperation and continuous optimization of regulatory models and data governance can digital credit supervision become a key force in promoting social progress.

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