

# Research on Credit Management in China from the Perspective of Data Information Technology

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## Abstract:

Credit management is an exploration of information society governance in China, which presents the technical dimension of governance tool innovation empowered by information technology and the normative dimension of seeking legalization under the concept of rule of law. However, due to the lack of awareness of the relationship between information technology and credit laws and the insufficient development of the regulatory mechanism reform space brought by information technology, social subjects including the government, accompanied by concerns about personal information protection, have caused disputes. The relationship between data information technology and credit law should be reconstructed in China's credit management. Specifically, in the technical dimension, the government's information capacity should be strengthened from the collection, interaction and application of credit information. In the normative dimension, the perspective of legal regulation should be changed based on the basic characteristics of digital technology, the certainty of law enforcement should be enhanced based on information technology to increase deterrence, the prediction function of big data should be highlighted to adjust the focus of regulation from post-disciplinary to pre-intervention and shaping, and the publicity orientation of personal information should be deepened to realize the necessary treatment of personal information by credit management.

**Keywords:** *big data; credit management; digital ability; right to personal information; right of privacy*

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## I. INTRODUCTION

The sharing platform where all things are interconnected, the social relationship concluded digitally, the online and offline consumption patterns, and the resource allocation and competition characterized by traffic acquisition and transformation all mark that the Internet has evolved from a single 'technological practice' to a comprehensive 'social transformation'." [1]Manuel Castells once pointed out: "As a historical trend, the dominant function and process of the information age are increasingly organized by the network, which constructs the new social form of our society. The proliferation of network logic has changed the operation and result in the process of production, experience, power and culture in essence." [2] The development of digital information technology iterates to the stage of algorithm and intelligence, which thoroughly pushes the social structure to change from "an acquaintance society organized by blood or

geography" to "an ultra-large-scale stranger society". As a result, the increasingly complex and profound governance crisis arises. All modern countries are facing increasingly severe social governance problems, which urgently require in-depth exploration of governance and systematic response.

The construction of social credit with credit management as the core is a powerful exploration by the Chinese government in the market supervision and social governance in the digital information era, which has achieved effective results. However, due to its implementation based on big data and algorithms and credit joint punishment as the basic means, it has aroused domestic and international concerns about the infringement of personal information and privacy rights and doubts about China's state monitoring doctrine. At the present stage, social credit is mostly closed as a legal issue in the research, ignoring its dynamic mechanism of information technology. Based on this, in this paper, the legitimacy of China's credit management will be pointed out from the transformation ability of information technology to social governance model. Then, based on the deconstruction and construction function of information technology to society and its mechanism, the relationship between information technology and social credit laws will be conceived, and some solutions to the difficult problem of the rule of law in China's social credit construction in the era of big data will be given.[3]

## II. THE CREDIT MANAGEMENT IN CHINA AS AN INNOVATION OF DIGITAL SOCIAL GOVERNANCE

The social credit management in China is a powerful exploration by the Chinese government in market supervision and social governance in the digital era. The rapid development of China after reform and opening up has led to the disruption of the original credit structure in urbanization and marketization, which "has caused the continual irregularity in both commercial activities and social behaviors, manifested by the fact that the market itself cannot adequately adjust the allocation of resources due to asymmetric information, while external legal supervision is in a dilemma due to high cost." [4] In June 2015, in the *Opinions of the General Office of the State Council on Strengthening Services and Supervision over Market Subjects by Using Big Data*, it was clearly stated that "the construction of social credit system and the openness of government information and data should be taken as the starting point, and modern information technologies such as big data and cloud computing should be fully used to improve the level of government services and strengthen supervision during and after the event." Thus, technologies such as "big data" and "algorithms" have been actively applied to social credit construction.

The superposition of the development of information technology and the transformation of market supervision not only strengthens the urgency of government transformation, but also provides many possibilities for the country to explore new governance models. In 2013, a successful attempt was made in the capital system reform of the *Company Law*: "The real success of the reform lies in the change of regulatory thinking, that is, solving the problem of information asymmetry in market transactions." [5] The era of big data and algorithms has provided technical support for effective regulation by addressing information asymmetry in market transactions. The government, based on the transmission mechanism of "information-credit" and relying on big data, algorithms and artificial intelligence, collects, evaluates,

publishes and applies the public credit information generated or mastered in the course of performing duties, thus realizing the regulatory reform based on credit. First of all, it helps to control the trading risk by subsidizing the production of necessary information needed by rational people to choose trading objects and set trading strategies, and realizes the suppression of opportunism based on information asymmetry through reputation mechanism, that is, "providing incentives for self-enforcement".[6] Secondly, based on the integration of information, especially the risk assessment after the integration of historical information, it realizes the optimal allocation of regulatory resources and the targeted promotion of regulatory measures. As of May 2019, the national tax authorities have announced a total of 22,750 cases of illegal taxation that have been blacklisted, and a total of more than 300,000 joint disciplinary actions have been taken.[7] Up to December 2020, a total of 7.51 million dishonest enforcers across the country have voluntarily fulfilled their obligations under the effective legal instruments without fear of joint credit punishment.[8]

The construction of China's social credit system after 2015 is an inevitable requirement for the government to improve the administrative efficiency in the digital information age and "the governance paradigm shift brought by algorithm control under the data drive"[9], which "represents a new form of governance".[10] Based on big data and algorithms, data information constitutes a "panoramic three-dimensional portrait" of people, by which the Chinese government seeks the "omnipresent" governance power. China has "adhered to the principle of integrating itself with the world based on its national conditions. Through theoretical and practical exploration, it has not only creatively put forward the concept of "social credit system" different from the "credit reporting system" in western countries, but has gradually formed a construction mode of "co-governance and mutual aid" between the culture of good faith and the social credit system. [11]

### **III. DIFFICULTIES IN CHINA'S SOCIAL CREDIT CONSTRUCTION FROM THE PERSPECTIVE OF DATA AND INFORMATION TECHNOLOGY**

#### **3.1 Insufficient understanding of the government on the data and information technology characteristics of credit management**

In China's social credit construction, the regulatory tools do not match the regulatory objectives. That is to say, the social credit system comprehensively covered by "government-market-society-justice", which bears the grand vision of social governance innovation, has been narrowed into credit supervision with punishment as the main means in the construction practice, resulting in many problem at the macro level, it has triggered misunderstandings and censures such as "expansionist nationalism as the most important thinking"[12]and "digital totalitarianism"[13] in China's social credit construction. At the micro level, the joint disciplinary system of dishonesty faces the risks of governance failure, function overload, excessive expansion, etc., and poses a threat to the legitimate rights and interests of individuals and other market entities. [14] Moreover, the lack of legal constraints in the use of credit regulation tools poses challenges to privacy and personal information protection. "Due to the insufficient supply of social credit theory research, the lack of legal restrictions and the administrative agencies' special preference for disciplinary measures for breaking the promise, the administrative agencies have attempted to hitch up almost all social

problems with the social credit system, which deviates from the original intention of the national credit system construction." [15]

All of the above reflects the Chinese government's insufficient understanding of the information technology characteristics of social credit construction. In fact, the construction of social credit system, as a practical attempt of market management and social governance, involves the intersection of administrative law, civil and commercial law, personal information protection law and other legal departments within the law science, and integrates the research paradigms of economics, sociology, management and other disciplines outside the discipline. At the same time, due to its technical foundation of big data, algorithms and artificial intelligence, it presents a high degree of echo and interaction with information technology, and has prominent characteristics of interdisciplinary and domain integration. [16] The deconstruction and construction of society brought by information technology is the power source of China's social credit construction. However, due to insufficient research on the internal structure and operation principle of information technology in the process of social governance by credit tools, the Chinese government has failed to establish governance concepts and regulatory tools that effectively reflect the technical characteristics of the information age.

### 3.2 Insufficient data and information capacity building of the government

At the present stage, the main achievements of China's social credit construction in the technical dimension are as follows: First, the unified social credit code is used as the identifier created by the state to construct the identity authentication infrastructure in the information society. Up to December 2021, there were 58.91 million legal and unincorporated institutions and 92.02 million individual businesses, which were classified into the categories of civil subjects according to the *Civil Code of the People's Republic of China*. [17] The implementation of the unified social credit code has opened up the collection and use of the same subject information across departments and fields, reduced administrative costs and formed the most basic big data resources. Secondly, the public credit information infrastructure has been extensively built at all levels of government. [18] The completion and use of such data systems and information platforms as "Credit China" operated and maintained by the National Credit Information Center, the State Industry Credit Information Publicity System operated and maintained by the State Administration for Market Regulation, and the Basic Financial Credit Information Database operated and maintained by the Credit Reference Center of the People's Bank of China have greatly improved the collection, publicity and sharing of public credit information. Although the above-mentioned infrastructure has laid the necessary technical foundation for the construction of China's social credit system, it still faces bottlenecks such as insufficient quantity and extensive quality of existing credit information, inability to support fine governance, lack of exchange and sharing rules among government departments, difficulty in information exchange, information islands and so on, which cannot meet the information capability expectation of "digital market and social mobility mechanism in a wider range" [19].

### 3.3 Challenges of data rights protection in credit construction encountered by the government

The construction of social credit system, which is far ahead of the theory in practice and packed with various institutional measures, [20] shows the possibility of technological empowerment for governance innovation. However, it is facing technical difficulties and has caused a series of normative problems, such as the possible over-control and privacy challenges brought by the information technology embedded in market supervision, public management and social governance in the process of changing from "governance technology to rule-based governance mechanism".

## **IV. LAW-BASED OPTIMIZATION OF CHINA'S CREDIT MANAGEMENT FROM THE PERSPECTIVE OF INFORMATION TECHNOLOGY**

### 4.1 Rational cognition of interactive relationship between digital technology and law

Although it is generally believed that the relationship between technological development and legal system is mutual restriction and mutual promotion, [21] technology, after entering the information society, has greatly promoted the changes in the market and society and has been deeply embedded in the government's governance reform, showing a strong and far-reaching influence of the system reform.

"Under the framework of governance technology, the "IT Excellence" has two sides: to become an efficient tool to implement legal regulations in the form of "compliance technology" and to become the best practice to supplement or replace legal regulations in the form of "empowering technology". "[22] The development of information technology is changing the process and pattern of legislation, law enforcement and justice, and reshaping the role and function of the state in social governance. Technology as an objective structure has its own functional mechanism and principle. [23] The law should acknowledge the constructive power of information technology to the society and respect the laws and functions of information technology itself. From the perspective of power production and operation, such a process can be integrated into a higher-level system of "digital government construction" and "government data governance" (including "data governance" and "governance of data") [24] for investigation. That is to say, the government takes the platform as the goal, breaks the vertical and horizontal power lines within the hierarchical organization and the boundary between the internal and external power lines with information technology to realize the flattening of the organizational structure and the redistribution of power and responsibility. In fact, governance attempts in various places since the COVID-19 outbreak have vividly demonstrated the tremendous change that data information has brought to governance. [25]

### 4.2 Strengthening the digital capacity building of the government

The information capability of the governments should be strengthened from the logical relationship of "technology-information-credit-governance". The optimal model of regulation theory under the framework of "principal-agent" relationship is the optimal solution to realize the public interest under the preset asymmetric distribution of information. [26] The opportunity for governance change brought about by the information technology revolution is to break the preset information asymmetry. Compared with any

single market body, the government has stronger information collection and processing ability in strength, organization and intelligence. [27] In the information age, the government should promote the opening, transparency and sharing of information flow among government, market and society systems and sub-subjects within each system through innovation in information supply, interaction and application, [28] so as to realize the innovation and optimization of governance.

First, the collection and integration of public credit information should be strengthened in the information supply dimension. As the basic project of social credit system construction, the construction of information base is an important support for establishing and perfecting credit records of credit subjects and carrying out credit classification supervision. At present, public credit information is the main part of information collection in information base. At the same time, market credit information should be prudently identified and accessed in the context of "the wild growth of the nationwide big data environment".[29] Secondly, efforts should be made from the perspective of public credit information interaction to crack the "information isolated island" between administrative departments, break the "information barrier" and ensure the flat, convenient, real-time and sharing of information exchange within the administrative system, which can not only avoid the waste of administrative resources for repeated collection of credit information, but also fully release the information value and improve the governance efficiency through the association and analysis after cross-departmental information integration. Finally, information mining and analysis technology should be innovated in the dimension of information application to construct big data analysis and prediction mechanism. Considering that the existing credit information application mechanism mostly focuses on the traditional "credit report", rough "red list, blacklist" and "social credit score"[30], prediction and discipline of scientific algorithms will become the future direction with the increase in the amount of available information and the embedded scoring.[31] Some scholars even think that the establishment, protection and maintenance of basic information and data technology capabilities and facilities may be the most core governance function of the future institutional state.

#### 4.3 The perspective of legal regulation based on the transformation of basic characteristics of digital technology

Social governance is a dynamic activity to seek the best state of governance ability and governance process.[32] Credit management relies on the handling of credit information, and the legalization of credit information handling is premised on the essential meaning and value principle of credit information. [33]Personal information governance should integrate three goals: the protection of rights and interests of information subjects, the utilization of personal information of information processors and the construction of social information infrastructure.[34]

##### 4.3.1 Adjusting the focus of credit regulation

Previous discussions on credit regulation have mostly focused on the legality of credit reward and punishment system. However, starting from the logic that technology governance expedites standardization

and system renewal, the key that deserves more reflection in this paper is that taking credit reward and punishment system as the focus of credit regulation does not conform to the technical characteristics and regulation logic of information society and should be adjusted.

First of all, information capability should be improved to increase the certainty of law enforcement and thus effectively improve the effect of law enforcement. The "streamlining administration, delegating power, strengthening regulation and improving services" reform of the Chinese government is a response to the ineffectiveness of supervision under the original "ineffectiveness of permit evaluation procedures" and "restriction of administrative law enforcement resources", with the objective of improving the law enforcement effect. The restriction of information is an important reason that affects the effect of law enforcement. First, the lack of information will reduce the probability of violations being actually detected and prosecuted. [35] Second, the choice of whether the regulated object violates the law depends on not only the magnitude of legal liability after the violation, but also the probability of its behavior being found and actually becoming the object of law enforcement. Both theoretical and empirical levels have shown that by improving the law enforcers' ability to collect, process, and disseminate information, the certainty of law enforcement can be enhanced, thus helping the law enforcers to efficiently improve the effectiveness of law enforcement with a small amount of law enforcement resources and a strong deterrent effect.[36] With the enhancement of national information ability, the increase of effective information available to the government and social subjects can not only improve the frequency of successful law enforcement, but also stimulate the voluntary mechanism of the regulated object and the deterrence of the counterparty based on contracts and repeated games, and even mobilize the reputation mechanism and resources of the community and industry self-regulatory organizations where the regulated object is located, so as to effectively improve the effect of law enforcement with joint efforts.[37]

Secondly, the prediction function of big data should be highlighted to adjust the focus of regulation from post-disciplinary to beforehand preventing and modeling. Because "the core of big data is prediction"[38], it is the greatest possibility that information technology will bring to the social governance reform that it can form a judgment of the future after the collection, integration and calculation of massive information, and then form resource allocation, reward and punishment coordination. In fact, in the commercial field, this possibility is constantly becoming a reality. [39] For example, under the drive of information technology in financial markets, regulators not only realize the synchronous real-time deployment of data acquisition, information feedback and instructions in the supervision, but also form a pre-judgment for the future and move the supervision forward. For another example, in the field of market supervision, data and algorithm-driven automated decision-making can integrate individual online and offline data to form an accurate prediction and evaluation of the behavioral preferences of specific subjects, which can then be typed or grouped, and credit ratings can be synchronized, thus improving the scientific allocation of supervision resources and the precision and effectiveness of supervision.[40] In the latest construction of market supervision, the "pre-judgment" and "early warning" of risks are more prominent: the risk early warning model is extracted through the common analysis of the risks that have occurred, so as to realize the comprehensive monitoring of enterprises with the same type of risks and the shift from post-treatment to beforehand preventing.[41]

In fact, "algorithms driven by large amounts of data have become new power brokers to predict people's behavior and performance, or to sort the allocation of resources and benefits." [42] Therefore, it is necessary to discuss the solution of governance risks brought by the disciplinary system of dishonesty in depth and the way to obtain legitimacy, but it is more fundamental to return to the characteristics of information technology and improve the implementation of the law by relying on its own mechanism.

#### 4.3.2 Deepening the publicity orientation of personal information to build "data infrastructure"

It is one of the biggest challenges in the information age to balance the development of big data with the protection of personal information. Due to the tendency of "maximizing" the use of information in the construction of social credit system under the logic of national governance, [43] it is necessary to deal with the invasion of personal privacy and business secrets brought by the modernization of governance. Over the years, privacy rights and personal information have been violated in reality, and people are anxious and afraid of public power and powerful data power of platform enterprises. [44]

The *Civil Code and Personal Information Protection Law* carry forward the main theme of "protection", whose theoretical research pays great attention to the construction and improvement of personal information protection system, which is consistent with the reality of personal information protection in China. In the field of social credit construction, it is still necessary to continuously strengthen the protection of privacy, personal information and business secrets as the key content after the social credit construction enters the stage of rational and legal development.

But at the same time, as information technology continues to shape new markets and societies, it is also important to note that personal information has both a "private rights" and a "data infrastructure" public orientation, and the processing of personal information has a positive externality. Some scholars have pointed out that the protection of personal information is not to give individuals exclusive control over their information. In fact, personal information protection contains two objectives: one is to balance the "data power" of information processors, and the other is to reserve space for the development of data technology and industry. [45] In the research of the economics of law, it is also pointed out that the traditional research of data privacy law mainly focuses on the conflict between "individual" and "society" that may arise from the collection and processing of personal information, hoping to balance the potential conflict between individual preference and social welfare by properly defining individual rights. However, if the goal of the data privacy system is to maximize the overall social welfare, the establishment of legal rights based on the individual control of the information subject may not be able to effectively promote the system goal. [46]

In the context of social credit construction, the following types of information are of prominent publicity orientation. First, it is the basic identity authentication information of the credit subject, and the authentication capability is the basic governance capability of the country. [47] As an identifier created by the state, identity authentication information serves the identification and national governance in social



communication and is constantly updated with the development of technology. In fact, the implementation of the unified social credit code for non-natural person subjects by the state is to complete the certainty and stability of the subject identity from the perspective of national governance. As the offline identity system in the form of ID cards, passports and the like in the field of natural person identity authentication has been very sound, it is natural to complete the correlation matching and unified authentication of online and offline identities based on this. Actually, it has been used as a medium to collect credit information of natural persons in the practice of credit construction in Chongqing and other places. From the perspective of the modernization of national governance capacity, it is reasonable to regard the "biometric identification" sensitive information such as face, iris, fingerprint and so on stipulated in the *Personal Information Protection Law* as the new type of ID identifier created by the state in the digital environment. The right to identity authentication is a kind of state power that serves the basic needs of national governance and can be exercised legally to the maximum extent without disturbing the people. Meantime, it needs special protection because of its authentication function, so as to prevent its leakage and abuse from causing interference to the normal public service authentication function and to weaken the power efficiency of the state.[48]

Secondly, it is the credit information of the credit subject, or reputation information. Because credit information, as external public evaluation information of the possibility of behavior expectation, is a modern "impersonal" governance mode, its integration and use are the core content of social credit system construction. [49] Different from other behavior adjustment mechanisms, the credit mechanism "restrains the social subject's behavior by means of flexible information, and endows the social subject's historical behavior with specific value and significance, which is measured and evaluated according to some unified standard." [50] In the mobile society before the high development of information technology, there were difficulties in information integration and prominent information asymmetry. However, in the society of strangers with highly developed information technology, information is complicated and difficult to identify. Because credit information has a great influence on the commercial transactions and social interactions of information subjects, it does not have enough motivation to disclose actively, and even deliberately conceals relevant information. Besides, the general social subjects do not have the corresponding ability to collect, analyze and forecast information. At this time, it is reasonable and necessary for the public power to intervene in a compulsory way to require the disclosure of the basic information of the credit subject. The information disclosure mechanism in the securities law is a typical example. In short, reputation information has the social value of helping social subjects to form effective decisions.[51] The government must give full play to its information capabilities that the general social subjects cannot match, produce information in a mandatory way, and apply it through certain uniform channels and standards.[52]

## V. CONCLUSIONS

Is it feasible for human behavior to be completely predictable? What can be done to avoid algorithmic discrimination after law enforcement and social governance are digitized? Will the construction of social credit in China strengthen the holographic control of technology and the pervasive

power? The future of China's social credit construction and its legalization "needs to be further studied and demonstrated", as stated in the legislative plan of the National People's Congress. In this paper, a superficial attempt is made to analyze the social credit construction from different dimensions starting from the characteristics of data and information technology. The relationship between data information technology and credit law should be reconstructed in China's credit management. Specifically, in the technical dimension, the government's information capacity should be strengthened from the collection, interaction and application of credit information. In the normative dimension, the perspective of legal regulation should be changed based on the basic characteristics of digital technology, the certainty of law enforcement should be enhanced based on information technology to increase deterrence, the prediction function of big data should be highlighted to adjust the focus of regulation from post-disciplinary to pre-intervention and shaping, and the publicity orientation of personal information should be deepened to realize the necessary treatment of personal information by credit management. It is hoped that more intellectual resources will be stimulated to study the social credit construction from the perspective of data information technology, so as to jointly promote the social credit construction in line with the scientific and technological mechanism of the data information society, embed it in the real social governance system, and integrate it into the process of rule of law in China.

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