Exploring the Basic Logic of the Enabling Effect of Government Data Governance on Investment Promotion

Nan Jiang [1, *], Xiaohui Huang [1], Xin Xia [2]

[1]School of Economics, Wuhan Textile University, Wuhan, China.

[2]School of Accounting, Wuhan Textile University, Wuhan, China.

*Corresponding author e-mail: 1159687303@qq.com

Abstract. With the arrival of the era of big data, giving full play to the application of data elements in investment promotion has gradually become an important means for the government to break the traditional investment promotion model. This paper starts from the basic content of data governance, explains the concept, purpose and application of data governance, and analyzes how data governance can accelerate the transformation of government functions and drive the development of investment promotion work from three levels: value logic, objective logic and practical logic. It aims to explore how big data technology can effectively solve the problems existing in the current investment promotion work by promoting the innovation of government governance methods and means and governance system mechanism, and provide references for further improving the level of government investment attraction.

Keywords: Data governance; investment promotion; data value; government decision-making; big data technology.

1. Value Logic - The Concept and Application of Data Governance

Over 40 years of reform and opening up, investment promotion has played a role in enhancing the transformation of economic structure and boosting high-quality economic development. However, the traditional investment model is affected by limited resources, policy convergence and white-hot regional competition, making it difficult to meet the requirements of local economic development in the new era. With the development of information technology, big data investment has gradually become an essential way and means for the government to attract investment.

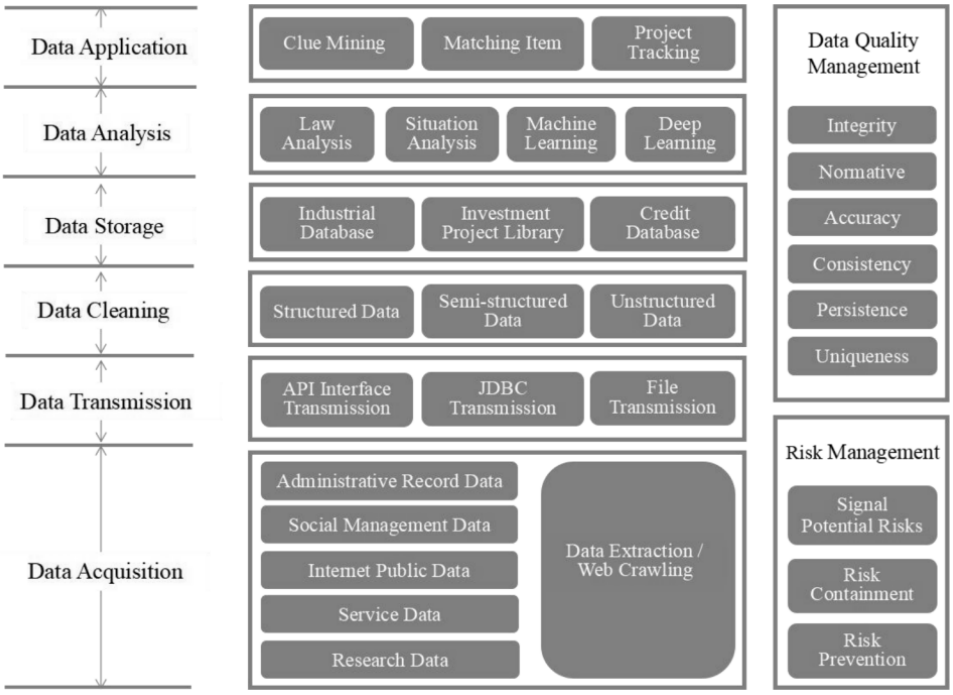

Figure.1 Government Big Data Governance Framework

In actual investment work, problems such as insufficient information sharing channels and inefficient business collaboration usually do not originate from existing government business rules or technology itself, but are caused by the lack of data governance mechanisms and capabilities. In this context, government data governance has become an indispensable part of the government's work as a means to ensure legal compliance in data use and to bring into play the effective value of government data assets. Specifically, it involves two aspects: one is data governance "for data", and the other is data governance "based on data". The former focuses on the management of data life-cycle under the framework of data governance, with the main purpose of improving data quality and ensuring data security; the latter emphasizes data as a governance tool, focusing on how to assist the government in management, decision-making and services based on data mining, analysis and application. As the essence of data governance, a government big data governance framework, which sets "for data" as the foundation and "based on data" as the core, is established [1] (Figure 1).

1.1 Governance Based on Data: Data Quality and Risk Management

In government activities, data participates in value creation by improving the quality and efficiency of decision-making and reducing production and transaction costs. However, untrue, incomplete, and low-quality data may distort the truth, mislead decision-making, and thus increase administrative costs. The realization of data value often requires utility as a guarantee. For this reason, government data governance encompasses two major components: data quality management and data risk management.

In terms of data quality management, the information resources stored in government departments are not only characterized by large volume of data, timeliness and variety of forms, but also have a wide coverage, including data generated, collected, maintained and owned in daily management activities, research data obtained through purchase or commission, and data publicly available on the Internet. If the quality of data cannot be guaranteed, data analysis and application will be significantly biased, which in turn will affect the correctness, accuracy, and the internal theoretical principle of the work[2]. Therefore, the government needs to strengthen the control of data quality level, in addition to real-time monitoring of the data operation process and understanding the quality changes of data, so as to ensure that the process of extracting, converting and loading data of unequal coarse and fine granularity can meet the data processing needs of various scales, structures and flows. In addition, it is necessary to develop unified data quality standards and specifications from the actual situation of data processing, so that the data can have high reliability and continuous use effect in a collaborative way.

In terms of data risk management, despite the undeniable potential value of data, there are also substantial risks in its use such as validity, relevance, and trust[3] and a series of problems such as data leakage, data manipulation, data rights infringement, and data misinterpretation caused by improper or lack of data management[3]. In order to reduce the harm caused by risks, government departments need to both assess the potential impact on business activities and anticipate risk exposure response plans. Data risk management involves two major aspects: risk prevention and risk internal control. From the perspective of risk prevention, risk awareness should be embedded in the government data openness process, risk responsibility subjects should be clarified, and risk prevention awareness of government personnel should be improved. From the perspective of internal risk control, the refined internal risk management should be based on the operational design principle of "data risk minimization" and build a risk identification, assessment and early warning mechanism. By establishing risk points and prevention solutions, the government can have an in-depth analysis and grasp of its internal and external data environment and its possible risk mechanisms and laws of action, as well as a clear judgment and accurate response to the consequences of various data risks and prevention methods, which can help improve the overall level of risk response.

1.2 Using Data for Governance: Realizing the Value of Data

Governance "based on data" is both an extension of governance based on data and an important path to realize the value of data. The demand for government governance of "data-based decision-making, data-based management, and data-based services" has become a consensus at present[4]. Based on cleaning, modeling, analysis, visualization and other technologies, the government can dig deeper into the correlation between data and the information behind the data, so that the value of data can be released through the process of "value composition - value formation - value realization".

Specifically, the realization path of data value is divided into two major parts: the basic link and the main link (Figure 2). In the basic link, government departments and big data platforms play the roles of enjoying and safeguarding the government data transmission and sharing process. The big data platform serves as a channel for data exchange among government departments to meet the government's demand for optimized management processes. In the main link, the government, enterprises and big data platform act as the demand subject, supply subject and development subject in the process of government data collection and use. The big data platform acts as a bridge for data circulation between the government and enterprises to meet the government's demand for decision support and improvement of functions.

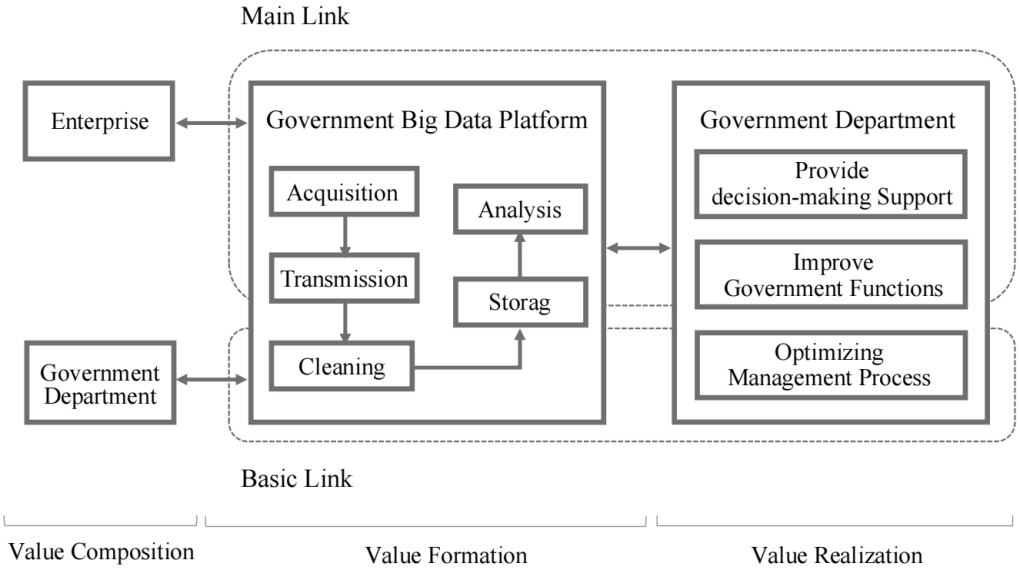

Figure 2. Data Value Realization Path

Looking at the background of intelligent investment promotion, business departments first submit industrial data as well as enterprise operation and credit data requirements to the big data platform based on business activity requirements. Through data cleaning, screening, and pseudo-existence processing, the big data platform combs out accurate industrial investment mapping, industrial investment regions, and key enterprise lists from the Internet, government websites, and core business networks. Then data mining, predictive analysis and other algorithms are used to analyze the data for correlation and get enterprise portrait information as well as investment leads. Based on the feedback from the big data platform, the business department makes appropriate adjustments to the decision and forms a specific strategic plan for investment promotion work by combining the actual development of the local economy. Considering the changing nature of data, big data decision-making often requires continuous verification and comparison based on data analysis results, and through the continuous optimization of decision-making results, thus promoting the government's decision-making towards complete rationality.

In the context of precise investment promotion, with the help of intelligent technologies such as Internet of Things, cloud computing and decision analysis and optimization, the effective matching of supply and demand can be realized through data processing and matching to maximize the

matchmaking and adaptation rate of projects and enterprises. On the one hand, with the help of the window of government-enterprise activities embedded in the big data platform, the government can grasp the information of service targets more comprehensively and provide services for the diversified needs of different enterprises. On the other hand, by relying on the investment project processing window, the government can effectively realize the reform and reshaping of the administrative approval system, optimize the investment project processing process, enhance the effectiveness of public services, and realize the in-depth cooperation of regional and cross-sectoral management. For example, the establishment of cross-industry-based business applications and its information system solves the problem of information sharing and collaborative management between government and enterprises. The service process of "one-stop acceptance, one kind of report, one-stop processing and one-stop service" has not only accelerated the efficiency of project operation, but also greatly improved the image of the government and public satisfaction.

2. Objective Logic - The Purpose and Significance of Data Governance

2.1 From the Macro Level - Optimize the Business Environment

The low-cost advantages brought by cheap labor, large supply of natural resources and various preferential policies are gradually fading, and the space for traditional local governments to obtain economic benefits is getting smaller and smaller. In the context of effective regional competition, the focus of resource solicitation of local governments has shifted from a single hard environment improvement work to a mutual promotion of soft and hard environments, enhancing the gathering of capital flow, material flow, knowledge flow, information flow and talent flow, which are precisely the policy formulation guidance for optimizing the business environment, specifically reflected in the protection of market subjects, market environment, government services, supervision and enforcement, rule of law and other aspects of protection. Optimization of business environment is not only the demand of multiple subjects in the process of market economy development, but also the result of cooperative governance of multiple subjects, which requires continuous mutual cooperation and joint management of government, market and enterprises.

The system to optimize the business environment is mainly in the administrative approval system and the commercial system to deepen the overall reform. The first is to put forward a new concept of "simple regulations are easy to follow" to ease the burden of enterprises and reduce systemic transaction costs; the second is to make the market play a decisive role in the allocation of resources, return the rights belonging to the market to the market, and reasonably divide the boundaries of the market, the government and enterprises. In addition, it is also necessary to improve business laws and regulations, unified market supervision system, to protect the rights and interests of enterprises, to ensure fair competition as an important grasp, to provide market players with efficient and high-quality services.

Investment promotion is a systematic work, the introduction of enterprises is only the first step, more important is how to let enterprises to carry out business smoothly. In terms of time dimension, optimizing the business environment should be implemented in the whole process of opening, operating and closing enterprises; in terms of space dimension, it should run through all aspects of enterprise human, financial, production, supply and marketing[5], such as reforming the registration system, compressing the approval of licensing matters, reducing the tax burden on enterprises, and implementing the negative list for market access, etc. Innovative governance and initiatives reduce the transaction costs of enterprises, stimulate market vitality and form a fair competitive market environment.

2.2 From the Meso Level - Innovative Management Model

The traditional regulatory administrative model of the government emphasizes the "center-edge" management structure, i.e., the government is the "center" that takes care of all affairs. This structure ignores the natural role and function of market subjects in the management of government affairs,

which inevitably leads to the rigidity of the government management system, low administrative efficiency, and difficulty in adapting the level of public services to the needs of social subjects. In the context of the change of administrative philosophy and the effective implementation of the institutional system, the government vigorously promotes the innovation of the management model, aiming to improve the overall efficiency of public management and service level.

The practical application of digital technologies has created positive external conditions for the innovation of government management processes. It not only accelerates the pace of government function transformation, but also broadens the way of function implementation. The main transformation is reflected in the following two aspects. First, from "single" to "multiple", to strengthen the interactive governance mechanism. With the overall public interest as the guide, the interactive governance mechanism with the participation of multiple subjects is established to promote two-way communication between the government and the market on management issues, forming a smart management mode of "government guidance, market autonomy and enterprise co-management"[6]. Second, from "each" to "whole", to optimize the organizational structure of the government. Guided by the theory of service-oriented government, the government uses mobile Internet, cloud computing, Internet of Things, artificial intelligence and other information technologies to transform the internal structure of the organization and sort out business work with systematic thinking to build a new mode of operation that is streamlined, efficient and standardized, maximizing the functions and roles of government departments and providing better and more convenient services for market players.

2.3 From the Micro Level - Improve the Effectiveness of Government Services

Information is an important basis for government governance, and scientific decision-making, quality services and efficient implementation cannot be achieved without the use of emerging technologies. To effectively improve administrative efficiency and enable the government to better play the role of serving the market, we must focus on the use of big data technology to achieve a holistic breakthrough in the management system and service system.

In the traditional governance context, the "slow and difficult work" is mainly attributed to the government's cumbersome and lengthy investment process and the unreasonable allocation of investment resources caused by the abuse of power by government personnel. With the joint promotion of the improvement of the external institutional environment and the strengthening of internal service elements, the government has gradually realized the intelligent management of "investment promotion", relying on big data technology to optimize the business process of investment promotion and simplify the procedures of enterprises. For example, in the areas of document and information collection and transmission, government process operation and management, and government consultation and response, diversified information collection methods and artificial intelligence technology are used to effectively identify redundant links in the administrative process, optimize the workflow, and improve the efficiency of the administrative process within the whole government[7]. The system is designed to improve the efficiency of administrative processes throughout the government. At the same time, to further promote the functional departments from "government allocation of resources" to "market optimization of resource allocation". With the help of the big data platform, different departments should strengthen the operation of the investment service mechanism and the government-enterprise cooperative supervision mechanism, in which the government only intervenes appropriately for the part of market failure. In addition, this also effectively integrates various departments involved in business and information resources. Based on the enterprise system, the service process is comprehensively reformed to form the whole process of "From Demand Discovery, Policy Release, Application Acceptance, Approval Processing, Disbursement and Cashing to Satisfaction Evaluation", ensuring that enterprises have the right to extensive, continuous and in-depth participation in decision-making, and to provide accurate, professional and diversified services for enterprises.

3. Practical Logic--Problems and Solutions of Investment Promotion

The advent of the era of digital intelligence has made data gradually become the basic element and key resource driving the digital transformation of the government, while the application scenarios of emerging technologies are increasingly enriched. The emerging technology applications represented by big data, cloud computing, blockchain and artificial intelligence technologies provide better tools, broader perspectives and better environment for government data governance. Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035, released by the Political Bureau of the Central Committee of the Communist Party of China in 2021, clearly proposed to "activate the potential of data elements, accelerate the construction of digital economy, digital society and digital government, and drive changes in the modes of production, life and governance with digital transformation as a whole". This means that government departments should take the acquisition, sharing, exchange, mining, analysis and application of data as the object of governance, and carry out all-round, all-factor, all-process and all-life cycle management of data, so as to improve the government's data governance capability and fully release the value of data.

When investment promotion activities are re-examined from the perspective of data governance, it can be found that in the process of reform and innovation and transformation of government functions, there are still problems such as insufficient data utilization capacity, insufficient work execution and low level of coordination. How to give full play to the advantages of data, so that digital technology is fully integrated into the new pattern of government governance, is the key to the current investment process reform and reshaping.

3.1 Insufficient Data Utilization Capacity

In response to a series of problems in investment promotion work, such as non-unified data standards, poor data sharing and weak data supervision, the government should carry out data governance at source, precise governance and long-term governance, and coordinate and control from both quality management and risk management based on data characteristics and actual work requirements, so as to enhance the usefulness, ease of use and efficiency of investment promotion data.

3.1.1 Source Governance to Improve the Usefulness of Data

In order to solve the problems of low quality and fragmentation of data and further improve the accuracy of investment work and the effectiveness of investment resources, the government should emphasize the migration of governance links, i.e., from post-disposal to prevention. Specifically, it should start from the source of data, take the theory of digital continuity as a guide, focus on the standardization and synergy of management standards, technical standards and digital format standards in the whole process of data generation, capture, storage, disposal, sharing, open utilization and continuous reuse[8], and ensure the usefulness of investment promotion data. At the same time, relying on artificial intelligence engine, related departments should improve data quality assurance and assessment mechanism, and reshape the work links of data quality supervision and quality reporting in order to standardize government data process.

3.1.2 Precise Governance to Improve the Ease of Use of Data

In recent years, under the policy of breaking information barriers and data chimneys and achieving inter-departmental information sharing and business collaboration, various regions have increased information sharing and information asymmetry between departments has been partially alleviated, but the flow of data between local and central government departments is still restricted by cross-domain and ownership factors. The government should create multiple open and shared "block data pools" by means of big data, Internet, blockchain and other high-tech means, and link them into an organic whole through Internet of Things technology, realize the unification of the standard specification system of investment data opening and sharing, accelerate the cross-level, cross-sector,

cross-platform and cross-border integration of government, enterprise and industrial data, so as to effectively solve the problem of investment data sharing. This can effectively solve the problems of unity, relevance and operability of investment data and ensure the ease of use of investment data.

3.1.3 Long-term Governance to Improve the Ability to Make Good Use of Data

As the guide and supervisor of investment activities, the government generates and accumulates a huge amount of data resources in its daily management activities. The two-sided nature of big data makes new threats different from traditional data security control emerge in the collection, processing and transmission. To ensure the trustworthiness, security and confidentiality of data resources, the government should start from the perspective of sustainable development and utilization of data, and make use of data mining technology, neural network algorithms and blockchain technology to accurately identify, real-time monitor and intelligently analyze all kinds of data risks in the process of data flow, so as to ensure the safe and efficient flow of data. In addition, it is also necessary to improve the organizational structure of data management and launch the governance of data-related elements and environment, so as to effectively prevent the occurrence of investment data forgery, data irregular collection, data leakage, data tampering and data misuse.

3.2 Insufficient System Executive Force

System executive force is an important part of the government's ability to govern. The problems of ineffective and weak implementation of government investment work are attributed to both the imperfect and unscientific system itself and the subjective reluctance and unconsciousness of system executors, resulting in the fleeting effect of system execution. In order to achieve the policy goal of "improve the authoritative and efficient system execution mechanism, and strengthen the supervision of system execution", and to solve the problems such as investment decision making mechanism that needs to be improved and the system guarantee system which is not in place. The government needs to continuously promote the application of big data in government decision making and policy implementation, and realize the transformation of administrative power operation mechanism.

3.2.1 For Poor Execution: Innovative Decision-making Model

Traditional decision-making mechanism in the acquisition, processing and transmission of information has greater limitations, in the implementation of the policy process, the "one-size-fits-all" type of phenomenon sometimes exists, the decision-making results often lack of scientificity, objectivity and standardization. In the era of market economy, government decision-making is influenced by factor innovation and function transformation, and gradually shifts to policy feedback mode, forming a two-way trend of "control with adjustment" and "policy with feedback".

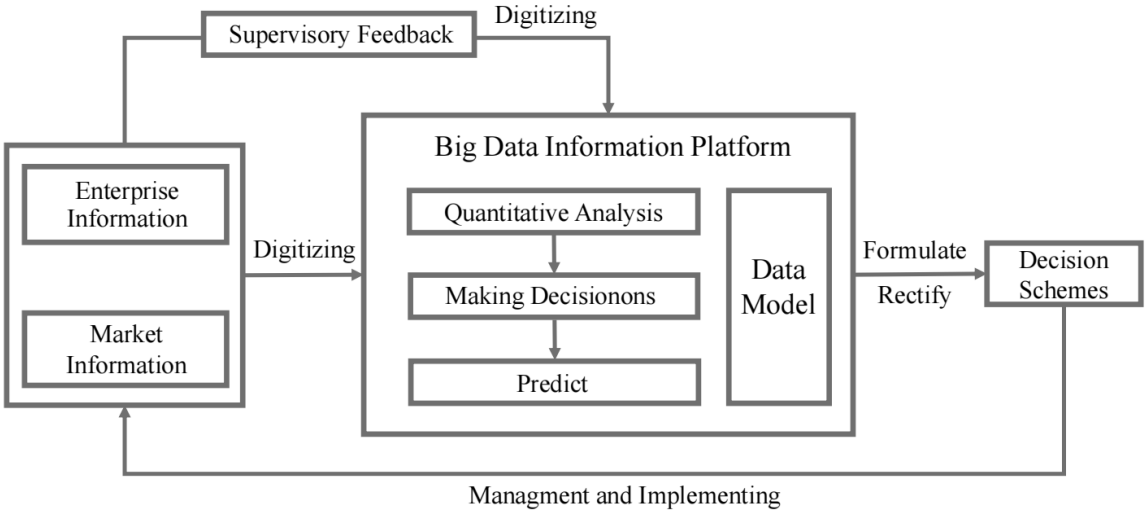

Figure 3. Closed Loop Self-Adjusting Decision Model

The essence of innovation in government decision-making is to enhance the accuracy of decision execution and to enable scientific grasp of the execution of decision support. Under the new decision-making model, the government has formed a closed-loop self-regulating decision-making model of "data-quantitative analysis-decision making-prognosis-supervision-feedback" (Figure 3). Firstly, various market information and enterprise information related to a certain decision are digitized and input into the big data platform; then, by building a data model, the pre-digitized information is classified and stored according to the type, format and source of the decision, and the characteristics and laws of things are discovered, which is the main reference basis for the decision; meanwhile, the big data platform will continue to provide real-time monitoring and feedback for the decision with a full sample. At the same time, the big data platform will continue to carry out real-time monitoring and feedback for decision making with full samples, and analyze the complex relationship between decision making and various stakeholders through quantifiable mathematical models, so as to reflect the progress and effect of decision implementation comprehensively. In particular, the expansion of the scope of data collection broadens the channels for enterprises to participate in government decision-making and ensures the completeness and systematicity of decision-making data; while the data quantification ensures the maximum derivative value of the data by establishing quantifiable data models and scientific grasp and utilization of the inherent laws of the data[9]. All these provide a solid foundation for the scientific and refined government decision-making, and effectively ensure the scientific, orderly and efficient development of investment work.

3.2.2 For the Partial Execution Force: Protect the Operation of the System

The core goal of the government's exercise of administrative power is to serve society, but an overly fragmented administrative system and the resulting relatively closed administrative power operation mechanism continue to impede the flow of and access to government data. The traditional legal and authorized configurations can hardly ensure the efficient use of administrative power. As a public power, the operation of administrative power must take into account the unity of efficiency and democracy, authority and system, and the enhancement of the impartiality and transparency of power. From this perspective of the administrative process, it is necessary to establish a stable, holographic and normative mechanism for the operation of administrative power, and to strengthen the constraints and supervision on the use of government data. For scenarios where data circulation occurs directly, relying on big data technology not only enables data acquisition and sharing that supports traceability and accountability, but also effectively ensures the security of the departmental data transmission and use process, and eliminates the hidden danger of data theft and data leakage. For the problems of data misrepresentation and illegal administration caused by the abuse of government data power in investment promotion work, with the help of artificial intelligence technology, restrictive regulations as well as assessments are made on the purpose and scope of government investment promotion data acquisition and the purpose, principle and scope of use, in order to play the role of system control, early warning and Penny production for the operation of government data power, so as to strengthen the binding force of the system and provide good investment promotion for the government system environment.

3.3 The Level of Coordination is Not High

The innovative governance method of "digital governance" has transformed the traditional one-way top-down governance mode into a new form of public governance with parallel coordination in all directions, so as to realize the reconstruction of "government-government department" and "government-enterprise" relationship, thus effectively solving the problems of incomplete transformation of investment functions of various departments and inability to accurately match supply and demand of government and enterprises.

3.3.1 Cross-sector: Remove Information Barriers

The division and monopolization of data resources by different government departments restrict the transformation of government functions. Due to the lack of unified inter-departmental

coordination and planning, there is a large gulf in data sharing and interoperability, which brings many negative impacts on the effectiveness of government governance and the quality of government services. For example, the complexity of office processes and the expansion of the approval hierarchy have increased the cost of time and effort at the objective level. Enterprises for various matters, often need to run through several departments, repeatedly submit forms, multiple trips. To this end, the top drive and technical support should be parallel, positive leadership and negative push back the combination of mechanisms to promote the optimization of government organizations and operating mechanisms, to avoid the management vacuum and cross-cutting responsibilities lead to mutual shirking and other obstruction phenomena.

3.3.2 Cross-subject: Realize Government-enterprise Synergy

In recent years, the implementation of the reform of government functions has prompted the government to continuously transform its investment promotion function and promote the collaboration between government and enterprises to carry out investment promotion work. Relying on the big data platform, the government has established an organic linkage mechanism for identifying, classifying, judging and integrating demand from both policy supply and market demand, and through remote intelligent perception, it has discovered the dynamic investment management needs of enterprises to enhance their sense of participation and trust. In addition, we should also establish a framework system of "government-enterprise-market" multi-corporate governance with the help of Internet and artificial intelligence technology to guarantee the ability of data utilization and work execution, so as to alleviate the problems of investment information asymmetry and information distortion caused by poor information transmission path and maximize the three effects of investment attraction (efficiency, effectiveness and profitability).

4. Conclusion

Based on big data and other cutting-edge technologies for data value mining and realization, promoting government governance innovation is not only an urgent need to enhance the modernization of government governance in the new era, but also an inevitable trend to optimize the business environment and promote sustainable economic development. Strengthening the investigation of the logic of data governance to empower investment promotion work can help strengthen data quality and risk management and promote the release of data value at the level of data application; at the level of government functions, it can help the government give full play to its institutional advantages and improve governance effectiveness. In the actual investment promotion work, it helps to improve the government data utilization ability, insufficient system implementation and coordination level, and points out the direction for the improvement of investment promotion work.

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