Research on Influencing Factors of Government Data Opening and Sharing in Jilin Province from the Perspective of Digital Ecology

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Abstract: *Open sharing of government data plays an important role in the construction of "digital Jilin". This paper takes the government departments of Jilin Province as the research object, combs the connotation of government data opening and sharing from the perspective of digital ecology, and finds that institutional environment, information technology, organizational network and individual behavior are the main factors affecting the open and sharing of government data in Jilin Province, This paper proposes strategies for the open and sharing of government data in Jilin Province.*

Keywords: *Digital Ecology, Government Data Opening, Influencing Factors*

1. Introduction

The deep integration of emerging technologies, economy and society has led to the large-scale growth of data, data has become a basic strategic resource. Government departments have gradually attached importance to the application of emerging technologies to improve service level and quality. Therefore, the open sharing of government data has played an important role. In May 2023, the Jilin Provincial Party Committee and the provincial government held the "Digital Jilin" construction promotion Conference, which issued three documents at the conference, "Jilin Province Manufacturing Intelligent Transformation and Digital Transformation Action Plan (2023-2025)", "Jilin Province Big Data Industry Development Guidance" and "Several Measures on Further strengthening the construction of digital government". The meeting has taken digitalization as the key variable to promote the overall revitalization of Jilin, and promoting the construction of "digital Jilin" to a higher level. How to promote the open sharing of government data in the era of big data has become an important issue.

2. The Connotation of Open Sharing of Government Data

Industry experts define digital government as taking the whole government as the core, focusing on the development of business data, making full use of emerging information technology, reshaping the business, management and organizational structure of government information through data-driven, and ultimately forming a modern governance model with data decision-making, data service and data innovation. Digital government has the characteristics of cloud, collaboration, intelligence, data and dynamic. The core of digital government construction is service, which continuously improves service efficiency and quality through data. The concepts similar to "government data" in existing studies include "government data", "government information", "government information resources", etc. "Data" refers to the encoding of recorded information and is a resource bearing value, and "resource" refers to the value attribute and economic and social attribute of information and data, so the expression "government data" is used uniformly in this paper. [1] The open sharing of government data mainly includes two dimensions: within and between government departments. The open sharing of government data mainly refers to the flow and use of data between different functional components of the same department. The open sharing of data between government departments mainly refers to the common sharing of data between two or more departments.[2]

3. Open and Sharing Status of Government Data in Jilin Province

Relying on the "Jilin Xiangyun" big data platform, the Bureau of Political Data of Jilin Province has

built a standardized and unified data sharing and exchange system. After collecting the construction needs of government informationization of all departments and units on an annual basis, it integrates and extracts the common needs of information system construction of all departments and units to reduce input costs; it summarizes the repetitive construction needs, classifies and integrates them, optimizes the construction plan, and highlights the role of the data sharing platform, truly achieving "more data running and less units running".[3] Since the preparation of the budget for 2022, the Provincial Finance Department has realized the sharing and sharing of basic information data in budget preparation, changed the situation of submitting paper supporting materials for the change of basic information data in budget preparation, the long change process and the large workload, greatly reducing the work burden of budget preparation personnel of more than 1280 units in 258 provincial departments. Relying on the data sharing system, the Bureau of Political Data of Jilin Province has continuously strengthened its exploration in the field of data application, fully utilized and integrated the existing public video data information and network platform resources of traffic police, transport management, municipal administration and other public organizations, continuously expanded the application scenarios of epidemic prevention and control, fiscal year budget, real and fake lawyer identification, social security approval, social assistance and other applications, and fully played the role of data sharing channel and guarantee. Electronic certificates have been widely used in the province. All kinds of high-frequency certificates such as ID cards, driving licenses, passports, residence certificates and collected certificates related to enterprises and people themselves can be displayed and displayed in "JiShiBan". In particular, through electronic certificates, the province has taken the lead in realizing the identification of real and fake lawyers within the province. Among them, the verification of construction permits has greatly improved the level and efficiency of engineering safety and quality supervision, law enforcement supervision and inspection, completion acceptance and record management in the field of construction engineering.

By August 2022, the province had access to 5,512 departments, collected 19.903 billion pieces of data, released 89,013 resources, and exchanged database tables and interfaces between departments at all levels for a total of 271.3888 billion, Jilin government has basically formed a comprehensive connection between provincial, municipal, county and rural areas at five levels vertically, and covered government affairs departments at all levels horizontally, realized the efficient flow and sharing exchange of cross-regional, cross-level and cross-departmental data of the provincial government.

4. Influencing Factors of Jilin Provincial Government Data Opening and Sharing

Through the investigation of the current situation of the open and sharing of government data in Jilin Province, based on the review of existing research results, this paper explains the factors affecting the open and sharing of government data in Jilin Province from four aspects: institutional environment, information technology, organizational structure and individual behavior.

4.1. Institutional Environment

Since the 18th CPC National Congress, the CPC Central Committee and the State Council have made a series of major plans to implement the big data strategy and strengthen the construction of digital government, strengthen top-level design, and coordinate the opening and sharing of government affairs data. Since 2016, they have successively issued the Interim Measures for the Management of Government Affairs Information Resources Sharing, the Implementation Plan for the Integration and Sharing of Government Affairs Information Systems, and the Opinions on Establishing and Improving the Coordination Mechanism for Government Affairs Data Sharing to Accelerate the Orderly Sharing of Data. At the national level, the construction of the national integrated government affairs service platform and the national data sharing exchange platform was launched in 2017, covering the departments of the State Council and 31 provinces (autonomous regions and municipalities directly under the central government). The compilation of government affairs data catalogues of the central and local departments, the construction of basic databases, the compilation of sharing responsibility lists in key areas, and the relief of 100 bottlenecks in the "delegation of power, regulation and service" have been carried out.[4]

Before 2021, Jilin Province has been actively exploring in accordance with the spirit of relevant national documents. Due to the lack of overall policy planning, the construction objectives are not highly concentrated, the construction contents are repetitive, and the executive departments lack effective cooperation, making it difficult to form a synergy. In August 2021, the CPC Central

Committee and The State Council issued the Outline of the Implementation of the Construction of the Rule of Law Government (2021-2025), which clearly expressed the "rule of law government" and "digital government", and put forward the goal of "comprehensively building a digital rule of law government". On July 1, 2021, Jilin Province issued the "14th Five-Year Plan" for the Construction of Digital Government in Jilin Province (hereinafter referred to as the Plan), clearly proposing the mode of "overall planning in the province, construction by the province and use by the city", aiming to build a digital infrastructure system with the "Jilin Xiangyun" big data platform as the core. According to the requirements of the Plan, the functional departments of the provincial government will decompose and implement the policy objectives layer by layer, clarify the responsibilities of the leading units and coordinating units, and continue to promote the integration of various businesses and the opening and sharing of government data. In terms of cross-level data opening and sharing, Jilin Province has delegated a large number of administrative approval and service functions to grassroots government departments. However, due to the lack of clear regulations on the collection, storage, sharing and use of government data by the central government, various grassroots government departments are relatively vague in terms of the level of data collection and use authority. Meanwhile, considering data security, some functional departments have concerns when opening and sharing data, resulting in obstacles in terms of the quantity, quality and efficiency of data opening and sharing.[5]

4.2. Information Technology

Information infrastructure construction is the foundation and guarantee of government data open sharing. In the early stage of construction, "Jilin Xiangyun" mainly considers how to realize the connectivity of business and data. At the technical level, there is a lack of design for how to connect and share professional title data across departments, which cannot support the cross-departmental sharing of data. Traditional data processing technology can realize the quality management of specific types and demands of data, but it cannot meet the requirements of open and sharing cross-border data with huge volume, responsible source and different formats. On the one hand, the infrastructure architecture of data platforms at all levels still needs to be clarified, and the difference in data interface configuration across departments leads to the slow speed of data sharing. There are many types of government data, and the difference in data format is great. When various departments build data platforms, they lack unified data standards, so the difference in data format and data statistics leads to great difficulties in data open sharing; the volume of government data is huge, and the processing of such a large volume of data requires the application of data extraction and integration technology, which puts forward higher requirements for data energy consumption and hardware facilities.[8] On the other hand, the algorithm technology of government digital platform is built on the basis of existing means and ideas, and there may be undoubted algorithm discrimination and bias. Firstly, the existing discrimination in human society will be "learned" by big data technology and then transformed into algorithmic discrimination. For example, traditional social discrimination types such as racism and sexism will be rooted in the genes of data, making algorithmic decisions biased. Secondly, the correlation application of personal sensitive information with other legally available data, and the accurate and personalized push for specific groups, makes the algorithm label a certain category of groups in the process of operation, making differential decisions, resulting in algorithmic discrimination. Finally, technical bugs such as the uneven selection of algorithm samples and the too wide technical filtering standards in the process of algorithm design can also cause algorithmic discrimination. If the results of data sampling only come from part of the masses, the algorithm technology can only identify the characteristics and needs of this group, and the output data is only applicable to this group, and the group not sampled may become the object of discrimination.[6]

4.3. Organization and Coordination

The layout of infrastructure construction plays an important role in the open sharing of government data. The quantity and quality of infrastructure not only affect people's digital life experience, but also play a decisive role in regional economic and technological development. The Jilin Provincial government has always paid great attention to the construction of network hardware facilities, and initiated the establishment of Jilin Xiangyun Information Technology Co., Ltd. in 2018, a state-owned big data company managed by the Jilin Provincial Government Service and Digital Construction Administration Bureau. As a state-owned joint-stock company approved by the provincial government, it aims to take the technical advantages and management concepts as the engine, and rely on the construction of "Xiangyun Big Data platform" to support the construction of Jilin Provincial government digital government, revitalize government data, drive social data, promote the rapid

development of Jilin digital economy, and create Jilin New Highland of digital industry. In addition to the attention and coordination of government departments, Jilin Province gives full play to the subjective initiative of social subjects, actively absorbs social forces to cooperate and build, and allows the public to participate in the development process of government data open and sharing system, which improves the efficiency of government data development and the accuracy of serving the society. Jilin Provincial government attaches great importance to the advantages of enterprises in the transformation of scientific and technological achievements and data development, improves the public's participation in data provision, application and supervision, and introduces a third-party expert committee to ensure the fairness, effectiveness and scientificity of data development and utilization at the professional level, and enhances the credibility of the government and cooperative development enterprises.[7]

4.4. Individual Behavior

The staff of government departments have a weak awareness of the open sharing of government data. They think that the open sharing of information means putting information on the open government website, and they do not have a clear understanding of the value and function of the open sharing of data. Some staff have insufficient awareness and ability of data open sharing security and privacy protection, and are easily affected by their own information literacy and ease of use of the platform system. They lack the subjective willingness or drive to use the "Jilin Xiangyun" data platform, and some are more inclined to use wechat, QQ and other chat software for data sharing. Although the purpose of data exchange is realized from the result, the security, accuracy and timeliness of data open sharing are ignored. In the process of data sharing between departments, it is easy to be affected by the traditional way of obtaining social communication resources. Based on the existing e-government platform, some staff tend to share government data by social network relations, and the effect of data opening and sharing is easy to be affected by the personal relationship between department leaders.

5. Jilin Provincial Government Data Opening and Sharing Strategy

5.1. Increased Emphasis on Open Sharing of Government Data

To achieve the open sharing of government data, government departments need to break the traditional thinking mode and guide the current work with a new concept. Government departments should create a good culture of data open sharing and incorporate it into their daily work. At the same time, it is necessary to continuously improve the public service awareness of government staff and the importance of data open sharing, which requires department leaders to lead by example, treat the work of data open sharing with a rigorous attitude, update and upload the data of the department in a timely manner, ensure the standardization and security of platform data, formulate strict supervision and inspection systems, and ensure the orderly progress of government data open sharing. At the same time, it is necessary to strengthen the training of government data open sharing technology, so that staff can further realize the significance and role of government data open sharing, from the perspective of people's data needs, change the traditional concept in a timely manner, improve the efficiency of government data open sharing, and constantly improve public satisfaction and experience.[9]

5.2. Optimize Laws and Regulations

Based on the difficulty of Jilin province government data sharing, sharing standards are not standard, formulate perfect laws and regulations system is the key step to ensure the smooth development of Jilin province government data open sharing work. First, Jilin province government should closely combine the development of the province, formulate laws and regulations in line with the characteristics of the province, and then eliminate the phenomenon of government within the government, promote the open sharing of government data resources; second, data security problem is an important constraint factor of government data open sharing, directly affects the citizens' personal data privacy, the existing laws and regulations in our province are less involved in the data security aspects, there is a certain ambiguity in the definition of personal privacy, so the government data open sharing process can not guarantee the privacy security of citizens. Only by formulating perfect laws and regulations on the protection of citizens' privacy, the public's personal information security system can be established, so as to enhance the public's willingness and motivation to participate in the data open

sharing; third, the government should formulate clear laws and regulations on the behaviors that endanger data security, stipulate the scope of the use and sharing of digital resources, increase the punishment on data abuse, and ensure that the government data play the maximum value and role within the reasonable use scope. Jilin provincial government should fully draw lessons from the speeches of other provinces, formulate corresponding laws and regulations on data opening and sharing, and provide strong legal guarantee for government data opening and sharing.[10]

5.3. Strengthen Technical Support

Jilin Province has established the "Jilin Xiangyun" data sharing platform, the goal is to achieve the integration of data resources of various departments, the public can better have the data embodiment, and then achieve the data open sharing between different departments. Compared with other provinces with Jilin Province has established the "Jilin Xiangyun" data sharing platform, the goal is to achieve the integration of data resources of various departments, the public can better have the data embodiment, and then achieve the data open sharing between different departments. Compared with other provinces with a faster process of digital government construction, the government data open sharing in Jilin Province still has a large room for improvement, and there is also a large gap in the quality and quantity of shared data. Our province should continuously optimize the functions of "Jilin Xiangyun", build a sustainable big data platform compatible with multiple data types, and strive to maximize the value of data resources. The government should continuously improve technical means to achieve barrier-free communication with the public. The data sharing platform should timely understand the data needs of the people, formulate unified data collection standards, and achieve the optimization and upgrading of the data platform while improving the quality of government data sources.[11]

5.4. Build Talent Team

Professional talents are an important guarantee for the collection, classification, induction, application and other links of government data. First of all, we should strengthen the training of professional and compound talents of big data, and establish and improve the training mechanism of data analysis talents. Secondly, the government should increase cooperation with universities to provide more internship and employment opportunities for data analysis talents in universities, improve the efforts of talent training, thirdly, the government should strengthen the training of internal talents at the same time, improve the information literacy of public servants, and constantly improve the ability of data opening and sharing; finally, the government should innovate the existing talent management mode, establish a clear talent incentive system and data analysis talent evaluation system, regularly conduct business assessment of personnel in various departments, give corresponding rewards to personnel with outstanding performance in data opening and sharing, constantly stimulate the enthusiasm and enthusiasm of public servants, and encourage them to actively participate in the work of government data development and sharing.[12]

Acknowledgement

References

[1] Carlos Carrasco, Xavier Sobrepere. Open Government Data. Social Science Computer Review, 2015, 33(05):631-644.
[2] Ruhua Huang. Construction of Chinese government data Open sharing standard system. Library and Information, 2020(03):17-19.
[3] Haiou Liu, Yingyu Zhou, Jing Zhang et al. Research on dual-link storage model and case application for open sharing of government data. Journal of Modern Information, 2023, 43(06):130-138.
[4] Fang Wang. Research on Government information Disclosure, Sharing and data openness from the

perspective of Information science: a review of the past 20 years and future prospects. Library and Information, 2022(04):51-65.

[5] Longwen Zhao, Jun Fang, Xueqi Zhao. Analysis on the interactive evolution of China's government data open and sharing policy system from the ecological perspective. Information and Documentation Service, 2022, 43(03):56-66.

[6] Quarati Alfonso. Open Government Data: Usage trends and metadata quality. Journal of Information Science, 2023, 49(04):887-910.

[7] Gao Yingying, Janssen Marijn, Zhang Congcong. Understanding the evolution of open government data research: towards open data sustainability and smartness. International Review of Administrative Sciences, 2023, 89(01):59-75.

[8] Alexopoulos Charalampos, Saxena Stuti, Janssen Marijn, Rizun Nina. Whither the need and motivation for open government data (OGD) promotional strategies? Digital Policy, Regulation and Governance, 2023, 25(02):153-168.

[9] Reggi Luigi, Dawes Sharon S., Gil Garcia J. Ramon, Ruijer Erna, Piotrowski Suzanne. The effects of open government data on the inclusiveness of governance networks: Identifying management strategies and success factors. Information Polity, 2022, 27(04):473-490.

[10] Zaher, M., Shehab, A., Elhoseny, M., & Farahat, F. F. Unsupervised Model for Detecting Plagiarism in Internet-based Handwritten Arabic Documents. Journal of Organizational and End User Computing (JOEUC), 2020, 32(2), 42-66.

[11] Anneke Zuiderwijk, Mark de Reuver. Why open government data initiatives fail to achieve their objectives: categorizing and prioritizing barriers through a global survey. Transforming Government: People, Process and Policy, 2021, 15(04):377-395.

[12] Yupen Zhao, Bo Fan. The moderating effect of external pressure on the relationship between internal organizational factors and the quality of open government data. Government Information Quarterly, 2017, 34(03):396-405.