



Analysis and Countermeasures of Public Data Authorized Operation

Guangming Cheng*, Shuai Li

China Electronic Product Reliability and Environmental Testing Research Institute,
Guangzhou, China

*Corresponding author: chengxinahlq@163.com

Abstract. Public data are important component of data elements. Authorized operation provides an important channel for the market-oriented allocation of public data elements. Multiple regions have explored models such as unified authorization, scenario guidance, and theme licensing in the practical process. However, there are currently some issues, such as, unclear boundaries between authorized operation and open sharing, incomplete systems for property rights, pricing, and profit distribution, and severe security risks. Therefore, suggestions have been put forward to formulate national guidance policies, improve pricing and profit distribution mechanisms, and strengthen risk control through operational supervision, aiming to promote the rapid and healthy development of China's public data authorized operation model.

Keywords: Public data; Authorized operation; Profit distribution

1 Introduction

As a new factor of production, data are the basis of digitalization, networking and intelligence. It has been quickly integrated into various links such as production, distribution, circulation, consumption and social service management, profoundly changing the mode of production, life style and social governance. Public data have large volume, good quality and high value, which are important part of the data element system [1,2]. Moreover, it is different from enterprise data and personal data in terms of its generation process, management mode and content characteristics, and its ownership structure is clearer. Therefore, promoting the opening and operation of public data is an important breakthrough point and a key test field for data factor market cultivation. According to "Opinions of the Central Committee of the Communist Party of China and the State Council on building a data infrastructure system to better play the role of data elements" (hereinafter referred to as "data 20"), data can be divided into public data, enterprise data, and personal data, respectively. Especially in the aspect of public data, "data 20" puts forward to promote the implementation of public data approval authorization mechanism, the party and government organs, enterprises and institutions in accordance with the role or provide public services in the process of public data, strengthen the

sharing and open development, strengthen the overall authorization use and management, promote connectivity, break the "data island", etc.

As an important path to bring into play the value of data, authorized operation has shown many advantages in the development and utilization of public data, such as the further display of the public attributes of data, the centralized operation mode for unified management, the more targeted data application effect, and the stronger data privacy and security protection [3]. At present, many localities in China have accelerated the exploration of public data authorization operation by issuing management measures, building authorization operation platforms, selecting operation subjects, and developing data products.

2 The main mode of public data authorization operation

In October 2018, Chengdu city issued the country's first local public data operation standard-- "Chengdu Public Data Operation Management Regulations", marking the beginning of China's local exploration of public data authorization operation. Up to now, more than 50 localities across the country have issued policy documents such as public data authorization operation management measures, detailed rules, and implementation plans. There are mainly three main operation modes, namely, unified authorization, scene traction, and theme license mode.

2.1 Unified Authorization Mode

Unified authorized operation mode refers to the government as the authorized body through local legislation, data authorization agreement, authorization of a single subject for the region all public data operation related work, generally including public data infrastructure construction, data authorization operation platform development, product design, responsible for the overall data development industry ecology, expand the data application value scenario. Typical areas include Fujian province, Shanghai, Chengdu, Qingdao, etc. At present, due to the current public data product pricing and income distribution mechanism is not sound, unified authorized centralized operation mode authorized unit generally for local state-owned assets or state holding operating company, the mode of maintaining the public data as the legitimacy of state-owned assets development management, avoid the public data ownership of social disputes or potential loss of state-owned assets. At the same time, the unified authorized operation mode has obvious advantages in ensuring the security of public data and promoting the unified operation, thus realizing the consistency between responsibility and stakeholders.

2.2 Scene Traction Mode

Scenario traction mode means that the government, as the authorized subject, recruits the public data operation subject of the application scenario by releasing data application scenarios, and clarifies the responsibilities, power and interests of the authorized operation subject by signing authorization agreements and other ways. The public data

authorization operation mode of Zhejiang Province and its cities is the most typical. At the provincial level, Zhejiang Province has formulated the “Management Measures for Public Data Authorization Operation (Trial)”, which defines the authorization methods, the rights and code of conduct of authorized operation units, and the responsibilities of data security and supervision and management, setting the overall framework for the authorized operation of public data in the province. At the prefecture-level level, 11 cities under the jurisdiction of Zhejiang Province have successively issued the implementation plans, implementation rules and notices for the authorized operation of public data at all levels to further clarify the pilot plans within the region. Scene traction mode driven adhere to the scene demand, no scene not implement the concept of operation depth, inspired the potential operating subject through data analysis of the actual scene, realize the rapid value of data to application, avoid the unified authorization mode of data resources without the possibility of benefit.

2.3 Theme License Plate Mode

Theme license mode refers to the government as the authorized subject by setting up different topics (field, regional, comprehensive) data operation scenario, establish a subject with a data by licensing way operation subject operation qualification, so that the operating subject in the process of further deployment and integration of data resources, as a typical representative in Beijing. The so-called data zone refers to the opening of specific data in a specific safe area and under specific regulatory conditions, introduce social forces to carry out activities such as data convergence and integration, cleaning and processing, mining and analysis, products and services, and promote the support carrier of big data technology innovation, application innovation and service innovation. Beijing released the Beijing public data zone authorized operation management method" clear of public data of data zone authorized operation mode, authorized by the government operation mode, choose with technical ability and resource advantages of enterprises and institutions such as main body to carry out the operation management. The data zone is divided into three categories: field, regional and comprehensive base. The theme license mode breaks the data classification mode simply according to the single standard such as the industry attributes of the government departments, and can give play to the aggregation effect generated by the theme data aggregation, and develop the application scenarios of the theme data to the maximum extent.

3 Major Existing Constraints

3.1 Open Sharing and Authorized Operation

In 2021, the authorized operation of public data was formally proposed. Before that, more attention from all sectors of society was paid to the sharing and opening of public data, and many places built public data open platforms for direct access and utilization

from all sectors of society. The difference between open sharing and authorized operation is mainly reflected in three aspects: participants, supply mode and income distribution. From the perspective of participants, the former generally involves the government departments and the public, while the latter involves the authorized subject and the authorized operation subject. The latter involves more subjects and has more complex relationships than the former. From the perspective of supply mode, the former is generally directly open to the data set to the public by the government departments, which is not targeted, while the latter provides data services or data products to the public or the data manager through the data processing by the data operator, which is more targeted. From the perspective of income distribution, the former highlights the public welfare attribute of public data, which is generally free, while the latter also balances the cost of data development when it considers the public welfare attribute of public data, which often involves the distribution of income generated from data authorization operation. At present, all walks of life are confused about the boundary between open sharing and authorized operation, and even worry that excessive emphasis on authorized operation will bring sacrifice to open sharing.

3.2 Right Confirmation and Authorization Mechanism

Public data mostly from people and enterprises, processing public data resources platform and more public funds construction and operations, therefore, the local government in the development of public data resources, can public data entrust other subject operation, whether to apply for the subject of public data charge, are not solved for a long time. Facing the overall play of the role of data elements, "data 20" attaches great importance to the release of the value of public data elements. In view of the ownership problem in data circulation, it is proposed to conduct classification and classification of right confirmation and authorization, and requires the establishment of the property right operation mechanism of "three rights separation" of data resource holding right, data processing use right and data product management right. The right to hold data resources breaks the controversial data ownership, gives public service institutions the right to legally hold public data, and allows the right to use data processing and the right to manage data products to social subjects with corresponding capabilities selected by legal and compliant methods. Although "data 20" to public data approval authorization provides the top-level guidance, but the specific execution level due to public data involves multiple public management departments, internal departments between authority mechanism lack of guidance and legal basis, the public data unified management department (refers to the local data bureau) keen on public data operation, but the real number source department enthusiasm is not high.

3.3 Operating Price Mechanism

"Data 20" puts forward "explore for the industry development, industry development of public data conditional paid use" for public data reasonably paid use "green light", also points out that "promote the development of digital public data according to the government guidance pricing paid use" to clear the government guidance pricing as a

paid use of public data price mechanism to form the basic follow. However, at present, there is no operational official guidance document for data pricing, which is not conducive to promoting the development of public data authorized operation in China. At present, there are several points in the discussion on public data pricing: the public data pricing should adhere to the public nature, which is different from the free pricing model of market data; the public data pricing should be similar to the data pricing with different pricing from each scenario; the third is that the pricing of public data should follow the principle of equality, cannot distinguish user groups and give different prices [4].

3.4 Income Distribution Mechanism

Income distribution is an important factor affecting the public data authorized operation participation enthusiasm. Public data authorized operation involved property rights and distribution has always been the focus of scholars and practitioners. From the research content, scholars often analyze the distribution of benefits in public data authorized operations from the perspective of data ownership, namely the first ownership and income according to the contribution distribution. For example, if the data come from personal online records, whereabouts track, the rights and interests belong to the natural person; for public information such as video surveillance in meteorology and public areas, the rights and interests shall belong to the state [5,6]. "Data 20" gives the public data authorized operating subject through data product services revenue rights and interests, from the current authorized operating mainstream mode is unified authorized operating subject, centralized authorized operating subject shall have the right to get benefits. But the income of the authorized operating subject is not directly equivalent to the data provide department, under the current financial management system in our country. Data department usually cannot directly accept income from operating, which becomes an important factor for the data provide department reluctantly to participate in public data authorized operation.

3.5 Security Risk Response

Because of its huge commercial value, public data have become the resource acquired by authorized operators. Authorized operation is an important value play mode, but it also faces some security risks [7]. One is authorized operating subject maybe for the sake of profit maximization, with its influence on technology and capital breakthrough by the rights of the boundary, not fully comply with the authorization of the government, leakage, abuse or sell data. Especially the original data leakage may lead to serious social impact. It also conflicts with the concept of the original data not out of domain, available but not visible in "data 20". Secondly, the lag in regulatory policies provides authorized operating entities with space to evade regulation. As a new type of data operation model, public data authorized operation cannot develop comprehensive regulatory policies in the initial stage. However, what needs to be done now is to encourage this model and continuously summarize experience in practice to improve the regulatory system.

4 Suggestions on Promoting Public Data Authorized Operations

4.1 Formulate Guiding Policies at the National Level

Public data authorized operation in many cities have been explored. Found in the process of communication with multiple local departments, whether this model is allowed by the national level and how to define boundaries become their biggest difficulties. So both local governments, operational entities, and the industry hope that the national level can quickly formulate guiding documents for the authorization and operation of public data, especially after the establishment of the National Data Bureau. Guiding policies at the national level should include the following contents. Firstly, the scope of public data, whether the data generated by the management activities of government agencies and the data generated by the service process of public service agencies should be included in the public data management. Secondly, which the operation mode is allowed. In particular, whether the legal or regulatory basis for the unified authorization model belongs to franchising; Third, the nature of the authorized operators. Whether private enterprises can become the subject of authorized operation; Fourthly, the basic ability of the authorized operators. What kind of data governance capabilities and data security capabilities can be authorized; Fifthly, the time period of the authorization can continue. The maximum time of a single authorization and the limit of the number of multiple authorization times need to be clarified.

4.2 Improve the Pricing Mechanism and Income Distribution Mechanism

The models of pricing rules and pricing of different data are different [8]. Because of public attribute, pricing principle of public data needs to balance the market revenue and public services. Pricing of public data should be from the perspective of the cost pricing, combined with data quality pricing model, avoid making different prices for different objects or application scenarios, form price discrimination. Income distribution should adhere to the principle of adopting different strategies according to the stage. The first stage of the government authorized operating subject stage, the public data department on behalf of public departments and authorized operating subject consultation income distribution principle can take two ways. One is the franchise mode in accordance with the authorized data resources scale and limitation agreed overall benefits. The second is agreed public data authorized operating subject in the income distribution ratio in the process of operation. The second stage is the income distribution stage among the internal departments of the government. The income distribution within the government should be based on the principle of encouraging the main body of the input contribution, and the content of the distribution is the data finance within the government after the first stage of distribution.

4.3 Strengthen Risk Management and Control through Operational Supervision

Firstly, guidelines for standardizing the construction of public data authorized operation platform are badly-needed to clear functional requirements, performance requirements, operation and maintenance requirements, security requirements and connectivity requirements. And also, guidelines should strengthen the application of privacy computing in protecting privacy. Then, compliance evaluation of platform standards should be carried out to ensure that platform functions comply with public data operation requirements. Secondly, we should establish a capability evaluation system for public data authorized operating institutions, in particular data governance and data security capabilities. Evaluation criteria using DCMM and DSMM can highlight the data compliance operation ability evaluation. Thirdly, establish a periodic public data operation benefit evaluation mechanism to evaluate the implementation of the public data authorized operation management measures or implementation plan, the operation effect of public data, the compliance of public data products, and the risk of public data operation. Fourthly, establish an effective risk prevention, early warning mechanism and an emergency response mechanism for public data and personal information security incidents to improve the risk prevention and control technology and system. Promote the emergency response capacity of the public data management departments and the authorized operating agencies.

5 Conclusions

Public data contain great value to be developed. The authorized operation of public data is an effective way to release the value of public data, and also the first strategy to cultivate the data factor market. At present, dozens of places in China have carried out the pilot work of authorized operation, and explored the unified authorization mode, scene traction mode, theme license mode and other ways to promote the value of public data to show a hundred flowers bloom. But also, the boundary of open sharing and authorized operating is not clear. Approval authorization mechanism, operating price mechanism, income distribution mechanism are not sound and outstanding security risks still remains. So, this article also proposes the hope that the national level will introduce guiding policies to provide top-level basis for local authorized operations. At the same time, the suggestions to improve the public data product pricing and income distribution mechanism and risk control are proposed, aims to effectively promote the development of our public data authorized operation mode.

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