A Text-Based Quantitative Evaluation Study of China' s Public Data Authorized Operation Policies

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Abstract

Purpose/Significance Public data authorization operation policies are an important prerequisite for regulating data utilization and promoting the reform of data factorization, and conducting quantitative evaluation of them helps improve policy quality. Methods/Process This study employs NVivo software to conduct content analysis of 274 relevant policies, and utilizes the PMC index model to construct an evaluation index system for quantitative assessment of 24 specialized policies. Results/Conclusion The results show that among the 24 specialized policies, 9 are good, 10 are passable, and 5 are failing, with an overall passable level. Policy content exhibits issues such as weak reward and punishment mechanisms, neglect of talent reserves, insufficient financial support, lack of publicity and guidance, and vague work objectives in terms of management mechanisms, institutional guarantees, operational construction, and operational evaluation. Additionally, policies demonstrate regional and temporal differences, with earlier policies focusing more on operational service construction. Based on the analysis results, improvement recommendations are proposed from three aspects: policy promulgation, policy content, and platform construction.

Full Text

Preamble

Research on Quantitative Evaluation of China' s Public Data Authorization and Operation Policy Based on Text Analysis

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Abstract

[**Purpose/Significance**] Public data authorization and operation policies are crucial prerequisites for regulating data utilization and promoting data factorization reform. Quantitative evaluation of these policies can significantly enhance their quality. [**Method/Process**] This study employs NVivo software to conduct content analysis of 274 relevant policies and utilizes the PMC index model to construct an evaluation index system for quantitatively assessing 24 specialized policies. [**Result/Conclusion**] The results indicate that among the 24 specialized policies, 9 are rated as good, 10 as passing, and 5 as failing, with the overall performance at a passing level. Policy content exhibits weaknesses in reward and penalty mechanisms, neglect of talent reserves, insufficient financial support, lack of publicity and guidance, and ambiguous work objectives regarding management mechanisms, institutional safeguards, operational construction, and operational assessment. Additionally, policies demonstrate geographical and temporal differences, with earlier policies focusing more on operational service construction. Based on these findings, improvement recommendations are proposed from three perspectives: policy promulgation, policy content, and platform construction.

Keywords: Public data authorization operation; Text analysis; Policy evaluation; PMC index model

Classification Numbers: G203; D63

Introduction

Under the guidance of data factor market allocation reform, the social utilization of public data represents a vital force in transforming the structure of the modern economic system and achieving digital economic development. Deep and high-quality development and utilization of public data constitute the core pathway for unleashing data value. China' s 14th Five-Year Plan and the "Opinions on Building a Data Foundation System to Better Leverage the Role of Data Factors" (known as the "Data Twenty Articles") explicitly state the need to "launch pilot programs for government data authorization operation and encourage third parties to deepen the mining and utilization of public data" [1], and to "explore and improve policy standards and institutional mechanisms for data factor property rights, pricing, circulation, trading, use, distribution, governance, and security" [2]. This signifies that public data authorization operation is an important measure for enhancing China' s data finance and promoting future digital economic development, gradually becoming a key direction in the market-oriented construction of data factors [3].

Compared to public data opening, public data authorization operation represents a new attempt in China' s market-oriented construction of data factors, based on data acquisition request authorization [4], encompassing multiple stages including data utilization, circulation, trading, and supervision. The primary challenges concentrate on the compliance of authorization procedures, the

efficiency of platform construction, and the rationality of operational assessment, urgently requiring a comprehensive and reasonable policy system and institutional means to ensure effective operation. In recent years, driven by central strategic initiatives, relevant policies have been successively introduced across the country, with increasingly evident problems. Do institutional designs align with regional characteristics? Are public data authorization and usage norms clearly defined? Is policy content comprehensive? To address these questions, an evaluation of existing public data authorization operation policies in China is imperative.

Current research on China' s public data authorization operation features both theoretical and practical dimensions, predominantly employing qualitative methods such as content analysis, case studies, and status quo analysis. From diverse perspectives including theoretical interpretation [5], legal pathways [6], operational models [7], participating entities [8], and platform applications [9], researchers have utilized various methods including evolutionary game theory [10], case analysis [11-12], and policy comparison [13] to conduct in-depth investigations into the current state of public data authorization operation in China. These studies provide theoretical support for improving institutional construction in areas such as data property rights [14], benefit distribution [15-16], and circulation supervision [17], with theoretical frameworks gradually maturing. The sustained operation of public data authorization operation relies on a complete policy system and institutional safeguards; however, current research rarely conducts in-depth policy content analysis and evaluation, making it impossible to grasp the rationality of policy formulation across different regions.

The PMC index model is a quantitative evaluation method that emphasizes consistency and comprehensiveness among variables to objectively reflect policy effectiveness [18], widely applied in policy evaluation across public management domains including digital government construction [19], public data opening [20], government data classification and grading [21], and public health [22]. Therefore, this paper employs grounded theory and the PMC index model to construct an evaluation index system for public data authorization operation policies, conducts quantitative evaluation of specialized policies from various regions, reveals current policy deficiencies, and provides references for improving the policy framework of authorization operation, thereby accelerating the coordinated regional development of national public data authorization operation.

2.1 Policy Sample Acquisition and Processing

As China' s public data authorization operation model is still in its infancy, specialized policies remain limited. To ensure accurate policy text coding and reasonable evaluation index system construction, this study adopts the following retrieval strategy for policy sample collection: Using the advanced search function of the PKULaw Policy Database, the search query (“public data” OR “government data” OR “government affairs data”) AND (“authorization op-

eration" OR "authorization" OR "operation") was constructed for keyword pairing combinations, with keyword positions limited to the same sentence and effectiveness levels set as "central regulations," "local regulations," "local government rules," or "local normative documents." Supplementary searches were conducted using the State Council Policy Database and policy document libraries of governments at all levels in China. Policies specifically addressing public data authorization operation issued by provinces, cities, and regions, as well as policies whose content involves public data authorization operation, were all considered as text analysis objects.

As of March 1, 2024, a total of 428 policy texts (excluding draft versions) were obtained. After deduplication and removal of invalid and irrelevant documents, 274 policy documents were finalized, including 29 specialized policies. Considering that some policies might only contain relevant clauses, to ensure high relevance between text analysis results and research themes, the Python pandas library was used to segment paragraphs where keyword combinations appeared in the same sentence. The segmented results and specialized policy texts were saved in Excel files as a text corpus.

2.2 Policy Text Mining and Analysis

The Python Jieba segmentation library and NetworkX library were used to perform word segmentation, high-frequency word extraction, and semantic network construction on the corpus. Combined with Gephi software, the top 50 high-frequency keywords were visualized, as shown in [Figure 1: see original paper], where node color and size indicate keyword importance, and edge thickness indicates the degree of association between keywords. Core keywords such as "public data" and "authorization operation" are closely connected with other keywords. "Data security," "data management," "institution," "mechanism," "principle," and "supervision" construct the operational system of public data authorization operation. "Competent department," "operation unit," "authorized operation entity," "enterprise," "responsibility," and "liability" clarify the rights and obligations of subjects and objects in public data authorization operation. "Platform," "public service," "data resources," "operation services," "scenarios," and "fields" create the operational environment for public data authorization operation, initially forming an authorization operation management system of institutional governance—authorization review—operation scenarios.

2.3 Evaluation Index System Construction

Based on social network analysis, grounded theory was further applied to mine the content of 274 policies. The policy text corpus was imported into NVivo software, where two coders conducted double-blind grounded coding of policy text content. A data governance scholar led discussions on disputed and unreasonable coding results. Combined with [Figure 1: see original paper], a policy quantitative evaluation system was constructed, as shown in .

Public Data Authorization Operation Policy Quantitative Evaluation System

X1 Work Responsibilities: X1:1 Authorization subjects and responsibilities, X1:2 Related work, X1:3 Authorized operation units and liabilities, X1:4 Target list
X2 Data Management: X2:1 Technical operation and maintenance, X2:2 Data circulation, X2:3 Organizational guarantee, X2:4 Data quality, X2:5 Classification and grading
X3 Service Development: X3:1 Process management, X3:2 Catalog compilation, X3:3 Service guarantee
X4 Management Mechanism: X4:1 Reward and punishment mechanism, X4:2 Feedback mechanism, X4:3 Benefit distribution mechanism, X4:4 Pricing mechanism, X4:5 Rectification mechanism, X4:6 Coordination mechanism
X5 Security Guarantee: X5:1 Responsible entity, X5:2 Rights and interests protection, X5:3 Emergency response, X5:4 Data traceability, X5:5 Security system, X5:6 Information recording, X5:7 Risk supervision and assessment
X6 Institutional Guarantee: X6:1 Concept definition, X6:2 Goal planning, X6:3 Expert consultation, X6:4 Talent cultivation, X6:5 Financial support, X6:6 Institutional construction
X7 Authorization Review: X7:1 Authorization method, X7:2 Data authorization, X7:4 Agreement period, X7:4 Review process
X8 Operation Construction: X8:1 Publicity and guidance, X8:2 Pilot parks, X8:3 Platform construction, X8:4 Key fields
X9 Operation Assessment: X9:1 Assessment mechanism, X9:2 Performance evaluation

The 29 specialized policies included various types such as management methods, implementation details, implementation plans, guidelines, pilot zone construction, and operation unit solicitation notices. To ensure comprehensive policy content and objective evaluation results, operation unit solicitation notices were excluded, resulting in the final selection of 24 specialized policies, as shown in .

Policy Evaluation Samples
P1: Interim Measures for Public Data Operation Management Pilot in Baotou City
P2: Management Measures for Public Data Zone Authorization Operation in Beijing (Trial)
P3: Management Measures for Public Data Operation Services in Chengdu
P4: Management Measures for Public Data Authorization Operation in Dali Prefecture
P5: Implementation Plan for Public Data Operation in Deqing County
P6: Interim Measures for Public Data Authorization Operation Management in Dezhou City
P7: Work Plan for Public Data Authorization Operation in Ezhou City (Trial)
P8: Interim Management Measures for Public Data Authorization Operation in Futian District
P9: Implementation Plan for Public Data Authorization Operation in Hangzhou

(Trial)
P10: Implementation Details for Public Data Authorization Operation Management in Huzhou (Trial)
P11: Measures for Public Data Authorization Operation in Jinan
P12: Implementation Details for Public Data Authorization Operation in Jinhua (Trial)
P13: Implementation Details for Public Data Authorization Operation Management in Lishui (Trial)
P14: Implementation Details for Public Data Authorization Operation Management in Ningbo (Trial)
P15: Management Measures for Public Data Operation Services in Putuo District
P16: Interim Measures for Public Data Operation Pilot Management in Qingdao
P17: Management Measures for Public Data Operation Services in Qingpu District
P18: Management Measures for Public Data Authorization Operation in Suining (Trial)
P19: Guidelines for Public Data Authorization Operation in Taizhou
P20: Implementation Details for Public Data Authorization Operation Management in Wenzhou (Trial)
P21: Implementation Plan for Public Data Authorization Operation in Xinchang County (Trial)
P22: Pilot Implementation Plan for Public Data Authorization Operation in Yinchuan (2024-2025) (Trial)
P23: Management Measures for Public Data Authorization Operation in Changchun
P24: Management Measures for Public Data Authorization Operation in Zhejiang Province (Trial)

3.2 Multi-Input-Output Table Construction

The multi-input-output table calculates scores for each primary indicator by assigning values to several equally-weighted secondary indicators. Secondary indicator values follow a [0,1] distribution: if a policy text mentions a secondary indicator in the evaluation system, it is assigned a value of 1; otherwise, 0. Based on the evaluation index system in Section 2.3, a multi-input-output table was established, as shown in .

Multi-Input-Output Table
X1:1, X1:2, X1:3, X1:4
X2:1, X2:2, X2:3, X2:4, X2:5
X3:1, X3:2, X3:3
X4:1, X4:2, X4:3, X4:4, X4:5, X4:6
X5:1, X5:2, X5:3, X5:4, X5:5, X5:6, X5:7
X6:1, X6:2, X6:3, X6:4, X6:5, X6:6

X7:1, X7:2, X7:3, X7:4
X8:1, X8:2, X8:3, X8:4
X9:1, X9:2

3.3 PMC Index Calculation

PMC index calculation enables quantitative evaluation of China' s public data authorization operation policies. The calculation involves the following steps: (1) Record the assignment of secondary indicators in the multi-input-output table; (2) Calculate scores for secondary and primary indicators using formulas (1), (2), and (3); (3) Calculate the PMC index using formula (4) and determine policy grades according to the following standards [18]: [0,4) = failing; [4,6) = passing; [6,8) = good; [8,9] = excellent. Results are shown in .

$$X \sim N[0,1]$$

$$X = \{XR : [0 \sim 1]\}$$

$$t = 1, 2, 3, \cdots,$$

$$\text{PMC Index} = X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + X_9$$

PMC Index Scores
| No. | X1 | PMC Index | Grade | Rank | |—-|—-|——-|—-|—| | P3 | | 3.92 | Failing | 20 | | P7 | | | Failing | 22 | | P17 | | | Failing | 21 | | Mean| 0.66| 5.56 | | |

3.4 PMC Surface Chart Construction

According to formula (5), scores of primary indicators are transformed into a 3$×$3 matrix to construct PMC surface charts, which enable intuitive horizontal assessment of policy strengths and weaknesses across dimensions. Higher surface protrusion and lower depression indicate more policy dimensions covered and higher evaluation grades. Based on , four provincial capital cities—P3 (Chengdu), P9 (Hangzhou), P11 (Jinan), and P23 (Changchun)—cover all policy grades in the PMC index. Due to space limitations, this paper selects these four provincial capital cities' specialized policies and uses Python' s Matplotlib library to draw PMC surface charts, as shown in [Figure 2: see original paper].

$$\text{PMC Surface} = \begin{bmatrix} X_1 & X_2 & X_3 \\ X_4 & X_5 & X_6 \\ X_7 & X_8 & X_9 \end{bmatrix}$$

[Figure 2: see original paper] PMC Surface Charts of Provincial Capital Cities' Specialized Public Data Authorization Operation Policies

3.5.1 Overall Policy Evaluation

As shown in , nine policies (P1 Baotou, etc.) achieved good grades; ten policies (P4 Dali, etc.) achieved passing grades; and five policies (P3 Chengdu, etc.) received failing grades. The mean PMC index of the 24 policies is 5.56, indicating that China' s specialized public data authorization operation policies are generally acceptable. However, the absence of excellent-grade policies suggests that institutional designs for management methods, specific content, and catalog systems remain incompatible and lack unified standards between central and local levels, leaving substantial room for improvement in policy consistency.

Zhejiang Province ranks first in provincial data openness in China [23], with robust data support, stable data services, rich data reserves, and efficient data utilization providing a policy and data foundation for exploring public data authorization operation. This has facilitated the promulgation of China' s first provincial-level specialized policy on public data authorization operation. As a novel concept, policy formulation has not fully matured regarding responsibilities of subjects and objects, achievement transformation, operation management, and operational assessment, resulting in a less-than-ideal PMC index for Zhejiang's policy. Nevertheless, it provides a policy benchmark for Zhejiang and the nation, advancing the development of domestic public data authorization operation. Among the 24 specialized policies, those from Zhejiang Province account for 42.67%, with relatively ideal PMC indices, and subsequent policies have gradually improved in formulating authorization operation subjects, processes, and institutions.

Regarding the nine primary indicators, X4 (Management Mechanism), X6 (Institutional Guarantee), X8 (Operation Construction), and X9 (Operation Assessment) scored relatively low. Management Mechanism scored the lowest, with reward and punishment mechanisms scoring the least, indicating weak incentives in most authorization operation policies that fail to fully motivate operation units. Within Institutional Guarantee, talent cultivation and financial support scored the lowest, suggesting insufficient government attention to future development of public data authorization operation and lack of corresponding talent reserves. For Operation Construction, publicity and guidance scored the lowest, indicating weak promotional efforts in most regions that may prevent attracting sufficient enterprises, research institutions, and public participation to provide financial and technical support. Additionally, work objectives under X1 (Work Responsibilities) were also suboptimal, with most regions lacking clear understanding of required tasks and expected goals for local public data authorization operation.

3.5.2 Evaluation of Individual Policies

Analysis of individual policies combines and [Figure 2: see original paper].

(1) Good-Grade Policies

The nine good-grade policies scored between [0.67,1] across primary indicators, indicating comprehensive policy coverage of the entire process from authorization to operation, supervision, revenue, and assessment, with extensive policy content, reasonable design, and diverse management strategies. However, some regional policies exhibit deficiencies: P2 (Beijing) and P13 (Lishui) scored 0.33 in X3 (Service Development). Both policies mention "raw data does not leave the domain, data is usable but not visible," ensuring data privacy security during service development. However, they fail to address catalog compilation and updates for local public data or specify concrete support for public data development and utilization, requiring improvement in catalog compilation and service guarantee.

P18 (Suining) scored 0.25-0.40 in X2 (Data Management), X4 (Management Mechanism), and X8 (Operation Construction). Regarding data management, the policy clarifies public data catalog system compilation and classification grading (Article 5), provides technical guarantees, and strengthens operation platform network data security and construction (Article 17), but fails to mention organizational structures and specific data circulation methods, with insufficient detail on data quality management processes. For management mechanisms, the policy only addresses benefit distribution and rectification mechanisms, lacking provisions for reward and punishment measures, usage feedback, product pricing, and collaborative cooperation. In operation construction, while the policy includes specific content on platform advancement (Chapter 2), it should strengthen construction of key fields and pilot parks for public data authorization operation and encourage social participation. Overall, good-grade policies exhibit point losses across different dimensions and should undergo targeted optimization to achieve excellent-grade status.

P9 (Hangzhou) has a PMC index of 7.19, ranking second, with its PMC surface chart shown in Figure 2: see original paper. The chart shows high protrusion and good internal policy consistency. The "Hangzhou Public Data Authorization Operation Implementation Plan (Trial)" features comprehensive data management measures, standardized service development requirements, a sound operation assessment system, corresponding institutional foundations, and an established public data authorization operation platform with good implementation. The depression in X8 (Operation Construction) indicates a narrow focus, neglecting supporting operation pilots or park construction and resulting in low social awareness.

(2) Passing-Grade Policies

The ten passing-grade policies show wide score distributions across primary indicators, particularly in X3 (Service Development), X4 (Management Mecha-

nism), X6 (Institutional Guarantee), and X7 (Authorization Review). X1 (Work Responsibilities) is slightly below average, while X3, X4, X6, and X8 fall below average, indicating ambiguous service development process design, overly simplistic management mechanisms, inadequate institutional guarantees, and backward operation construction.

Among passing policies, P15 (Putuo District) shows the most significant inter-dimensional variation, scoring 0 in X2 (Data Management), X4 (Management Mechanism), and X8 (Operation Construction). This indicates no clear provisions for data circulation and classification methods, absence of operation maintenance, organizational structures, and data quality assurance; lack of management mechanisms for rewards and punishments, benefit distribution, and operation rectification; and no proposals for constructing authorization operation scenarios, resulting in weak policy operability. However, the policy excels in X6 (Institutional Guarantee) and X9 (Operation Assessment) with clear concept definitions (Article 2), reasonable goal planning (Article 1), corresponding talent and financial guarantees (Articles 28, 30), sound institutional construction (Article 4), and performance evaluation mechanisms combining ex-ante and ex-post assessment (Chapter 5). Overall, passing-grade policies exhibit obvious quality gaps across dimensions, requiring future policy formulation to emphasize service development, management mechanisms, institutional guarantees, and operation construction.

P11 (Jinan) has a PMC index of 5.57, ranking sixteenth, with its PMC surface chart shown in Figure 2: see original paper. The chart shows pronounced variations and average internal consistency. The "Jinan Public Data Authorization Operation Measures" feature comprehensive data management, standardized authorization review processes, and diverse operation construction goals, with an ongoing public data authorization operation platform. Depressions in X4 (Management Mechanism), X6 (Institutional Guarantee), and X9 (Operation Assessment) indicate incomplete institutional design and insufficient operational assessment description, requiring improvement in strategic mechanisms, financial support, talent training, and performance evaluation.

P23 (Changchun) has a PMC index of 5.94, ranking eleventh, with its PMC surface chart shown in Figure 2: see original paper. The chart shows pronounced variations and average internal consistency. The "Changchun Public Data Authorization Operation Management Measures" scores close to the good standard but lacks provisions for expert consultation, talent cultivation, financial support, and institutional construction in X6 (Institutional Guarantee), while providing insufficient description in X1 (Work Responsibilities), X4 (Management Mechanism), X8 (Operation Construction), and X9 (Operation Assessment). The policy requires further improvement based on local public data management realities.

(3) Failing-Grade Policies

The five failing-grade policies scored between [0.17,0.50] across primary indi-

cators, with most indicators below average, indicating slow progress in public data authorization operation, incomplete policy content, and chaotic institutional design. These regions should prioritize system construction, learn from high-grade policy institutions, improve policy objectives, enrich policy content, implement subject work responsibilities, and actively advance key tasks in data governance, data security, authorization review, and operation management to formulate forward-looking yet practical policies. Some policies scored well in certain dimensions: P3 (Chengdu) has clear division of responsibilities and implementation (Article 3) and a sound security supervision system (Articles 17-18); P7 (Ezhou) actively builds authorization operation platforms, prioritizes livelihood fields, and conducts multi-channel publicity; P17 (Qingpu District) actively promotes operation service catalog construction (Article 7) and implements service development process management with special financial support (Article 10). However, failing-grade policies generally score low across dimensions and should strengthen institutional construction in management mechanisms, authorization review, and operation assessment while improving content.

P3 (Chengdu) has a PMC index of 3.92, ranking twentieth, with its PMC surface chart shown in Figure 2: see original paper. The chart shows high depression and poor internal consistency. The "Chengdu Public Data Operation Service Management Measures" achieves average levels in X1 (Work Responsibilities) and X5 (Security Guarantee) but scores below average in the remaining seven indicators, particularly 0 in X9 (Operation Assessment). This may be because Chengdu's policy, issued earliest as China's first data operation policy, no longer adapts to today' s public data opening environment. It only includes ex-ante assessment mechanisms for authorization operation services (Article 13) without subsequent operation evaluation. Regarding X8 (Operation Construction), while the mentioned platform has been built, scenario construction remains limited. Chengdu ranks twelfth among cities in the "China Data Forest Report"with rich data opening experience and should revise and supplement previous policy content based on actual platform operation to enhance policy effectiveness.

4 Conclusions and Implications

Currently, China' s public data authorization operation policies show significant regional differences, with most policies in trial stages. Using Python and NVivo software, this study conducted text analysis of 274 public data authorization operation policies and constructed an evaluation system based on keyword co-occurrence networks and coding results. The PMC index model was applied to quantitatively evaluate 24 selected specialized policies, analyzing strengths and weaknesses through indicator scores and PMC surface charts. Results show 9 policies rated good, 10 passing, and 5 failing, with a mean PMC index of 5.56. Policy planning and design are basically reasonable and relatively comprehensive, generally advancing local institutional construction for public data authorization operation. However, problems exist in weak reward and punishment mechanisms, neglected talent reserves, insufficient financial support, lack

of publicity and guidance, and ambiguous work objectives regarding management mechanisms, institutional guarantees, operation construction, and operation assessment. Additionally, policies exhibit varying inter-dimensional differences, with some lower-scoring policies overly focused on data operation services due to their issuance period.

Based on these findings, this paper proposes the following recommendations:

(1) **Policy Promulgation**: China has not yet formed a top-down hierarchical governance architecture for public data authorization operation, with severe absence of provincial-level policies. Jilin, Sichuan, Shanghai, Chongqing, and others only briefly mention exploring public data authorization operation mechanisms in specific chapters of their "Data Regulations," providing insufficient description and causing subordinate cities and counties to lack adequate basis, clear intent, and comprehensive content in policy formulation, leading to copying and imitation that yields poor evaluation results. The "Zhejiang Province Public Data Authorization Operation Management Measures (Trial)" provides an important reference for jurisdiction-level policy formulation, with continuous improvement and extension based on provincial policies producing generally favorable evaluation results. Therefore, provincial governments should learn from Zhejiang' s successful experience, accelerate the issuance of provincial-level public data authorization operation policies based on local data openness conditions to guide jurisdiction-level formulation, eliminate strategic differences in public data authorization operation, and develop regionally-characteristic systems and models aligned with local data storage formats, classification bases, and opening conditions.

(2) **Policy Content**: Current policies concentrate on work responsibilities, data management, service development, security guarantees, and authorization review, but lack management mechanisms and institutional guarantees. Future policy formulation should clarify relevant content descriptions and supplement with policy tools. For example, annual authorization operation assessment results should serve as important bases for next-year budget allocation; authorization permissions for different data types should be strictly defined with increased penalties for violations; incentive measures such as innovation competitions, material rewards, and fault tolerance exemptions should guide public use of public data operation service products; and multiple feedback channels including telephone, email, and platforms should establish a collaborative government-enterprise-public supervision model to promote bidirectional public data value flow. Meanwhile, local governments should lead specialized talent cultivation with assistance from research institutions, data companies, and universities to broaden application scenarios and provide education and practice platforms for data officers, chief data officers, and data governance professionals. Additionally, governments should provide appropriate policy support, with financial departments approving special funds for public data autho-

rization operation construction and authorized operation units jointly establishing work coordination mechanisms with development and reform, economic information, and finance departments. Issued policies should be regularly revised to enrich content and enhance timeliness and completeness of authorization operation process management.

(3) **Platform Construction**: Numerous policies explicitly propose advancing platform construction, but implementation remains unsatisfactory due to insufficient publicity, pilot park exploration, and technical support. As of March 1, 2024, only Henan Province, Fujian Province, Hangzhou, Nanjing, Chengdu, Qingdao, Baotou, and others have launched public data authorization operation platforms. Effective platform operation can promote data factor circulation and activate data value, involving multiple stages including public data resource aggregation, circulation, trading, development, and security. Critical considerations include platform construction methods, multi-platform coordination, and long-term maintenance complexity. Therefore, future policy formulation should detail platform construction content, encouraging local data group enterprises to undertake platform and pilot park construction. Second, local public data opening platforms, data trading platforms, and government service platforms should be interconnected to create one-stop public data operation service platforms with enhanced data security to prevent privacy leaks. Finally, provincial governments should establish unified performance evaluation indicators for provincial public data authorization operation platforms to ensure safe and compliant operation, promote healthy intra-provincial competition, and increase data industry output value.

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Note: Figure translations are in progress. See original paper for figures.