A Research Framework for Constructing Government Big Data Governance Regulatory Systems: Postprint

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Abstract

[Purpose/Significance] To remedy the deficiency in the government big data governance rule system and the inadequacy of its research under the backdrop of big data development and application. [Methods/Process] From a multi-dimensional cognitive perspective of big data, this study analyzes the challenges confronted and the demands for big data rule formulation across four dimensions—governance subjects, governance objects, governance activities, and governance risks; diagnoses the impediments and underlying causes in research on constructing a government big data governance rule system; and proposes a fundamental framework for such research, grounded primarily in public value theory, digital continuity theory, and pluralistic value theory. [Results/Conclusions] The study elucidates the key elements and their interrelationships in constructing a government big data governance rule system, thereby furnishing a multi-dimensional research perspective and a comprehensive integrated research scheme for establishing a long-term rule system for government big data governance.

Full Text

Preamble

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Research Framework for Building Government Big Data Governance Rules Systems

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Abstract

[**Purpose/Significance**] This study aims to address the gaps in research on government big data governance rules systems within the context of big data development and application. [**Method/Process**] From a multi-dimensional perspective on big data cognition, this paper analyzes the challenges and rule-making needs in four aspects: governance subjects, governance objects, governance activities, and governance risks. It diagnoses the obstacles and underlying causes in building government big data governance rules systems. Grounded in public value theory, digital continuity theory, and pluralism theory, a basic research framework for constructing government big data governance rules systems is proposed. [**Result/Conclusion**] The study clarifies the key elements and their relationships in building government big data governance rules systems, offering a multi-dimensional research perspective and a meta-synthetic research agenda for establishing long-term governance rules systems.

Keywords: Government big data governance; Governance rules system building; Meta-synthetic research agenda; Multi-dimensional perspective
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1 Research Background

Since 2015, the Chinese government has issued numerous policy documents, including *Several Opinions on Using Big Data to Strengthen Services and Supervision of Market Entities*, *Action Outline for Promoting Big Data Development*, *Guiding Opinions on Promoting and Regulating the Development and Application of Health and Medical Big Data*, and *Big Data Industry Development Plan (2016-2020)*. By September 2017, implementation progress showed that various government departments—including environmental protection, land and resources, transportation, and agriculture—had issued industry-specific big data development policies. Nearly 40 provinces and municipalities had released local big data development action plans, 13 provinces had established 21 new big data management institutions, and 8 national big data comprehensive laboratories and 15 big data exchanges had been established [1].

On December 8, General Secretary Xi Jinping emphasized during the second collective study session of the Political Bureau of the CPC Central Committee that "we must strengthen research on international data governance policy reserves and governance rules, and propose a Chinese solution." Consequently, research on government big data governance rules and rules systems has become urgently necessary. Government big data encompasses not only the massive data accumulated by government departments over years of information collection, information system construction, and business operations [2], but also includes

the potential value and asset attributes embedded within government big data. Discussions on government big data governance must therefore consider both technical solutions and the relationships of rights, responsibilities, and interests among stakeholders, as well as the cost-benefit-risk relationships of management behaviors.

Discussions on government data governance transformation [3] are still in their infancy, lacking representative research results from multidisciplinary integration. Among various research outcomes on government big data governance, there is insufficient effective communication, integration, and connection between technology-dominated and service-dominated studies. Governance rules and rules systems based on collaborative, multidisciplinary integration urgently require research.

2 Literature Review

2.1 Cognitive Perspectives on Big Data and Governance Rules System Building

Literature surveys and analysis reveal that cognition of big data can be summarized into six perspectives: new thinking, new methods, new capabilities, new rights and interests, new resources, and new infrastructure. The core content of each perspective is shown in Table 1 .

These studies reveal that under different cognitive perspectives, the production value, decision-making value, and asset value of big data have different implementation objectives and meet different needs, forming complementary and mutually beneficial relationships. The production value of big data refers not only to improved production efficiency from data technology applications, but more importantly to transformations in production relations and industrial development models triggered by data processing technologies. The decision-making value primarily refers to the degree to which different decision-making entities utilize big data analysis results to improve decision-making efficiency and accuracy. The asset value of big data encompasses not only the commercial value attached to production and decision-making values, but more crucially the distribution of rights and obligations among roles such as data collectors, processors, owners, and users. This implies that research on building big data governance rules systems should adopt multi-dimensional perspectives, considering multi-stakeholders and their needs in governance rules from multiple dimensions.

2.2 Current Status of Government Big Data Governance Research

International big data governance research focuses on the integration of governance subjects, objects, and management activities. The integration of diversified big data subjects requires advocacy of collaborative governance and deep integration [22-24]. The functional expansion of big data resource supply objects demands public service-centered diffusion [25-28]. Government organiza-

tional business processes, management methods, laws and regulations, and ethical norms all exhibit diverse governance characteristics and multi-dimensional governance paths [29-34], with the public service attribute of government big data governance being particularly prominent [26,30].

In contrast, Chinese government big data governance research focuses relatively more on technical issues such as big data representation methods [12,35], information fusion across different data types [12], data storage cost governance [16], and improvements in data algorithms and intelligence levels [16,35-36]. Research on big data governance knowledge services [37-39], governance service mechanisms [12,40-42], and big data-driven government governance transformation [43-45] remains in its early stages, lacking representative results from multidisciplinary integration. There is insufficient effective communication, integration, and connection between technology-dominated and service-dominated research outcomes, necessitating studies on governance rules and rules systems based on collaborative, multi-dimensional governance.

Regarding the construction of big data governance systems, three levels of understanding exist: macro, meso, and micro. Macro-level perspectives include two viewpoints: first, that big data governance system construction should be a conceptual system building exercise comprising goals, power, objects, and problems [46-47]; second, that it should be a framework including strategic guidelines, organizational structures, and division of responsibilities [48]. Meso-level perspectives also have two viewpoints: one suggesting it should include management mechanisms [49-50] and data governance plans [51-52]; the other arguing it should cover comprehensive data management deployment [53]. Micro-level perspectives include three viewpoints: first, that it should be a governance strategy or procedure [54]; second, that it should involve effective management throughout the entire data lifecycle [55-56]; and third, that it should provide technical tool applications for big data governance behaviors [55-57]. Current big data governance system research lacks frameworks covering macro, meso, and micro levels simultaneously.

Literature review results from domestic and international government big data governance and big data governance systems indicate that international research features multidisciplinary integration and multi-dimensional governance based on collaborative cooperation. Chinese government big data governance research, however, suffers from limitations including disciplinary independence, single dimensions, level isolation, technology dominance, and lack of collaborative, diversified governance. There is a particular shortage of research agendas featuring multi-stakeholder collaborative governance, multidisciplinary rule-of-law integration, and multi-dimensional precision governance.

3 Key Elements Analysis for Building Government Big Data Governance Rules Systems

Under the aforementioned six-dimensional cognitive perspective on big data, China's government big data governance faces challenges in four key elements: governance subjects, governance objects, governance activities, and governance risks. From the perspective of rules and rules system formulation needs, urgent research recommendations are proposed [43,58].

3.1 Big Data Governance Subjects

In the "one number, one window, one network" information service for citizens, data convergence, government outsourcing services, and PPP financing models have introduced risks of losing control over data power, rights, and interests in data utilization and reuse. Data integration, big data analysis, and result disclosure may impact data ownership and utilization rights. Particularly, the re-identification of individuals through reassembled fragmented personal information poses urgent privacy exposure risks, necessitating research on and formulation of hierarchical and classified rules for legitimate and reasonable personal data protection.

Under big data development and application, data subjects involve increasingly numerous stakeholders. The government has gradually transformed from traditional data rights owner, controller, and regulator to data power coordinator and social collaborative governance service provider, shifting from departmental interests to overall government interests and maximizing social benefits in smart cities and information services for citizens. Moving from past information silos to cross-level, cross-domain, cross-regional, cross-system, cross-departmental, and cross-business information resource integration and innovative services, cooperation among multi-stakeholders becomes increasingly important, as does the cultivation of composite talents. The power, rights, and interest relationships among big data subjects urgently require research to provide legitimacy recognition rules.

3.2 Big Data Governance Objects

From a management object perspective, data resources face transformations in form: from offline to online-offline integration, from single to diverse, from static to dynamic, and from structured to primarily unstructured data. Regarding value, they shift from single to multiple values, meeting diverse needs of government, enterprises, and the public, and from information transmission to information value-added reuse. From a strategic position perspective, they shift from organization-level to industry-level, regional-level, national-level, and international-level, becoming internationally competitive resources. Regarding data ownership relationships, they shift from simple to complex with uncertain characteristics. Legal basis issues concerning data ownership, disposal rights,

utilization licensing rights, and privacy protection rights urgently require research to provide legitimacy control rules.

3.3 Big Data Governance Activities

From the perspective of data resource management activities involved in big data governance, collection, storage, utilization, and maintenance have also changed. Collection has shifted from single-source to multi-source heterogeneous, from goal-based partial collection to scenario-based comprehensive collection, and from industry-level to regional and national unified big data resource system construction. Storage has shifted from distributed cold backup to hot backup and cloud storage, and from trusted digital repository construction to trusted blockchain platform construction. Utilization has expanded from intra-institution sharing to cross-regional, cross-domain, cross-level, cross-system, cross-departmental, and cross-business sharing, emphasizing not only connectivity but also mutual trust, mutual recognition, and interaction to solve "zero distance, zero materials, zero running" problems. In data maintenance, there is an urgent need to build legitimate connectivity rules for comprehensive integrated management throughout the entire data lifecycle and across all elements, aiming to achieve one-time or zero running service requirements and innovative service goals for Internet+ social collaborative governance.

3.4 Big Data Governance Risks

Big data governance faces three key issues: enhancing collaborative innovation capabilities for social governance requires establishing cross-departmental data continuity management plan rules; improving public service capabilities for social governance requires researching cross-system intelligent open data algorithm design rules; and enhancing security capabilities for social governance requires establishing cross-business automated personal information protection and security supervision standard operation rules [43].

4 Obstacle Diagnosis in Building Government Big Data Governance Rules Systems

Currently, China's big data governance universally suffers from broken data chains across domains, regions, levels, systems, departments, and businesses. There is an urgent need to establish a data resource supply service system covering the entire data lifecycle to effectively plan and integrate government data collection, information disclosure, data opening, and big data application activities.

Big data governance suffers from a lack of overall planning in data resource management rules systems and service rules systems. Current sharing mechanisms, security mechanisms, and opening mechanisms operate independently and in isolation from each other. Regulations such as the *National Security Law of the People's Republic of China*, *Cybersecurity Law of the People's Republic of*

China, *Network Products and Services Security Review Measures*, *Regulations on Internet News Information Services*, *Interim Measures for the Administration of Government Information Resource Sharing*, and *Several Opinions on Promoting the Opening of Public Information Resources* have yet to clarify the data power, rights, and interest relationships among multi-stakeholders, requiring strengthened cross-domain and cross-departmental cooperation and coordination. For information services benefiting citizens, there is an urgent need to build an integrated mechanism for connectivity, mutual trust, and mutual recognition throughout the entire data lifecycle.

Key questions urgently need resolution: Who should build big data resources requires addressing leadership and collaborative capacity issues of construction subjects and recognition rules; Where big data resources come from requires addressing rules for sharing and opening basis and control; How to use big data resources requires addressing conflicts between connectivity rules and privacy/security risk control rules; and How to achieve sustainable reuse of big data resources requires addressing legitimate, compliant, and contractual rules for disposal and retention.

Furthermore, China's sustainable reuse assurance system for big data resources urgently needs establishment. Currently, there are serious conflicts in laws and regulations regarding sustainable data reuse. From the perspective of requirements for data traceability, associability, and controllability, national policy documents still lack strategic management strategies treating information as assets. The most frequently mentioned information activities in documents are sharing, disclosure, and security, while lacking strategic awareness of digital continuity management for data resources, comprehensive lifecycle management planning, management guidelines for long-term preservation and sustainable reuse, asset management systems for data resources, risk management norms, and digital continuity management strategies and action plans for cross-domain, cross-regional, cross-level, cross-system, cross-departmental, and cross-business collaborative management and innovative services.

From the development needs of digital society and digital economy, the legitimacy and credibility of electronic documents (including electronic evidence, electronic certificates, and digital vouchers) urgently require resolution. The current *Electronic Signature Law of the People's Republic of China* (2004) and *Provisions on Several Issues Concerning the Collection, Extraction, and Review of Electronic Data in Handling Criminal Cases* (2016) cannot support government digital transformation and trusted digital government construction. Many interviewed institutions adopt dual-system and dual-track management for electronic documents, printing native digital documents into paper for preservation and then scanning them for utilization, causing serious resource waste. Legitimacy issues of electronic documents seriously affect electronic evidence collection and digital identity recognition, impacting cross-level, cross-regional, cross-system, cross-departmental, and cross-business electronic certificate mutual recognition and paperless public services.

From the perspective of digital information resource availability and reusability, conflicts exist in the division of rights and responsibilities among information subjects in the *Archives Law of the People's Republic of China* (2003), *Regulations on Government Information Disclosure* (2007), *Law on Guarding State Secrets* (2010), and *Interim Measures for the Administration of Government Information Resource Sharing* (2016), causing practical difficulties for departments. For instance, the principle of "whoever's information, whoever discloses" creates conflicts in legal basis for opening historical archives preserved by archival departments, lacking operable legal grounds and resulting in significantly decreased open rates of comprehensive archival collections.

How to build a collaborative innovation rules system for multi-stakeholder cooperative governance, a control criteria system for multi-stakeholder symbiotic relationships, and a licensing mechanism and shared contract norms for multi-stakeholder win-win digital resource utilization and reuse urgently requires research.

5 Research Proposal for Building Government Big Data Governance Rules Systems

5.1 Research Approach

Based on the "subject-object-activity-risk" elements of big data and information resource collaborative innovation management, this research analyzes the attribute characteristics of big data itself and the transformation features of management subjects and processes through literature review and investigation. Grounded in collaborative innovation theory, public value theory, digital continuity theory, and pluralism theory, the research constructs a government big data governance rules system ecosystem from three dimensions: big data supply governance system, big data resource assurance governance system, and big data resource service governance system, as shown in Figure 1 [Figure 1: see original paper].

Specifically, public value theory guides the construction of service governance systems to address subject alliance role transformation and multi-stakeholder governance rules. Digital continuity theory guides the construction of resource assurance governance systems to address process connectivity and diverse rule-of-law issues in management processes. Pluralism theory guides the construction of supply governance systems to address knowledge service methods and diversified precision governance rules in element connectivity. To address the complexity of multi-stakeholder collaborative governance in building government big data governance rules systems, the research introduces multidisciplinary integration perspectives from information technology, information management, information and communication technology, social technology, and information resource management. Following the evolution process of "data-information-knowledge-action," corresponding viewpoints and research results are integrated hierarchically into the research framework [59].

5.2 Research Questions

Three key questions urgently require research in building big data governance rules systems:

"Who" (Who are the governance subjects in the collaborative governance system, what are the universal rules and principles for subject access, and how to build multi-stakeholder governance alliance rules) involves the social construction of collaborative governance rules and collaborative governance system building in the big data ecological governance system, aiming to optimize the path and resource allocation methods for realizing government big data resource value and enhance digital governance capabilities.

"What" (What are the dependent elements for legitimate, compliant, and reasonable realization of data value, how to build rule-of-law connectivity rules, and how to share public and conventional rules for data value utilization) involves building mutual recognition rules for risk assessment and mutual trust rules for security management to enhance digital security and risk control capabilities for connectivity and mutual recognition among various elements.

"How" (How to address the diverse utilization purposes and needs of multi-stakeholders, how to build precision governance linkage rules, and how to achieve win-win outcomes between social and conventional rules) requires connecting technical support and rule requirements for subjects, objects, activities, and risk control, namely the technical implementation and reference architecture for co-construction, sharing, and win-win rules in collaborative innovation entities, aiming to enhance multi-stakeholders' digital identity recognition capabilities, digital rights protection capabilities, and digital service capabilities.

5.3 Technical Route and Research Methods

This research aims to provide a comprehensive, adaptive, and knowledge service-oriented governance rules system for government big data governance, thereby offering a convenient service and security assurance digital governance approach for enhancing data-driven public service capabilities and modernizing social governance capabilities, and promoting sustainable development of the data economy and digital society. Following the basic scientific research logic of "problem identification-analysis-solution-feedback," the overall research process is formulated as shown in Figure 2 [Figure 2: see original paper].

In the problem identification stage, systematic literature review, policy research, and social survey results are used to sort out and compare the current status and issues of domestic and international government big data governance research. Drawing on collaborative innovation theory, public management theory, digital continuity theory, and digital value pluralism theory, the necessity of building government big data governance rules and the research objectives, key issues, research paths, and research tasks are clarified. Later stages will use questionnaire surveys and multi-stakeholder interviews to deeply understand the key

influencing factors and their positive and negative impacts on building government big data governance rules and rules systems, extracting practical rule issues and their scenarios to adjust the rules system building objectives, research questions, and improve research paths and plans.

In the problem analysis stage, the main methods include case studies and field research. On one hand, the research uses best practice cases to find, compare, and learn from advanced domestic and international management experiences, providing theoretical references for building government big data governance rules systems. On the other hand, following theoretical sampling principles, cases with corresponding theoretical characteristics are selected for in-depth analysis and investigation. The basic characteristics of phenomena presented through surveys will be further explored and adjusted in case studies and field research.

In the problem-solving stage, the main method is key factor analysis. Through field research, the research questions are analyzed and adjusted in depth. The key factors and their relationships have been prelimarily identified. Using a combination of questionnaires and interviews to deeply analyze these key factors and relationships enables analysis of the conditions, causes, and influencing factors of problems based on problem identification and analysis, fundamentally exploring the origins of issues. In this research, key factors required for building government big data governance rules supply systems, service systems, digital continuity assurance systems, and ecological environment systems must be selected and identified through this method, tested through application cases and experiments.

In the problem feedback stage, the main data collection methods are expert interview validation and application case analysis. Using expert evaluation and Delphi methods, feedback and evaluations from domain experts on problem-solving methods and solutions are obtained. Based on this, following theoretical sampling principles, a corresponding comparative application case is selected. According to theoretical replication logic, theoretical issues and preliminary conclusions from existing cases undergo “logical replication” for re-observation of research questions and key factors.

References

[1] Li Jiashi. Big Data: Shaping New National Competitive Advantages [EB/OL]. [2017-09-01]. http://www.miit.gov.cn/n973401/n5329862/n5329922/c5777836/content.html.
[2] Fan Lingjun, Hong Xuehai, Huang Chao, et al. Challenges and Countermeasures of Government Big Data Governance [J]. Big Data, 2016(3): 27-38.
[3] Wang Fang, Chen Feng. Research on Government Big Data Opening and Utilization in the Process of National Governance [J]. Chinese Public Administration, 2015(11): 6-12.
[4] Schönberger. The Big Transformation in Life, Work, and Thinking [M]. Translated by Zhou Tao. Hangzhou: Zhejiang People’s Publishing House, 2013.

[5] Wu Hequan. Big Data Thinking [J]. Science and Society, 2014, 4(1): 1-13.
[6] Ma Jiantang. Big Data: Great Transformation, Great Opportunity [J]. China Economic and Trade Herald, 2015(28): 50-51.
[7] McAfee A, Brynjolfsson E. Big Data: The Management Revolution [EB/OL]. [2018-02-06]. https://hbr.org/2012/10/big-data-the-management-revolution.
[8] Power D J. Big Data Decision Making Use Cases [EB/OL]. [2018-02-06]. https://ewgdssbelgrade2015.files.wordpress.com/2015/05/danielpower.pdf.
[9] Ni Guangnan. Third World Internet Conference "Big Data Forum" [EB/OL]. [2017-11-05]. https://project-open-data.cio.gov/policy-memo/.
[10] Digital Economy Strategy (2015-2018) [EB/OL]. [2017-11-05]. https://www.gov.uk/government/uploads/s
18_{{{Web}}}*{{Final}}}.pdf.*
[11] UK Digital Strategy [EB/OL]. [2017-11-05]. https://www.gov.uk/government/publications/uk-digital-strategy/uk-digital-strategy.
[12] Li Guojie, Cheng Xueqi. Big Data Research: A Major Strategic Field for Future Technology and Economic and Social Development—Current Status and Scientific Thinking on Big Data Research [J]. Bulletin of the Chinese Academy of Sciences, 2012, 27(6): 647-657.
[13] Huang Xinrong. Ethical Reflections on Big Data Technology [J]. Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition), 2015, 36(3): 46-53, 2.
[14] Big Data: A Tool for Inclusion or Exclusion? [EB/OL]. [2017-11-05]. https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-report.pdf.
[15] Yu Wenxuan. The Tragedy of Big Data: Challenges to Humanity, Ethics, and Democracy [J]. E-Government, 2017(11): 21-29.
[16] Huai Jinpeng. Big Data is a National Strategic Resource [J]. China Economic Informatization, 2013(8): 49-50.
[17] Wu Hequan. Several Thoughts on Big Data [J]. China Informatization, 2014(9): 3-7.
[18] Yang Shanlin, Zhou Kaile. Management Issues in Big Data: A Resource-Based View of Big Data [J]. Journal of Management Sciences, 2015, 18(5): 1-8.
[19] Open Data Policy: Managing Information as an Asset [EB/OL]. [2017-11-05]. https://project-open-data.cio.gov/policy-memo/.
[20] Managing Information as a Strategic Resource [EB/OL]. [2017-11-05]. https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/OMB/circulars/a130/a130revised.pdf.
[21] A Strategy for American Innovation [EB/OL]. [2017-11-05]. https://obamawhitehouse.archives.gov/sites/d
[22] Williamson B. Knowing Public Services: Cross-Sector Intermediaries and Algorithmic Governance in Public Sector Reform [J]. Public Policy & Administration, 2014, 29(4): 292-312.
[23] Jordan S R. Beneficence and the Expert Bureaucracy [J]. Public Integrity, 2014, 16(4): 375-394.
[24] Liao Z S, Yin Q, Huang Y, et al. Management and Application of Mobile Big Data [J]. International Journal of Embedded Systems, 2015, 7(1): 63-70.
[25] Bhimani A, Willcocks L. Digitization, 'Big Data' and the Transformation of Accounting Information [J]. Accounting & Business Research, 2014, 44(4):

469-490.
[26] White S. A Review of Big Data in Healthcare: Challenges and Opportunities [J]. Open Access Bioinformatics, 2014(6): 13-18.
[27] Dhotre P, Shimpi S, Suryawanshi P, et al. Healthcare Analysis Using Hadoop [J]. International Journal of Scientific & Technology Research, 2015, 4(12): 279-281.
[28] Williamson B. Governing Software: Networks, Databases and Algorithmic Power in the Digital Governance of Public Education [J]. Learning Media & Technology, 2015, 40(1): 83-105.
[29] Bonilla D N. Information Management Professionals Working for Intelligence Organizations: Ethics and Deontology Implications [J]. Security & Human Rights, 2014, 24(3-4): 264-279.
[30] Clarke E. Reflecting Inward and Looking Outward: Future Trends Impacting Corporate Governance Research and Practice [J]. Global Journal of Comparative Law, 2013, 2(2): 115-146.
[31] Davenport T H. How Strategists Use "Big Data" to Support Internal Business Decisions, Discovery and Production [J]. Strategy & Leadership, 2014, 42(4): 45-50.
[32] Kemp R. Legal Aspects of Managing Big Data [J]. Computer Law & Security Report, 2014, 30(5): 482-491.
[33] Lemieux V L, Gormly B, Rowledge L. Meeting Big Data Challenges with Visual Analytics: The Role of Records Management [J]. Records Management Journal, 2014, 24(2): 122-141.
[34] James R. Out of the Box: Big Data Needs the Information Profession—The Importance of Validation [J]. Business Information Review, 2014, 31(2): 118-121.
[35] Li Linfeng, Chen Baoquan. Innovating Big Data Theory and Methods to Enhance Urban Intelligence Levels [J]. China Construction Information, 2015(3): 22-25.
[36] Wang Yude. Research on Enterprise Big Data Governance [J]. Internet World, 2014(1): 20-24.
[37] Liu Lanbing. Building a Knowledge Management Platform in the Big Data Era [J]. Information Engineering, 2015, 1(6): 109-112.
[38] Wu Ruoxi. New Trends in Knowledge Management in the Big Data Era [J]. Academic Theory, 2015(19): 161-162.
[39] Zuo Xinrui, Ma Zhong. Exploring Knowledge Management Methods in the Big Data Era [J]. China Management Informatization, 2016, 19(9): 198-198.
[40] Zhang Yongjin. Smart Government and Government Governance Transformation [J]. Media, 2015(5): 21-24.
[41] Zhang Chunjing, Cao Lei, Qu Yun. Research on Big Data Application Models and Trends in Public Cultural Services [J]. Library Journal, 2015, 34(12): 4-8.
[42] Yu Shiyang, Wang Jiandong, Tong Nannan. Review of Domestic and International Government Big Data Application Development: Directions and Issues [J]. E-Government, 2016(1): 2-10.
[43] An Xiaomi. Cloud Thinking for Modern National Governance: Information

Governance Capability and Government Transformation [J]. Chinese Public Administration, 2015(11): 6-12.
[44] Chen Zhichang. Applying Big Data to Promote Government Governance Modernization—A Case Study of Dongcheng District, Beijing [J]. Chinese Public Administration, 2015(2): 38-42.
[45] Wang Yukai. Government Governance Innovation in the Big Data Era [J]. Information Security and Communications Privacy, 2016(6): 44.
[46] Zheng Daqing, Huang Lihua, Zhang Chenghong, et al. The Concept and Reference Architecture of Big Data Governance [J]. R&D Management, 2017, 29(4): 65-72.
[47] Zheng Daqing, Fan Yingjie, Pan Rong, et al. Analysis of Concepts and Elements of Big Data Governance [J]. Science and Technology Management Research, 2017, 37(15): 200-205.
[48] Zhang Shaohua, Pan Rong, Zong Yuwei. Big Data Governance and Services [M]. Shanghai: Shanghai Scientific and Technical Publishers, 2016.
[49] Hu Zhiwei, Wang Zhenqiang. Research and Analysis on Big Data Governance [J]. Times Report, 2014(7): 177, 179.
[50] Pan Yonghua. What Concepts Should Leading Cadres Pay Attention to in Big Data Governance? [J]. Decision-Making and Information, 2015(12): 29-30.
[51] Soares S. Big Data Governance: An Emerging Imperative [M]. Idaho: MC Press, 2014.
[52] Cheng Guangming. Research on Big Data Governance Models and Governance Maturity Assessment [J]. Science and Technology Innovation, 2016(9): 6-7.
[53] Mohanapriya C, Bharathi K M, Aravinth S S, et al. A Trusted Data Governance Model for Big Data Analytics [J]. International Journal for Innovative Research in Science and Technology, 2015, 1(7): 307-309.
[54] Malik P. Governing Big Data: Principles and Practices [J]. IBM Journal of Research & Development, 2013, 57(3/4): 1:1-1:13.
[55] Loshin D. Chapter 5: Data Governance for Big Data Analytics: Considerations for Data Policies and Processes [EB/OL]. [2018-02-06]. https://www.sciencedirect.com/science/article/pii/B9780124173194000053.
[56] Tallon P. Corporate Governance of Big Data: Perspectives on Value, Risk, and Cost [J]. Computer, 2013, 46(6): 32-38.
[57] Liang Zhiming. Big Data Governance: An Essential Component of National Governance Modernization [J]. Journal of Jishou University (Social Sciences Edition), 2015, 36(2): 34-41.
[58] An Xiaomi, Mao Chunyang. Government Information Governance in the Big Data Era [J]. China Construction Information, 2015(12): 58-59.
[59] Kam B. Options for Smart City Development [R]. Beijing: Renmin University of China, 2015.

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Big Data Governance Rules System Building in Government: A Research Agenda

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Abstract: [**Purpose/significance**] This paper aims to fill the gaps in research that pays insufficient attention to big data governance rules system building in government under the context of big data development and application. [**Method/process**] The necessities of research about big data governance rules system building in government are rationalized by analysis of challenges facing in four aspects of big data governance and their problems of lack of big data governance rules in terms of subjects and objects of big data governance, governance activities and governance risks. A feasible research framework is put up based on theories of public value, digital continuity and pluralism thinking. [**Result/conclusion**] The paper clarifies key issues of research about data governance rules system building in government and provides a multi-dimensional research perspective and a meta-synthetic research agenda to study long-term rules system building for big data governance in government.

Keywords: big data governance in government; governance rules system building; meta-synthetic research agenda; multi-dimensional perspective

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