Research on Key Influencing Factors of Cross-departmental Sharing of Government Information Resources in China Based on the DEMATEL Model (Postprint)

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Abstract

[Purpose/Significance] In the new era, cross-departmental information resource sharing has become an important undertaking for accelerating the transformation of government functions and improving government service efficiency and transparency. Identifying the key factors for the effective implementation of current government information resource sharing is of significant importance, both for enabling the government to accurately grasp the direction of action and for focusing academia on the fundamental issues of government information sharing. [Method/Process] Through the comprehensive integration method, this study systematically identified factors influencing government information resource sharing across eight dimensions that have attracted academic attention in recent years, and constructed a relational matrix of these factors using the complex system DEMATEL model. [Results/Conclusion] Through calculation, this study identified 11 key factors influencing the implementation of government information resource sharing, which are mainly concentrated in the dimensions of regulations, policies, and standards, institutional structure, operational mechanisms, and technical infrastructure.

Full Text

Preamble

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Research on Key Influencing Factors of Cross-Departmental Government Information Resource Sharing in China Based on the DEMATEL Model

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Abstract

[Purpose/Significance] In the new era, cross-departmental information resource sharing has become a critical undertaking for accelerating the transformation of government functions and improving the efficiency and transparency of government services. Identifying the key factors for effective implementation of government information resource sharing is important both for helping the government accurately grasp the direction of action and for enabling scholars to focus on the fundamental issues of government information sharing. **[Method/Process]** Through qualitative meta-synthesis, this study identifies eight dimensions of influencing factors for government information resource sharing that have attracted scholarly attention in recent years. Using the complex system DEMATEL model, it constructs a relational matrix of these influencing factors. **[Result/Conclusion]** Through calculation, this study identifies 11 key factors influencing the implementation of government information resource sharing, which are concentrated in the dimensions of laws, policies and standards, institutional structure, mechanisms, and technology.

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1. Research Background

On September 5, 2016, the State Council issued the *Interim Measures for the Administration of Government Information Resource Sharing*, which put forward clear requirements and a relatively systematic approach for government information resource sharing work in China [1]. On September 25 of the same year, the State Council's document *Guiding Opinions of the State Council on Accelerating the Work of "Internet Plus Government Services"* explicitly emphasized the need to "accelerate the mutual recognition and sharing of government information resources" and to "implement the *Interim Measures for the Administration of Government Information Resource Sharing*, break down data barriers, and achieve interconnectivity and full sharing of data and information across departments and levels" [2]. Within a single month, two consecutive State Council documents sent a clear signal from the central government about promoting government information resource sharing. During the second collec-

tive study session of the Political Bureau of the CPC Central Committee on December 8, 2017, General Secretary Xi Jinping stressed the need to "form a nationwide data sharing platform that provides comprehensive coverage, coordinated utilization, and unified access, build a national information resource sharing system, and achieve collaborative management and services across levels, regions, systems, departments, and businesses" [3]. In the new era, information resource sharing has become an important undertaking for accelerating the transformation of government functions and improving government service efficiency and transparency. The construction and use of large-scale data sharing platforms represent a major initiative in implementing government information resource sharing.

Government information resource sharing is multi-layered, with each layer involving different participants and content. Based on sharing needs and content, government information resource sharing can be divided into four levels from top to bottom: information sharing between government and enterprises (G2B), between government and citizens (G2C), between state power organs and government, between government functional departments, and between different levels of government [4]. Government information resource sharing projects between functional departments are also known as "G2G" applications [5]. If government departments lack information resource sharing, information silos can easily form within the government, making it difficult for government departments to become good providers of information resources, which in turn affects information resource sharing between different levels of government, between government and central power organs, and between government and enterprises or individuals. Moreover, internal information barriers constrain government social service efficiency, collaborative management levels, and emergency response capabilities, and even affect overall government operational efficiency [6]. Therefore, information resource sharing between government departments is the core of government information resource sharing [7]. Given the important position of information resource sharing between government functional departments in the entire government information resource sharing system, this paper focuses on inter-departmental (i.e., cross-departmental) information resource sharing (hereinafter referred to as government information resource sharing) and attempts to analyze the key influencing factors of government information resource sharing in China based on complex system models.

2. Related Research

Cross-departmental government information resource sharing is influenced by multiple factors. In international research, "cross-boundary" is commonly used to describe inter-departmental activities. S. S. Dawes et al. pointed out that cross-departmental information sharing is subject to the dual influence of benefits and barriers. Through surveys, they found that most respondents highly agreed that inter-departmental information sharing would bring benefits, while also being constrained by technological, organizational, and political factors,

and proposed a theoretical model for government information resource sharing [8]. D. Landsbergen et al., based on the theoretical model proposed by S. S. Dawes et al., analyzed public sector information systems, information resource management, and online inter-departmental cooperation, and made recommendations for enhancing the interoperability of government agency information systems from an information technology perspective [9]. S. S. Dawes et al. further found through investigation that factors troubling cross-departmental information sharing in the New York State government included differences in departmental roles and relationships, diversity in departmental functions, multiplicity in departmental business environments, technological changes, and limited capacity to adapt to changes [5]. Some scholars have noted that the series of investigations by S. S. Dawes and the Center for Technology in Government (CTG) team at the State University of New York represent the beginning of research on influencing factors of cross-departmental government information sharing [10]. In 2001, the U.S. Government Accountability Office (GAO) released the report *Information Sharing: Practices That Can Benefit Critical Infrastructure Protection*, which, based on research across 11 federal government departments, extracted five key success factors for federal government information resource sharing: (1) cultivating trust and respect among departments; (2) establishing effective, real-time, and appropriate secure communication mechanisms; (3) support from senior management; (4) ensuring continuous attention from agency leadership; and (5) clarifying the benefits for participating members [11]. Y. Akbulut et al. believed that recommendations for enhancing information resource sharing between U.S. state and federal governments could be categorized into three dimensions: technology, agency, and environment. The technology dimension mainly included increasing the scope of inter-departmental information resource sharing, reducing system usage complexity, and improving system compatibility. The agency dimension mainly included support from senior leadership, IT capabilities and infrastructure to support sharing, financial support, and the need to configure corresponding management personnel for small agencies. The environment dimension mainly included establishing trust between departments, strong promotion mechanisms (non-mandatory such as financial incentives and rewards, mandatory such as penalties and sanctions), reducing threats to project integration, protection by federal and state laws, and clarifying participation boundaries [12]. Z. Bigdeli et al., based on the four-layer environmental model proposed by the CTG team at the State University of New York, constructed a model of influencing factors for cross-departmental government information sharing and validated the reasonableness of each factor through case studies. Specifically, Z. Bigdeli et al., building on previous theoretical results and combining them with their own research findings, identified factors influencing government information resource sharing, including policy level, organizational level, business process level, and technology level. The policy level included political factors, economic factors, legal and regulatory factors, and sharing boundaries. The organizational level included management capabilities, organizational goals, online cooperation, financial support, and trust. The business process level included workflow and decision-making processes.

The technology level included IT capabilities, data standards, data quality, and data security [13].

Domestic research on influencing factors of government information resource sharing can be broadly divided into studies testing whether certain factors are influential and studies examining the mechanism of action of individual influencing factors. Existing research has proposed influencing factors for government information resource sharing, including: administrative management system, interest orientation of government departments, support from senior leadership, inter-organizational trust, coordination mechanisms, responsibility issues, government process factors, technical capabilities, supporting resources, concepts and quality of information managers, information security, and legal and regulatory systems [7, 11, 14-15]. Zhou Wei et al. conducted research around four hypotheses, with the dependent variable being the degree of information resource sharing and independent variables being 13 variables across four dimensions including information resource construction and information management system (specifically including information resource standardization, shared platform construction, departmental interest coordination, etc.). The study collected data through surveys around these hypotheses [16]. However, from the perspective of government information resource sharing, besides these 13 variables, other proposed factors were not included in the hypotheses, such as the legal and regulatory factors emphasized by Du Zhizhou [14]. Fan Jing et al., based on a literature survey method, 梳理出包含 7 个因素的电子政务环境下组织间信息共享成功因素模型及相应的正向作用假设。其所梳理的因素包括：法律与政策环境、倡导机构、组织间信任、组织领导的支持、技术支持、实施成本（人力、物力、财力成本因素）、流程的可追踪性。该研究通过建立回归方程，基于上述因素和相应的假设，通过问卷调查收集数据并进行分析。经检验，法律政策环境、组织间信任、组织领导支持和流程可追踪性被认为对组织间信息资源共享有着显著的正向影响 [17]. However, factors such as information resource quality and personnel's cognition of information resource sharing were not included in the factor model and hypothesis framework of this study.

Zhou Wei, Fan Jing and other scholars basically used structural equation modeling or statistical hypothesis testing to verify the significance of factors when validating and identifying influencing factors [16-17]. However, their factor models or hypotheses often targeted partial influencing factors, verifying whether these factors had a significant impact on government information resource sharing, rather than identifying key influencing factors from the set of influencing factors. Moreover, structural equation modeling and regression analysis cannot comprehensively reflect the complex interaction relationships between influencing factors. Key influencing factors are generally considered to play a crucial role in the entire influencing factor system and the affected object, and are indispensable. Identifying and analyzing the key influencing factors of government information resource sharing, and clarifying which factors are indispensable, can reveal the driving mechanism and leverage points for promoting information resource sharing for decision-makers, provide references for formulating strategies to advance government information resource sharing, and lay a foundation for scholars to focus on the fundamental issues of government information sharing.

However, existing related research shows that direct studies on key influencing factors of government information resource sharing are relatively scarce and were published earlier. In existing domestic research on influencing factors, the research approach is generally to first establish an influencing factor framework, propose influencing factors based on the framework, construct influencing factor hypotheses, then obtain data through questionnaires or field surveys, and further verify whether the proposed factors have a significant impact on government information resource sharing through regression models. In terms of influencing factor construction, existing research mainly proposes specific factors based on theoretical frameworks or factor models, and the 梳理 of existing achievements is not sufficiently comprehensive, posing a certain risk that some influencing factors may be omitted due to researchers' limited perspectives. In terms of influencing factor identification, these studies can determine which factors are influencing factors of government information resource sharing, but they do not adequately explain which factors are relatively more important than others.

Since 2013, China's information technology upgrading and political system reform have progressed rapidly. Both the widespread application of big data platforms and the requirements of "Internet Plus Government Services" reform in the new era have brought new changes to government information resource sharing work. These changes require us to re-examine the problems faced by government information resource sharing, especially as the State Council issued the *Interim Measures for the Administration of Government Information Resource Sharing* in 2016, and big data centers and big data bureaus have taken root in local governments. The state is mobilizing legal and policy factors, institutional factors, and technological factors to promote government information resource sharing. Are these factors the key influencing factors of government information resource sharing? What key factors should be grasped to effectively implement government information resource sharing? Around these questions, this study systematically 梳理 the influencing factors of government information resource management and sharing that have been discovered and proposed by scholars, constructs an influencing factor system through qualitative meta-synthesis to minimize the risk of omitting influencing factors, and then attempts to use methods related to complex systems to analyze the criticality of each influencing factor in the government information resource sharing influencing factor system, with a view to identifying the key influencing factors of government information resource sharing in China based on existing research.

3. Research Approach and Methods

3.1 DEMATEL Model

This study mainly uses the DEMATEL model for determining the importance of factors in complex systems to analyze the key influencing factors of government information resource sharing. Specifically, it analyzes key influencing factors by constructing a standardized influence matrix and comprehensive relation matrix. The DEMATEL method is a technique for constructing weight matrices

of relationships between influencing factors in complex systems. It analyzes the influence relationships between various influencing factors in a complex system, and calculates the influence degree (R), influenced degree (C), centrality (R+C), and causality (R-C) of each factor by constructing a direct relation matrix (M), a normalized relation matrix (M), and a comprehensive relation matrix (M). Ultimately, it determines whether a factor is an important issue affecting the complex system based on the positivity/negativity of centrality, and whether it is an essential issue based on the positivity/negativity of causality [18]. This method has been relatively maturely applied in research on importance weight analysis of factors in many complex systems [19-21].

The formula for converting the direct relation matrix (M) to the normalized relation matrix (M) is:

$$l = \frac{1}{\max_{1 \le i \le n} \sum_{j=1}^{n} x_{ij}}$$

where x'_{ij} is the value in row i and column j of the normalized relation matrix, and x_{ij} is the value in row i and column j of the direct relation matrix.

The formula for converting the normalized relation matrix (M) to the comprehensive relation matrix (M) is:

$$M'' = M'(E - M')^{-1}$$

where E is the identity matrix.

In this study, we combine centrality and causality to identify the key influencing factors of government information resource sharing.

3.2 Qualitative Meta-Synthesis

The foundation for effectively using the DEMATEL model lies in constructing a relatively complete and comprehensive set of influencing factors. To this end, this study mainly adopts the qualitative meta-synthesis method to summarize and induce relevant research on government information resource sharing at home and abroad, and extract the influencing factors of government information resource sharing.

Qualitative meta-synthesis was first proposed by C. Stern and N. Harris for systematic review of qualitative research in the medical field [22]. This method mainly summarizes a set of theories or frameworks to explain the research findings of a group of similar studies on a certain topic. Since its proposal, many studies have attempted to use this method to analyze qualitative research. After years of practice and testing, D. Walsh and S. S. Downe summarized a set of application steps for qualitative meta-synthesis: (1) determine the problem and objectives of the qualitative meta-synthesis; (2) identify relevant literature; (3) identify and compare the research approaches of each study to determine the scope of synthesis; (4) evaluate research quality and eliminate low-quality literature; (5) compare and identify the main ideas, connotations, concepts, and

terminology in the research; (6) aggregate the concepts and connotations used in the transformation process and integrate them into a framework [23].

Based on the above methodological steps, this study conducted a meta-synthesis of research on government information resource factors. The specific process was as follows:

(1) **Determine the objective of qualitative meta-synthesis in this study**: To 梳理, analyze, and summarize relevant research on government information resource sharing, and integrate the factors influencing government information resource sharing.

(2) **Literature retrieval**: In March 2018, the author conducted searches in the China Journal Full-text Database and Wanfang Database using the subject terms "government + information resource + sharing," "government affairs + information resource + sharing," "government + information + sharing," "government affairs + information + sharing," "G2G + information + sharing," "public + information + sharing," and "public + information resource + sharing." Using a snowballing literature collection method, the author focused on research results from 2005-2017 related to government information resource sharing. Based on descriptions in the titles and abstracts, 91 domestic journal papers were initially identified. Using the subject terms "Public + Information + Sharing," "Public + Information Resource + Sharing," "Agency + Information + Sharing," "Agency + Information Resource + Sharing," "Government + Information + Sharing," and "Government + Information Resource + Sharing" (SU) in EBSCO's Library, Information Science & Technology Abstracts (LISTA) database, Academic Search Premier database, and Academic Search Complete database, and using the above terms as subjects in all datasets of Web of Science, focusing on literature after 1980, 30 foreign journal papers were initially identified based on titles and abstracts. After using the snowballing method, a total of 121 papers were obtained.

(3) **Preliminary literature screening**: Through reading each paper individually, the author found that some papers did not involve research on influencing factors of government information resource sharing. After referring to other studies using qualitative meta-synthesis [24-25], the author set two screening principles: (1) the content does not involve influencing factors of government information resource sharing; (2) no directional suggestions are made on how to promote government information resource sharing. Based on these principles, the collected literature was preliminarily screened, retaining 44 Chinese and English papers.

(4) **Further literature quality evaluation**: Considering the differences between domestic and foreign government systems, legal environments, and technology development stages, there will be corresponding differences in influencing factors of information resource sharing. Simply transplanting foreign research results may not be applicable to domestic realities.

Therefore, the author adopted the principle of "focusing on survey results in domestic research and theoretical results in foreign research" to select literature. Additionally, if a paper's format and citations were highly irregular, it was eliminated. Ultimately, 32 core papers were identified. These papers were of relatively high quality, and some involved comprehensive analysis of multiple influencing factors of government information resource sharing.

The 12 eliminated papers were placed in a "supplementary literature set." After completing the meta-synthesis, the factors involved in the papers in the "supplementary literature set" were screened according to the integrated influencing factor framework to reduce the possibility of factor omission.

(5) **Concept transformation**: In the integration process, the author first replaced descriptive words with similar meanings using synonyms. Second, the author understood the connotations of the factors proposed in the literature and, based on consistency of connotation, transformed the concepts and viewpoints of related factors, recording the common concepts and their connotations established between two or more studies during this process. For example, when discussing the implementation path of government information resource sharing based on big data technology, Xu Xiaori et al. pointed out the need to "seek to establish a unified national-level leadership institution and set up corresponding permanent management institutions at local levels, with the national informatization authority mainly responsible for cross-departmental sharing of government information resources" [26], while Chen Lanjie et al. found that one of the obstacles to regional government information resource sharing was "lack of unified leadership, fragmentation between departments, and each acting on its own," and that in promoting information resource sharing construction, "the relevant departments of Beijing-Tianjin-Hebei need to act in unison with unified standards and norms, and there needs to be a unified leadership institution… establishing a unified Beijing-Tianjin-Hebei regional government information resource management committee" [27]. These two studies have consistent understanding regarding the establishment of a competent authority, both expressing the importance of establishing a unified competent authority factor. "Unified competent authority" is a factor involved in both papers.

(6) **Aggregate the common concepts and connotations used in the transformation process and integrate them into an influencing factor framework**: After completing the 梳理 of factors involved in the core literature, the author compared and mapped the factors involved in the supplementary literature set with the factors in the integrated factor framework to ensure that no factors were omitted in the collected literature.

4. Analysis of Government Information Resource Sharing Influencing Factors

4.1 Basis for Constructing the Influencing Factor Framework

After 梳理 and integrating viewpoints, concepts, and terminology from existing research, this study identified 33 government information resource sharing influencing factors that have been proposed and preliminarily validated. Some studies have also proposed or constructed frameworks for government information resource sharing influencing factors, such as Y. Akabulut et al.'s three-dimensional framework of technology, agency, and environment [12]; Z. Bigdeli et al.'s four-layer framework including policy, organization, business process, and technology [13]; and Long Jian's theoretical framework including six aspects of motivation and background, objective conditions, subjective conditions, organizational management, operational management, and actual effectiveness [15]. The logic for categorizing government information resource sharing influencing factors in these studies roughly falls into three types: (1) the structure of government information resource sharing, involving why to share, how to share, and what effects to achieve, such as motivation, process, and results; (2) the levels of government information resource sharing, such as agency and environment; and (3) the business logic of government information resource sharing, such as policy, organization, business, and technology. These perspectives are sometimes used in combination, and the granularity of classification varies, resulting in complex and diverse outcomes.

The author believes that business logic essentially reveals the work content and interrelationships of government information resource sharing, and therefore is the fundamental basis for constructing an influencing factor framework. Government information resource sharing is a task that takes information resources as its object, is supported and handled by specific personnel, relies on specific technologies, supports specific processes, requires institutional mechanisms and comprehensive guarantees, and is carried out in a specific legal, policy, and standard environment (see Figure 1 [Figure 1: see original paper]). Given that institutional mechanisms involve relatively complex factors, the author divided them into institutional structure and mechanisms. Thus, an influencing factor framework with eight dimensions was constructed: laws, regulations, policies and standards; institutional structure; mechanisms; technology; information resources; comprehensive guarantees; personnel; and processes.

4.2 Analysis of Influencing Factor Dimensions

4.2.1 Laws, Regulations, Policies and Standards Dimension Laws, regulations, policies and standards for government information resource sharing refer to the laws, regulations, policy systems, and standard norms that the government relies on when practicing information resource sharing. Among them, laws and regulations define the objectives, paths, and boundaries of government information resource sharing and are important guarantees for procedural

justice in practice. Standards are action guidelines for government information resource sharing practice and are important guarantees for compliance in practice. The factors in this dimension mainly include government legislation, standard design, and framework formulation for information resource sharing. Existing research has relatively consistent views on the relationship between legal and regulatory factors and government information resource sharing, i.e., that a sound and effective legal and regulatory system can effectively guarantee government information resource sharing [4, 27]. The legal and regulatory factors involved in existing research mainly include: designing and referring to unified sharing framework standards and norms and following e-government development strategies (FL1), formulating unified development plans (FL2), establishing and improving legal, regulatory and institutional guarantee systems (FL3), and collecting and sharing information resources according to statutory authority (FL4). Specific details are shown in Table 1 .

4.2.2 Institutional Structure Dimension Generally speaking, institutional structure refers to the establishment of government agencies and the division of administrative authority, manifested as a framework with long-term and stable characteristics [28]. The management system is a complete set of organizational and personnel management systems formulated by a social organization based on laws, regulations, internal rules, and standard norms to effectively achieve its specific management objectives and organizational tasks [29]. The government information resource sharing institutional structure refers to the departments, positions, and corresponding authority and responsibility allocations set up around government information resource sharing activities, specifically including: the establishment of information resource management agencies, chief information officer systems, leadership support, and organizational relationships. A sound institutional structure is an important condition for implementing government information resource sharing [6, 15]. The institutional factors involved in existing research mainly include: establishing a unified competent authority (FS1), establishing a unified leadership system (such as establishing corresponding organizations at all levels by drawing on the CIO management system of the U.S. federal government [30]) (FS2), support from senior organizational leadership (FS3), establishing trust and respect between departments (FS4), participation of multiple social subjects and formation of a multi-governance model (FS5), and clearly defining the autonomy and responsibilities of data exchange and sharing (FS6). Specific details are shown in Table 2 .

4.2.3 Mechanism Dimension Mechanisms are the procedures, rules, and operational methods that ensure system implementation. Compared with institutional structure, mechanisms are more flexible and diverse in form [28]. Government information resource sharing mechanisms refer to the specific operational procedures, rules, or operational methods around government information resource sharing. The mechanism dimension mainly includes specific mea-

sures that the government needs to implement to achieve sharing. Performance assessment and incentive mechanisms, departmental interest coordination mechanisms, and supervision mechanisms have been widely recognized for their role in the successful implementation of information resource sharing [14, 27, 31]. Through literature 梳理 and integration, the factors in the mechanism dimension mainly include: establishing effective, real-time, and appropriate secure communication mechanisms (FM1), implementing top-down promotion mechanisms (FM2), introducing market mechanisms to encourage outsourcing (FM3), improving inter-departmental interest balancing and coordination mechanisms (FM4), establishing differentiated sharing mechanisms (i.e., applying different sharing mechanisms to different types of business and data) (FM5), implementing performance assessment and incentive mechanisms (FM6), and establishing systematic and institutionalized supervision mechanisms (FM7). Specific details are shown in Table 3 .

4.2.4 Technology Dimension Technology dimension factors refer to the information technology measures taken by the government to achieve information resource sharing, as well as the application of specific information technologies (such as cloud computing technology, data integration technology, etc.). Information technology is the foundation of informatization, and information system construction is the main battlefield of informatization [32]. As an important component of national informatization planning [33], government information resource sharing is also built on the cornerstone of information technology. In the era of big data and cloud computing, many studies have emphasized the important role of technologies such as information system collaboration, data integration, and unified cloud platforms as technical support for government information resource sharing [27, 34]. Through literature 梳理 and integration, the technology dimension mainly includes: building unified platforms for data sharing (FT1), improving information system compatibility to achieve data integration between agencies and departments (FT2), clarifying the types and methods of data exchange and sharing (TF3), and IT capability factors (FT4). Specific details are shown in Table 4 .

4.2.5 Information Resource Dimension Information resource dimension factors refer to factors related to the information itself under the narrow definition of information resources, such as information resource quality and information resource sharing scope. The academic community has not yet reached a unified understanding of government information resources, while the government's definition of its information resource scope is relatively broad. For example, the *Notice of the State Council on Issuing the Interim Measures for the Administration of Government Information Resource Sharing* (Guofa [2016] No. 51) [1] defines information resources as "information produced or obtained by government departments in the performance of their duties, recorded and preserved in certain forms, including documents, materials, charts, and data." In many studies on information resource sharing factors, discussions about the

resources themselves are relatively rare, but we cannot ignore the role of resource-related factors in the implementation of government information resource sharing. For example, the importance of government information quality has been emphasized and discussed by scholars such as Tang Qiong [35]. Through literature 梳理 and integration, the factors in the resource dimension include: ensuring information resource quality (FR1), determining the scope of information resources participating in sharing (FR2), integrating information resources to meet higher-level information needs (FR3), and clarifying information resource property rights (FR4). Specific details are shown in Table 5 .

4.2.6 Comprehensive Guarantee Dimension Comprehensive guarantee dimension factors refer to specific guarantee measures used to protect the smooth implementation of government information resource sharing, such as special financial guarantees and security guarantees. Unlike general projects, due to the special nature of government information, government information resource sharing requires not only human, financial, and material resource guarantees but also political, information security, and information confidentiality guarantees. In addition to grasping key factors in institutional mechanisms, laws and regulations, the implementation of government information resource sharing consumes human, financial, and material resources, requiring good guarantee measures to safeguard project implementation. Through literature 梳理 and integration, the factors in the guarantee dimension mainly include: aggregating and coordinating various resources to guarantee projects (FG1), special financial support and guarantees (FG2), and information security and confidentiality guarantees (FG3). Specific details are shown in Table 6 .

4.2.7 Personnel Dimension Personnel dimension factors refer to factors related to the awareness, quality, and level of leadership and grassroots staff in the government information resource sharing process. Given the current stage of information technology and administrative system, the implementation of government information resource sharing is mainly human-centered. Because of this, many studies have proposed factors related to the psychology and quality of government staff. Through literature 梳理 and integration, this study believes that personnel dimension factors mainly include: enhancing the cognition and acceptance of information resource sharing among relevant personnel, especially functional department leaders (FH1), strengthening training for civil servants, especially leading cadres, and building an adaptive civil service team (FH2), and building a comprehensive personnel team including talents in technology, policy, and management (FH3). Specific details are shown in Table 7 .

4.2.8 Process Dimension Process dimension factors mainly refer to government administrative processes, including business processes and decision-making processes. From the perspective of government administration, government information resource sharing essentially affects the original administrative processes of the government. If government information resource sharing is im-

plemented without corresponding changes to government operational processes, it will be difficult to achieve improvements in government administrative efficiency, collaborative management levels, and emergency response capabilities. In such a scenario, government information resource sharing can be considered a failure [7]. Process optimization and transformation are both influencing factors and objectives of government information resource sharing, and the two complement and support each other. Through literature 梳理 and integration, this study believes that process dimension factors mainly include: government business process transformation, optimization, and reorganization (FP1) and government decision-making process transformation, optimization, and reorganization (FP2). Specific details are shown in Table 8 .

5. Analysis of Key Influencing Factors

5.1 DEMATEL Model Construction and Calculation

After 梳理 out 33 influencing factors, this study measured the key influencing factors of government information resource sharing based on the DEMATEL model. First, a focus group was organized to evaluate the relationships between various factors of government information resource sharing. The focus group consisted of 11 members whose professions were all related to government information management work and who had relatively rich practical and research experience. They included experts and scholars in government information resource management from universities, civil servants from central ministry informatization departments, researchers from central ministry informatization research and decision-support institutions, and civil servants from local government informatization and office departments. The focus group discussed the degree of influence of each factor on all other factors, such as how the factor "establishing a unified management institution" under the institutional dimension influences all other factors like "implementing performance assessment and incentive mechanisms," "special financial support and guarantees," and "building unified platforms for data sharing." The degree of influence was scored from 0 (no influence) to 9 (decisive influence).

After constructing the relation matrix, this study calculated the influence degree (R) and influenced degree (C) of each factor according to the calculation method of the DEMATEL model (refer to the research approach and methods section regarding DEMATEL matrix calculation methods) (see Table 9). Among them, a factor's influence degree refers to the total degree of influence that the factor exerts on all other factors in the system; a factor's influenced degree refers to the total degree to which the factor is influenced by other factors.

Based on the influence degree and influenced degree results of each factor of government information resource sharing, it can be found that factors with relatively high influence degree include: laws, regulations and institutional guarantee systems (1.44), establishing a unified competent authority (1.17), support from senior organizational leadership (0.94), establishing a unified leadership

system (0.87), and enhancing the cognition and acceptance of information resource sharing among information management personnel and civil servants, especially functional department leaders (0.78). These factors have relatively high influence on other factors and are "origin-type" factors. Factors with high influence degree are mainly concentrated in the institutional structure dimension and laws, regulations, policies and standards dimension, which is basically consistent with the view in some current research that government information resource sharing should be "laws and regulations first" and "institutional reform as the core" [6, 11]. This shows that government information resource sharing should be based on institutional reform and legislation in practice.

From the perspective of influenced degree, factors with relatively high influenced degree mainly include: data integration of e-government systems between agencies and departments (0.94), building unified platforms for data sharing (0.93), government business process transformation (0.78), ensuring quality of information resources participating in sharing (0.66), and government decision-making process transformation (0.61). These factors are relatively highly influenced by other factors and belong to "result-type" factors. Unlike "origin-type" factors, "result-type" factors more directly act on the practice of government information resource sharing and are more direct drivers of successful implementation of government information resource sharing. It can be seen that in the new era, data integration of e-government systems between departments and the construction of unified sharing platforms have become the most important "result-type" factors.

5.2 Identification of Key Influencing Factors

Based on the theoretical model of the DEMATEL weight network, this study further calculated the centrality and causality of each influencing factor of government information resource sharing. According to the views of scholars such as M. Seyed-Hosseini who proposed the DEMATEL model, a factor's centrality (R+C) refers to its importance in the factor complex network, calculated as the sum of influence degree and influenced degree; a factor's causality (R-C) refers to its contribution to the causes of the entire factor network formation, calculated as the difference between influence degree and influenced degree [16]. The centrality and causality of each influencing factor of government information resource sharing are shown in Table 10 .

This study identifies key influencing factors by combining centrality (R+C) and causality (R-C). From the distribution of centrality (R+C) and causality (R-C) of each factor (see Figure 2 [Figure 2: see original paper]), some factors have both high centrality and high causality, such as FL3 (laws, regulations and institutional guarantee systems), FS1 (establishing a unified competent authority), FS3 (support from senior organizational leadership), FS2 (establishing a unified leadership system), and FH1 (enhancing the cognition and acceptance of information resource sharing among information management personnel, civil servants, especially functional department leaders). This indicates that these

factors have both strong centrality in the complex system network and strong explanatory power for other factors. Some factors have low causality but very high centrality, such as FT1 (building unified platforms for data sharing), FT2 (improving system compatibility to achieve data integration of e-government systems between agencies and departments), and FP1 (government business process transformation, optimization, and reorganization, adapting to information resource sharing). This indicates that although these three factors have little influence on other factors, they have an important position in the entire system and are important targets of many factors.

Based on the centrality and causality of government information resource sharing factors, this study selected the top 8 factors in both centrality and causality rankings, and identified 11 key influencing factors of government information resource sharing through comparison and analysis. Sorted by centrality, these factors are: FS1 (establishing a unified competent authority), FL3 (laws, regulations and institutional guarantee systems), FH1 (enhancing the cognition and acceptance of information resource sharing among information management personnel, civil servants, especially functional department leaders), FT1 (building unified platforms for data sharing), FS2 (establishing a unified leadership system), FP1 (government business process transformation, optimization, and reorganization, adapting to information resource sharing), FT2 (improving system compatibility to achieve data integration of e-government systems between agencies and departments), FS3 (support from senior organizational leadership), FL2 (formulating unified development plans, overall planning and development), FL1 (designing and referring to unified sharing frameworks, standard norms, and following e-government development strategies), and FM7 (establishing systematic and institutionalized supervision mechanisms).

5.3 Results and Discussion

From the perspective of the dimensions of the 11 identified key influencing factors of government information resource sharing, the dimensions of laws, regulations, policies and standards, institutional structure, and technology account for the majority of key factors, indicating that information resource sharing legislation, institutional reform, unified planning, and sharing platform construction are key to achieving government information resource sharing.

In the laws, regulations, policies and standards dimension, the three selected factors have both high centrality and high causality. Designing and referring to unified sharing frameworks and standard norms (FL1) and formulating unified development plans (FL2) are the foundation for building unified platforms for government information resource sharing. Unified sharing frameworks and standard norms can solve the interoperability and data consistency problems between government systems. Formulating unified development plans aims to eliminate the chaos of "every department building networks and every level managing data," plan and construct sharing platforms according to overall planning, and achieve availability of information resources and efficient utilization of gov-

ernment resources. The laws, regulations and institutional guarantee systems (FL3) provide legal protection and jurisprudential basis for government information resource sharing, clarifying the question of "what to manage based on," such as providing clear legal interpretations on accountability, personal privacy protection, and scope of authority, and regulating and promoting government information resource sharing through legislation.

In the institutional structure dimension, establishing a unified competent authority (FS1), establishing a unified leadership system (FS2), and support from senior organizational leadership (FS3) are three very critical institutional factors, whose causality ranks at the forefront of all factors. This is closely related to China's current government system. Under the fragmented management system, cross-departmental information resource sharing requires a strong department or institution to uniformly manage and coordinate sharing work, clarifying the question of "who manages," in order to effectively promote sharing step by step, and further address the questions of "who contributes" and "who is held accountable." In the entire organizational structure system, it is necessary to establish a competent authority (such as an information resource department at the central level and a big data bureau at the local level) to uniformly lead national government information resource sharing work, formulate corresponding policies and standard norms, and promote the formation of relevant mechanisms for government information resource sharing. Within organizational structures, it is necessary to establish a unified leadership system, such as the Chief Information Officer (CIO) system adopted by countries like the United States, to 统筹规划 and coordinate government information resource sharing through establishing a strong promotion system. Additionally, given that senior leaders have decision-making authority, obtaining their support is crucial for information resource sharing projects that require inter-departmental coordination and overall planning.

In the technology dimension, unified platform construction (FT1) and improving system compatibility to achieve data integration of e-government systems between agencies and departments (FT2) have relatively high centrality. The importance of these two factors was rarely mentioned in previous research, but according to this study's analysis, they are key influencing factors of government information resource sharing. Among them, unified sharing platforms are currently important initiatives promoted by the state to advance government information resource sharing. As can also be seen in the influenced degree analysis in Section 5.1, unified platform construction is a direct driver of successful implementation of government information resource sharing. Unified platform construction is an influencing factor with instrumental attributes. Building the platform is only the first step; the subsequent key steps are for users of the unified sharing platform to share data on the platform, use data on the platform, and maintain data on the platform in a timely manner. Behind the construction and use of unified platforms is the combined effect of factors including establishing and improving legal and regulatory systems, unified standards, and institutional mechanism reforms. Improving system compatibility to achieve

data integration of e-government systems between agencies and departments is closely related to unified sharing platform construction. Data integration between departmental systems is an important guarantee for data availability in sharing platforms, while unified sharing frameworks and standard norms are important guarantees for cross-system data integration between departments.

In addition, the mechanism dimension, personnel dimension, and process dimension each have one factor selected as a key influencing factor: enhancing the cognition and acceptance of information resource sharing among information management personnel, civil servants, especially functional department leaders (FH1); establishing systematic and institutionalized supervision mechanisms (FM7); and government business process transformation, optimization, and reorganization adapting to information resource sharing (FP1). Enhancing the cognition and acceptance of information resource sharing among information management personnel, civil servants, especially functional department leaders, is key to understanding information resource sharing from a big-picture perspective, recognizing information resources as an important strategic resource for national and social development, and understanding the important role of information resource sharing in enhancing administrative capabilities. Only with this conceptual transformation can there be enthusiasm for implementation. Supervision mechanisms are micro-level factors belonging to guarantee factors in specific implementation work. The importance of these factors has been elaborated in many previous studies. For mechanism factors, the key is not knowing whether they are important, but how to specifically implement them, clarifying the question of "how to manage," such as how to supervise whether organizations and personnel have effectively implemented information resource sharing. Government business process transformation, optimization, and reorganization and government information resource sharing complement and interact with each other. The goal of government information resource sharing is to improve government administrative efficiency, collaborative management levels, and emergency response capabilities, which needs to be achieved through government business process transformation, optimization, and reorganization. Conversely, changes in government business processes will also affect government information resource sharing, such as promoting government departments to shift from "passive sharing" to "active sharing."

6. Conclusions and Recommendations

6.1 Research Conclusions

This study takes the key factors for cross-departmental government information resource sharing in the new era as its research question. Through literature 梳理, it obtained 33 influencing factors of government information resource sharing across eight dimensions, and used the DEMATEL complex system model to identify 11 key factors. Among these 11 factors, seven are laws, regulations, policies and standards, institutional structure, and mechanism factors, two are technology factors, one is a personnel factor, and one is a process factor. This

shows that legal and standard guarantees and institutional mechanism reforms are the core of government information resource sharing in the new era, while technical support has become a powerful tool for current government information resource sharing.

Among the 11 key factors identified in this study, some have been mentioned and analyzed multiple times in previous research, such as unified competent authorities, laws, regulations and institutional guarantees. Some factors have not received sufficient attention, such as the cognition and acceptance of information resource sharing among functional department leaders, and the mutual adaptation between government business process transformation and information resource sharing. Some factors have been mentioned multiple times in previous research but were not selected as key factors in this study, such as special financial support and guarantees, and information security and confidentiality guarantees. This may indicate that personnel and process factors should also receive sufficient attention from government information managers, or could be themes for the next wave of government information resource sharing policies. The importance of special financial support may have declined under the strong support of governments at all levels, or is no longer a focus of attention. Information security and confidentiality guarantees are important in different contexts, but with the advancement of various unified sharing platform projects, they are temporarily not considered constraining factors for information resource sharing. The 11 key influencing factors identified in this study have obvious timeliness and have certain supporting significance for current government information resource sharing practice and related research.

6.2 Countermeasures and Recommendations

At the central government level, institutional mechanism reform and legal and standard guarantees are particularly important for promoting government information resource sharing in China. Based on the key influencing factors analyzed in this study, we recommend: (1) **Establish or clarify a central competent authority** to be overall responsible for government information resource management including sharing. The primary problem facing government information resource sharing is the question of "who manages." Under the overall pattern of fragmentation and vertical strength with horizontal weakness in government information resource sharing, there is an urgent need to establish a unified competent authority at the central government level. The main responsibilities of this authority should include: leading national government information resource sharing work, researching and formulating national laws, policies, standards, and plans for government information resource sharing; coordinating information resource sharing work among various ministries; and 统筹 constructing national-level information resource sharing platforms according to planning schemes. (2) **Establish intra-agency information resource sharing leadership systems**. Establish or designate corresponding leadership positions in each agency to be responsible for agency information resource sharing work,

drawing on the U.S. federal government's information resource management experience by establishing a CIO system, or clarifying the job requirements of responsible leaders. (3) **Improve legal, regulatory and institutional guarantee systems**. Formulate supporting regulations for government information resource sharing, and clarify information resource sharing boundaries, responsibility relationships, and interest focuses such as performance achievements through legislation or policy, thereby guaranteeing government information resource sharing. (4) **Formulate data standards, technical standards, and process standards for government information resource sharing**, thereby standardizing government information resource sharing behavior. Formulate top-level planning, 统筹 platform construction, and prevent the emergence of new information silos.

At the local government level, all 11 key factors identified in this study deserve attention for local government information resource sharing work. Given the current status of government information resource sharing in China, the following points require special attention: (1) **Local governments must first address the issues of unified competent authority and leadership system**. Due to the characteristics of China's administrative system with fragmentation, institutional barriers to horizontal information resource sharing are very prominent in local governments. In recent years, many local governments in China have newly established big data bureaus, while others have clarified responsible units for government information resource sharing work within existing administrative agencies. These responsible units are mainly responsible for implementing information resource sharing laws, regulations, policies, standards, and plans, issuing specific rules and implementation plans, and coordinating information resource sharing activities among government departments. To facilitate coordination of departmental interests and obtain support from main leaders, it is best for the competent authority and its responsible leaders to be at a level higher than the coordinated units. For example, the competent authority at the provincial government level should preferably be at the deputy provincial level, with deputy provincial or higher-level leading cadres in charge. (2) **Cultivation of leadership awareness**. Effective government information resource sharing can improve government administrative efficiency and people's convenience in handling affairs, but it also consumes a large amount of human, financial, and material resources. The concept of information resource sharing may require certain training for some leading cadres to understand and accept. Local government information resource authorities need to pay attention to training leaders of various units and lower-level governments to improve their awareness, making it easier for information resource sharing work in various units and lower-level governments to receive attention. (3) **Build unified sharing platforms according to plans from higher-level competent authorities**. Information resource sharing platforms are currently important tools for achieving government information resource sharing. Questions of how to build them and to what level should be scientifically planned according to the plans of higher-level competent authorities combined with local realities.

6.3 Research Limitations

Due to limitations, when obtaining the direct relation matrix of factors, this study could only obtain influence weights between factors through the focus group method within a limited participation scope. As China's legal and regulatory system for government information resource sharing continues to improve, planning is gradually implemented, institutional mechanism reform progresses, and unified sharing platforms are widely applied, the key influencing factors will also change. In future research, the author will attempt to use more extensive surveys and big data-related methods to collect and analyze the influencing factors of government information resource sharing and the relationships between these influencing factors, in order to more accurately grasp the development context of China's government information resource sharing cause and contribute to the development of China's government information resource sharing work and government information resource management research.

References

[1] State Council. Notice of the State Council on Issuing the Interim Measures for the Administration of Government Information Resource Sharing [EB/OL]. [2017-12-15]. http://www.gov.cn/zhengce/content/2016-09/19/content_{5109486}.htm.

[2] State Council. Guiding Opinions of the State Council on Accelerating the Work of "Internet Plus Government Services" [EB/OL]. [2017-12-15]. http://www.gov.cn/zhengce/content/2016-09/29/content_{5113369}.htm.

[3] Xi Jinping: Implementing the National Big Data Strategy and Accelerating the Construction of Digital China [EB/OL]. [2017-12-15]. http://www.xinhuanet.com/politics/leaders/2017-12/09/c_{1122084706}.htm.

[4] Li Weidong. Principles and Methods of Government Information Resource Sharing [J]. Chinese Public Administration, 2008(1): 65-67.

[5] DAWES S S, PARDO T A. Building collaborative digital government systems: systemic constraints and effective practices [C]// McIver Jr. W J, Elmagarmid A K. Advances in digital government: technology, human factors, and policy. New York: Springer, 2002: 259-273.

[6] Fan Bo. The Promotion System, Mechanism and Methods of Cross-Departmental Government Information Resource Sharing [J]. Journal of Shanghai Jiaotong University (Philosophy and Social Sciences), 2008, 16(2): 13-20.

[7] Huang Hui. Research on Restricting Factors and Promotion Strategies of E-Government Information Resource Sharing—Taking X City as an Example [J]. Modern Information, 2014, 34(8): 47-50.

[8] DAWES S S. Interagency information sharing: expected benefits, manageable risks [J]. Journal of Policy Analysis & Management, 1996, 15(3): 377-394.

[9] LANDSBERGEN D, WOLKEN G. Realizing the Promise: Government Information Systems and the Fourth Generation of Information Technology [J]. Public Administration Review, 2001, 61(2): 206-220.

[10] You Jia, Wang Rui, Xu Jianping. Research on Influencing Factors of Inter-Departmental Information Sharing in Government Based on Grounded Theory [J]. Journal of Intelligence, 2014(1): 178-182.

[11] GAO. Information Sharing: Practices That Can Benefit Critical Infrastructure Protection [EB/OL]. [2017-10-15]. http://www.gao.gov/products/GAO-02-24.

[12] AKBULUT Y, KELLE P, PAWLOWSKI D, et al. To share or not to share? Examining the factors influencing local agency electronic information sharing [C]// 9th European Conference on Information Systems. Helsinki, Finland: ECIS, 2001: 79.

[13] BIGDELI Z, KAMAL M, DE CESARE S. Inter-organisational electronic information sharing in local G2G settings: a socio-technical issue [C]// 9th European Conference on Information Systems. Helsinki, Finland: ECIS, 2011: 79.

[14] Du Zhizhou. On Improving the Effectiveness of E-Government Information Resource Sharing [J]. Modern Management Science, 2009(2): 39-41.

[15] Long Jian. Research Progress and Enlightenment on Influencing Factors of Cross-Departmental Government Information Resource Sharing [J]. Information and Documentation Services, 2014, 35(2): 44-51.

[16] Zhou Wei, Han Jiaqin. Research on Influencing Factors of E-Government Information Resource Sharing Based on SEM [J]. Information Science, 2007(2): 278-283.

[17] Fan Jing, Zhang Pengzhu. Research on the Success Factor Model of Inter-Organizational Information Sharing in E-Government Environment [J]. Information Science, 2007, 25(7): 1080-1084.

[18] SEYED-HOSSEINI M, SAFAEI N, ASGHARPOUR J. Reprioritization of failures in a system failure mode and effects analysis by decision making trial and evaluation laboratory technique [J]. Reliability Engineering & System Safety, 2006, 91(8): 872-881.

[19] Gan Junwei, He Zhenggang, Peng Mao, et al. Analysis of Influencing Factors on the Development of End-of-Life Vehicle Recycling Industry in China Based on DEMATEL Method [J]. Science and Technology Management Research, 2016, 36(1): 103-107.

[20] Wang Zhongyuan, Wei Fajie. Research on Legal Risk Identification of Military Industrial Enterprises Based on IFAHP-DEMATEL [J]. Management Review, 2015, 27(06): 68-77.

[21] Li Chunrong, Geng Yong, Xue Bing, et al. Analysis of Obstacles to Urban Sustainable Development Based on DEMATEL—Taking Shenyang as an Example [J]. Chinese Journal of Applied Ecology, 2012, 23(10): 2836-2842.

[22] HARRIS C, STERN N. Women's health and the self-care paradox: a model to guide self-care decision-making [J]. Healthcare for Women International, 1985, 6(1/3): 151-163.

[23] WALSH D, DOWNES S. Meta-synthesis method for qualitative research: a literature review [J]. Journal of Advanced Nursing, 2010, 50(2): 204-211.

[24] LEE J. 10-year retrospect on stage models of e-government: a qualitative meta-synthesis [J]. Government Information Quarterly, 2010, 27(3): 220-230.

[25] JENSEN A, ALLEN N. Meta-synthesis of qualitative findings [J]. Qualitative Health Research, 1996, 6(6): 553-560.

[26] Xu Xiaori, Li Sicong. Research on Government Information Resource Sharing Issues in the Context of Big Data [J]. Changbai Journal, 2015(6): 57-61.

[27] Chen Lanjie, Liu Yanlin. Research on the Promotion Mechanism of Government Information Resource Sharing in the Beijing-Tianjin-Hebei Region [J]. Information Science, 2015(6): 109-114.

[28] Zhang Gang, Xie Yangqun. On Enterprise Crisis Information Management System [J]. Information Studies: Theory & Application, 2005, 28(5): 459-461.

[29] Li Jing. Research on the Management System of U.S. Federal Government Information Resources [D]. Hefei: Anhui University, 2010.

[30] Liu Yuhong. Development Status and Countermeasures of Government Information Resource Sharing in China [J]. Information Science, 2009(2): 190-195.

[31] Liu Mixia. International Experience and Reference for Government Information Sharing [J]. E-Government, 2017(6): 117-125.

[32] Lai Maosheng, Yang Xiudan, Hu Xiaofeng, et al. Research on Basic Theory of Information Resource Development and Utilization [J]. Information Studies: Theory & Application, 2004, 27(3): 229-235.

[33] Ministry of Industry and Information Technology of the People's Republic of China. State Council Issues the "13th Five-Year Plan for National Informatization" [EB/OL]. [2017-12-28]. http://www.miit.gov.cn/n1146290/n1146392/c5444529/content.html.

[34] Zhang Yongjin. Research on the Current Situation of Local Government Data Opening in China [J]. Chinese Public Administration, 2016(11): 19-23.

[35] Tang Qiong, Chen Siren. The U.S. Federal Government Information Quality Assurance Policy System and Its Reference [EB/OL]. [2018-03-21]. http://kns.cnki.net/kcms/detail/11.1762.G3.20171114.1716.002.html.

[36] Lü Xin, Pei Ruimin, Liu Fan. Analysis of Influencing Factors and Security Risks of E-Government Information Resource Sharing [J]. Management Review, 2013, 25(6): 161-169.

[37] Chen Mei. Research on the Path of Government Information Resource Sharing in E-Governance Environment [J]. Library and Information Service, 2013, 57(5): 38-45.

[38] Zhou Chengbing, Xue Gang. Foreign E-Government Information Resource Integration Models and Enlightenment [J]. E-Government, 2013(12): 94-99.

[39] Li Yan, Hu Guangwei. Research on the Establishment Model of Government Information Resource Sharing Mechanism—Taking Jiangsu Province's "Power Sunshine" Operation Practice as an Example [J]. E-Government, 2015(3): 106-112.

[40] Li Yu. Analysis of Bottleneck Factors in Government Information Resource Sharing in the Network Era [J]. Journal of Beijing Administration Institute, 2014(3): 65-68.

[41] Gong Liqun, Gao Lin. Empirical Research on Influencing Factors of Cross-Departmental Government Information Resource Sharing [J]. Information and Documentation Services, 2012(4): 61-65.

[42] Fan Bo, Meng Qingguo. Research on Government Information Resource Sharing from a Top-Level Design Perspective [J]. Modern Management Science, 2009(1): 3-5.

[43] Deng Chunlin, He Zhen. On Influencing Factors of E-Government Information Resource Sharing [J]. Modern Information, 2014, 34(5): 13-16.

[44] LAM W. Barriers to e-government integration [J]. Journal of Enterprise Information Management, 2005, 18(5): 511-530.

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Yang Jianliang: Proposed the research question, developed the research framework, conducted data analysis and paper writing.
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Note: Figure translations are in progress. See original paper for figures.