



A Review of China's Open Data Policy Research

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Abstract

[Purpose/Significance]: To provide a reference for the development of open data theory and practice by targeting a review of China's open data policy-related research. **[Method/Process]:** Through textual content analysis, the study finds that the research on open data policy in China currently consists of four main sections: theoretical research, policy content analysis, policy coordination research, and policy evaluation. **[Result/Conclusion]:** At present, China's research on open data policy has made some progress, especially the reference to foreign open data policy experience, and also found the problems and obstacles of China's open data policy, but the overall is still in the development stage, which can be combined with knowledge mapping for in-depth research on open data policy network.

Subject Areas

Public Administration

Keywords

Open Data, Policy Research, Research Review

1. Introduction

Currently, new technologies represented by cloud computing and artificial intelligence continue to make breakthroughs, and data resources have become the core elements driving economic transformation and development, serving people's livelihood construction and innovating social governance models, and are fertile ground for cultivating new economies and new dynamic energy. The United States established a government data portal in 2009, followed by the United Kingdom, Canada, Australia, and other countries to promote open data, looking around the world, open data has become a common trend. Along with the continuous development of informatization, government departments have accumulated a

large amount of data resources, and the popularization of open-source thinking and open concept and the increase of data innovation awareness has also made the public's demand for open data continue to grow. Many studies on open data have emerged in the academic field, including open data sharing mechanisms, open data platform construction, pros and cons of open data, open data stakeholders, open data sharing applications, and open data countermeasure suggestions. Among them, the construction of an open data platform has been a hot spot for research. Early studies focused on the comparison of the differences between domestic and foreign open data platforms [1], while in recent years, more attention has been paid to the functions and user experience of open data platforms [2]. From the change of research focus, it can be seen that with the gradual advancement of China's open data, the construction of open data platforms is no longer focused on narrowing the gap with other countries, but is more user-friendly and conducive to the utilization of open data from the perspective of users' actual needs and user experience [3]. As a current hot topic, open data is closely related to the goals of achieving a more transparent and efficient government, solving social problems, and adding economic value [4]. Realizing the great value brought by open data [5], our government has gradually increased the content of open data in policies. However, due to the late start of China [6], there are few targeted policies, and the content of open data is scattered among policies in various fields, and there is a lack of systematic combing of related policies in the academic community [7], so there is no way to know the overview of the policy system. Therefore, the questions to be addressed in this paper include: What is the main focus of current China's open data policy research? Which aspects of policy research are still relatively lacking? What obstacles exist in the process of policy development? The current status of domestic open data policy research is explored to provide references for the development of China's open data theory and practice.

2. Research on Open Data Policy

In addition to being an important window for observing the policy process and understanding the policy direction [8], policy research is also of great significance in guiding further policy formulation [9]. In 2015, the "Action Plan for Promoting Big Data Development" was released, which clarifies the guiding ideology and overall goal of China's big data development puts forward the main tasks of China's big data development in terms of government [10], industry, and security system, and points out the development and improvement of the data policy system. As an important part of the national strategy of big data, the content of "open data" appears in thousands of policies such as "Comprehensive Promotion of Government Affairs Openness" and "Regulations on Government Information Disclosure". Around the strategic deployment of national open data, governments at all levels have responded to the call and introduced a series of open data policies in recent years. Accordingly, many scholars have researched

open data policies. There are about 350 papers on the topic of “open data policy” in the CNKI database. After analyzing the content and summarizing the themes of this literature, we found that there are four main sections of open data policy research in China.

2.1. Theoretical Research

Theoretical research on open data policy includes the construction of theoretical model, the construction of policy research framework, the construction of policy system, the construction of policy content framework, and lifecycle management model of open data.

According to the definition of public policy in academia [11], the policy has a clear normative nature, that is, normative actions must be taken in a specific policy environment in order to achieve policy goals [12]. Based on the normative analysis, we can construct a model of open data policy, which can deepen the understanding of existing policies and predict the direction of future policies, and think about and analyze open data policy in various ways [13]. Open data policy is an important tool for the government to solve the problem of openness and utilization, which clearly decides whether the data is open, the scope and type of openness, data security in the process of openness, and a series of other issues, and its policy process involves state agencies, social organizations, individual citizens and other subjects [14]. The ultimate goal to be achieved by the open data policy is to promote open data while stimulating the sense of social innovation and using open data to realize the value-added of data resources. However, due to its special attributes that are different from other policy types, issues such as data security and privacy protection will arise in the process of creating data value, in addition to general factors such as political factors, the ruling class, and citizen participation, there are two types of special influencing factors such as national security and citizen privacy [15]. Therefore, whether the current policy environment can support the development and implementation of open data policies is a realistic basis that needs to be considered comprehensively. Fundamentally, the value of open data lies in its use by society, and the huge demand for data is the source motivation to promote its openness. At present, there is a growing demand for data resources from civil society, mass media, enterprises, and the government in China in various aspects such as financial budget, medicine, and food, environment, and ecology. The leadership ability of political leaders and the management ability of managers are also realistic bases for open data. The introduction of plans such as the Action Plan for the Development of Big Data and the cross-sectoral collaboration in terms of public resources for e-government have provided a political foundation for government open data. Open data is a new era development of information disclosure, and open data policies and regulations are a new era continuation of the information disclosure system. The relevant policies and regulations that have been introduced can greatly reduce the obstacles in the process of open data and

reduce the occurrence of security problems. In addition, China's Internet penetration rate, network coverage, the level of development of information technology, and the government's financial support for the big data industry have created a broad market stage for open data [16].

Currently, policies have been introduced at various levels in China to cover the open data lifecycle. However, there are still great obstacles in the stages of data collection, data organization, data storage, data discovery, and data evaluation [17]. The national top-level design is crucial to open data, and the provincial level also needs to put the top-level design into practice with more specific policy measures. The policy system of open data in China needs to be further improved, and the data demand of the public and the data management capability of the government need to be enhanced [18].

2.2. Content Analysis of Policy Texts

According to the World Wide Web Foundation's Open Data Barometer report, countries such as Australia, France, the United Kingdom, the United States, and Japan have high overall scores and high levels of data openness. Although open data policies cannot provide specific working instructions for practical operations and only serve as programmatic guidance documents, the open data policy systems in Australia, the United States, and the United Kingdom are also quite well developed [19]. The Australian government's open data policy focus on revision and have formed a more complete policy system with detailed and specific policies that are highly operable [20]. The Danish government has also formed a set of mature policy systems and working mechanisms in open data, opened government data in phases, set up a corresponding department to manage open data, and has a perfect legal system in terms of personal information security [21]. The French government has a high legal status in open data and has promoted the process of opening up government data by setting up open data agencies and formulating perfect policies and regulations and has also strengthened interdepartmental cooperation within the government to ensure data security [22]. From the historical process of open data in the UK, the government has paid great attention and formulated appropriate policies with clear goals and guidelines [23], and there is a high degree of coordination between the government and other stakeholders, and the overall recognition of open data by government and society at large [24], which are the key factors for the remarkable results achieved by the UK government. The Japanese government focuses on the cultivation of social organizations, partnership with the public, and legal system construction during the implementation of open data strategy [25], and its policy-driven model has both commercial and public good attributes, and interaction between openness and utilization is also an important factor for the good performance [26]. From the perspective of policy implementation and practice, the U.S. open data policy takes "data" as the core, attaches importance to organizational system construction and data management capacity, promotes

social innovation with openness, and presents the characteristics of regulation, open source, and keeping up with the times [27].

On the whole, the policies of countries such as Britain and the United States with a high degree of open data have some common characteristics: a wide range of social subjects participate in the policy formulation process, the operability of policy content is strong, and cross-sectoral collaboration has been formed among different policymakers [28]. In contrast to leading open data countries, China needs to build targeted framework policies [29], and improve open data legislation and institutional supply to meet the practical development needs [30].

2.3. Policy Coordination

Policy coordination is a series of instrumental measures taken to solve the problem of policy fragmentation in the process of governmental provision of public services and management of social affairs [31], and to reduce the duplication, intersection and conflict among policy subjects and policies, which has the advantage of achieving better policy performance [32], and the coordination among governmental departments is also conducive to the implementation and promotion of open data policies. The study of open data policy coordination in China includes policy subject coordination, policy theme coordination, policy tool coordination, and policy goal coordination. From the policies above the provincial level, the coordination among policy subjects of open data in China has increased year by year, from providing a basic guarantee for open data in the preparation period, to constructing the basic framework of government open data in the development period, to comprehensively promoting government open data in the perfection period, the overall policy effectiveness has been continuously improved, and the trend of cooperative issuance among multiple policy subjects has been on the rise, and the coordination in improving government governance effectiveness, promoting social and economic development, and serving social The coordination of policy objectives in improving the effectiveness of government governance, promoting social and economic development, and serving the people's livelihood is also on the rise. China's open data policy, using a combination of environment-based tools and supply-based tools, synergistically promotes the policy goal of data resource utilization, and therefore the highest degree of coordination between different policy tools is found between environment-based tools and supply-based tools [33]. In terms of policies at the provincial and municipal levels, policy coordination is less desirable both in the vertical inter-provincial dimension and horizontally between provinces and municipalities at the same level [34]. In addition, the coordination between open data and data security in the open data policy is a key factor to promote the healthy development of open data steadily. However, in terms of the policy coordination between open data and data security, the overall coordination between the two is at a low level, and only some of the policy coordination are relatively close [35].

The current policy status in China shows that although the system construction is being improved, there is still a lack of independent open data regulations, the policy provisions are scattered in various policies, and the policy system is not systematic enough. Therefore, the country needs to further strengthen the top-level design of open data policy, clarify the overall goal, play a leading role, coordinate the implementation of policies [36], improve the efficiency of information transfer and the matching of authority and responsibility, and grasp the coordination between open data and data security in the process of continuously improving the policy system, so as not to cause security risks to the state and individuals, nor to affect the overall promotion of open data [37]. In addition, to enhance the common perception of open data in the whole society, because the effectiveness of open data also depends on data stakeholders [38], to promote the cooperation between society, citizens and government, to provide perspectives beyond government for open data, and to participate in open data together.

2.4. Policy Evaluation

The current evaluation of open data policies in China is commonly studied from the perspective of comparative domestic and foreign policy studies to obtain the evaluation of policy effectiveness. Such as one of the pioneers of open data, the United Kingdom, as part of its open government construction, has invested more in government transparency, social participation, and subject collaboration, and its open data strategy covers systematic laws and regulations, perfect management structures, and generally accepted policy measures, which bring government departments, enterprises, and people welfare, also created economic value [39], which has a certain reference value for China's open data process. However, at present, there is no standard system for evaluating open data policies in China, and the existing evaluation studies lack evolutionary analysis of the overall policy development process and do not reach the judgment of policy trends and proper measurement of policy values [40]. Therefore, there is an urgent need to establish a relatively systematic evaluation system to measure the performance of China's open data policy, prove that open data has brought real benefits, especially the impact on society, further enhance the public perception of the impact of open data, improve the participation of relevant stakeholders, and create a good ecology of open data.

3. Conclusions

The current domestic research on open data policy mainly focuses on the textual content analysis of data policies at home and abroad, which provides a reference with practical significance for China's open data policy formulation and practice development. The research method is based on textual content analysis, and the content analysis and quantitative analysis methods commonly used in policy coordination and policy text analysis studies show the shadow of policy bibliometrics [41]. Unlike traditional public policy research, policy measurement tends

to quantitative analysis of large-scale policy texts [42], which is used to reveal the evolution of policy development, understand the policy overview, and interpret the policy direction through quantitative analysis of a large number of policy texts [43]. Since the introduction of bibliometric methods into policy research, there is no shortage of quantitative analysis of policies in the field of open data. Many Chinese scholars have conducted quantitative research on data openness policies with the help of knowledge mapping tools such as Ucinet and VOS-viewer [44], and the analysis perspectives include release time, policy type, issuing agency [45], policy instrument, administrative level, policy subject, policy topic [46], policy form, policy intensity, and policy goal, and the research methods include bibliometrics [47], social network analysis, and content analysis, with policy size ranging from 50 to 300. However, previous studies were limited to single-dimension analysis of policy literature attributes [48]. Relatively speaking, studies on policy systems, policy framework construction, policy coordination, and policy evaluation are weak, and there is a lack of targeted policy documents on open data at both national and provincial levels, and the content of open data is only scattered in various policy documents [49]. The academic community needs to strengthen research in related aspects to promote the improvement of the open data policy system and the practical implementation of policy measures.

In addition, relevant research at home and abroad has made some progress since the concepts of policy text computing and policy bibliometrics have been proposed, but there is still more room for the development of research on open data policy bibliometrics worth exploring. In addition to the research on the evolution of policy development and the progress of policy construction [50], the cooperative network of open data policy can be studied based on social network analysis combined with knowledge mapping to explore the deep inter-house relationship behind the policy issuance [51], and the administrative influence of the policy can also be explored based on citation analysis of the cross-references between open data policies. It is also possible to explore the administrative influence of policies based on citation analysis and cross-referencing between open data policies. It is possible to deepen the direction of subsequent research by using bibliometric tools and methods to dig deeper into the policy content, not limited to individual dimensions such as “policy issuing organization” and “policy level”.

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Conflicts of Interest

The authors declare no conflicts of interest.

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