Study on the Optimization Path of Government Public Decision Making from the Perspective of Big Data

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Abstract: The advent of the era of big data provides a brand-new thinking concept and methodological tools for government public decision making. It provides an alternative way for the modernization transformation of government public decision-making and the optimization of decision making. Big data decision-making helps to modernize the national governance system and governance capacity, realize the scientific and fairness of public decision making, take into account the needs of different decision-making interest subjects, and maximize the effect of decision making. However, big data decision making under the current stage faces some dilemmas and shackles. This paper analyzes how to transcend the dilemmas of big data decision making and proposes the optimization path of public decision-making in the context of big data.

1. Big Data and Public Decision Making in Government

In 2017, Xi Jinping introduced the new concept of "smart society" in the report of the 19th Party Congress when discussing the acceleration of building an innovative country. In the new era, with the goal of eradicating poverty and building a well-off society, we have seized a new victory of Chinese specialties in the new era. We can further consolidate the four comprehensive and five-in-one situation for further development. General Secretary Xi Jinping proposed the "implementation of the national big data strategy, accelerate the construction of digital China", proposed to integrate big data and national governance and government public decision-making, comprehensive governance, seize the focus on improving the level of modernization of national governance, pay close attention to the implementation of big data government decision-making. The government should establish a sound and solid promotion of big data to assist public decision making. We should establish and improve the mechanism for solid promotion of big data-assisted public decision-making, and continue to promote government governance and social governance model innovation to achieve scientific government decision-making, precise social governance and efficient public services.

2. Big Data Concept and Its Research Status

“Big data” is from the book *The Third Wave* written by Alvin Toffler. He pointed out that if the birth of the IBM mainframe can be regarded as the prologue of the information revolution, then big data is the music of the third wave. Since then, the United States in 2008 in the Nature magazine "Nature" proposed on the big data, but also the concept of big data has been widely disseminated and recognized. At present, different scholars have different academic definitions of big data, but the most direct and simple definition and understanding of big data for the general public is large-scale data, which is based on the massive increase of data brought by the great development of Internet technology.

2.1 Status of foreign research

Since the concept of "Big Data" was first introduced in *The Third Wave*, McKinsey Global Institute has proposed the arrival of the era of Big Data. After analyzing, sorting and researching related literature and monographs, the research on big data in foreign academia is generally divided into these categories.

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2.1.1 Research on the specific practical application of big data in society

Foreign scholars study the sources of big data, the disposition of analyzing big data, and the problems and development bottlenecks of the practical use of big data from the perspective of the field of big data technology. Trevor Hesty, in terms of the administrative field, proposed the combination of data analysis and statistics on big data to realize digital administration with the help of building models [1]. Martin Krumbek, on the other hand, finally started studying on data security privacy and other aspects [2].

2.1.2 Research on big data and local government governance capacity

Regarding the research on big data and social governance, in *The Next Wave*, West proposed that big data drives a new path for social development and government governance. By widely applying big data in government management, governance and public services, it can improve information disclosure and transparency, improve government decision-making, enhance the quality and quantity of public services, and modernize governance capacity and governance system [3].

2.1.3 Research on big data and government public decision making

American Ian Ayres put forward his view in *Super Genius* that most decision makers think they are good at decision making, but ignored the fact that their own decisions are influenced by subjective factors. If the decision-making power is handed over to machines, it will jeopardize their own authority and power. Thus, he proposed that government decision making based on big data can largely avoid human errors in decision making. *Big Data Thinking and Decision Making* introduces big data into government decision-making, emphasizing that big data-led decision-making behavior can effectively improve the scientific and effective nature of public decision-making and maximize the effective value and benefits of the decision-making itself and the stakeholder subjects.

2.2 Status of domestic research

The exploration of big data and decision making in China's academic circles began in 2015 with the study on the characteristics of intelligent public decision making based on big data. Since then, the theoretical research on big data and governmental decision-making has developed rapidly, focusing on: first, the research based on the perspective of the change of big data on public decision-making; second, the research based on the perspective of the necessity and advantage of big data decision-making. Third, the research on the public decision-making model in the context of big data; fourth, the research on the two-way relationship between big data environment and public decision-making system; fifth, the research on the foreign experience of big data and public decision-making.

3. The Dilemma of Public Policy-making in the Context of Big Data and its Causes

3.1 Conceptual level: the lack of big data awareness of two-way subjects of decision-making has not yet become universal awareness

The two-way subjects of government public decision-making include two subjects - government and citizens.

From the perspective of the leading decision maker and governance - the government, on the one hand, the use of big data technology in government decision-making at home and abroad is still at the stage of crossing the river by feeling the stones. There are not many experiences to learn from, plus government leaders are limited by the traditional decision-making model. Moreover, the awareness of big data public decision-making is still in the state of "In addition, government leaders are limited by the traditional decision-making model, and the awareness of big data public decision making is still in the state of "top-level enthusiastic promotion, middle-level advocacy, grassroots wait-and-see. In addition, influenced by the long-term political and social atmosphere in China, the government is stricter in managing data information, and the information resources are internalized

and semi-transparent, resulting in poor transmission of relevant data information.

From the participants of decision making and the direct influencers of profit and loss - citizens. Despite the continuous improvement of China's service-oriented government, citizens' awareness of participation and ability to participate have been enhanced, but there are also some citizens who lack real and effective participation in government decision-making and have little data awareness, making the two-way subject interaction of government public decision-making unbalanced, formal and lacking more effective feedback.

3.2 Technical level: big data fragmentation, weak sharing and technology

First, data openness and sharing lag behind the real demand, and big data decision making is caught in the water of no source

Public data openness-shareability is the starting point of stepping into the digital era, but also the shackle. In terms of government departments, information systems of government departments in China are incompatible with each other, and the problem of data silos has been accumulating. At the same time, it is not difficult to analyze the relevant industries in China and find that the industry giants keep data strictly confidential and technically blocked out of their own interests, and cannot share their own data. What's more, big data is intensive in the field of commerce and trade, and relatively little in public management and decision-making.

Second, technical and ethical issues are shackled

Any technology has its own advantages and disadvantages. While Big Data brings convenience to human beings, it also has its own potential risks. At the same time, at the present stage, there are difficulties in the technical aspects of big data that are difficult to break through at this stage. In the moral aspects, there are contradictions between the privacy and openness of citizens, and there are unbalanced contradictions between the secrecy of private data and the accessibility of the state.

3.3 Institutional level: the legal system and decision-making mechanism are shackled

Firstly, data security and laws and regulations lag behind the innovation practice, and big data decision making has become an uncontrolled horse

As a "double-edged sword", the positive side of big data attracts attention, but it also hides security risks and moral and ethical risks such as data abuse [4]. At the present stage, the use of big data lacks a sound legal system to regulate it, and the lag of the legal system is difficult to regulate the rapid development of big data, which has become a problem to be solved in terms of how big data can be based on law and driven by law for public decision-making.

At the same time, the virtual and supra-regional nature of big data also challenges the traditional legal system [5]. The supra-regional nature of big data challenges the concept of national sovereignty and the legal system, which are traditionally bounded by national boundaries. However, there is no relevant uniform standard applicable legal provisions worldwide.

Second, the depth of big data embedded in public decision-making is not deep enough, the decision-making mechanism needs to be innovated. It is difficult to fully liberate the advantages of technological embedding.

As an unprecedented new decision-making model - big data decision-making, this new model will definitely form a huge impact on the existing power pattern and decision-making mechanism, weakening the dominant role and monopoly of the political power exerciser - the government and government officials in the allocation of social public resources. This impact and challenge will require institutional and top-level changes to the existing political forces and power games. However, realistically, all changes to the existing system are contradictory and conflicting, and the mismatch between big data and government governance philosophy, power structure, and other conditions can make big data an external means of decision-making rather than an internal driver.

4. The Optimization Path of Government Public Decision-making Under the Perspective of Big Data

4.1 Cultivate government thinking about big data and break the traditional concept dilemma

As a kind of information, big data is both a technical tool for decision making and to some extent, it can also be a sense of thinking for government decision making. Big data openly and properly used will become the inevitable choice of government decision-making and citizens. Government decision-making is not a single act, but a two-way multi-subject and multi-role interaction and feedback. For the leading decision maker - the government, it is important to establish big data thinking. Government decision makers should have a clear and explicit orientation and understanding of big data and big data decision making. In the context of big data, government decision makers have to change their original conceptual dimensions of decision making, decision ideas and decision-making methods [6]. First of all, government policy makers and staff should change their concepts, keep abreast of the times, and establish and adhere to the thinking and concepts of "using data to speak facts, using data to make scientific decisions, using data to manage accurately, and using data to innovate". Secondly, decision makers should break their own subjective experience and subjective cognition, and realize the change of their own way of thinking from empirical decision to data decision. In the era of big data, decision makers need to change their own concepts and ways of thinking. Government departments and institutions should continuously strengthen their own learning of big data knowledge, form advanced knowledge of big data in their minds, and carry out relevant data learning training. They should also strengthen their own concepts of big data and integrate them into their decision-making practices.

4.2 Improving expertise to cross the technical divide in big data decision making

The fundamental purpose of big data decision making is to use big data to achieve scientific, intelligent, and timely government decision making and to improve government decision making ability. It can be said that the key to government decision-making under big data is that the government is by the ability to achieve the mastery and full use of big data [7]. At the present stage, governments around the world face the dilemma and problem of diversified sources, complex collection, miscellaneous types, and detailed information of big data, and are constantly exploring and solving to achieve a technical breakthrough of the technical divide.

4.3 Do a good top-level design, accelerate the innovation of institutional mechanisms

Big data as a superstructure must be designed at the top level so as to promote the integration of big data with public decision-making [8]. A sound governmental inter-governmental data linkage system should be established. Under the existing system of government departments, big data is used in different departments, but mostly indifferent ways and irrelated. The connectivity of big data is not brought into play, which is of little help to government public decision making. At the same time, it is also necessary to improve the top-level design of big data and the system of big data itself to realize the organic integration of various subset systems of collection, analysis, application and feedback of big data with government public decision making. First, from the source - data collection, to build a unified data information collection interface, and to achieve the authenticity, comprehensiveness and reliability of big data. Secondly, in the analysis stage of data, we should reasonably use various technical means to rationalize big data and improve the "vitality" of big data. Finally, in the application stage of big data, the integration of big data and public decision-making should be realized.

4.4 Improve and sound the legal and regulatory system of public decision-making under big data, improve the management of big data decisions

In 2016, General Secretary Xi Jinping emphasized at the Symposium on Network Security and Informatization that year that it was necessary to "speed up the process of network legislation, improve regulatory measures in accordance with the law, and resolve network risks" [9]. Therefore,

the use of big data decision-making must have a sound legal system. In order to establish a sound big data decision-making system, improve the relevant laws and regulations, and establish and improve a complete set of perfect and sound legal system consisting of three major parts including but not limited to the constitution, administrative mechanism, and judicial mechanism on the basis of the four basic principles of data management - data sovereignty principle, data protection principle, data freedom principle, and data security principle. Big data laws and regulations system, to establish a solid legal guarantee for the use of big data. At the same time, the subsystems of big data should also be done in accordance with the law. It is necessary to insist that all aspects of the collection, analysis, and decision-making use of big data should be done in accordance with the law. In the process of collecting big data information stage, it is vital to pay attention to the legal collection and protection of citizens' personal information and personal privacy, information of enterprises and organizations, and avoid violating the right to privacy. Under the legal system, big data decision should achieve the balance of openness, legalization and morality and ethics of data collection. To analyze the stage process of big data information, the legal system should be used to supervise and manage the relevant practitioners and staff, to avoid the interference of human factors in big data decision-making, to prevent the leakage of big data, and to prevent the use of big data by human beings in order to achieve the behavior of using data for personal and profit [10]. In the process of using the stage of big data, the law should be used to realize the lawfulness and feasibility of data-based decision-making, and to achieve scientific, rule of law and openness.

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