Public Management Innovation in the Era of Big Data

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Abstract: In the Internet era, computer technology and data analysis technology have been widely applied to people's work and their daily lives. Big data technology has brought great influence to public management, providing efficient and convenient public services and improving the ability to cope with crises of public opinion[1]. However, in the actual public management practice, there are widespread problems such as single practice model and poor data openness. Based on this, the article expounds the relevant contents of big data, introduces the role of big data in public management, and studies the public management innovation in the era of big data.

Keywords: The era of big data, Public management, Innovation

1 Introduction

Big data is the result of the development of computer technology and Internet technology, which has been widely used by citizens during the process of applying computers and networks. With the data collection function of the computer, datasets could be made consisting of a large number of data resources, which will help to provide support for data analysis. With the development of the big data, various industries have undergone great changes. Public management is the function of government departments. In order to provide services with high qualities to citizens, government departments need to improve their own decision-making and service-providing capabilities. Therefore, in the era of big data, China's public management faces great opportunities and challenges, and government departments need to innovate public management models.

2 Related contents of big data

2.1 The meaning of big data

Big data refers to the technology that uses a large amount of data to express information, which promotes the development of social economy to a large extent, and makes great changes in the daily life of the people. In the era of big data, relevant departments need to use relevant data tools and technologies to implement corresponding data strategies, promote the further development of the social economy, and provide support for the development of public management and public services.

2.2 The characteristics of big data

The big data era has the following characteristics: first, the amount of data is huge. At this stage, smart phones and tablet PCs have gradually developed into important data collection platforms, and the convergence of various data has brought great difficulties for information screening; second, there are some differences in the form of data representation. Images, geography, audio, video, and web logs are all representations of data; third, the value of the data is low. In the era of big data, the data is relatively scattered, and the data per unit density is extremely low.

2.3 The value of big data

The value of big data is reflected in structured and unstructured data, and relevant personnel need to screen and extract them, and use visualization technology to present them. Big data has the characteristics of large data volume and low value density, its value-added effect is very strong, and the greatest value of big data

is the ability to predict behavior[2]. Big data analysis has a large number of data scattered in various fields, using machine learning models and data processing techniques to identify trends and patterns in the data, and to infer and predict specific populations and individual behavior based on these trends and patterns. Therefore, big data users can't just analyze the data surface, but also need deep analysis to fully exploit the value of the data.

3 The role of big data in public management

3.1 Bring new development opportunities for public management

Public management and the development of the country are closely related. There are many transactions in public management, involving a large number of people, but their management development is relatively slow. More seriously, there will be a phenomenon that the level of social public management cannot meet normal needs, which has led to a series of social problems[3]. At this stage, the means of big data information has been effectively applied in the process of industrial management, making the concept of public management constantly updated, and the way of public management has undergone great changes, which promotes the further development of social public utility management.

3.2 Reasonably allocate social public resources

In the development of modern society, big data technology provides support for public management. Social public utility management staff applies data and information to clarify the needs of the people in social life, which makes the direction of social public resource allocation more clear. In addition, in the process of big data pooling, public utility managers can implement the relevant concepts advocated by the state into practical work, realize the redistribution of society, use relevant data and information to feedback the actual work situation, and achieve further improvement of public management work.

3.3 Improve the emergency response capabilities of public administration

In the public management process, the emergency response capability directly affects the development of a region. The application of big data information in actual management work can infer the problems involved, relevant personnel shall formulate emergency

work plans according to the relevant content in the management system data, realize effective integration between work planning and actual conditions, and improve the emergency affairs in the public management process and the ability to face emergency situations.

3.4 Optimize information and data in various areas

In the development of a modern society, public managers can use social networks to express their opinions, so that they can introduce the attention of government departments, which enables the government to effectively solve the public problems, so that the people actively participate in the public management process and strengthen communication with the government departments[4]. In the development of the era of big data, government departments mainly use specific data and data analysis to make decisions, provide a basis for decision-making, and enable all people to actively participate, fully demonstrating the democratic and scientific nature of public management in the era of big data.

4 Changes and reforms of public management in the era of big data

4.1 Integrated way of thinking

The way of thinking as the perspective of human beings seeing everything in the world, the intrinsic activity of the data brain is constantly changing in the process of changing times. In the past development process, scholars often use limited random samples for analysis in the process of analyzing a certain phenomenon. This analysis method has strong limitations. In the development of modern society, the amount of data that humans have mastered is increasing. If this traditional analysis method is still unable to play its due role, it needs to be handled by a holistic way of thinking. In the era of big data, the scale of data is relatively large, and there is a phenomenon of data confusion. The causal relationship of small sample data acquisition cannot be reflected in big data, which requires the introduction of a relevant way of thinking, in the process of receiving data complexity, using different ways of thinking to study things. In general, big data analysis is based on the development of data. In the government department, information collectors and providers in the public management information system need to have more accurate and complete information than enterprises

and individuals. This information needs to be oriented to society, which reflects the comprehensiveness and diversity of the way of thinking in the era of big data.

4.2 Diversified governance

In the era of big data, the amount of information of the government, the society, and the people is constantly increasing. The application of information technology has enabled the effective dissemination of data among various subjects, making the public administration of the country a diversified feature[5]. In the development of the new era, part of the responsibility of the government has gradually changed from social organizations to the public, and the people can use the Internet technology to provide constructive opinions for the government and realize the democratization of government decision-making.

4.3 Scientific policy

At this stage, government departments can use big data analysis to grasp the behaviors of citizens, make relevant policies more democratic, and effectively implement policies. Relevant scholars have provided support for government departments to formulate policies through analysis of big data, making it more rational and scientific. The main goal of government departments to master data is not only to provide information to the people, but also to use big data to analyze innovative public management models. The joint cooperation of the government, society and the people has provided a new model for public management and realized the scientific nature of government decision-making.

4.4 Efficient management

The openness and transparency of the data help the people to use more channels to express their interests to the government departments. In this way, government departments can provide more targeted public services, improve the efficiency of government work, and reduce the input of service costs[6]. In the era of big data, the information exchange between relevant government departments has become closer, effectively improving the complexity of internal information. The application of big data technology integrates the information of relevant departments and publishes them in the network platform, which can realize the coordination of public management and improve the transparency of government public management, which is conducive to the government departments to accept the supervision of the people and reduce corruption.

5 The challenges facing public management in the era of big data

5.1 The big data awareness needs to be improved

In the era of big data, many data resources and data analysis technologies came into being. Affected by the traditional management model, and government managers are still in the "arbitrary decision-making" stage in the decision-making process, and often make decisions based on past experience, which cannot ensure the accuracy of decision-making. Relevant data show that as of the end of 2017, China's netizens have reached 772 million. Therefore, there are massive data in China, but the data awareness of government managers is relatively poor, causing a lot of waste of data resources.

5.2 Data and information security issues

Big data is a technology developed on the basis of the Internet. The Internet is relatively open. Data security issues have gradually become an important issue in the era of big data, especially data that requires confidentiality, such as national security data, defense military data, and citizen privacy data, are subject to problems such as criminals and network diseases[7]. Public management involves information and data from all sectors of society. Without protection, public information and social information will be leaked. Many criminals will use improper means to collect data and information for more benefits. Government departments are public sector managers who have a large amount of information, but may be information traffickers and leakers.

5.3 Information isolated island integration issue

The data format is diversified, and the differences in data standards make the data an island and cannot be effectively compatible with the system. In the era of big data, the development of various industries in the society involves massive data, such as population, social security, transportation, medical care, etc., the departments of public utilities are relatively proofread, the communication between various departments is not close enough, and the system is in an isolated state. In the traditional e-government work process, there are a large number of non-interconnection problems in the government information, affecting the information integration and analysis of the public management

department, unable to achieve full use of data, and affect the service work of government departments. For example, in the process of handling the passport procedures for migrant workers, the relevant personnel have to go through multiple formalities and many departments need to affix their official seals, making the work more cumbersome, and the application of big data makes the data of the government department share, reducing the number of people rushing.

5.4 Insufficient data technicians

In the development of the era of big data, data technology and talent are the key content of using big data. The application of big data technology is mainly reflected in the process of publishing, analyzing and collecting data. Therefore, the key content of big data applications is data acquisition, data transformation, data integration, locking data targets, data analysis, data mining, data visualization design, etc.[8]. Therefore, in order to achieve effective application of big data, government departments need to introduce more talents, however, China's government departments are mainly managed by personnel, data technology cannot be fully utilized, and the lack of professional technical personnel in the government seriously affects the efficiency of public administration.

6 Public management innovation strategies in the era of big data

6.1 Actively build a social public management data platform

In the process of public management, government departments need to build social public management data platforms, such as transforming streetlight micro base stations, building data acquisition platforms, and building large data server storage platforms in the form of underground space. In the process of building smart cities, we will use data value-added services and intelligent forms to develop new social public management models and provide more high-quality public management services. In addition, government departments should develop relevant technologies, establish resource platforms, and make full use of all data and information. People can also use Internet browsers and mobile phone mobile terminals to access government websites to fully realize the value of data and information.

6.2 Establish a security protection mechanism

First of all, government departments need to develop the scope of development of corresponding standards for different types of data, and relevant personnel can disclose various data and cannot disclose controversial data. Moreover, government departments need to understand the actual needs of all sectors of society and improve the overall quality of public services. Second, government departments need to establish data management departments to ensure data security. Before the data is published, the professional should be arranged to identify the data to ensure that the data is within the scope of the disclosure; finally, relevant management departments need to evaluate the security of data products developed by the government, and formulate corresponding laws and regulations to stipulate the responsibilities and obligations of data users. Public managers should also clarify the security technologies used in big data information to prevent malicious use of information by criminals.

6.3 Strengthen the emphasis on information integration

There are a lot of data dispersion problems in the public management department, which makes the government control weakening, the relevant departments lack communication, and the information systems are incompatible, and the effective integration of information cannot be achieved. In order to effectively improve this situation, government departments need to implement the network connection method, apply Internet of Things technology, cloud computing technology, social network technology, etc., to improve the division of each department, and realize the sharing of information and data[9]. At the same time, government departments need to integrate information systems, use a central database and multi-level networks to establish a unified information platform to achieve the sharing of data and information in various departments.

6.4 Build a high-quality team of big data talents

In the public management work, the government departments need to introduce more excellent big data technology talents, realize the full use of big data technology, and strengthen the training of big data talents, and improve the overall quality of personnel. At this stage, data analysts are hot industries. In the era of big data, the demand for talents from all walks of life is increasing, requiring the introduction of comprehensive talents such as statistics, mathematics, data analysis, computer software development and application,

using talent introduction and training methods, we will establish a talent team that integrates management capabilities and big data technology to improve the level of public management.

7 Conclusion

In summary, in the development of modern society, information technology and Internet technology have been widely applied to the development of various industries. Big data integrates and optimizes messy information. By mining data depth, it highlights the relevance of thinking data and predicts the development of things[10]. Therefore, the effective application of big data technology in the public management process has improved the overall level of public services.

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