The Reform of Government Statistical Work in the Era of Big Data

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Abstract: Today's society is a rapid development of society, the progress of science and technology, the spread of information, people use science and technology to communicate more, life has become more convenient, in this era of high technology, big data is the best proof. In the statistical work, one of the most important links is the statistical work of the government, in order to quickly improve the level of statistical work, we must organically combine big data with statistical work. In order to improve the efficiency of government statistical work, it is necessary to apply big data in this aspect.

1. Introduction

The era of big data comes rapidly, developing rapidly in our country, its products are widely applied in all walks of life. Today's big data technology is not only the analysis of data, but also the analysis and combination of images, videos, text and other information. The method of using big data technology to deal with the statistical work of the government, in a sense, is to speed up the work, but it also leads to new problems. Therefore, in order to make full use of big data technology in practical work, we need to understand and learn big data, only in this way, we can compare its advantages and disadvantages, so as to find a better way to solve the problem and promote the development of society.

Big data is a type of dataset composed of a large volume of data, possessing significant strategic value as an information resource. It encompasses both structured and unstructured data, with a broad scope. Within a specific time and space, original data storage and analysis software are employed to capture, manage, and analyze its content. In other words, data qualifying as big data must exhibit the following four characteristics at different levels [1].

1.1 Huge Volume of Data

In the age of big Data, the range of data measurements is constantly expanding over time, starting with P (1024 T), E (1 million T), or Z (1 billion T), and data size is growing rapidly.

1.2 There are Many Types of Data

With the continuous development of the Internet of Things, the ubiquitous information perception makes the data become bigger and bigger. Compared with the two-dimensional tabular data in the past, text, language and graphics have appeared in the era of big data. Such as video and data reports,

as well as geographical location information, these are not able to use the original storage and analysis software to effectively store, analyze and process them. [2]

1.3 Low Value Density

Although the source channels of data have become broader, the usable value of most data is very low, and it cannot fully adapt to the needs of policy development. Unstructured data such as photos and videos are of no use at all. Take the monitoring video of the scene of the incident required by the police in the process of executing a case as an example. The helpful information for the case may be the instant moment.

1.4 Fast Processing Speed

The rapid development of emerging technologies such as cloud computing and artificial intelligence has greatly improved the analysis and processing capacity of data and information. The "one-second law" is an important difference between big data technology and traditional data mining technology, and it is a best example.[3]

2. The Importance of Government Statistical Work

Government statistics play a vital role in modern society. It is a statistical investigation and analysis of a country's economic and social development. These statistical agencies have investigative powers and can provide the basis for the government to formulate relevant policies. Their work covers the state of operation in social politics, economy, ecology and other aspects, providing valuable information and data.

Statistical data can not only comprehensively reflect the state of national operation, but also reveal the law of internal correlation and development, providing an important reference for the government's macro-control and scientific decision-making. For example, statistics can help the government understand the speed, quality and structure of economic growth and provide guidance for future policy making. In addition, statistics can also help the government understand the development status of society and people's living standards, as well as the changes in the ecological environment, so as to better formulate policies and plan the direction of future development.[4]

In order to provide more accurate, scientific and efficient statistical information and data, national statistical departments and staff need to make use of technologies such as big data and cloud computing. These technologies can help them better collect, analyze and process data, as well as improve its quality and accuracy. Additionally, the utilization of these technologies can facilitate data sharing and collaboration, fostering synergy and advancing the development of national statistical efforts. Government statistics are an indispensable part of modern society. By utilizing new technologies and methods, we can further improve the quality and efficiency of national statistics and make a more positive contribution to the country's development.[5]

3. Challenges for Government Statistics in the Era of Big Data

3.1 Government Functions Can Not Be Effectively Played

After applying big data technology to government statistical work, although there are a large number of data sources in government statistical work, there are still many problems, among which the identity of most data owners has changed; With the continuous development of modern society, the rise and development of online shopping, logistics and express delivery, daily necessities and

other industries have gradually formed a huge data system. In national life, most of the necessities in life have changed from physical stores in real life to shopping on the network. This is a huge blow to physical stores. Nowadays, the processing of information and data in the data system can be realized through the computer and the Internet. Such a new working mode has a great impact on the original working mode of data statistics, and finally makes the relevant functions of the government become weak, hindering the functions of the government.

3.2 Traditional Statistical Methods Are Under Attack

In the previous statistical data, usually, statistical information and the real real life is very different, therefore, after the release of statistical information, its authority will be greatly reduced, cannot get the due guarantee. In addition, the traditional data statistics work is relatively simple, it can provide services are basically large companies and national government agencies, and so on, in the whole society has not been widely used. Some data does not reflect its own characteristics, so it also has disadvantages. With the development of a country, the market economy of the country is also expanding and increasing, and gradually developing towards the direction of public. In this case, the national government statistical work began to improve continuously, according to different aspects, levels, levels and individuals, forming a variety of data statistics, so that we can faster, better, accurate to provide convenience for the enterprises in need. In this way, the authority and influence of data statistics can be ensured, and people can have more confidence in this data source. At the same time, the data statistics work has become closer to the market.

3.3 Influence on the Construction of Data Statistics Informatization

With the wide application of big data in government statistical work, the statistical objects of data have become more extensive. Naturally, the data of some government departments and administrative units should also be shared, so as to strengthen the communication and exchange among various departments and improve work efficiency. For data statistics institutions, by establishing an information exchange platform, it can be easier to share this information, and at the same time, it can collect a lot of information related to this, as a backup, for the future data statistics. In the continuous development of the big data industry at the same time, the use of big data is also increasing, but the big data professional and technical personnel is increasingly scarce, even a "shortage" phenomenon. In this case, in order to make full use of big data, it is necessary to strive to develop statistical techniques of big data, so that video, music, pictures and other information become an important part of big data, effectively processing, collection, analysis of text and other data. In the statistical work of big data, the most urgent problem to be solved is: mining effective and important information, forecasting the trend of development, forecasting the direction of development, to provide data services for the needs of the public.

4. Problems Faced by Government Statistical Work in the Era of Big Data

4.1 The Ability of Data Mining Analysis Needs to Be Improved

With the development of the socialist market economy, the generation and diffusion of various materials and information, the development and progress of society, politics and science and technology; the explosion of information, such as the relationship between man and nature, leads to a large number of information and information, such as sound, image, text, in all kinds of information at the same time; the processing and use of unstructured data such as images will pose a huge challenge to the statistical work of the government, and it is a difficult task to explore the potential

information and value contained in it. Therefore, the relevant departments should consider how to discover and analyze the high-quality data available to the public and enterprises from the "database". Visualized analysis of abstract data, data extraction and speed up the data processing speed, improve the judgment quality of predictive analysis.

4.2 Data Information Island Problem

At present, in China, the data statistics of various government departments are basically carried out in their own way, according to the administrative functions and management authority of the departments. However, the data information cannot flow efficiently among different departments. Moreover, because of the administrative system, there are no clear requirements, so among various departments, nor is there sufficient sharing and exchange of data and information among departments. In the era of big data, unstructured data such as text, video and images are intensively studied. As a result, higher requirements have been put forward for the overall quality of statistical workers. In this way, in the cadre team is not strong, the work base is not strong, it is easy to produce such and such problems. In the process of information sharing, it will expose its own data quality problems, which will increase the workload, affect the authority of data, and cause the isolation and circulation barriers between data and departments.

4.3 Insufficient Social Application of Statistical Data

At present, data integration and flow chart construction are still relatively backward. Relevant statistical institutions mainly accept the leadership of the government or governments at all levels of the government to carry out their work. As a result, government data statistics cannot fully meet the statistical needs of the public and enterprises in the process of the formulation and implementation of government macro policies. This paper studies the economic activities and social economic activities of Chinese administrative organs from the requirements of national administrative organs for economic activities. However, with the continuous development of market economy, the types of market subjects become more abundant. The public's decision-making, operation and development, especially the aspects of commercial activities, all rely on statistics. At present, the data released by government agencies is difficult to meet the needs of the public, which has seriously affected the scientific, sustainable and healthy development of some companies, resulting in narrow service channels, single service objects, difficult data query and other problems. The main performance is the lag of information publication, information publication speed is slow. At the same time, when these data are analyzed and processed, it will seriously affect the influence and authority of official statistics. Therefore, it is urgent for the government to keep pace with the Times and provide personalized statistics for enterprises, the public and families and other groups.

5. Accelerate the Reform of Statistical Work in the Era of "Big Data"

5.1 Vigorously Improve Data Mining and Analysis Capabilities

We are faced with a large number of administrative records, business transaction data, in fact, is a large number of structured data. How to extract the relationships, patterns and trends hidden in the massive data can be better used for statistics. In order to make statistics more social in the future data race, data exploration must be intensified. In the background of the era of big data, the application technology of data mining technology includes: neural network algorithm, data genetics, data decision tree, data rough set and other algorithms. This new algorithm can quickly discover and select the right information in a large amount of information. By exploring the abstraction level and value

level in the data classification, we can discover the rules and rules of the data, and use a variety of means to explore the rules of the data, through the description of the concept of the data and the prediction of the data and other means to achieve, so that we can better classify big data.

5.2 Improve the Application of Administrative Record Data in Statistical Work

Personal information of residents obtained by public security departments for household registration management and identity card issuance. While it lacks inherent statistical functionality, it contains a substantial amount of information that can contribute significantly to statistical work. Through further investigation and exploration, it can evolve into a crucial component of statistical efforts. The utilization of administrative archives can complement and rectify deficiencies in statistical data. When employed effectively, it has the potential to enhance the overall quality of statistical data. The positive utilization of administrative archives not only improves the quality of original data but also reveals additional insights, as depicted in Table 1 below.

Table 1: Supplement of administrative record data to specific statistical work

Statistics specialty	Administrative records data sources
Basic unit statistics	Database of basic unit lists for the departments of industry and commerce, taxation, public security, surveying and mapping, transportation, urban construction, etc
Real estate statistics	Housing department, "net signature data", such as prices, sales, etc
Industrial statistics	Tax information from the tax department
Labor market statistics	Labor market monitoring data from the Labor Security Department
census	Population registration data from the departments of public security, labor and social security, civil affairs, education, health and family planning
Floating population statistics	Data from public security, health and family planning departments and GPS survey data from telecommunications departments
Agricultural statistics	Data from surveying and mapping, meteorological departments
Traffic and transportation statistics	Registration and monitoring data of transport authorities
Revenue statistics	Tax department tax registration data
Payroll statistics	Bank salary transfer data and tax department tax data

5.3 Continuous Improvement of Statistical Research and Sampling Survey

Statistics and sampling are the two main methods of data collection. Since all personal data and the true distribution of the population can be obtained, the survey does not require statistical methods to make inferential estimates. Sampling survey refers to the use of sampling theory, how to scientifically design the sample, obtain the sample data, and make scientific inferences. Obtaining accurate "individual data" is a key problem in demographic statistics and sampling research. The objects of a statistical survey should cover both offline and online aspects, and the original statistical data submitted by the respondents should be the original records of their production, operation and management, rather than the so-called original statistical data after processing and collating. In this case, the important step of processing and collating the original records of the respondents is removed from the entire statistical data production process. Eliminating the last-mile impact on enhancing the quality of statistical information not only alleviates the workload for respondents but also effectively

addresses the challenges of achieving "true, accurate, complete" data. Through the ongoing enhancement of statistical practices in censuses and sampling surveys, there is a substantial potential to significantly boost the overall quality of statistical work.

6. Conclusion

Government statistics should keep pace with the Times and improve with the development of information to ensure the effectiveness, timeliness and authenticity of data. Only in the era of big data can the government better provide services for the market, enhance the ability to work and reduce the difficulty of work. Therefore, the development of big data is very meaningful for us, because it can enable companies to better conform to the trend of social development and make better decisions. Therefore, relevant staff should have a clear understanding of the meaning of big data and carry out practical analysis in all aspects to continuously improve their statistical ability, so as to better and faster help the government's statistical work. Big data technology is closely related to us, it permeates into our life and consumption, permeates into all aspects of our life, will be more used in the government statistical work.

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