Research on the Problems and Countermeasures of China's E-Government Under the Background of Big Data

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Abstract. The rapid development of big data technology has brought opportunities and challenges to the development of e-government. Improving e-government service capabilities is an inevitable trend of social development and progress. Therefore, it is very important to develop e-government with big data thinking today. This article explains the related concepts of big data and e-government, and analyzes the current development of China's e-government. In this paper, the problems existing China's e-government construction were studied, such as unbalanced regional development of e-government, inaccurate public service, weak data security construction, and lack of e-government professionals. Based on the analysis of the above problems, a solution path is proposed: promoting the coordinated development of e-government regions; promoting the deep integration of big data technology and public services; accelerating the construction of e-government data security and cultivate a professional team of e-government.

Keywords: E-government · Big-data · Public service quality · Data security

1 Introduction

In the current social background of the rapid development of the internet and the rapid increase of network information, government departments use information technology to accelerate the construction of government services and improve national governance capabilities and levels. The Fourth Plenary Session of the 19th Central Committee of China clearly stated that "use the Internet, big data, artificial intelligence and other technological means establish and improve the system and rules for administrative management, promote the construction of digital government, strengthen the orderly sharing of data, and protect personal information in accordance with the law." In recent years, China's e-government has developed to a new stage, from simply building a website or simply developing a system in the past, to building a government cloud, big data, and even building a unified national public service window. The national integrated government service platform, which went online for trial operation in 2019, has facilitated the modernization of government governance. According to the "2020 United
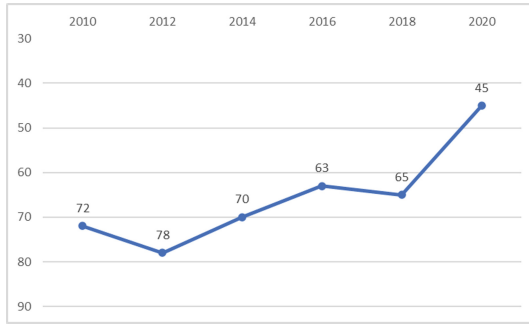
Fig. 1. 2010–2020 China E-Government Development Index Global Ranking Change Trend

Nations E-Government Survey Report", China's E-Government Development Index has increased from 0.6811 in 2018 to 0.7948 in 2020, and its ranking has risen 20 places from 2018 to 45th in the world, reaching a record high. The emergence and development of e-government has not only made up for the shortcomings of traditional government departments, but also improved the quality and level of government services for the people to a large extent. Therefore, in the era of big data, it is of great value to study how to build e-government and provide convenient, high-quality and efficient public services for the people, enterprises and other social organizations (Fig. 1).

2 Big Data and E-Government

2.1 The Connotation and Characteristics of Big Data

With the rapid development of information technology, the current data growth of human society is faster than in any previous period. This makes people more and more demanding for processing large amounts of data. Therefore, "big data" is a product that adapts to the large amount of data generated in the information age. There is no recognized definition of big data. The well-known consulting organization IDC (International Data Company) defines "big data" as "designed to obtain value from large-capacity, different structures and types of data more economically from new generation architecture and technology" [1]. Therefore, it can be concluded that big data is significantly different from traditional mass data. Its basic characteristics can be summarized by 4 Vs: Volume, Variety, Value, and Velocity. That is, large data scale, various types, low value density, and fast processing speed. Wikipedia's definition of big data refers to data sets that take more than tolerable time to capture, manage, and process data using common software tools [2]. Now, with the continuous development of big data technology, it has provided convenience to all aspects of our lives (Fig. 2).

2.2 E-Government

E-government refers to the use of modern information technology, computer technology, and office automation technology by government departments to achieve goals such as
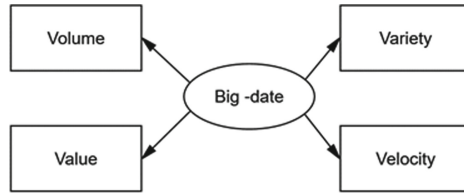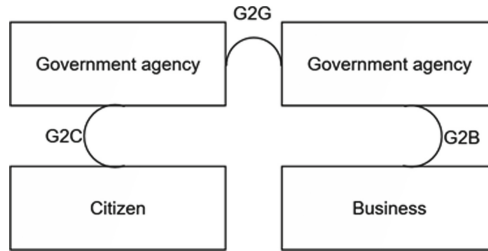
Fig. 2. Characteristics of big data

Fig. 3. E-government interaction diagram

open government information, network office, and convenient services [3]. From the perspective of service targets of e-government, e-government mainly includes G2C, G2B, and G2G. As can be seen from Fig. 3, e-government interaction is divided into three types: (1) G2G: the interaction of government agencies between government agencies. (2) G2C: The interaction between the government and the citizen. (3) G2B: Interaction between government and business. Specifically, it is to break through the restrictions of time, region, different government organization levels and departments, and build a streamlined, efficient, and fair new government operation mode, maximize the functions and roles of government departments to provide society and the public with more high-quality and convenient services.

3   The Importance of Developing E-Government in the Era of Big Data

3.1   Optimize Functions and Promote Governance Modernization

In the digital government environment, the application of information technology to government management practices can effectively promote government service business reorganization and process optimization, build a government service chain, and comprehensively improve government governance capabilities. First of all, e-government can rely on data analysis to meet the diverse and individual needs of the public, and realize the transformation of government services from extensive management to refined management. With the help of big data, the government's decision-making level and the accuracy of government affairs have been continuously improved. The second is to realize the transformation of paper documents to e-government, reduce the cost of public administration, and shorten the time for government administrative examination

and approval. More diversified government services provide the society and the public with diversified service channels, make up for the single defect of traditional government services, and improve the quality of service-oriented government construction. Since the beginning of 2020, the global COVID-19 outbreak has reactivated the role of e-government. At the same time, the e-government platform is also managing crises in innovative ways, providing new perspectives and governance ideas for the construction and development of digital government in the future. After the epidemic, the prospects and market scale of the world's e-government affairs are even broader.

3.2 Integrate Resource Allocation and Reorganize Governance Structure

Traditional government resources have not been effectively integrated. Now, through the improvement of e-government construction, on the one hand, the open and transparent characteristics of e-government have promoted the gradual development of the government's organizational structure in the direction of flattening, greatly simplifying government departments, and further optimizing the content and quality of government services. On the other hand, the established data sharing trust system breaks the previous situation of "information islands" within the organization, realizes the smooth exchange of government affairs data which will greatly reduce the cost of information transmission and communication between different government departments. Big data technology has promoted the government's transformation from single operation to collaborative sharing, strengthened the interaction between the government and the public, and promoted government service innovation.

3.3 Promote Open and Transparent Government, Improve Government Credibility

Digital government is not an end: it is just to improve the delivery of public services, increase public participation, and increase transparency, accountability, and inclusiveness. Ultimately a means to make everyone's life better. Open government is an inevitable trend in the development of service-oriented government. The establishment of the e-government platform makes the government governance process more transparent and scientific. The supervision model is simplified to facilitate the supervision of relevant government departments and improve the capacity, efficiency and level of social public services of government departments at all levels. Public participation forms a social governance pattern of co-construction, co-governance, and sharing, and the people's sense of gain, happiness, and security continue to increase.

4 Problems in the Process of E-Government Construction

4.1 The Public Service Quality of E-Government Still Needs to be Improved

Judging from the actual development of China's e-government, the quantity and quality of social public services provided by the Chinese government have not yet met the needs of society. In terms of government information content, some government websites still

have problems such as slow information update speed, blank areas in the construction of some information resource databases, and service supply that cannot meet the real needs of the people. This has also led to the inadequate service of government departments to the public, and the construction of e-government lags behind and lacks practicality. To improve the quality of e-government services, the government must not only consider system quality and information quality, but also work hard on public participation and service efficiency [4].

4.2   E-Government Faces Data Security Challenges

The development of digital technology and data is pushing the world forward in a positive direction, but e-government generally involves government agencies and power departments, including a large amount of data and information and citizen privacy. In particular, the "One Internet Service" requires a high degree of data sharing. The problem of network information security appears to be particularly important. Compared with the commercial field, the citizen information collected by government departments for the purpose of public management is more comprehensive. Furthermore, the convenience of information acquisition and dissemination in the Internet field has greatly aggravated the security risks faced by citizens' personal information [5]. In many countries, the government is not only one of the largest data producers and consumers, but also plays an important role in data regulation. However, in the process of China's e-government construction, the lack of laws and regulations on operation and safety maintenance has hindered and restricted the construction and development of e-government.

4.3   Regional Development of E-Government is Unbalanced, Prone to Digital Divide

According to the "2020 Digital Government Development Index Report" released by Center on Data and Governance, Tsinghua University, at the provincial level, Shanghai occupies the top position. Zhejiang and Beijing ranked second and third respectively. Chinese provinces and cities have a relatively high level of e-government services, but there is a large development imbalance. The development of digital government in the eastern region is ahead of the central and western regions, and the western region is showing a trend of polarization. For example, provinces such as Sichuan and Guizhou are catching up with the leading provinces by virtue of their late-comer advantages, and their digital government scores rank high. However, some provinces are lagging behind in the development of digital government and need to be improved. The digital divide will cause the unfair distribution of resources and reduce the availability of e-government systems. If the digital divide cannot be effectively resolved, e-government construction will not succeed (Table 1).

4.4   Lack of E-Government Professionals

Network information technology is only a special new medium used to assist the effective development and implementation of government affairs. The key to the healthy development of e-government lies in the construction of a team of government affairs talents.

Table 1. Provincial Digital Government Development Gradient Distribution

Gradient	Province	Score	Gradient	Province	Score
Leading	Shanghai	76.7	Development	Guangxi	58.3
	Zhejiang	74.5		Hunan	56.6
	Beijing	71.6		Ningxia	56.1
High quality	Guangdong	70.1		Jilin	55.9
	Sichuan	68.6		Inner Mongolia	53.7
	Fujian	66.9		Shanxi	51.8
	Guizhou	65,8	Catch-up	Shaanxi	47.8
Characteristic	Shandong	65.4		Liaoning	46.9
	Jiangxi	64.6		Heilongjiang	46.5
	Jiangsu	64.5		Hebei	44.9
	Tianjin	63.5		Gansu	44.0
	Hubei	62.4		Tibet	41.7
	Hainan	62.4		Yunnan	41.1
Development	Anhui	59.9		Xinjiang	40.7
	Chongqing	58.7		Qinghai	39.6
	Henan	58.7			

In the era of big data, the public has put forward higher requirements for the quality of government staff. However, at this stage, the management concept of government staff is backward, and the enthusiasm for the construction of e-government is not high. The awareness of using internet thinking to promote e-government needs to be further strengthened.

5 Countermeasures to Strengthen the Construction of E-Government

5.1 Promote the Deep Integration of Big Data Technology and Public Services

The most valuable thing in the information age is not information, but the ability to process and use information. Establishing an e-government platform that serves the people is to take the public as the center and use big data to make precise and scientific decisions. Relying on the big data platform, e-government will achieve better integrated development, the needs of the public will be better met, and the public will be able to implement one-stop services online. Giving full play to the advantages of e-government in serving the public is an important measure for building a service-oriented government (Fig. 4).
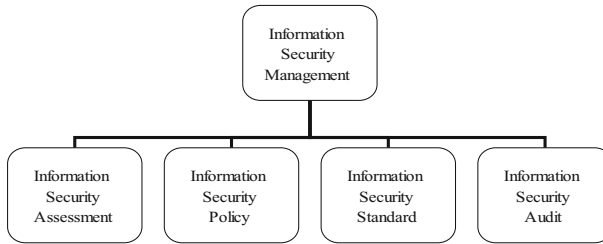
Fig. 4. E-government information security management system

5.2 Strengthen the Construction of E-Government Network and Maintain Information Security

Data security concerns national security and all aspects of economic and social development. Attaching importance to the security construction of the network environment of e-government needs to make full use of the technical advantages of big data and artificial intelligence in both technology and management to do a good job in network security level protection and network security supervision [6]. First, improve the information protection system, standardize e-government business processes and information release, evaluate the important information security of government departments at all levels, and clarify the scope and boundaries of government affairs disclosure. Second, speed up the formulation of network information security standards, and improve the supervision and guarantee mechanism between departments in e-government. Third, the state should issue relevant security policies, increase the penalties for those who violate the laws related to e-government, and provide a good legal environment for the development of e-government. Finally, the construction of the e-government security system must be audited to ensure the safe development of e-government.

5.3 Promote the Coordinated Development of E-Government Regions

The foundation of e-government has the most significant impact on the provincial government's "Internet + government service" capabilities [7]. The main funding for the development of e-government comes from financial appropriations, and it is necessary to strengthen financial support for the western region and carry out informatization and infrastructure construction. At the same time, promote the expansion of intelligent governance and services to the western region, and narrow the gap in regional digital governance. Local governments in the backward stage should learn advanced experience and improve the construction of electronic informatization, and realize the coordinated development of China's e-government.

5.4 Strengthen the Construction of E-Government Professionals

People are the cornerstone of the development and progress of all organizations, and they are also an important factor in the construction and development of e-government. The government administrators in the new era should have more comprehensive government information management capabilities and application capabilities. Therefore,

government departments need to strengthen the professional training of administrative staff. Through professional learning and training, administrative staff can have a deep understanding of e-government related skills, master paperless office technology, and improve government service quality and level. In addition, the government should use "big data thinking" to build an e-government system. At the same time, the thinking style of relevant staff also keep up with the digital trend, instead of passive and complaining acceptance.

6 Conclusion

With the rapid development of big data and computer-related technologies, e-government has grown rapidly, and government service quality and work efficiency have been greatly improved. However, Chinese government and the public have increasingly higher requirements for governance, supervision and services, the supply of public services is imbalanced and insufficient, and problems such as data security still exist. Therefore, the government is faced with a trade-off between the benefits of data concentration and the costs caused by the decline in data security. The development of e-government is driven by improving the quality of government services and meeting people's needs for government services. Judging from the practice of e-government, the current imbalance in the regional development of e-government is still obvious, and the internal management structure and service concepts still need to be strengthened. In response to the above problems, the future development of e-government should start from the following aspects: the government still need to play the role of modern science and technology, continuously improve the construction of government information and service levels, and establish a network security protection system while promoting the reform of government departments, steadily promote the development of e-government work to shape a credible and reliable government image.

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