Research on the Way of Promoting the Construction of Smart Government in China in the Post-epidemic Era

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Abstract. The outbreak of new crown pneumonia (NCP) has created opportunities as well as new requirements for the informationalization of government services. The intelligent government is an important way to promote the modernization of government governance system and capacity, and to promote the transformation of government functions. In recent years, although the local governments in China have made great progress in building smart governments with people as the center, there are still some problems to be solved. Based on the above-mentioned background and from the perspective of the construction of smart government, in order to better play the role of government functions and achieve better quality and efficiency of government services, the research object is the provision of smart government services by the government, based on the theory of big data, the theory of smart government, the theory of New Public Management and the theory of new public service, and on the basis of analyzing the current situation of smart government construction in China, this paper probes into the new thinking of promoting smart government construction in the "Post-epidemic" era, with the help of the construction of intelligent government system, the service mode should be changed, the level of information synergy should be raised, and the efficiency of government public administration should be improved.

Keywords: post-epidemic · smart government

1 Introduction

A smart city can not be built without smart government, which provides smart government services. To build a smart city, government departments should use big data to provide smart services, and grasp the needs of the people in a timely manner through mobile internet collection, information-based linkage, and big data research, so as to respond quickly to the needs of the people, so that we can respond to the needs of the people, let the people have more and more sense of happiness and security. Therefore, the construction of intelligent government affairs should become an important way for the government to deal with the social reform and innovation, and an important hand for the government at all levels to enhance the governance capacity.

A. Luqman et al. (Eds.): PMIS 2022, AHCS 6, pp. 436–446, 2023.
https://doi.org/10.2991/978-94-6463-016-9_46

2 The Proposal of Smart Government

2.1 The Definition of Smart Government

In recent years, local governments have earnestly implemented the spirit of the Fourth Plenary Session of the 19th Central Committee of the Communist Party of China, making smart city and smart government construction a top priority, profoundly transforming the concept of governance, innovating administrative methods and improving administrative efficiency, and making some substantial progress in data opening, government affairs services, cloud platform and building online-to-offline integrated development, for example, a Smart City Operation Center will be built in the low-rise area to realize smart management, such as population information, grid management, project information, image information, spatial location and so on. The National "14TH FIVE-YEAR PLAN" puts forward the goal of building smart city. The construction of smart city is first of all the construction of smart government, so as to promote the construction of smart government. Among them, the construction of smart government service is an important part of smart government service.

"Smart Government", in the vertical, "Smart government" is the way to achieve "Smart government" and means. "Smart Government" is the use of big data, cloud computing, Internet of things and other technologies, intelligent data processing, in order to provide the public with more intelligent, accurate, proactive services. The intelligent government not only can let the public participate in better, but also can make the government's management behavior and management way more humanized, diversified, convenient and efficient. The basic goal or the core value of smart government is that the government provides more accurate, convenient and active public services to the public through the smart way. The basic content of the intelligent government includes the internal management of the government, the communication between the governments, the management of the social affairs and the public service. Horizontally, "Smart government" is the advanced stage of "E-government" development, e-government has gone through the digital government, intelligent government, and eventually to "Smart government" direction [1].

2.2 From E-Government to Smart Government: Paradigm Shift

Intelligent government is the inevitable outcome of the development of e-government after the advanced stage [2]. The emergence of new technologies often leads to change. As shown in Table 1, in the traditional administrative stage (before the 1990s), due to technical and other practical constraints, the government mainly adopts a face-to-face approach to provide public services to the public. With the development of information and communication technology and the advent of the Internet (1995–2000), e-government came into being and the efficiency of government services has been greatly improved, but the provision of its services is still limited by time and space, its Service Paradigm is a unified service based on service supply. Around 2005, the development of mobile communication technology such as WEB2.0, CDMA and GPRS has attracted the attention of government departments all over the world. How to use mobile phones, PDAS and other hand-held mobile devices to provide information and services through wireless

Table 1. Government Public Service Paradigm Shift from e-government to smart services

	E-E-GOVERNMENT (government affairs 1.0)	Mobile Government (government affairs 2.0)	Smart Government (government affairs 3.0)
Popular Year	1995–2000	2005–2010	2015–2020
Government carrier	World Wide Web	Web2. 0	Real-world network
Object oriented	For the government, the first stop	One-stop shop for the public	Individual-oriented government service portal
Service Direction	One-way service	Two-way interactive services	Personalized Intelligence Service
Limitation Condition	Limitation of time and space	Mobile Services	Seamless service, anytime, anywhere
Service Paradigm	Unified Service based on Service Supply Paradigm	Public-private partnership	Smart Services

access infrastructure for front-line government workers and the public has increasingly become the focus of governments.This is where we are now in mobile government. The Service Paradigm is public-private partnership based collaborative services. And around 2015, Web 2.0 will enter the web 3.0 phase, in which virtual networks will be closely connected to the real world through wireless communication devices, semantic networks, RFID/USN and other technologies, generating real-world networks and smart government in the public domain. At this stage, the government becomes more "SMART", more efficient and more transparent, and the smart government presents the characteristics of simplicity, transparency, autonomy, mobility, real-time, intelligence and seamless integration [3].

3 The Present Situation of the Construction of Intelligent Government Affairs in China

The report data shows that China's e-government development index has increased from 0.6811 in 2018 to 0.7948 in 2020. The global ranking has risen by 20 places over 2018, reaching a record high and reaching a "Very high" level of global e-government development. In 2020, the market volume of government data governance reached 3.454 billion yuan, an increase of 10.3 percent year-on-year. With the strong support and promotion of the state, great progress was made in smart government in 2020, and the growth rate reached a new high. In 2020, China's smart government market reached 332.6 billion yuan, an increase of 5.86 percent year-on-year. It is expected that in the next five years, smart government will maintain a steady growth of around 6%.

3.1 Progressive development of "Online, Online and Offline Integration"

Online and offline integration development model (O2o, online and offline) is the most popular e-business development model. China's intelligent government construction has been actively learning from this O2O model to provide citizens with online and offline integrated services. The offline entity concept corresponding to the smart government is the Government Affairs Service Hall, the Service Center and so on. At the same time, online, with the development of the Internet, more and more citizens are also using government Weibo, wechat, government websites, government APPS and other consulting, business. The development of "On-line and off-line integration" of smart government has greatly broadened the channels of public services and improved service efficiency. In the long run, on-line and off-line integration is the main trend of the development of smart government.

3.2 The Openness of Government Data Has Been on the Rise

The construction of intelligent government depends on the opening and sharing of data. The opening of government data is helpful to enhance the efficiency and efficiency of administrative departments and improve the transparency and satisfaction of government service. China has implemented government data development programs in cities such as Beijing, Shanghai, and Chongqing, and has set up data.gov.cn. Beijing has opened up more than 400 government data sets covering areas such as tourism, transportation, education and health care, and the disclosure of service data can help the public understand how the government works and save government money, help to improve the transparency and credibility of government services. At present, China's data opening involves fewer cities, and most of them are one-way open, that is, the government issues information mainly, there is less information integration for other enterprises and organizations, and there are fewer data sets that can be directly applied, therefore, in order to implement a comprehensive data open plan, to help the construction of intelligent government, but also constantly improve the safety, quality, accuracy and other standards of data open. On January 20, the Fudan University and the 2021 jointly released the China local government data open report for the second half of 2020, this paper evaluates the openness of 102 open government data platforms at prefecture level and above in China. See Table 2.

3.3 Our Administrative Service Capacity Has Been Continuously Enhanced

In 2020, the State Council General Office commissioned the E-GOVERNMENT Research Center of the National School of Administration to evaluate and compile the survey and evaluation report on the online government service capacity of provincial governments and key cities ("Good and bad" survey on Government Service (2020). Among them, the overall index of online service capacity of 32 key cities in the country has been ranked. Local governments have realized the situation from "Business Internet access" to "Service Internet access". The government affairs service network is faster, more standard and more standardized than before, and it is continuing to innovate. On-line affairs can be traced and evaluated, focusing on the construction of "Non-detailed"

Table 2. 2020 China's open ranking of local government data

City	Composite Index	Overall ranking	Open series
Guiyang	67.72	1	Level 5
Shenzhen	61.93	2	Level 5
Harbin	54.45	3	Level 5
Jinan	53.23	4	Level 5
Qingdao	48.07	5	Level 4
Chengdu	44.98	6	Level 4
Fuzhou	43.93	7	Level 4

Data source: CAC.GOV.CN/INDEX.HTM, State Internet Information Office, PRC

Table 3. Overall index of online government service capacity in key cities of China

Rank	City	Aggregate Index	Online service effectiveness	On-line processing maturity	Completeness of Service Mode	Service coverage	The accuracy of the manual
1	Shenzhen	97.34	96.30	97.09	99.38	96.16	97.99
2	Nanjing	96.45	94.84	96.48	96.30	96.01	99.34
3	Ningbo	95.28	93.28	95.23	94.63	96.06	97.86
4	Hefei	90.50	90.42	85.92	91.17	90.44	97.40
5	Qingdao	90.13	86.53	86.85	91.92	92.64	94.68
6	Harbin	88.76	86.51	90.56	87.08	86.16	94.47
7	Wuhan	88.45	86.17	85.93	89.17	89.04	93.97
8	Nanchang	87.07	81.06	84.40	90.35	87.64	94.41
9	Fuzhou	86.73	80.15	83.29	88.87	91.24	92.38
10	Changsha	85.45	81.39	81.81	87.55	84.83	94.97

Data source: People's Daily: HTTP//hljpeople. COM/N2/2020/0621/c220027–34102099. HTML

intelligent government affairs. The overall index of online government service capacity in key Chinese cities is shown in Table 3.

3.4 Public Participation is Gradually Increasing

With the development of intelligent terminal, more and more citizens use micro-blog, wechat, applications and websites to enjoy government services and conduct political affairs on the Internet. For example, the public can participate in education, welfare security, housing and other public affairs that benefit people's livelihood through the mayor's hotline and the Mayor's mailbox There are also more social hot events spread

through the network so that more citizens know and participate in. The enthusiasm of public participation has gradually increased, the forms have become more diversified, and the satisfaction of public participation has gradually increased. Therefore, it is necessary to continuously improve the government response and handling methods in the smart government, and continuously enhance the experience dimension of the smart government.

4 Problems Existing in the Construction of Smart Government Affairs in China

4.1 The Absence of Cooperative Development Mechanism Construction

Compared with traditional e-government, intelligent government is not only for the internal services of the government. With the help of the cutting-edge technology of the Internet, the intelligent government is committed to achieving a high degree of integration and coordination within the government, forming vertical and horizontal linkage development of governments at all levels, effective sharing of information resources, and enhancing the effectiveness of government services. However, due to the deep-rooted Sectarianism and Sectionalism thought, the government has changed from electronic government to intelligent government, in the process of developing intelligent government, government departments have such serious problems as separation of organs, Ossification of system and mechanism, lack of coordination, self-government, failure to listen to calls,etc., the local government public service supply is unbalanced, lacks the effective communication [4]. In general, the government departments lack of awareness of coordinated development, in the process of government internal construction, the lack of seamless government advocated by Linden, the lack of effective connectivity, linkage.

4.2 The Construction of New Infrastructure is the Necessary Approach to the Construction of Intelligent Government Affairs

The construction of smart government project needs a large amount of long-term capital investment and financial support, but the lack of funds in many areas leads to inadequate infrastructure. In 2020, for example, Harbin's Transportation Authority spent $233 million on the service, mainly used for the integration and sharing of traffic data resources, big data application system, traffic management sub-system, field perception implementation system, network system, information security, computer room rental, traffic signal optimization and traffic organization optimization, operation and maintenance services. In 2020, the city invested 1.916 billion yuan to realize the full coverage of 5g signals in the main urban areas, some streets and the downtown areas of counties (cities). By the end of 2020, a total of 7,0305 g base stations had been built in Harbin [5]. However, compared with the rapid development of smart government in cities such as Shanghai and Beijing, the lack of funds and limited investment is one of the reasons why the smart government construction can not be promoted. At present, the number of 5G base stations in the main cities of our country is shown in Fig. 1. At the end of 2020, due to the lack of government investment, there is still a big gap between the number of 5G base stations in different places and the cities with rapid development of smart government.

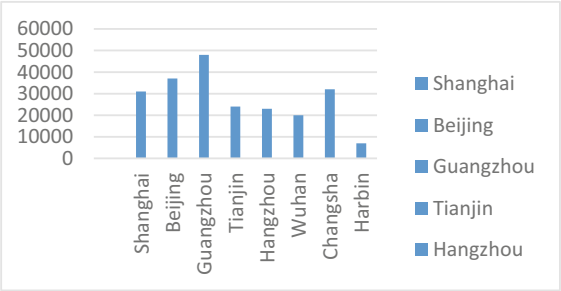

Fig. 1. Number of 5G base stations in major Chinese cities

4.3 Hidden Dangers Exist in Network Information Security

Intelligent government is the high stage of the development of e-government, but both e-government and intelligent government are based on the Internet, the security of data and information in the network determines whether the intelligent government can provide service smoothly and effectively. As far as the network information itself is concerned, there are potential security risks, and there is a risk that the transmission of the intergovernmental network information will be invaded by illegal elements. As for the national level, there is also a lack of network specifications to protect information system sharing between different departments. For the technical level, the security defense technology development is insufficient, the government and the personal information database face by the hacker intrudes and the illegal element uses the hidden danger. Our common hidden danger is each kind of harmful virus software, the artificial intelligence age also is giving birth to the network attack day by day intelligence, the form day by day diversification, the virus dissemination way diversification. While constructing the platform of intelligent government, the software purchased by the government is quite diverse, so it is easy to be attacked because of the negligence of personnel and the vulnerability of the system itself. In addition, due to the government's internal supervision of the data security system is not in place, the operator's security awareness is weak, the security management system mechanism is not sound, and so on, these factors will pose a threat to data security.

4.4 The Shortage of Human Resource Construction, Which Affects the Construction of "Soft Power"

Smart government, requires not only the "Hard power" of the construction of information infrastructure, but also the "Soft power" of the construction of smart government. The construction of intelligent government affairs can not be separated from the construction of talents, especially the civil servants, who are the main force of the construction and practice of intelligent government affairs, should be fully valued and cultivated. From the technical level, due to the civil service system, administrative system constraints, many skilled and competent people do not want to work in the government, that "Bound", "No money". As a result, the government service website, the application and so on use degree and the experience degree is far inferior to other software on the market. For example,

the 12306 ticket purchase APP developed by the government has always experienced "Difficulty in swiping tickets", "Difficulty in snatching tickets" and system paralysis during the Spring Festival travel season. On the other hand, e-commerce companies such as tmall and Jd.com, when faced with huge demand for shopping such as "Double 11", can still be dealt with effectively. From the service level, many serving civil servants, influenced by the ideas of "Official standard" and "Iron rice bowl", are unwilling to learn the skills related to smart government, they are not willing to accept the opinions and suggestions from the Internet and improve them, or can not deal with the problems raised by the public in time and effectively, which leads to the weak "Soft power" of the construction of our country's intelligent government affairs.

5 Thinking on the Path of China's Construction of Smart Government

5.1 Establishing the Mechanism of Synergetic Development

To reshape the internal ecology of the government, to form coordinated development and win-win sharing among different levels, departments and localities within the government, to make use of the development dividends brought about by the Internet, and to build a unified Internet information platform, to provide one-stop services to the public, which will break the long-standing state of Government Services State of fragmentation, the significance of the existence of intelligent government affairs is to log on the integrated information government information website or other types of government affairs service platform, to achieve the current e-government system can not meet the one-time, one-stop business processing [6]. To achieve "One-stop" service, mainly from four aspects of construction, the first is to provide service standards, used to standardize the overall construction of intelligent government; The second is to guide the construction of the basic project of intelligent government affairs and the optimization of the organizational structure in a unified way, so as to provide the basic conditions for the business cooperation of the sub-departments; the third is to aggregate resources, integrate information, unify management and build a virtual cooperation platform, in order to promote the integration of the information resources of the intelligent government quickly, and provide the guarantee of the information resources for the cooperative development of the sub-departments; Creating conditions for collaborative service delivery.

5.2 Increasing Investment in Infrastructure

The construction of smart government requires the government to invest a large amount of funds. The information construction project should be included in the municipal annual financial budget, and the municipal finance should set up special funds every year, dedicated to supporting the construction and implementation of the Internet economy, smart city and other projects. Local governments can consider two ways to increase financial investment in new infrastructure: On the one hand, the overall promotion of the speed of communications networks. The government may assign personnel from the relevant departments to form a professional leading group of informatization to

give unified guidance to the construction of network infrastructure of each government department. At present, a communication network infrastructure system covering "5G + gigabit optical network + smart private network + satellite network + Internet of things" should be built on the basis of realizing 5g city-level independent networking, and the construction of "Double Gigabit" should be promoted, speed up the construction of 5G government affairs network and wireless broadband network. Continue to promote 5G and government, medical, transportation, environmental protection and other aspects of the deep integration. On the other hand, the infrastructure of the Strong AI. The local government should support the leading enterprises in the field of artificial intelligence to establish the open source service platform of artificial intelligence. At the same time, the provincial and municipal science, technology and innovation commissions can work together with experts in artificial intelligence from local universities to study plans for the construction of artificial intelligence infrastructure, we will promote the application of AI in transportation, medical and financial fields, and comprehensively build a new high ground for AI applications.

5.3 Improving the Cyber Security Defense System

First, government departments should strengthen the construction of network security system. The construction of the intelligent government must be realized through the network to achieve its technical attributes, then the network security will inevitably have hidden dangers, so we must strengthen the network information security protection through the top-level design. To strengthen the network information security from the system level by formulating and issuing the "Computer room security management system", "Database security management standard (trial)" and "Application system security management standard (trial)"; Improve the "CENTRAL/PROVINCIAL Data Center Information System Emergency Response Plan" to ensure rapid response to emergencies. Secondly, strengthen the network security monitoring. The implementation and construction of smart government requires regular security self-inspection, weekly comprehensive scanning of the external network system, monthly Trojan check and account audit of all important application servers, and regular change of passwords. Implementation of on-duty Monitoring, establishment of data center daily inspection and on-duty system, including Spring Festival, National Day and other statutory holidays, data center round-the-clock on-duty Monitoring, to ensure daily use and major events during the network information security.Third, improve the quality of internal control. Data Center is divided into database administrator, security personnel, auditor posts, clear job responsibilities and specific personnel, the posts cooperate with each other, each other constraints, to further strengthen database and information system management. Deployment of the Fortress Machine, access to the database server behavior for unified authentication, authorization and audit, so that all operations can be traceable and auditable. Finally, enhance operational and maintenance services. By means of Operation System Monitoring, Computer Room moving-ring monitoring and manual inspection, the security inspection of computer room is strengthened to ensure the first detection and elimination of potential physical security risks. Improve the data center operation and Maintenance Service workflow, daily backup of core business data in the

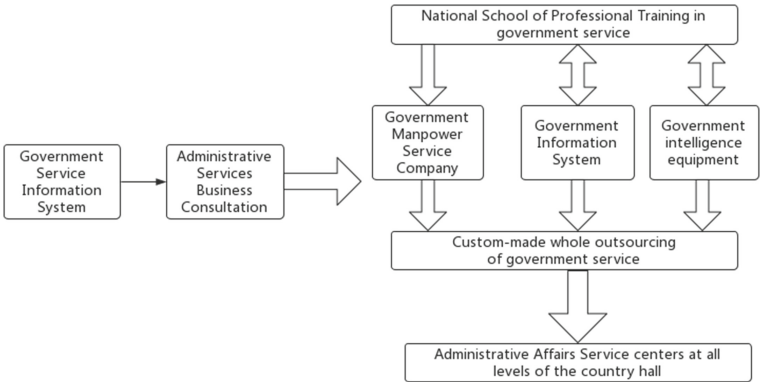

Fig. 2. Intelligent government personnel training system

same city, regular data recovery exercises, and do a good job of major network security incidents prevention and emergency response.

5.4 To Accelerate the Training and Introduction of Professional Personnel

The construction of intelligent government affairs needs the "Soft strength" of high-end talents, so we should pay more attention to the introduction and cultivation of professional talents. At present, the introduction mechanism of multi-regional civil servants is still an annual provincial examination, and many people with professional skills want to enter the system and compete with non-professional talents. At the same time, the rigid administrative system also makes many people feel that civil service jobs pay low wages, promotion and salary is difficult to enter the government sector. These problems can be solved in four ways: First, since Smart Government requires special talents such as senior architecture engineers and cloud computing programmers, we can choose to recruit these talents specially, salary treatment can refer to such cities as Hangzhou and Suzhou. Second, hire experts as technical consultants, in the process of intelligent government construction for technical guidance, but also for staff in the organization to learn related technologies. Third, the regional government can cooperate with large enterprises such as Tencent and Huawei to make full use of the relevant technical talents in the enterprises, and can also send civil servants to enterprises for training and learning relevant technologies during the cooperation period, a long-term partnership with the company. Fourth, the government can sign agreements with colleges and universities around the talent transfer, set up relevant professional, professional training, regular for the government to send high-tech talent.The current smart government talent development system is shown in Fig. 2.

6 Conclusions

The outbreak of New Crown Pneumonia outbreak in 2020 not only poses a major challenge to the global economy and people's health, but also puts forward new requirements

for the re-recognition of social physical distance, the dissemination of information and the transmission of physical objects, it also puts forward new tasks for social operation and governance, which indirectly promotes the informationalization level of social operation and governance, and enlarges the overall scale of all kinds of online and offline business integrated operation. The epidemic situation will not only change people's life style and form of interpersonal communication, but also deeply change the way of social operation and governance in our country, and promote the early arrival of social "Reason". The epidemic spread around the world, it is difficult to get rid of the shackles and restrictions brought by the epidemic in a short period of time, it is expected that in a long time, society will establish a new mode of operation. It is the first choice for the future social management to provide efficient and accurate government affairs service by means of network and intelligence. China should seize this opportunity and promote the perfection of the intelligent government affairs system as soon as possible, to provide government services to the people in a broader and deeper level, and to promote the early arrival of the age of social "Reason".

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