Recommendations for the Development of Digital Government in China in the Post-Pandemic Era

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Abstract: In the post-epidemic era, China's digital government is facing important opportunities and challenges. In terms of opportunities, accelerating the popularization and promotion of digital services, promoting the digitalization of public health management, promoting the innovation of government governance models and promoting the digitalization and upgrading of emergency management systems provide opportunities for improving the efficiency of government governance and the level of public services. On the challenge side, they will need to address the scale and maintenance of technology infrastructure, data security and privacy protection, the complexity of digital management and cross-sector collaboration, and the dynamics of public trust and engagement. Based on the analysis of the development of China's digital government in the post-epidemic era, the author believes that the efficient, intelligent and sustainable development of digital government can be achieved by strengthening the construction of digital infrastructure, promoting data security legislation, promoting cross-departmental collaboration and data sharing, and enhancing public participation and digital literacy.

Keywords: Digital Government, Post-Pandemic Era, Data Security, Digital Infrastructure

1. Introduction

Since the end of 2019, the COVID-19 pandemic has brought unprecedented changes to our society, disrupting the daily lives and work routines of people across the country. After a three-year battle against the pandemic, all control measures were lifted on December 7, 2022 [1].

In response to the pandemic, governments worldwide implemented various measures, including lockdowns, quarantines, and remote work. While these measures were effective in controlling the spread of the virus, they also exposed the limitations of traditional governance models. Against this backdrop, the question of how to leverage digital technology to enhance government governance capabilities has become a common challenge for countries around the world. Particularly in the post-pandemic era, the "Guiding Opinions of the State Council on Strengthening the Construction of Digital Government," issued on June 23, 2022 [2], has provided China with guiding principles for promoting digital transformation in government.

This paper aims to explore breakthroughs and development paths for China's digital government in the post-pandemic era, analyze the current challenges and opportunities, summarize practical experiences, and propose relevant policy recommendations.


Since the comprehensive lifting of pandemic control measures on December 7, 2022, social life has gradually returned to normal, and economic activities have started to recover, marking the beginning of the post-pandemic era in China. The post-pandemic era, characterized by widespread vaccination and effective control measures, signifies a stage where COVID-19 is under control, yet coexisting with humans for the long term [3].

Over the three-year span of the pandemic, China's digital government governance has shown remarkable features in the widespread adoption of online public services, enhancement of digital public health management, accelerated digital infrastructure development, and innovation in social
governance models. These developments reflect the profound changes brought by the pandemic and the rapid advancement of digital governance, though they also come with pros and cons that need further optimization for achieving an efficient, intelligent, and sustainable digital government.

2.1. Widespread Adoption of Online Public Services

In the post-pandemic era, online public services have rapidly proliferated and become a prominent feature of digital government development in China. To reduce offline contact and control the spread of the virus, the government accelerated the construction and promotion of online service platforms during the pandemic.

By the end of 2022, the national integrated government service platform had over 1 billion visits, with more than 90% of service items available online. Local governments also launched mobile government apps, such as "Zheli Office" and "Yue Service," enabling the public to handle various government matters anytime and anywhere via their smartphones. The download and usage rates of these apps significantly increased during the pandemic, greatly facilitating the public. Additionally, the government has vigorously promoted online approvals and electronic certificates, allowing many processes to be completed entirely online, from application to approval to result delivery. The use of electronic certificates, such as electronic ID cards and electronic driving licenses, has become increasingly widespread, significantly enhancing the convenience of handling affairs. Online medical and social security services have also rapidly proliferated, with the government providing online consultations, prescriptions, and health consultations through digital platforms, and significantly improving efficiency in social security services such as online inquiries, payments, and benefit applications.

2.2. Enhancement of Digital Public Health Management

In the post-pandemic era, the level of digital public health management in China has significantly improved, reflecting the profound impact of the pandemic on social governance models [4]. During the pandemic, the government extensively applied digital technology to address the public health crisis, achieving a swift transition from traditional to digital and intelligent management models. The health code system played a crucial role in pandemic control, allowing real-time monitoring and management of individual health status through mobile apps or QR codes.

By the end of 2022, the health code system had been used by over 1.3 billion people nationwide, becoming a vital tool for managing personnel movement and implementing preventive measures during the pandemic. Vaccine administration also achieved comprehensive digitalization, with real-time recording and dynamic management of vaccination information. The public could book vaccinations, check vaccination records, and obtain vaccination certificates through digital platforms, greatly enhancing the efficiency and transparency of vaccination efforts.

By early 2023, the national vaccination system had recorded over 2 billion vaccination entries, ensuring orderly vaccination operations. Furthermore, the government established a comprehensive real-time pandemic data monitoring system, utilizing big data analysis and artificial intelligence technologies to predict and warn about pandemic trends. The daily release and real-time update of pandemic data allowed the public to stay informed about the pandemic dynamics, enabling the government to adjust control measures and enhance decision-making accuracy and precision.

2.3. Accelerated Development of Digital Infrastructure

In the post-pandemic era, the construction of digital infrastructure in China has significantly accelerated, primarily in the expansion of 5G networks, cloud computing, and data centers. The explosive growth in digital demand during the pandemic compelled the government and enterprises to expedite the construction of digital infrastructure to support the development of new industries such as remote work, online education, and e-commerce [5].

By the end of 2022, China had built over 1.5 million 5G base stations, covering all prefecture-level cities and some key towns. The rapid expansion of 5G networks not only improved network speed and stability but also provided a solid technical foundation for applications such as the Internet of Things (IoT), smart manufacturing, and smart cities. The number of data centers and cloud computing platforms nationwide increased significantly, with substantial investments in cloud computing infrastructure from both the government and enterprises. By 2022, China had added over 300 large data
centers, and the cloud computing market size exceeded 200 billion yuan. These facilities enhanced data processing and storage capabilities, supporting real-time analysis and application of massive data [6]. Additionally, the pandemic accelerated the construction of smart cities, with the proliferation of IoT devices and the development of smart city infrastructure making urban management more intelligent and refined. Applications such as smart transportation, smart security, and smart healthcare were widely promoted in multiple cities, improving urban management efficiency and residents’ quality of life.

2.4. Innovation in Social Governance Models

In the post-pandemic era, China's social governance models have undergone significant innovation, with the application of digital technology in social governance greatly enhanced. During the pandemic, the government leveraged data-driven decision-making, public participation platforms, and cross-departmental collaborative governance to enhance the intelligence and precision of social governance. The extensive use of big data and artificial intelligence technologies for collecting and analyzing massive pandemic data improved decision-making accuracy and precision [7]. During the pandemic, several provinces and cities successfully predicted and controlled potential outbreak points through big data analysis, significantly reducing the risk of virus transmission. To enhance public participation and governance transparency, the government promoted online public participation platforms, enabling the public to submit opinions and suggestions and participate in policy-making and community management.

For example, the "Instant Report" platform allowed the public to report urban management issues such as environmental pollution and illegal construction in real time, with the government responding and addressing these issues promptly. In 2021, the number of public opinions and suggestions submitted through online platforms increased by 35% year-on-year, significantly boosting public engagement in public affairs. During the pandemic, the coordination of governance between different government departments was significantly strengthened, with the government establishing cross-departmental data sharing and collaborative work mechanisms to achieve information exchange and resource integration. For example, the health code system integrated data from multiple departments such as public security, transportation, and health, enabling precise management of individual health status and cross-departmental collaboration.


In the post-pandemic era, China's digital government development faces challenges in expanding and maintaining technical infrastructure, ensuring data security and privacy protection, managing digital operations and cross-departmental collaboration, and addressing public trust and participation. These challenges reflect the profound changes and new demands brought by the pandemic, requiring comprehensive measures in technology, management, law, and social interaction to ensure the smooth progress and sustainable development of digital government. By effectively addressing these challenges, digital government can better serve the public, enhance governance capabilities, and achieve comprehensive improvement in the modern governance system and capabilities.

3.1. Difficulties in Upgrading and Maintaining Technical Infrastructure

In the post-pandemic era, rapidly expanding and maintaining technical infrastructure has become a critical issue for the development of China's digital government. The surge in demand for remote work, online education, and e-commerce during the pandemic forced the government and enterprises to accelerate the construction and upgrading of technical infrastructure [8]. However, this rapid expansion has brought significant conflicts and issues.

First, the construction and maintenance costs of technical infrastructure are high. Large-scale deployment and maintenance of 5G networks, cloud computing platforms, and data centers require substantial financial investment. For local governments, the financial burden of building and maintaining this infrastructure is enormous, especially in economically underdeveloped areas where limited financial resources cannot support large-scale technological investments.

Second, the shortage of highly skilled technical personnel limits the effective utilization and maintenance of the infrastructure. Although China trains a large number of IT graduates annually, the rapid development of the digital economy has created a demand for advanced technical talents that far
exceeds supply. Particularly when faced with complex network environments and evolving technological demands, the shortage of technical personnel can lead to inefficient system maintenance and inadequate risk prevention capabilities.

Furthermore, the rapid expansion of technical infrastructure has exacerbated the digital divide. There are significant differences in the ability to access digital resources between urban and rural areas and among different social groups. Some remote areas and low-income groups struggle to enjoy the same digital services, which not only affects their quality of life but also hinders the comprehensive development of the digital economy.

3.2. Urgent Need for Data Security and Privacy Protection

During the pandemic, the government intensified data collection and application to manage the public health crisis and provide convenient online public services. However, this extensive data utilization has raised significant security and privacy concerns [9].

First, the widespread collection and storage of personal data have increased the risk of data breaches. Systems related to health codes, vaccination records, and pandemic controls have collected vast amounts of sensitive personal information, which, if leaked, could severely impact personal privacy and social order. Recent major data breaches in various countries and regions highlight the inadequacies in data security protection. For example, some local governments' health code systems and vaccination platforms faced hacker attacks during peak periods, leading to significant data theft, which not only undermined public trust but also exposed vulnerabilities in existing data protection mechanisms.

Moreover, public concerns about privacy protection are increasing. In the context of widespread digital services, people are increasingly worried about the protection of personal privacy data. Some criminals exploit data vulnerabilities for cyber fraud, identity theft, and other crimes, further exacerbating public concerns. This trust crisis not only affects the usage rate of digital government services but could also hinder the further advancement of digital governance. Additionally, some government departments and enterprises have relatively outdated data protection technologies, which cannot effectively address the complex and evolving cybersecurity threats, necessitating urgent upgrades and improvements.

3.3. Complexity of Digital Management and Cross-Departmental Collaboration

The pandemic exposed the limitations of traditional management models, with severe data and information silos significantly hampering the efficiency of digital management. Various departments and regions operate their digital systems independently, with inconsistent data formats and standards, making it difficult to effectively share and integrate information [10]. This data isolation increases the complexity of data management and affects the timeliness and accuracy of decision-making. During the pandemic, different departments needed to collaborate to respond to public health emergencies, but data silos led to inefficient data transmission and resource allocation, delaying emergency response times.

Secondly, the mechanisms for cross-departmental collaborative governance are inadequate. Despite the establishment of some cross-departmental coordination institutions and mechanisms, numerous issues persist in actual operations. Departments lack effective communication channels and collaboration mechanisms, and unclear responsibilities often lead to buck-passing. For example, the health code system requires data integration from multiple departments such as public security, transportation, and health, but the lack of a unified coordination mechanism affects data integration and updating efficiency, thus impacting pandemic control effectiveness.

Moreover, the conflict between traditional management models and digital transformation should not be overlooked. For a long time, many government departments have adhered to a hierarchical bureaucratic management model, which appears rigid and inefficient when faced with rapidly changing digital demands. Digital management requires a flatter and more flexible organizational structure, but promoting this change often encounters conceptual resistance and institutional barriers.

3.4. Dynamic Changes in Public Trust and Participation

During the pandemic, the government extensively used digital technology for pandemic control and
public services, resulting in dynamic changes in public trust and participation, which have significantly impacted the effective operation of digital government. Issues like information transparency and poor communication have affected public participation enthusiasm [11]. Although the government disseminated pandemic information and policy measures through various digital platforms, the transparency and timeliness of information still need improvement. Sometimes, the information released by the government is not clear or updated promptly, leading to inconsistent policy understanding and even misunderstandings among the public.

Additionally, the limited channels for public participation and the varying quality of participation pose significant challenges. Despite the government's promotion of online public participation platforms to encourage public expression of opinions and suggestions through digital means, the actual participation effect is less than satisfactory. Some people are unfamiliar with digital platforms or face technical barriers that hinder participation, while others provide non-constructive feedback, including malicious complaints and irrational expressions, which significantly increase the difficulty for the government to process opinions.

Lastly, the increased reliance on government digital services during the pandemic has exacerbated the existing digital divide, leading to participation inequality among different groups. Remote areas, the elderly, and low-income groups, due to a lack of digital skills or devices, find it difficult to equally participate in digital public services and governance. This digital divide not only affects the expression of interests and access to public services for these groups but also undermines social fairness and stability to some extent.

4. New Opportunities for China's Digital Government Development in the Post-Pandemic Era

In the post-pandemic era, changes triggered by the pandemic have brought numerous opportunities for the development of China's digital government. These include accelerating the popularization and enhancement of digital services, promoting the digitalization of public health management, innovating government governance models, and upgrading the digitalization of emergency management systems. Unlike the challenges mentioned earlier, these opportunities reflect how the experiences and technological foundations accumulated during the pandemic can be transformed into drivers for sustainable development, providing a solid foundation for the future of digital government.

4.1. Accelerated Popularization and Enhancement of Digital Services

The post-pandemic era has accelerated the popularization and enhancement of digital services, offering significant opportunities for the development of China's digital government. During the pandemic, the demand for online services surged, prompting the government to accelerate the construction and optimization of digital service platforms. By the end of 2022, the national integrated government service platform had accumulated over 1 billion visits, with online service coverage exceeding 90%, significantly improving the convenience and efficiency of public services.

In the medical field, the popularization of online medical services was particularly notable. The government provided online consultations, prescriptions, and health consultations through digital platforms, reducing the pressure on hospitals and improving the utilization efficiency of medical resources. During the pandemic, the number of users on online medical platforms increased by over 200%, effectively meeting the public's demand for medical services at home. Additionally, social security services quickly digitized, with online queries, payments, and benefit applications becoming widespread, enhancing service efficiency and coverage during the pandemic.

Digital services have also become widespread in education. During the pandemic, online education became the primary teaching method, and governments at all levels rapidly promoted the digitalization of educational resources. By promoting digital transformation in governance, healthcare, and education, the government can provide more efficient, convenient, and intelligent public services, enhancing governance capabilities and service levels, fostering closer ties with the public, and promoting high-quality economic and social development [12].

4.2. Promoted the Digitalization of Public Health Management

The three-year pandemic promoted the digitalization of public health management in China, offering significant opportunities for the development of the digital government. During the pandemic,
the government extensively applied digital technology to address public health crises, achieving a rapid transition from traditional management models to digital and intelligent management models. This process significantly improved the efficiency and accuracy of public health management.

The health code system played a crucial role in pandemic prevention and control. The health code, available through mobile apps or QR codes, enabled real-time monitoring and management of personal health statuses. By the end of 2022, over 1.3 billion people had used health codes nationwide, making it a vital tool for managing personnel movement and implementing pandemic prevention measures. The health code system allowed the government to quickly track and isolate potential infections, significantly reducing the risk of virus transmission.

Additionally, the government established a comprehensive real-time epidemic data monitoring system, using big data analysis and artificial intelligence to predict and warn about epidemic trends. Daily updates and real-time publication of epidemic data allowed the public to stay informed about the situation and enabled the government to adjust prevention measures, enhancing decision-making accuracy and precision. By rapidly identifying epidemic hotspots through real-time data analysis and dynamic monitoring, the government could implement targeted prevention measures, effectively controlling the spread of the virus.

4.3. Facilitated Innovation in Government Governance Models

The extensive application of digital technology during the pandemic drove profound changes in government governance models, enhancing decision-making accuracy and governance efficiency [13]. The widespread use of data-driven decision-making mechanisms significantly improved the precision and timeliness of government decisions. Governments collected and analyzed vast amounts of epidemic-related data using big data and artificial intelligence technologies, enabling real-time monitoring and rapid response. Several provinces and cities successfully predicted and controlled potential epidemic outbreaks through data analysis, effectively reducing the risk of virus transmission.

The establishment of online public participation platforms increased public engagement and governance transparency. The government promoted these platforms, allowing the public to submit opinions and suggestions and participate in policy-making and community management. For instance, the "Handy Reporting" platform enabled the public to report urban management issues in real-time, such as environmental pollution and illegal construction, with the government quickly responding and addressing these issues. This interaction not only improved the scientific and democratic nature of policy-making but also strengthened public trust and support for government work.

In the post-pandemic era, innovations in governance models through data-driven decision-making and public participation platforms have significantly enhanced governance efficiency and transparency. This model provides valuable experience and a solid foundation for the development of digital government, further promoting the modernization and intelligentization of social governance.

4.4. Promoted the Digitalization of Emergency Management Systems

The pandemic highlighted the inadequacies of traditional emergency management systems, making digital technology application key to improving emergency management capabilities. Over the three years of the pandemic, China’s emergency management system underwent significant digital upgrades, enhancing its ability to respond to public health emergencies and overall emergency management level.

To integrate pandemic prevention resources, China established a comprehensive emergency command platform that brought together resources from multiple departments such as public security, fire services, and healthcare. This platform, through data sharing and real-time communication, significantly improved response speed and coordination. The digital emergency command system reduced response times to sudden incidents by over 30%, effectively minimizing disaster losses and casualties. This upgrade enabled the government to manage emergencies more efficiently, enhancing public service levels.

Furthermore, digital technology improved the efficiency and transparency of emergency supplies management, ensuring timely and accurate distribution during crises. This upgrade not only safeguarded the lives and property of the public but also provided robust support for the development of the digital government, demonstrating the vital role of digital technology in modern governance.

The pandemic-driven digital upgrade of China’s emergency management system has enhanced the
ability to respond to public health emergencies and overall emergency management levels. This upgrade has provided strong support for the development of the digital government, further improving the modern governance system, enhancing public trust and satisfaction with the government, and promoting high-quality social development.


In the post-pandemic era, China's digital government faces numerous opportunities and challenges. Strengthening digital infrastructure, promoting data security and privacy legislation, enhancing cross-departmental collaboration and data sharing, and improving public participation and digital literacy can effectively address these challenges and fully leverage opportunities, driving efficient, intelligent, and sustainable development of digital government. The following recommendations aim to ensure better public service, enhance governance capabilities, and achieve comprehensive improvement in modern governance systems.

5.1. Further Strengthen Digital Infrastructure

Faced with the growing digital divide and increasing demand for digital services, strengthening digital infrastructure is essential. Investing in remote and rural areas, providing equipment and skills training, enhancing overall network and data processing capabilities, and promoting smart city infrastructure can effectively address these issues, fostering the development of China's digital government, improving public service coverage and efficiency, and promoting balanced and sustainable social development.

Although China's 5G base stations cover all prefecture-level cities and some key towns, network coverage in remote areas still needs improvement. The government should increase investment to build more 5G base stations and fiber networks, ensuring high-speed, stable connections in these regions. Special funds and policy support can help extend network infrastructure to rural and remote areas, narrowing the digital divide [14].

Providing digital equipment and technical support to enhance the digital skills of vulnerable groups is also crucial. Elderly, low-income, and some disabled individuals lack the necessary equipment and digital skills to participate in the digital society. The government can provide smartphones, computers, and other devices through subsidies or donations. Free digital skills training courses can be offered at community centers, libraries, and other public facilities to help these groups master basic digital operations and improve their use of digital government services.

5.2. Promote Data Security and Privacy Legislation

Balancing data utilization and privacy protection requires promoting data security and privacy legislation, a crucial step for the development of China's digital government. As digitalization accelerates, extensive data collection and application enhance public service efficiency but also pose significant data security and privacy challenges. Strict data security and privacy protection laws and regulations are necessary. The existing "Cybersecurity Law" and "Personal Information Protection Law" provide a foundation, but the increasingly complex digital environment demands further improvement of the legal system, including detailed implementation rules and regulatory measures.

Transparent policies and effective supervision mechanisms are needed to enhance public trust in digital government. The government should maintain high transparency in data processing, publicly disclose the purpose, scope, and usage of data collection, and accept public supervision and feedback.

Strengthening technical measures is also key to ensuring data security and privacy protection. Governments and enterprises should adopt advanced encryption technologies, access controls, and data anonymization measures to improve data protection levels. For example, using blockchain technology for data storage and transmission can effectively prevent data tampering and leakage. Continuous upgrades and improvements in technical measures can prevent data security risks at the source, increasing public confidence in digital services.
5.3. Enhance Cross-Departmental Collaboration and Data Sharing

Severe data silos between government departments hinder effective information sharing, leading to inefficient decision-making and services. Enhancing cross-departmental collaboration and data sharing is essential. Breaking down departmental barriers and promoting collaboration and data sharing can significantly improve government governance efficiency and public service levels, strengthening public trust and support for digital government and laying a solid foundation for its development.

A unified data-sharing platform and standards are needed to break down departmental barriers and enable data interoperability. The government should establish laws, regulations, and technical standards for data sharing, ensuring seamless data integration across departments [15]. For example, a national data exchange platform can be established to manage and share cross-departmental data centrally, ensuring data accuracy and timeliness.

Promoting cross-departmental collaboration to enhance governance efficiency is also crucial. Departments should establish collaborative working mechanisms based on data sharing, achieving information exchange and resource integration. A cross-departmental coordination body can be set up to oversee collaboration, develop working processes and standards, and ensure consistency in policy-making, implementation, and supervision. Big data and artificial intelligence technologies can improve decision-making and service levels, with comprehensive and accurate data resources obtained through cross-departmental sharing.

5.4. Improve Public Participation and Digital Literacy

Improving public participation and digital literacy is key to enhancing public trust in digital government. The government can encourage public participation in digital government through multiple channels, establishing and promoting online participation platforms for easy public expression of opinions and suggestions, and participation in policy-making and public affairs management.

Extensive digital literacy education can also enhance public digital skills. Free digital skills training courses can be offered at community centers, schools, and libraries, helping the public master basic digital operations. Specialized training programs for the elderly and rural residents can teach them to use smartphones, computers, and online public service platforms. Improving public digital literacy ensures broader access to digital government services and the benefits of digitalization.

The government can optimize user experience on digital service platforms, designing simple, user-friendly interfaces for easy operation by users of different ages and backgrounds. Establishing a public feedback mechanism to continuously improve and optimize digital government services is also important. The government should value public feedback, establish efficient mechanisms for collecting and processing opinions, and promptly respond to public needs and suggestions [16]. For example, feedback portals on government service platforms can facilitate the submission of user experiences and improvement suggestions, enabling the government to adjust and optimize services based on feedback, improving service quality and satisfaction.

6. Conclusion

In the post-pandemic era, advancing China's digital government development is not only a necessary measure to improve governance efficiency and public service levels but also an important means to achieve social fairness and inclusiveness. Strengthening digital infrastructure, promoting data security and privacy legislation, enhancing cross-departmental collaboration and data sharing, and improving public participation and digital literacy can lay a solid foundation for the comprehensive development of digital government.

Looking ahead, we hope that digital government can provide more efficient services, more transparent governance, and stronger technical support, enhancing public satisfaction, security, and happiness. Through collective efforts, high-quality digital government development can contribute to building a more intelligent, inclusive, and sustainable society. We believe that with close cooperation between the government and the public, the development of China's digital government will achieve a brighter future.
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