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Digital government as an "intelligent" government: an exploratory study on operational dilemmas and corrective pathways

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Abstract. The "digital government" is an indispensable component of the blueprint for building a "Digital China", yet numerous problems have emerged during its development. To address these issues and promote the healthy, efficient operation of digital government, this paper interprets the concept of "digital government" from three perspectives: information technology, automated processing, and open collaboration. It conducts an in-depth analysis of the problems arising from the misalignment and distortion of these three dimensions and proposes targeted corrective pathways to precisely address critical pain points. The goal is to ensure that the digital government truly functions as an "intelligent" government and serves as a robust guarantee for the implementation of whole-process people's democracy.

Keywords: digital government, information technology, whole-process people's democracy

1. Introduction

Since information technology has spread throughout human society with astonishing momentum, affecting all aspects of human life, "digitalization" has become the pursuit across various industries, and China's administrative organizations are no exception. As an indispensable component of the blueprint for building a "Digital China", the digital government plays a crucial role in promoting the modernization of China's national governance capacity and governance system, as well as comprehensively enhancing the efficiency of national governance. Therefore, the continued construction and development of digital government will be implemented as a long-term national strategy, ensuring that the digital government better belongs to an intelligent, "wisdom-oriented" government.

With the rapid development of the Internet and other information technologies in China, the digital government has gradually risen on the national agenda and has received high-level attention across multiple laws, regulations, and policies. Since the launch of the "Government Online Project" in 1999—jointly initiated by more than 40 information management departments from the Ministry of Posts and Telecommunications, the Economic Information Center of the State Economic and Trade Commission, and other ministries, offices, and bureaus—policies such as the 2006 National E-Government Framework, the 2013 Opinions on Strengthening and Improving the Construction and Management of National E-Government Projects issued by the National Development and Reform Commission, the 2015 Action Plan for Promoting Big Data Development, the 2020 Guidelines for Building the National E-Government Standards System, and the 2020 List of 140 National High-Frequency Cross-Province Government Services have successively established requirements and guarantees for digital government construction, forming a continuous chain of policy support.

Digital government is not only emphasized in policies but is also an unavoidable focal point in major Party and state meetings. Since the 19th National Congress of the Communist Party of China in 2017, the construction of digital government has become increasingly urgent. Both the Fourth and Fifth Plenary Sessions of the 19th Central Committee explicitly set requirements for digital government. In 2021, "digital government" was officially included in the Government Work Report for the first time. To this day, the progress of digital government remains uninterrupted. The high attention, strong initiative, and strict demands from the Party and the state continuously drive the long-term development of digital government, aiming to support China's digital economy and whole-process people's democracy, while ensuring that administrative agencies fulfill their duties efficiently, to high standards, and with high quality.

However, the "Collingridge Dilemma" reminds us that the social control of technology is difficult to anticipate in its early stages, and once recognized, "changes become costly, difficult, and time-consuming" [1]. In the process of advancing China's digital government construction, as the development deepens, numerous shortcomings and paradoxical phenomena of

digitalization have emerged, hindering the intelligent development of digital government. This is undoubtedly constrained by the technological paradox described by the Collingridge Dilemma.

To better address these issues and promote the healthy, efficient operation of digital government, this paper analyzes the problem through the lens of the three conceptual dimensions of digital government. It examines how misalignments and distortions within these concepts have caused challenges and proposes targeted corrective pathways to precisely tackle key pain points. In doing so, digital government can better belong to an intelligent, "wisdom-oriented" government, and serve as a strong safeguard for the implementation of whole-process people's democracy, clearing obstacles in the administrative domain for the vigorous advancement of Chinese-style modernization.

2. Conceptual definition

As the term suggests, a digital government is a governance model that relies on modern information technologies to highly centralize the organizational structure, operational procedures, and management services of administrative departments on online platforms driven by big data. By leveraging the convenience, efficiency, and intelligence of digital information, digital government empowers the government to perform its duties effectively in areas such as economic regulation, market supervision, social governance, public services, and ecological management, thereby achieving smart governance.

Based on this understanding, this paper further refines the concept of digital government by identifying three concrete dimensions of its essence, deepening our comprehension of the concept.

2.1. Information technology as the foundational support of digital government

The distinctiveness of digital government within modern discourse lies primarily in its reliance on highly developed next-generation Information and Communication Technologies (ICTs), setting it apart from traditional government governance. Whether in "Internet + government services" platforms or mobile applications such as mini-programs and apps (e.g., Zhejiang Province's Zheli Ban), the core enabler is internet technology. With ICT as the foundational support, digital government can transfer the acceptance, processing, and closure of administrative affairs online, laying the technical groundwork for subsequent operations.

2.2. Automation as the operational mechanism of digital government

Compared with manual labor, automation is the most prominent feature of information technology. Consequently, a digital government, built upon ICT, benefits from intelligent and convenient features in its operations, allowing the rapid, precise, and automated collection, integration, and analysis of massive amounts of information.

On one hand, the government itself can escape bureaucratic inefficiencies through automated approval processes. On the other hand, citizens benefit from reduced delays caused by manual processing, enhancing their satisfaction with public services. In summary, automation as an operational characteristic of digital government generates positive outcomes both for government departments and the public.

2.3. Openness and cooperation as the collaborative orientation of digital government

On one hand, leveraging digital technologies, government service platforms are interconnected through big data, making the exchange, communication, and sharing of information inevitable. Automated, efficient, and intelligent operations also require internal information sharing across departments, breaking down digital silos. Thus, in the construction of digital government, administrative organizations are increasingly open, enabling the optimal allocation of resources across departments and a joint commitment to addressing public concerns.

On the other hand, with the ubiquity of information technology, government work is publicly accessible online, and citizen feedback is collected and aggregated digitally. This facilitates open collaboration between the government and society, achieving a citizen-centered approach. By utilizing digital government to build a service-oriented government, the full implementation of people's democracy throughout the administrative process can be actively promoted.

3. Construction background

3.1. Technological development

China's development of information technology began in the 1980s. Since then, Information Technology (IT) has grown with unstoppable momentum, like bamboo shoots after a spring rain. From the early days of outdated infrastructure and lagging

technical conditions, the country has advanced to a stage where the Internet is ubiquitous in households, and innovative collaborative models such as "Internet+" permeate all aspects of social life. A comprehensive network and information technology industry system has been successfully established, with 5G technology leading the world. Through over seventy years of persistent effort, China has achieved a remarkable feat of informatization, emerging as a global network power. Under such strong technological conditions, administrative organizations must seize the opportunity to keep pace with the information era and promote digital government construction. This is not only supported by objective technological conditions but is also an inevitable requirement of the times.

3.2. Policy support

Digital government construction occupies a crucial position in the building of Digital China. To ensure its smooth development, China has issued a series of policies providing legal and regulatory support. At the national, provincial, and municipal levels, countless policy documents concerning digital government have been promulgated. Focusing solely on 2024, China released an impressive array of relevant documents. At the national level, policies ranged from the "State Council's Measures to Further Optimize Government Services, Enhance Administrative Efficiency, and Promote 'Efficient Completion of Single Tasks'" on January 16, 2024, to the "Opinions of the General Offices of the CPC Central Committee and the State Council on Accelerating the Development and Utilization of Public Data Resources" on September 21, 2024. Throughout the year, thirteen national-level documents were issued to continuously advance digital government construction from multiple angles. At the provincial and municipal levels, local policies exceeded 300 documents, covering all 31 provinces. In total, nearly 350 documents, more than 2,300 pages, and approximately 2 million words of relevant regulations were issued in 2024 alone, laying a solid foundation and providing strong policy support for the deepening of digital government construction.

3.3. Demand expansion

The expansion of demand manifests in both quantity and quality.

On one hand, demand quantity has expanded. With social development, the range of matters that government departments must handle has become increasingly complex. Especially in an era of rapidly accelerating technological change [2], various social issues arising from technology have become increasingly diverse. This objectively increases both the workload and the complexity of government operations. On the other hand, demand quality has expanded. As material living conditions improve, the public has developed unprecedented expectations regarding the quality of government services—they not only expect services to be fast but also well-executed. However, traditional manpower-based government operations often suffer from inefficiencies due to the extensive consumption of human resources, resulting in slow and potentially subpar service. This drives government departments to seek solutions to resolve the tension between "speed" and "quality".

At this critical juncture, the development of information technology provided a solution. From the perspective of government personnel, massive amounts of information are merely the tip of the iceberg in a large database. Highly functional data analysis systems can process government affairs quickly while ensuring both quality and quantity. Therefore, the emergence of digital government is a necessary response to the expanding demands of society and undoubtedly represents the optimal choice.

4. Challenges analysis

Although the emergence of digital government is an inevitable product of the times, its construction is not immune to the barriers described by the "Collingridge Dilemma". Disorder and recurring problems are unavoidable. The deeper cause of these issues can be traced to a misunderstanding of the three core concepts of digital government. That is, the paradoxical phenomena observed in the development of digital government stem from an incomplete, inaccurate, or even distorted understanding of these three conceptual dimensions. Based on this, the challenges encountered in constructing digital government can be categorized into the following three major pain points.

4.1. Misplacement of information technology: from "foundational support" to "core of operations"

In the conceptualization of digital government, information technology serves merely as a foundational support, enabling the possibility of digital governance. However, in practice, IT has often been elevated to the core of all governmental operations, becoming a central focus. This significantly distorts the intended role of technology as a "tool", transforming it into an end in itself.

On one hand, excessive emphasis on the "digitalization" of government can lead to a cycle of "digital government debt". From the initial construction of digital platforms to their subsequent operation, maintenance, and continued development, the financial demands are extremely high—sometimes reaching astronomical figures [3]. An unrestrained pursuit of advanced digital

technologies and top-tier software may result in budget deficits, and in some cases, even give rise to corruption in digital government construction, thereby undermining the political ecosystem.

On the other hand, overemphasis on information technology can create administrative gaps, leaving certain governmental functions neglected. In such cases, "digitalization" becomes an excuse for inefficiency or bureaucratic inertia: a particular administrative task is delayed because resources were directed toward building digital platforms; certain social security services remain incomplete because elderly citizens are required to complete online facial recognition steps, and without this, the services cannot be accessed digitally [4]. Consequently, when IT is elevated to an unreasonably central role, "digitalization" effectively becomes a pretext for governments to evade responsibility and self-justify inaction, seriously damaging the healthy functioning of administrative organizations.

Therefore, when information technology shifts from a "foundational support" role to the "core of operations", digital government ceases to be an integrated union of "digital" and "government" and instead becomes a fragmented assembly. In such a scenario, it is neither truly "digital" nor genuinely "intelligent".

4.2. Automation distortion: from "operational mechanism" to "superficial display"

In the concept of digital government, a key purpose of digitalization is to leverage automated processing to efficiently handle massive amounts of information. However, when the operational mechanism of automation is not fully utilized, digitalization remains only at the conceptual level and fails to be implemented in the practical processes of automated service delivery.

On one hand, some data have yet to be digitized, which limits the scope of governmental automated processing. While digital automation has indeed achieved significant results in public services, in areas such as urban infrastructure, a large amount of information remains offline—for example, roads, bridges, and other infrastructure often exist in a "dormant" state [5]. When significant portions of social data remain undigitized, the digital government cannot fully realize automated processing, and these "automation gaps" still require manual intervention, preventing transparent management and limiting overall operational efficiency.

On the other hand, even for data that have been digitized, automated processing is often not effectively applied. Two main reasons can be identified. First, government personnel may lack sufficient digital literacy. The promotion of digitalization imposes high demands on staff, as platform operations involve numerous procedural steps, and mastering new platforms requires time and effort. If personnel are not fully familiar with the functioning of digital technologies, even digitized data exist only as static records and cannot be effectively utilized. Second, fragmented data require human effort to integrate. Digitalization is supposed to break the constraints of time and space, but in practice, it often only reduces the previous difficulty of obtaining information to a superficial convenience. For instance, various local offices may publish their contact information online, but it is scattered across different platforms, websites, or even embedded within news articles. To obtain a single office's contact details, staff often must still inquire in person or search offline, which fundamentally contradicts the original purpose of automation.

Therefore, when automated processing, which should constitute the core operational mechanism of digital government, is reduced to a seemingly "automatic" but essentially "manual" superficial display, digital government fails to operate efficiently. In such cases, the government is neither genuinely "digital" nor truly "intelligent".

4.3. Open collaboration deviations: from "linkage tendency" to "bureaucratic enabler"

In the concept of digital government, digitalization opens channels between administrative departments as well as between government and society, creating opportunities for data and resource sharing. Ideally, such linkage—especially between higher- and lower-level government departments—should embody a more equal cooperative relationship. This does not oppose the leadership hierarchy between superior and subordinate governments; rather, it emphasizes that, in terms of data sharing and open collaboration, digital government should fully leverage information technology to jointly collect public opinions, reflect societal needs, and address civil matters. Only in this way can the powerful synergy necessary to advance whole-process people's democracy be realized. However, as "digital formalism" and "digital bureaucratism" increasingly manifest during digital government construction, this seemingly cooperative symbiosis often exacerbates the encroachment of higher-level governments on the "autonomy" of subordinate departments [6]. In practice, the traditional hierarchical bureaucratic system is effectively cloaked in a new digital guise, permeating administrative organizations.

On one hand, data sharing concentrates power in the hands of higher-level governments. Once information shifts from manual records to digital platforms, it becomes constantly visible and monitored along the data-sharing path by superior authorities. This attachment of digital technology renders hierarchical organizations more rational and efficient, centralizing decision-making authority [7]. Greater centralization, however, compresses the autonomy of lower-level governments, reducing their flexibility and discretionary power. Consequently, subordinate departments' initiative and motivation are weakened.

On the other hand, rapid data transmission increases the workload of lower-level governments in handling formalized tasks. When all information circulates on digital platforms, recorded in Excel sheets, and transmitted between hierarchical levels via

tools such as DingTalk, higher-level authorities may impose extensive requirements for numerical tracking and tabular management—manifestations of "digital formalism". Rather than promoting efficient data utilization, this results in repetitive mechanical work, intensifying administrative burdens, and trapping departments in the digital system. In this process, information technology becomes a form of "enslavement", dictating operations rather than facilitating them.

Therefore, when open collaboration fails to fulfill its intended "linkage tendency", the cooperative synergy necessary for mutual benefit cannot be achieved. Instead, it becomes an enabler for the entrenched hierarchical bureaucracy, suppressing vitality within administrative organizations. Such a digital government, then, cannot rightly be called "intelligent".

5. Solutions

Given that the paradoxes in digital technology arise from misconceptions about the concept of "digital government", resolving these dilemmas requires, first and foremost, a correct understanding of the concept. Beyond merely emphasizing the "digital" aspect, attention must shift from cold, rational "digitalization" to a more humane and empathetic perspective that prioritizes people's democracy. By balancing these two dimensions dialectically, digital government can develop more effectively, truly escape the "Collingridge Dilemma", and implement a vibrant practice of whole-process people's democracy.

5.1. Clarifying the core mission of digital government: people-centeredness

Whether it is the high investment and consumption in digital information platforms or the misuse of digitalization as an excuse for low-efficiency and low-quality work, the root cause lies in digital government's neglect of the people it serves. Therefore, digital government must clearly define its administrative actions as fundamentally aimed at safeguarding the people's role as masters of the state and serving the public interest. Digital technology is merely a tool and means for efficient administration; it interfaces with countless living citizens, not emotionless, uniform text or data code. Guided by a "people-centered" philosophy, digital government should focus on the citizens themselves, paying attention to marginalized groups. Efforts must be made to help elderly citizens, persons with disabilities, and other "digital refugees" integrate into digital administrative mechanisms, alleviating their difficulties. Digital government must not use the limitations of digital technology as an excuse to evade responsibility or shirk accountability.

5.2. Clarifying the prerequisite for automated processing: continuous human effort

Automated processing requires, first, comprehensive data integration; second, enhancement of government personnel's capabilities; and third, effective information consolidation. In this context, the human factor is given central importance, as the proactive efforts of individuals form the prerequisite for ensuring effective digital automation.

First, government staff must not neglect data collection, monitoring, and supervision. For data not yet integrated into digital networks—such as urban infrastructure information—staff must engage in in-depth preliminary data collection before inputting the information into digital platforms. Furthermore, because the operation of urban infrastructure requires long-term management, relying solely on automated digital platforms cannot fully guarantee normal functioning. Staff must regularly conduct manual monitoring on online platforms and intervene promptly when data errors or anomalies are detected, thereby ensuring the smooth operation of infrastructure and safeguarding public welfare.

Second, government personnel should actively enhance their digital literacy. No matter how advanced the digital technologies may be, if government staff have insufficient digital skills, all claims of digitalization become empty rhetoric. The gap between technology and personnel capability prevents the public from enjoying the convenience digital government promises. Therefore, staff must keep pace with the evolution of information technology, continuously learning new digital tools and mastering the relevant operational processes in administrative work, thus removing human resource barriers to the development of digital government.

Third, fragmented data requires proactive human integration. Online information is often dispersed across various administrative organizations and departmental platforms. However, communication channels among staff must not be disrupted by this fragmentation. Digital government should require administrative units and departments to consolidate data internally, following a "from large to small, from small to large" approach. Data should then be unified at the level of administrative organizations and integrated into the national administrative system, with big data tools employed for classification and organization. This enables rapid and precise information collection for both citizens and government agencies.

In summary, human initiative is key to overcoming these challenges. From data collection to capability enhancement, digital government cannot rely on technology alone; it requires the sustained effort of human actors. After all, digital technology itself is a human creation. Therefore, clarifying that continuous human effort is the prerequisite for automated processing is essential to overcoming the pitfalls of "human absence" in digital operations and truly serving the public.

5.3. Clarifying the bridge for open collaboration: human understanding

The operational mechanism of open collaboration can, paradoxically, become a "bureaucratic accomplice", serving as a tool for higher-level authorities to compress the autonomy of lower-level units and a sharp instrument that traps subordinates within the "digital cave". This process exacerbates the atomization of interpersonal relations, concealing and eroding understanding among individuals, and driving digital government toward a colder, more impersonal trajectory. To address this issue, it is first necessary to re-examine relationships between personnel within government departments, eliminate the mechanical interactions distorted by "digital formalism" and "digital bureaucracy", and restore warmth, understanding, and empathy among individuals.

In this regard, higher-level government departments should show greater consideration for the work of lower-level units. Digitalization should not serve as a pretext to increase the workload of subordinate departments. On the contrary, during the process of data sharing, both levels should strive to understand each other's progress, and provide timely assistance when challenges or difficulties are encountered. Only when mutual understanding among personnel within government departments is successfully established can data sharing move beyond merely enhancing administrative efficiency; it can also serve as a powerful instrument for strengthening interdepartmental communication and collaboration. When government departments operate in a coordinated, synergistic manner, the public services they provide will better reflect the needs and interests of citizens, collectively advancing the path toward full-process people's democracy.

In conclusion, the various shortcomings revealed during the construction of digital government all stem from neglecting the human element. Digital government is not merely a rational, "digital" concept in name; it is, first and foremost, a government—one that serves the people, alleviates public concerns, and addresses societal needs. By focusing on the warmth and humanity embedded in digital government, its governance deficiencies can be addressed, thereby creating a truly "intelligent" government. Full-process people's democracy will no longer remain an empty slogan, but will instead become a tangible reality visible and tangible through the actions of digital government itself.

6. Conclusion

On March 5, 2025, Premier Li Qiang, in his Government Work Report, announced that the compilation of the "15th Five-Year Plan" would commence this year. The report explicitly emphasized the need to strengthen both the rule-of-law government and the digital government. Accordingly, the construction of a digital government must continue relentlessly.

Based on a detailed exposition of the three core concepts of digital government, this study identifies three major issues arising from conceptual misunderstandings: the misplacement of information technology from a "foundational support" role to the "core of work", the distortion of automated processing from an "operational mechanism" to mere "superficiality", and the deviation of open collaboration from a "linkage tendency" to a "bureaucratic accomplice". In light of this reality, this study advocates addressing the shortcomings of digital government from the human perspective: clarifying its operational core as being people-centered, establishing the preconditions for automated processing through human effort and initiative, and reinforcing the bridge of open collaboration through interpersonal understanding. Ultimately, it is by incorporating warmth and human sensitivity that the limitations of purely instrumental rationality can be mitigated.

Through this approach, the study aims to respond to the Party and the State's call for advancing digital government construction, enabling it to transcend the technological paradox described by the "Collingridge Dilemma". Digital government can thus become a powerful instrument for building a strong nation, promoting socioeconomic development, safeguarding full-process people's democracy, and serving as a driving force in social governance. In doing so, digital government can truly belong to an "intelligent" government—one that is not only digital in name, but wise, people-centered, and capable of supporting the modernization of the national governance system and governance capacity.

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