

A Future of Governance in the Digital Era

Martial Dogou

Faculty of Political Sciences: University of Belgrade, Jove Ilica 165, 11000, Serbia
Media and Communication (PhD)

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Abstract:

In this paper, I provide an overview of digital government, covering its characteristics, scope, objectives, current status, and future potential. I believe digital government involves leveraging Information and Communication Technologies (ICT), particularly the internet, to transform the interaction between government and society positively. I briefly introduce two concurrent reform paradigms: the participatory and managerial approaches, striving to enhance the government's responsiveness, accessibility, transparency, responsibility, participation, shift, development, efficiency, and effectiveness. Additionally, I present digital government models that elucidate its development trends. I also outline the paper's target audience, structure, and educational objectives. Moreover, I introduce 'A Future of Governance in the Digital Era' as a novel paradigm in public administration studies, emphasizing the evolving role of digital technologies in public governance. I underscore the challenges posed to public administration and society by emerging digital technologies like big data, artificial intelligence, and blockchain. By contrasting the evolving functions of digital technologies in government, public value creation, human resources, and governance, I argue that the theoretical and practical implications of 'A Future of Governance in the Digital Era' diverge from those of Dunleavy et al.'s 'Digital Era Governance'.

Keywords: Future, New Digital Technologies, Digital Era Governance, Public Governance, Government Functions

1. Introduction

Upon awakening one morning from a troubled slumber, Gregor Samsa discovered himself transformed in his bed into a grotesque insect. He lay upon his rigid, almost armored, back, and upon lifting his head, he observed his round, brown belly segmented into stiff, arched sections. The bedclothes struggled to remain in place atop these segments, threatening to slip off entirely. His many legs, frail to compare to his bulky body, flailed helplessly before his great eyes. "What has become of me?" he pondered, realizing it was no mere dream. (The Metamorphosis, F, Kafka).

Kafka's *The Metamorphosis* is often interpreted as a poignant allegory of human suffering exacerbated by a sense of disconnection from one's identity and surroundings amid the advancements of modernity. In the novella, Gregor Samsa struggles to adapt to his sudden physical transformation, only to face increasing anguish as he attempts to conform to societal norms, eventually resorting to self-imposed starvation. Similarly, contemporary public administration finds itself at a crossroads. The rise of disruptive technologies such as artificial intelligence, blockchain, Internet of Things,

augmented and virtual reality, and robotics necessitates a rapid overhaul of traditional practices in favor of innovative business models, products, and services. A wealth of diverse data sources, coupled with advancements in data processing technologies, and evolving societal expectations regarding citizen-government interactions heralds the dawn of a new era of digital governance. Throughout the 2010s, novel governance concepts like e-governance and agile governance, innovative organizational frameworks such as open government and government as a platform, and engaging citizen-government methods like smart cities and digital platforms have emerged to drive public value through digital channels. Today, digital technologies are not only recognized as key drivers for enhancing public sector efficiency and accountability but are also central to the transformation of governments into entities that are open, transparent, innovative, participatory, and trustworthy (Siems & Alvarez-Macotella, 2015). However, the proliferation of technological alternatives, the automation of public policy processes, and the displacement of human roles by digital counterparts present challenges to the skill sets and capacities inherent in public administration, potentially distancing public servants from their traditional roles, responsibilities, and behaviors (Barbero et al., 2019). As public administration grapples with the rapid changes brought about by technology and society, one may ponder whether the somber narrative of Gregor Samsa could offer a glimpse into the challenges and transformations awaiting it in this new digital epoch. This paper explores the evolutionary trajectory of public administration, encompassing transformations in administrative and business methodologies, legislative and regulatory frameworks, and both internal and external dynamics. Its central objective is to deepen understanding of the challenges confronting public administration and society in light of advancing digital technologies such as big data, artificial intelligence, and blockchain. Furthermore, it endeavors to refine our theoretical constructs to facilitate the effective incorporation of these technologies into the fabric of public governance,

anticipating the evolving landscape of future administrations.

2. Theoretical Framework:

2.1. The transition from e-government to a modern era of digital governance:

As I look ahead, it is clear that technological innovation has continuously reshaped society throughout history, and the profound impact of digital technologies on public administration is not a novel concept. So, why should I expect the outcomes of these new digital technologies to be any different from past experiences with technological advancement? Back in the mid-2000s, scholars like Dunleavy and his team were already heralding the transition from the era of New Public Management (NPM) to an emerging 'Digital-Era Governance,' where governments fundamentally change by prioritizing service integration and adopting holistic, digitally-driven policymaking approaches (Dunleavy, 2006). Simultaneously, governments globally were unveiling strategies for digitally transforming public services, leveraging information and communication technologies (ICT) to enhance service delivery. Concepts like e-government and digital government have been gradually replacing traditional paper-based processes with digital alternatives, ushering in infrastructural, administrative, and cultural shifts within public administration.

This digital transformation is not confined to the public sectors alone; the widespread adoption of smartphones and social media has catalyzed a swift transition towards digital technologies in both business and public services. International organizations such as the OECD, UN, and the EU have developed numerous metrics to assess the digital capabilities of public administration and society at large. The data reveals a global uptrend in the adoption and proficiency of ICT in government services. For instance, the UN's e-Government Development Index (EGDI) surveys spanning from 2008 to 2020 illustrate a steady improvement in global e-government capacities, both absolutely in terms of the complexity of

services offered and the uptake of such services. By 2020, 65% of the 193 surveyed countries were classified in the very high EGDI group, with over 84% of countries providing at least one online transactional service (e.g., birth certificate applications, utility payments) (Draheim & Butt, 2019). Additionally, as of 2021, 51.4% of the global population had internet access, fueled by the widespread proliferation of fixed and mobile broadband connections (Dobrolyubova, 2022). Despite the observed correlation between a country's EGDI ranking and its income level, it is evident that strong political will, strategic leadership, and a commitment to expanding digital service provision are crucial determinants for achieving a higher EGDI ranking (UN, 2020), (Tan & Cromptoets, 2022). Looking forward, I anticipate that these trends will continue to evolve, shaping the landscape of public administration and society as a whole in increasingly digital directions. Based on the UN's past experiences, I believe that by investing in infrastructure and human capital, along with adopting appropriate managerial strategies, I can leverage the advantages of digital innovation to enhance government operations and expand the scope of public services. Therefore, I must consider the potential implications of new digital technologies and reassess my assumptions and theories regarding their impact on public governance. To address this concern, I must observe how digital technologies are evolving in their role within government functions, creating public value, the management of human resources, and the overall governance framework.

2.2. Managing and Changing the Roles of Digital Technologies in Human Resources:

Now, let's explore how new digital technologies are reshaping my role and skills in this new era. I compare the impact of old and new digital Instruments for managing human resources and expectations regarding managerial competencies in public administration. First, I delve into the necessary skills for integrating digital technologies into public administration. Then, I analyze how both new and old digital technologies influence my decision-making and managerial abilities.

2.3. Human resources and abilities for digital technologies:

In my research, I decipher that Dunleavy and his colleagues distinguish four types of skills that organizations of all kinds must acquire to handle IT (Dunleavy et al., 2006). First, as an IT specialist, I need the ability to develop, operate, and maintain IT systems effectively. Second, many organizations require some 'advanced users', referring to a particular level of competency to use advanced and sector-specific software tools. Third, there is a basic level of competency required for all of us employees working with word processing programs, spreadsheet packages, and the Internet. Fourth, there is a new set of operational skills we must acquire to better use Internet-based services and new media, which are influential in the policymaking and competitiveness of organizations. Following this categorization, we trace the changing roles of the technology specialist and the general workforce and the new operational skills expected by organizations. I start by comparing the impact of former and new digital technologies in this new area. In the former era of digital governance, I primarily provided support services and daily maintenance for ongoing systems. Most of my investigations were purely on the technical side, such as building internal communication and offering helplines for computer-related issues in day-to-day operations. Therefore, it was common practice to centralize IT services in large government IT centers located in peripheral areas or physically separate IT units from the rest of the organizational hierarchy (Dunleavy et al., 2006). Only a minority of IT staff was integrated into the administrative hierarchy to support change management for new business processes built on the Internet largely and to liaise with middle and top management for Internet-based services (Dunleavy et al., 2006).

In the new digital-era governance, I find that data is everywhere, and it plays an integral role in decision-making processes. As a data professional, I see a variety of specialized positions such as good data scientists, data analysts, data entry supervisors and clerks, data center operators, database

administrators, data (base) architects, data quality specialists, and data protection officers in data-related services. In this era, specialized and technical staff not only provide support services but also often play an integral role in the management systems and decision-making processes.

I acknowledge that not all data jobs are solely created by the great advent of new digital technologies, but their definitions have evolved and transformed alongside these technologies. For example, while interoperability of government information systems used to be primarily managed by IT services, advancements in digital technologies area and new government policies, such as open data initiatives, have redefined interoperability and the associated skill sets. Take for instance the European Interoperability Framework (EIF), initially established in 2010 and revised in 2016. This updated framework emphasizes openness, data management, data portability, interoperability governance, and integrated service delivery. In this new understanding of interoperability, my skills as a professional in communication have expanded to encompass legal, semantic, and organizational aspects of interoperability, in addition to technical skills. (Margetts and Dunleavy, 2013).

3. Methodology:

3.1. Data Categorization and Analysis:

3.2. Adapting the roles of digital technologies in public governance:

In the ICT revolution and the Internet era, I have noticed a significant increase in data availability across all aspects of human life. Due to the emergence of new digital technologies, there are now fresh opportunities to derive value from this data, reshaping public governance in profound ways. As I reflect on the differences between traditional governance and this new digital era, I find that the most notable contrast lies in how digital technologies alter the roles of both government and society in shaping public governance processes.

In this final section, I aim to shed light on the evolving roles of digital technologies within public

governance. According to Dunleavy and colleagues (2006), the influence of digital-era governance is evident in its simplification of state operations, reduction of institutional complexity, and increased visibility among government entities. They suggest that fully embracing digital-era governance will inspire citizens and businesses to solve their issues more effectively, simplifying information retrieval and transactions, while also demystifying governmental processes. In their view, digital technologies indirectly influence policy outcomes by altering governmental operations and societal behaviors. However, I argue that the influence of emerging digital technologies and data-driven public services extends beyond mere facilitation; they are transformative in the very essence of public governance. It is not just about governing digital technologies but also being governed by them. In the subsequent discussion, I will delineate the distinctions between these two dimensions of governance and delve into their implications. Furthermore, I will explore potential transformative avenues for governments in this new digital era.

3.3. Digital technology governance:

When I talk about the 'Governance of' digital technology, I'm referring to the rules concerning the utilization of digital technological means in the information infrastructure. The choices made by system designers and policymakers about information system architecture and technical standards can significantly influence how digital technologies are integrated into public governance processes. These decisions often involve trade-offs between enhancing capabilities in public governance processes and the impact of design choices on organizational culture, administrative procedures, and policy outcomes. As I design ICT systems, I find these trade-offs particularly relevant within the administration. Introducing new ICT systems often necessitates behavioral and operational changes in day-to-day work and citizen interactions, creating trade-off conditions between improved outcomes, such as operational efficiencies and user experience, and the associated

costs – whether financial or transactional. However, I firmly believe that the trade-off conditions linked with new digital technologies are fundamental and crucial for policy outcomes. For example, the introduction of machine-learning algorithms raises questions about the efficiency, accountability, and morality of policy outcomes. Similarly, design choices in blockchain-based systems entail trade-off conditions among privacy, usability, performance, flexibility, security, transparency, rule compliance, and community control. Overall, I see system design choices in the governance of the new digital era as inherently political and therefore cannot be merely treated as administrative or technical decisions. Moreover, new digital technologies have various individual and combined impacts. As I mentioned earlier, different technologies, such as AI and blockchain, have distinct strengths in enhancing public governance processes. For instance, blockchain can establish trust in how data is handled and managed in public governance processes, while AI can provide faster and deeper insights into data for use

in public governance processes. How these technologies are integrated into data governance systems can either enhance or restrict their value propositions.

4. Result and Discussion:

4.1. The transformation of the roles of digital technologies in government functions:

In my perspective, governments, as suggested by Hood (1983), primarily regulate society. To accomplish this, I assert governments depend on four key resources: the nodality, authority, treasure, and organization. Nodality emphasizes the government's central role in information flow, enabling efficient gathering and distribution. Authority represents the legal power to command, prohibit, assure, and adjudicate. Treasure denotes financial assets used for influence or acquiring expertise (Hood, 1983). Organization refers to utilizing human resources for direct action. By merging these resources with detectors and effectors, I posit governments possess eight tools to effectively steer society toward their goals.

Table 1. (Table for clarification, ‘A new era of digital governance’ on page 16)

Types of government tool	Detectors	Effectors
Nodality	Online tools to acquire information from citizens and media (e.g., e-mail, media monitoring systems)	Online tools to disseminate information to citizens and media (e.g., government websites, information databases)
Authority	Electronic databases to store information on citizenship records, rights benefits, and liabilities (e.g., taxation, ID system, etc.)	Online system to post information about legal and regulatory issues (e.g., penalty systems, price and service information systems used in government regulation of financial or product markets).
Treasure	Computerized forms to collect information from citizens and businesses about financial issues (e.g., tax, incomes, profits, and property registries)	Online and/or digital payment systems for citizens and businesses (e.g., welfare state benefit payment systems for, automated traffic-changing systems for cities).
Organization	Management information and monitoring systems inside and outside the administration	Grants and information transfer systems for sustaining the public sector delivery chains (e.g., medical record systems in public health care systems).

Source; Table for clarification, figure 1; according to Tan, Evrim, and Crompvoed Joep in ‘A new era of digital governance’ on page 16.

Expanding upon my analytical framework, I discovered that Hood and Margetts and Dunleavy et al (2013) attribute different tools to governments in today's digital world. Table 1 depicts these tools categorized according to their functions in the initial phase of digital governance (Margetts & Dunleavy, 2013). What catches my interest are the common features shared by these tools. In my view, the innovations during this period were primarily driven by advancements in information and communication technology (ICT), leading to the integration of ICT infrastructure into governmental operations. According to Dunleavy et al. (2006), digital tools had three immediate impacts on government functions. Firstly, they facilitated the reintegration of dispersed government services, which were previously fragmented due to processes like gentrification and privatization in the New Public Management (NPM) era. Secondly, there was a shift towards needs-based holism, emphasizing citizen-centric approaches rather than just operational efficiencies. Finally, digitization brought about organizational, behavioral, and cultural changes within the government sector, often encapsulated by the term e-government. However, in the initial phase of digital governance, I argue that while there were significant operational shifts, the fundamental transformation of the government's toolkit was limited. Digital technologies primarily served as counterparts to

paper-based services, enhancing detection capabilities rather than effecting substantial changes. While computerization facilitated quicker information extraction, utilizing this data in government services incurred ongoing expenses and required investments in information management systems and human resource development for policymaking and service provision.

Moreover, integrating digital technologies into administrative processes introduced coordination challenges such as data silos, conflicting protocols, and cybersecurity concerns, straining existing organizational and financial capacities. Ultimately, the impact of these digital technologies varied across policy fields and broader social contexts. Moving forward, I employ the same analytical framework to assess the impact of new digital technologies. Table 2 is a portion of the government toolkit.

The emerging phase of digital governance is centered around data. In contrast to the communication-centric initial digital era, today's public services prioritize data-driven approaches, becoming essential tools in the government's arsenal of new digital technologies. These diverse technologies have multifaceted impacts on data, shaping various aspects of governance.

Table 2. Tools of Government in the new era of digital governance

Types of government tool detectors	Detectors	Effectors
Nodality	Machine learning algorithms work on big data (e.g., social media, data held by private, non-public, or other government sources) to detect new patterns. Edge and cloud computing systems for faster, more efficient, and scalable data processing	Automated agents for real-time interaction (e.g., chatbots), personalized services, and methods in citizens' engagement (e.g., targeted advertisement)
Authority	Predictive analytics and credit scaring self-sovereign identities (SSI) and decentralized	Regulatory Technologies, Lex cryptographia Blockchain-based authentication services

	identifiers (DID) verifiable credentials	
Treasure	Blockchain-based decentralized registry services (e.g., land registry, asset registry systems), fraud analytics in taxation, entitlement, and social insurance programs	Automated management of tax and social benefits Blockchained procurement supply-chain, and management systems
Organization	Automation of data collection from employer and state databases interoperability and open standards data analytics officers, data protection officers.	Transparent and immutable blockchained systems to track inventory and assets Open Government data Digital platforms for citizen participation Decentralized autonomous organizations

Source; Table for clarification, figure 2; according to Tan, Evrim, and Crompvoed Joep in ‘*A new era of digital governance*’ on page 18.

In my view, the evolution of technology in data collection and processing is profoundly impacting governance. With the advent of big data and the Internet of Things (IoT), we witness a remarkable surge in the capacity for data collection. Additionally, AI technologies introduce innovative tools for analysis and processing. This paradigm shift enables us to explore novel avenues for storing and accessing large amounts of data, leveraging blockchain technologies, edge, and cloud computing. Importantly, these advancements alleviate the strain on government resources by moving data storage beyond traditional servers. Moreover, the landscape of digital technologies is becoming increasingly multifaceted. Unlike earlier ICT-driven tools that primarily focused on enhancing communication efficiency, contemporary technologies prompt governments to consider broader implications. Issues such as automation, decentralization, and the potential dehumanization of public services come to the forefront. Consequently, implementing these technologies necessitates not only financial and administrative considerations but also ethical and moral reflections. We must carefully navigate the trade-offs involved, ensuring that technological advancement aligns with the best interests of both governance and society.

In discussing the term 'new' digital technologies, it is crucial to clarify my stance. When I use 'new' in this context, I do not intend to suggest that these technologies have supplanted or rendered obsolete 'older' digital technologies within governmental functions. Rather, the advancements in these new technologies build upon the progress achieved during the initial era of digital governance. For example, enhancements in broadband connectivity and faster computing capabilities within public administration have paved the way for the integration of big data and AI-driven applications into governmental services. Furthermore, I do not imply that the innovations and advancements in ICT-driven governmental tools have halted or lost significance. By 'new' digital technologies, I refer to their ability to provide fresh approaches for governments to collect information from both public and private domains, thus enabling the delivery of more insightful, proportionate, and expedited public services. The crucial distinction lies in how this information is obtained—through the utilization of pervasive data from both public and private spheres, rather than solely through advancements in information transfer from one point to another. In considering these points, I posit that there are three main key distinctions between traditional and contemporary digital-era

governance regarding the utilization of digital technologies within governmental operations. Initially, I observed that traditional digital-era governance was characterized by heightened coordination and centralized control facilitated by the implementation of digital technology. For instance, Dunleavy et al. (2006) outline nine reintegration components in the post-NPM world where digital technologies significantly contribute to the establishment of consolidated or shared services. However, in the current phase of digital governance, I notice a contrasting trend otherwise, at the very least, a less clear prospect in terms of service reintegration. An example of this is the increasing inclination toward migrating government data to public clouds operated by third-party providers. According to a 2020 FedRAMP research conducted by Maximus and Genesys, approximately 49% of state and local governments in the USA have predominantly embraced cloud-based systems, while around 56% of federal government offices have integrated some form of cloud-based solutions and systems. Similarly, a 2020 Gartner study forecasts a significant increase in government adoption of public cloud services, with expenditure expected to rise by an average of 17.1% through 2021.

4. 2. The shifting roles of digital technologies in creating public value:

Since the time of Max Weber, I believe the concept of creating public value has been emphasized as a key aspect of public administration. Initially, there was opposition from New Public Management abridged (NPM) theorists, who downplayed the distinct role of the public area in creating public value and instead focused on efficiency and frugality in public management (Moore & Moore, 1995). However, I argue that there has been a growing reaction against this narrow perspective. Prominent scholar Mark H. Moore, for instance, has linked success in public sector management to the ability to innovate and transform public sector enterprises in ways that enhance their value to society both in the short term and in the long term. While the importance of public value creation in public management and governance is widely

recognized today, I believe there remains a lack of consensus regarding how digital technologies and investment in them within the public area contribute to public value. According to Cresswell et al. (2006), IT investment enhances public value by improving government effectiveness as perceived by citizens and by directly providing benefits to individuals, groups, or the public. These benefits encompass financial, political, and social dimensions (Cresswell et al., 2006). Financial value arises from cost reduction and increased efficiency in government operations or direct financial gains for citizens. Political value involves fostering participation, fairness, transparency, legitimacy, or enhancing the political standing of elected officials and citizens. Social value encompasses factors such as improved social status, stronger relationships, and opportunities like enhanced safety, trust in government, and economic benefits. Furthermore, I believe that Panagiotopoulos et al. (2019) emphasize that the creation of such public value through technologies is contingent upon the organizational capacities involved in service provision. Failure to effectively utilize these technologies or the necessary capabilities may require public organizations like mine to seek external resources through collaborative efforts such as co-creation, platform organizations, and multi-actor arrangements (Cabral et al., 2019). Moreover, I argue that creating public value relies not only on governmental actions but also on the perceptions and collective beliefs of citizens regarding such value creation (Bozeman, 2009). As Timo Meynhardt (2009) suggests, 'public value originates and culminates within the individual.' This perspective emphasizes the importance of citizens' perceptions, needs, and satisfaction (Bozeman, 2009). It views public value creation as a dynamic process that intertwines political, social, and legal obligations with the collaborative generation of societal values to achieve coordination, legitimacy, and significance (Meynhardt, 2009). Additionally, Bryson and colleagues outline four dimensions of public values as perceived by citizens: moral-ethical values, political-social values, utilitarian-instrumental values, and hedonistic-aesthetic

values (Bryson et al., 2014). I attribute this reciprocal relationship to the dual aspect of public value generation. For example, citizen involvement can fulfill my motivations as a participant (such as feeling a sense of usefulness and engaging in socialization processes), while simultaneously indirectly enhancing societal well-being (e.g., fostering justice, bolstering trust in government) (C. Wang et al., 2021). Consequently, creating public value does not necessarily adhere to linear pathways; a singular action may yield various forms of value provision. Having outlined public value creation processes in broad strokes, I find it imperative to note that the way digital technologies create public values remains largely unexplored (Panagiotopoulos et al., 2019). Throughout various theoretical and empirical studies, I have observed exploration into how ICT enables government services such as websites (Bryson, 2019), and e-government functions in creating public value (C. Wang, 2014)).

4. 3. Trust in political and social institutions:

The implementation of ICT in the public area can be conceived as an instrument to build public trust, to enhance confidence, and to promote a more participatory citizen-government relationship, as well as a means for equitable ICT policies (Cordella & Bonina, 2012).

The utilization of ICT for public value creation is closely tied to two main objectives, which I find crucial: enhancing public governance and enriching the democratic process. I believe that the former aims to optimize IT services in administrative and managerial functions, while the latter emphasizes leveraging ICT to facilitate citizen involvement in decision-making processes. These advancements provide me, as a citizen, with improved access to the government's information systems, reduce the bureaucratic burden of paper-based services, and enable real-time interactions with public officials. I truly appreciate how such achievements are expected to foster trust in government. From my perspective, research indicates that the utilization of e-government tools and websites fosters trust by enhancing my interactions as a citizen and creating perceptions of

government responsiveness (Mahmood et al., 2020). Key contributions of the first digital-era governance include improved public services with reduced transaction costs for participation and communication, as well as increased openness and transparency in government services. The advent of digital-era governance initially posed challenges to trust dynamics, especially with widespread surveillance and breaches of privacy by government agencies through covert programs. As I see it, these actions severely undermined confidence in the digital technologies sector and the government's use of ICT-based surveillance methods. Notably, revelations from Edward Snowden about the National Security Agency (NSA) and its collaboration with foreign agencies in global surveillance only worsened these concerns. However, I believe that the new digital technologies sector has brought both advantages and hurdles to the forefront in terms of trust dynamics. On one hand, advanced data analytics have enabled quicker and more cost-efficient administrative and managerial processes within public governance. Similarly, decentralized technologies like blockchain have offered more transparent and secure mechanisms for handling personal data, while also fostering citizen involvement in democratic governance procedures. On the flip side, I believe governments are confronted with new trust challenges due to the emergence of digital technologies. These challenges extend beyond ensuring accountability in using ICT tools. I find myself grappling with the daunting task of mitigating risks associated with the massive amounts of data held by private service providers. The advent of machine learning and other data analytics techniques has unveiled the potential for unscrupulous exploitation of data stored in commercial and public databases to make more accurate predictions about human behavior and psychological responses. I see that social media algorithms, in particular, are susceptible to manipulation through coordinated attacks aimed at distorting reality and undermining democratic processes.

4. 4. The provision of public services:

In my view, the onset of digital governance has significantly improved the provision of public services. By transitioning from traditional paper-based systems to digital platforms, we have seen a notable enhancement in efficiency and effectiveness. Moreover, the current phase of digital governance, characterized by data-driven strategies, has further advanced this progress by enabling personalized services. This not only boosts operational efficiency but also enhances citizen satisfaction. Both of these approaches alleviate administrative burdens, paving the way for more flexible and responsive governmental systems. Essentially, I believe that the current age of digital governance builds upon the groundwork laid by its predecessor, emphasizing a more tailored and comprehensive approach that prioritizes individual needs.

From a different perspective, I believe the emergence of the new digital age has brought forth enhanced "effectors" that were previously lacking in the early stages of digital governance. Technologies like regulatory technologies, machine learning, and blockchain have paved the way for more efficient enforcement of policies. For instance, in blockchain-based systems, rules are ingrained within the system, activated by the collective actions of miners, executed autonomously via smart contracts, and resistant to reversal by third-party interference (S. Wang et al., 2021). Similarly, machine learning equips machines with advanced predictive mechanisms for tasks such as application processing or fraud detection. While these systems can mitigate the expenses associated with monitoring, processing, and regulatory compliance, deterministic algorithms, discriminatory practices rooted in data biases, or the absence of human judgment may inadvertently affect citizen satisfaction and impede in creation of public value. Initially, I am concerned about the risks stemming from intentional or unintentional discriminatory policies facilitated by data-driven decision-making. For instance, China's establishment of a standardized national data-sharing system aims to bolster a social credit system, which scores and ranks all Chinese

citizens. I am unsure of the extent of intrusion of this system upon its full implementation, but pilot programs indicate that scores are influenced by minor infractions like receiving a traffic ticket or ideological actions such as performing heroic deeds. The promotion of individuals with high social credit scores as 'civilized families' and public remarks emphasizing preferential treatment for the trustworthy while restricting opportunities for those deemed discredited highlight the discriminatory nature of the proposed system. I believe discriminatory practices can also arise from biases present in the training data used by algorithms. For example, a Dutch agency's algorithm erroneously labeled over 20,000 parents as fraudsters, disproportionately affecting individuals with immigrant backgrounds or dual citizenship. Despite its intended use as an initial filter, officials hastily approved claims based on the algorithm's flawed assessments.

Another concern I have is that automated systems may lead to significant operational and political costs in the event of malfunctions. Particularly, opaque self-learning systems impede problem detection, and replacing faulty systems can outweigh the benefits of automation. I have noticed that such systems lack the agility for quick managerial interventions when issues arise. That is to say, in the SyRI scandal regarding childcare benefits, the government resigned due to the systemic failure and injustices caused by algorithmic decision-making. Similarly, Microsoft's AI chatbot experiment on Twitter quickly turned awry, generating racist and misogynistic responses. The project was swiftly terminated, and a replacement model was designed to avoid potentially offensive content. Comparable issues extend beyond machine-learning systems; for instance, the Ethereum blockchain community faced a permanent split following a \$50 million hack of funds invested in an automated investment application. The division arose from a disagreement over how to resolve the issue, resulting in the creation of two separate blockchains.

4. 5. The government's expectations from the citizens:

In my view, another crucial aspect of creating public value lies in how digital technologies shape governmental expectations. As I mentioned earlier, this includes the responsibility to ensure transparency and safety measures in how digital technologies are utilized, not only within governmental bodies but also in wider society. I expect digital advancements to bring about improvements such as enhanced efficiency and cost-effectiveness in public services. However, it is crucial to be vigilant so that these benefits do not inadvertently result in privacy infringements, discriminatory practices, or data breaches. What innovative methods can governments employ to generate public value within the context of digital-era governance? We highlight two emerging governmental roles aimed at meeting citizens' expectations:

a-The concept of open government traces back to the post-World War II era and has continuously evolved since then (Yu & Robinson, 2011). According to the OECD, open government is built upon key principles such as transparency, integrity, accountability, and stakeholder participation. In today's context, open government extends beyond merely disclosing government-held information to also include providing publicly accessible data through government databases. This broader perspective, often considered open government data (OGD), involves a spectrum of policies aimed at fostering transparency, accountability, and value creation by ensuring government data is available to everyone. OGD encompasses diverse datasets, spanning business information, registers, patent and trademark data, public tenders, geographic information, legal records, meteorological data, social metrics, and transportation data. Public institutions share these datasets to enhance accountability and facilitate their effective utilization, encouraging business innovation and improving public governance through data-driven decision-making.

b-The concept of Government as a Great Platform (GaaP) emerged in a 2011 article penned by Tim

O'Reilly, drawing inspiration from the successful platform-business models of companies like Amazon, Apple, Alibaba, and Airbnb. O'Reilly proposed a transformative role for government, one that transcends the traditional dichotomy of merely providing services or relying solely on the private sector. In his vision, a government acting as a platform provider would not only establish essential infrastructure but also develop core applications showcasing the platform's potential, thereby motivating external developers to innovate further. Moreover, it would oversee the implementation of regulations to ensure seamless integration among various applications. Similarly, Richard Pope of Harvard Kennedy School (2019) characterizes GaaP as an ecosystem comprising shared APIs, standardized components, canonical datasets, along with the services built upon them, and governance mechanisms aimed at maintaining the integrity and accountability of the broader system (Bennett & Yiu, 2019).

Governments offer various platform models as part of their service offerings. One notable example is the GOV.UK Platform as a Good Service (GOV.UK PaaS), which furnishes a cloud-based platform for public sector organizations to manage their digital services. As per their website data from 2021, 131 organizations are utilizing this platform, hosting a total of 1,652 applications. Additionally, a cohesive live service assessment model is provided to participating users. Similar platform frameworks are also in use in other nations like Estonia, India, and Singapore.

5. Challenges:

5.1. Challenges of Digital Governance:

As I reflect on the challenges ahead, I realize that the CPC will continually encounter new obstacles as it moves forward with its historical mission in this new era. These challenges have played a paramount role in keeping me, as a member of the party, updated with the current times and have fostered resilience within me. Mao Zedong, before the establishment of the People's Republic in 1949, and Deng Xiaoping, during the onset of China's reform and opening up in the late 1970s, both

emphasized the importance of acknowledging and overcoming new challenges (Peng, 2022). Today, the proliferation of digital technology has sparked a profound transformation in China's state governance, presenting both opportunities and hurdles that require innovative solutions and strategic recommendations to navigate effectively.

5. 2. Challenges in Transforming Governance in the Digital Era:

Over recent decades, I have witnessed the internet, with connectivity as its core function, becoming the most powerful instrument in Chinese society. Peng Bo (2022) scrutinizes that as a new communication technology centered on information technology, the internet has changed the means of dissemination of information and communication among people and reshaped the structure of social relations in modern society. As of March 2020, China boasted a remarkable surge in internet users, reaching a staggering 904 million, a notable leap from a mere 620,000 in 1997. The penetration rate of internet usage soared to 64.5%, a stark contrast to the minuscule 0.05% recorded in 1997. Among these users, 897 million embraced mobile internet, a significant rise from 79.92 million at the close of 2018. Mobile internet emerged as the predominant choice for accessing the internet. In March 2020, rural internet users numbered 255 million, constituting 28.2% of the nation's total user base, marking an increase of 33.08 million from the end of 2018 (China Internet Network Information Center, 2020). This exponential growth underscores the comprehensive transformation of Chinese society driven by the internet. From the era of limited connectivity with 1G, 2G, and 3G technologies facilitating mass online communication, I have witnessed a monumental shift towards extensive self-communication facilitated by robust connectivity in the 4G era and the emergence of a hyper-connected paradigm underpinned by 5G technology. A new era of widespread intellectual exchange commenced, fundamentally altering the framework, functionality, and power dynamics within Chinese society (Zhang et al., 2019). Nonetheless, China

finds itself in the nascent phase of the information age in specific domains and has yet to effectively tackle the challenges that arose during earlier internet phases. Thus, there is a pressing need to strive to catch up with developed nations in this evolving internet landscape (Peng, 2019a).

The COVID-19 outbreak, originating in late 2019 and escalating into a worldwide pandemic, represents a significant global public health crisis, challenging human society on a global scale.

I learned online the team was supposed to come on the battlefield to combat the pandemic. As the contagion spread, regions across China imposed measures such as quarantines and shutdowns, hurting the economy. Simultaneously, the evolving shift in public sentiment has become more evident. These dynamics have introduced fresh demands for state governance. As articulated by President Xi Jinping, there is a need to chart new paths amidst changing circumstances (Rodrigues & Xu, 2020). Leveraging the latest advancements in science and technology is imperative for humanity to effectively combat the pandemic. Digital technology has emerged as a crucial tool in this endeavor, facilitating meaningful connections among individuals during times of social distancing. Additionally, it has aided in various aspects such as diagnosis, treatment, pandemic management, sustaining livelihoods, resuming work and production, online education, and fostering digital transformation. Over time, this has aided people in managing the pandemic and restoring a degree of normality. Simultaneously, the broad adoption of digital technology has proven advantageous in the fight against the pandemic. Karl Marx contended that the tension between societal needs and technological capabilities is the primary catalyst for technological advancement, while Friedrich Engels observed that every significant historical challenge is accompanied by corresponding progress. The endeavors to combat the pandemic have opened up extensive opportunities for swiftly evolving digital technologies to assume a significant role in the post-pandemic period, my formal initiation into the digital age commenced with a pivotal moment.

During an interview on LinkedIn in April 2020, Ray Dalio, the founder of Bridgewater Associates, remarked that while the coronavirus pandemic was indeed devastating, it could also serve as a historic turning point, potentially ushering in significant societal advancements. He emphasized the importance of honing one's cognitive abilities and leveraging digital tools for thinking, identifying them as invaluable skills (CNBC, 2020). In this era dominated by technological advancements, China faces the imperative of enhancing its digital leadership—a task of utmost importance and urgency. The COVID-19 crisis has reinforced my belief in the efficacy of digital technology and intensified my resolve to foster its development. This commitment is pivotal in laying the groundwork for expediting technological progress.

6. Perspectives:

6.1. The Strategies for Improving Digital Governance Era and Recommendations

I will continue to confront and address new challenges as I progress in my historical mission during this new era. This strategy ensures that I remain current and sustains my determination. Before the establishment of the People's Republic in 1949, Mao Zedong emphasized this principle to his colleagues, and during the onset of China's reform and opening up in the late 1970s, Deng Xiaoping reiterated the importance of confronting new trials. Today, digital technology has catalyzed a significant transformation in China's governance structure. Amid the COVID-19 pandemic, there has been an initial shift towards digitalization in the system of social governance, leading to gradual solutions to traditional issues such as information asymmetry, slow responsiveness, and governance inefficiency. As highlighted by President Xi Jinping, "This epidemic is a major examination of China's governance system and capacity. I must distill my experiences and glean insights from them." A pivotal aspect of this examination lies in digital leadership. Leveraging big data to track the origins of the pandemic for precise prevention and control, harnessing technologies like big data, 5G, and AI to revamp the industrial landscape, advancing targeted social governance, and

addressing the challenges of the 'post-pandemic syndrome' have become central to my objective of modernizing state governance.

6. 2. Establish digital literacy training to adapt to the digital age:

It has been 26 years since China gained complete functional access to the internet. Throughout this period, I have observed governments at various levels undergoing a transition. Initially, they grappled with adapting to e-government by establishing official websites. Subsequently, they seamlessly integrated social media into their operations. However, during the COVID-19 pandemic in 2020, Wuhan, a new first-tier city with robust technological capabilities, encountered challenges in disseminating information and managing supplies. This wasn't due to a lack of technical prowess but rather a deficiency in digital leadership, resulting in insufficient utilization of available technology. Despite substantial investments in hardware platforms by provinces and cities, the acknowledgment and utilization of data's value represent a fundamental reflection of policymakers' and governments' philosophies and capabilities to stay abreast of the times. Various occurrences illustrate that in the digital age, governments face the demanding task of "re-adapting" to the internet. As President Xi Jinping emphasized, harnessing big data to enhance state governance modernization is crucial. The ability to acquire, analyze, and leverage data is a fundamental skill for leading officials in fulfilling their duties. (Xi, 2020). It is, therefore, necessary for me to launch a campaign of digital literacy training in government departments across countries around the world to disseminate knowledge about digital technology, foster digital thinking, and improve digital leadership.

7. Conclusion:

In conclusion, the transition to the new and future era of digital management marks a significant departure from its predecessor, driven by a shift from an ICT-centric to a data-centric transformation. This evolution manifests in various facets of governance, including government

functions, the creation of public value, and human resource management. In terms of government functions, my focus has shifted from optimizing information exchange to prioritizing data exchange for citizen-centric services. This necessitates a reorganization of public service provision to leverage the abundance and quality of information available. Public value creation in the digital area introduces new challenges, such as trust issues stemming from data analytics' predictive and manipulative capabilities. While digital technologies enable more effective public service provision, they also introduce risks of discriminatory practices and accountability challenges. To meet citizen expectations, I must adapt by facilitating access to data sources, designing user-friendly platform-based services, and regulating the data ecosystem in collaboration with stakeholders. Moreover, A shift in the skills and competence requirements for public personnel and managers is necessary due to the emergence of new digital technologies. Data literacy and digital proficiency become essential, alongside the need for managerial decisions informed by technology specialists. Technical design choices in governance processes directly influence policy outcomes, presenting new governance challenges around techno-social power dynamics and accountability. Looking ahead, the future of digital governance presents various possibilities, including Digital New Public Management, Digital Neo-Weberianism, and Digital Communitarianism. The choices I make will shape the political outcomes of each approach. In navigating this new era of governance, embracing data-centric approaches, fostering digital literacy, and ensuring ethical and accountable use of technology will be paramount. By addressing these challenges and opportunities, I can harness the potential of the digital age to better serve citizens and achieve collective societal goals.

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