45 Digital Government

Introduction

Governments are improving their processes in order to provide more efficient and responsive services to citizens, businesses, and other governmental agencies. Rapid developments in information and communications technologies (ICTs) are continually creating new opportunities. For governments, the use of these technologies in interaction with citizens and businesses as well as in inter and intra-governmental interactions has brought along new governance paradigms (Janowski, 2015).

In this chapter, I outline the concept of *digital government*, drawing on the governance paradigms that have evolved over the past decades: computing in public administration, electronic government (e-government), open and collaborative government, and agile and smart government. While breaking down the developments of digital government into broad stages is undoubtedly very simplistic, it is also helpful to determine the improvements linked to each paradigm. In each case, governments use new technologies, methods and approaches to modernize their services, processes, products, relationships, interactions, and cooperation with internal and external stakeholders.

I will now outline the development of digital government along these four governance paradigms. I will then provide an overview over the main drivers, motives, barriers to implementation, and success factors of digital management.

Computing in public administration

The widespread and expanding use of computing by governments has started gaining momentum in the 1970s (Danziger, Dutton, Kling, and Kraemer, 1982; Kraemer and King, 1986). As Yildiz (2007) pointed out, until the introduction of the Internet and the widespread use of personal computers, the use of technologies in public administration was more a side-issue than a central management function. The main goal of technology use in public administration was enhancing the efficiency and effectiveness of administrative tasks.

With the spread of personal computers in the 1980s, computers also became an inventory of administrations' offices. With this development and increasing use of (and dependence on) technology, new questions relating to power structures, employment, or decision-making have arisen (Danziger et al., 1982; Kraemer and King, 1986), as did new skills and qualifications as well as training in these competencies through appropriate courses. The primary use of technologies for internal tasks changed when the Internet and the World Wide Web achieved wider use: not only internal efficiency and effectiveness in task execution, but also the external impacts of administrative activities on citizens, businesses, and other administrations have become increasingly important (Yildiz, 2007).

Government becomes *electronic*

The introduction of World Wide Web in the 1990s paved the way for a government to be reinvented (Ho, 2002). E-government is commonly conceptualized as the use of the Internet and the World Wide Web to enhance access and delivery of government information and services to citizens, businesses, government agencies, and employees (Evans and Yen, 2006; Silcock, 2001). Many countries have adopted e-government programs, laws, and policies that have created the legal, strategic, and organizational basis for widespread e-government applications (Yildiz, 2007). E-government has become a tool for modernizing public administration internally and externally.

Internally, e-government marks the beginning of the transition from paper-based tasks and processes to digital processes, with increasing efforts to connect different departments and agencies and thus make cross-agency information-sharing faster. E-government projects seek to improve efficiency and thus reduce the cost and effort of providing services, as well as to ease workflows. For governments, e-government is increasingly becoming a core area where capacity-building takes place. The creation of the Chief Information Officer position and the integration of IT into the strategy planning process demonstrate the growing importance of e-government as a new governance paradigm (Twizeyimana and Andersson, 2019).

Externally, e-government marks a paradigm shift in how public administrations interact with citizens and businesses. It represents a government's efforts to establish an online presence

(on the Internet) (Layne and Lee, 2001) and provide government services and information to the public via electronic means (Monga, 2008). Examples include online forms for social security benefit applications or registration and deregistration or changes of address in a municipality. The use of websites is intended to extend an administration's presence into the digital space. Terms such as *virtual state* (Fountain, 2001), *netstate* (Lawson, 1998), or *e-administration* (Heeks, 2001) are also used in the literature to describe a government's efforts to create an online presence.

Efforts focus on but are not limited to utilizing the Internet and the World Wide Web to improve the quality of public services, to deliver government services to citizens and businesses 24/7, and to increase transparency through facilitated access to government information and electronic records. Further, e-government efforts also involve providing online transactions with government agencies that enable online payments, for instance, paying taxes online (Layne and Lee, 2001; UN and ASPA, 2002; Yildiz, 2007). With the advent of portable devices, the so-called *mobile government* (m-government) has emerged and has allowed citizens to also access information and services through their mobile devices (Rossel, Finger, and Misuraca, 2006).

Government becomes *open* and *collaborative*

In the development of digital government, the insight is gaining ground that it is not sufficient to focus solely on the uses and improvement of ICTs to provide citizens with government information and services. Gradually, the rigid and one-sided online presence is becoming more open, participatory, and collaborative. The focus is shifting toward levering the opportunities afforded by Web 2.0 technology, increasing governments' interactions with citizens, businesses, and other government agencies. Not only access to information, but also the empowerment of citizens and businesses to influence government processes and decisions is gaining importance (Meijer, Curtin, and Hillebrandt, 2012). Thus, the motto is no longer *for* but *together with* citizens, businesses, and other government organizations. For instance, *e-feedback*, *e-participation*, and *e-democracy* are rapidly gaining importance and are opening new possibilities for democratic processes (Bonson, Torres, Royo, and Flores, 2012).

Including and working more closely with citizens, businesses, and other government agencies is resulting in a more open and collaborative governance model (Gil-Garcia, Chengalur-Smith, and Duchessi, 2007). Thus, it's not only about improving government services by, for instance, making government information and data accessible to the public (i.e. open data), but also about enabling citizens to share their opinions and influence government processes through participatory mechanisms. ICTs are used as ways to release government information, increasing transparency more effectively and facilitating participation and collaboration (Meijer et al., 2012; Tai, 2021).

Such interaction is implemented by, for instance, social media or other online consultation or discussion platforms (Bonson et al., 2012; Linders, 2012; Meijer and Thaens, 2013). Examples of collaboration include online crowdsourcing projects (Brabham, 2012) or emergency response governance, such as during the Covid-19 pandemic, which demands close coordination and collaboration between different levels of government (Kummitha, 2020). Establishing such collaboration also allows more innovation from the outside. Using open government data, for instance, startups can contribute to innovation processes by improving existing services or developing new ones (Fuglsang, Hansen, Mergel, and Rohnebaek, 2021; Ruijer and Meijer, 2020). In innovation labs, living labs, or hackathons, public, private, and civil society actors with different skills, competencies, and specialties work collaboratively to develop solutions to predefined problems (Kvamsås, Neby, Haarstad, Stiller-Reeve, and Schrage, 2021).

Further, the concept of *digital government* is becoming more prevalent. In contrast to e-government, digital government is more multifaceted and multilayered (Janowski, 2015). This is also why *digitalization* is increasingly being replaced by *digital transformation*, which takes a more comprehensive view of this process and changing the ways administrations work: user-centricity, collaboration, and partnership among government, public, and private organizations become key and are placed high on the agenda. Internally, the aim is to change the inherent bureaucratic structures and culture to enable and drive digital transformation. Externally, the focus shifts from purely digitalizing services and processes to engaging citizens more effectively in the democratic process and

government decision-making, creating public value (Carbo and Williams, 2004; Gil-Garcia and Pardo, 2005; Layne and Lee, 2001; Lee and Kim, 2007).

Government becomes *agile* and *smart*

The next attempt in the modernization of public administration concerns increasing the speed of government's adaptiveness and improving the decision-making appropriateness and accuracy. Governments are striving for a more open, inclusive, and innovative administration and are employing user-driven and data-driven approaches to improve citizens wellbeing, add value, and build trust and legitimacy in public institutions (OECD, 2020).

Some efforts to achieve this are labeled under the umbrella term *agile government*, i.e. a government that flexibly and swiftly adapts to the needs and requirements of citizens, businesses, and other government organizations, as well as those of its own employees. The use of agile methods in government is intended to change the rigid organizational structures and culture, resulting in higher adaptability (Mergel, Gong, and Bertot, 2018).

Agile represents the antithesis of traditional, bureaucratic organizations: this new governance type requires new and flexible forms of collaboration in interdisciplinary teams that work together to find solutions that are tested and adjusted swiftly if the desired effects are not achieved. For instance, agile methods are used when redesigning and digitalizing public services, especially in the initial requirements analysis. Thus, the needs as well as pain points of the users are captured, and adaptations are made in small cycles and in collaboration with them. Agile approaches bring together very different expertise, connect people inside and outside an administration, and trigger learning processes (Mergel, Ganapati, and Whitford, 2021).

Smart government is an attempt by a government organization to use data and digital technologies to address citizens' needs and demands and respond to them in agile, responsive, or even proactive ways (Guenduez, Mettler, and Schedler, 2020). On the one hand, *smart* means harnessing the potentials of new technologies such as the Internet of Things (IoT), sensor systems, blockchain, drones, or artificial intelligence (AI) to perform governmental tasks and, simultaneously, reduce the uncertainties and dangers associated with them. On the other hand, *smart* refers to more informed decision-making based on the analysis of big data generated primarily by new technologies.

Thus, smart government is characterized by having more accurate, near-real-time information about social problems, allowing one to make evidence-based decisions and to rapidly develop solutions (Schedler, Guenduez, and Frischknecht, 2019). The information that governments rely on to develop their policies is generated by both private devices (e.g. smartphones, smart meters) as well as IoT and sensor systems in public spaces. Above all, combinations of different data open up new possibilities for governments.

The need for quick and informed intervention is particularly evident during the Covid-19 pandemic. Governments must swiftly respond to new health, social, and economic challenges, basing their decisions on real-world data such as infection and hospitalization rates, and using smart technology to conduct contact-tracing, for instance. However, the wealth of information about citizens also raises fears and concerns of a Big Brother society. Governments handle technology and data differently: while China, for instance, takes a technology-centric approach to combating the pandemic, Western countries pursue a much more people-centric approach, allocating significant importance to individual privacy and freedom (Kummitha, 2020).

Drivers and motives

Technology has been a key driving force behind many government reforms over the past decades and plays a main role in the modernization of public administration. By adopting new ICTs, governments become *electronic*, *digital*, and *smart*. Thus, the development of digital government is closely interwoven with that of technology. However, many non-technology factors also have key roles. The evolution of digital government is influenced by the larger social, economic, and political environment (Janowski, 2015). In this context, increasing external expectations and demands of services provided by governments, especially from citizens and businesses, are repeatedly emphasized as powerful drivers.

Citizens and private businesses expect and demand that public services be inclusive, efficient, reliable, intuitive, and available at any

time and from anywhere (OECD, 2020). In addition to environmental expectations, governments also face internal pressures, including cost reduction, improving efficiency, and enhancing organizational agility. Overall, there are both internal and external drivers of digital transformation in public administration (Mergel, Edelmann, and Haug, 2019).

A decision to adopt and improve digital government is motivated by various factors. Overall, motives can be broken down into short-term outputs (e.g. new and improved services, new products, improved processes) and long-term outcomes and impacts (e.g. improving transparency and accountability of government, establishing trusting government–citizen relationships, creating public value, achieving good governance) (Heeks, 2001; Kim, Kim, and Lee, 2009; Mergel et al., 2019).

Today, after several decades of development, digital government is associated with a wide range of objectives. This is best illustrated by the objectives associated with smartness: smartness reflects the ambition of government to become integrative, innovative, evidence-based, citizen-centric, sustainable, creative, effective, efficient, entrepreneurial, open, resilient, and technology savvy while fighting inequality and fostering citizen engagement (Gil-Garcia, Zhang, and Puron-Cid, 2016). While the digital transformation of the public sector promises change, it is hard to say whether the desired improvements are being achieved. Compared with short-term goals that lead to specific products or services, long-term effects are inherently hard to measure. Achieving the long-term objectives requires changes in bureaucratic structures and culture, which themselves are long-term objectives. Technology is a trigger and catalyst for change. However, to achieve long-term impacts, profound organizational transformation as well as continual revision and improvement is necessary (Mergel et al., 2019).

Barriers and success factors

There are several challenges to the successful implementation of digital government. The numerous barriers are well documented in the literature. For e-government, these challenges include but are not limited to the lack of technical, personal, and financial means (Moon, 2002). Further, in their meta-analysis, Savoldelli, Codagnone, and Misuraca (2014) found three barrier groups to e-government adoption: technological and economical, managerial and organizational, and institutional and political. Concerning open government, Janssen, Charalabidis, and Zuiderwijk (2012) described a number of institutional barriers to making government data public, including an unclear tradeoff between public values, a risk-averse culture in public administrations, and conflicts of interest between local organizations and citizens. In their study of barriers to smart government, Schedler et al. (2019) identified six barrier groups: a lack of legitimacy, a lack of legal foundations, a lack of policy coherence, a lack of technical infrastructure, cost-benefit considerations, and a lack of innovation capacity.

A look at the research reveals that the findings on barriers are very similar across all the stages of digital government development. This indicates that the development of digital government faces relatively similar barriers from its outset. Frequently cited economic, institutional, political, or organizational factors are not only identified as barriers to the adoption of e-government (Gil-Garcia and Pardo, 2005; Savoldelli et al., 2014) or the implementation of open data initiatives (Janssen et al., 2012), but also to the introduction of smart government initiatives (Schedler et al., 2019).

However, the context influences which challenges become particularly salient. Different contexts lead to differences in the barriers. Thus, developments in digital government differ between and within countries depending on the context (Janowski, 2015). For instance, developing countries face different barriers when implementing digital governance than do developed countries. Poor technical infrastructure and low access to computers and the Internet is much more prevalent in developing countries than in developed ones, posing a major challenge to developing countries (Ashraf, Hanisch, and Swatman, 2009; Sharma, Metri, Dwivedi, and Rana, 2021). Significant financial investment is often required to develop the technological infrastructure needed for the implementation of digital government.

The research into the implementation of digital government has focused not only on barriers but also on success factors. Studies in this area have identified an extensive catalogue of factors, from e-government to smart government (Gil-Garcia and Pardo, 2005; Guenduez, Singler, Tomczak, Schedler, and Oberli, 2018; Pardo and Tayi, 2007).

In a recent study, Gil-Garcia and Flores-Zuniga (2020) provided a comprehensive list of success factors for the implementation of digital government. Their model identifies external conditions (including political, economic, and social factors), implementation variables (including organizational characteristics and institutional arrangements), characteristics of the digital government services being offered, user perceptions of usefulness and ease-of-use, and the de facto use of digital government services as critical to digital government success. Specifically, external conditions impact on the implementation of general organizational characteristics and institutional arrangements, which themselves influence the delivery of digital government services. The adoption of these services depends on the perceived usefulness and ease-of-use by the users of digital government services. These two adoption criteria are expected to impact on the de facto uses of digital government services.

Success factors and barriers are two sides of the same coin; addressing the barriers to and increasing the success factors for digital government mostly go hand in hand (Gil-Garcia and Pardo, 2005; Guenduez et al., 2018; Schedler et al., 2019).

Outlook

Digital government is undergoing continual change. The different paradigms I have outlined have evolved along with the new innovative technologies, methods and approaches of their time to respond to social, economic, and political needs and demands. Starting from its focus on efficiency, effectiveness, and improvement of services, digital government has evolved into a comprehensive and complex endeavor with multiple objectives. The changes resulting from technologies, but also from the requirements and expectations of citizens, businesses, and politics, are playing increasingly important roles. The challenge for governments is to keep pace with these changes and to continually adapt the organizational structures and culture to the changing requirements.

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See also

Innovation in the Public Sector, Open Innovations

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