Scientific Research Publishing

Beijing Law Review, 2023, 14, 1352-1371
https://www.scirp.org/journal/blr
ISSN Online: 2159-4635
ISSN Print: 2159-4627

Public Administration and Innovation: E-Government in the International Perspective

Leandro Sarai[1], Carolina Zancaner Zockun[2], Flávio Garcia Cabral[1]

[1]AGU School, Brasilia, Brazil
[2]Administrative Law, Pontifical Catholic University, São Paulo, Brazil
Email: leandro.sarai@agu.gov.br, czockun@pucsp.br

How to cite this paper: Sarai, L., Zockun, C. Z., & Cabral, F. G. (2023). Public Administration and Innovation: E-Government in the International Perspective. *Beijing Law Review, 14,* 1352-1371.
https://doi.org/10.4236/blr.2023.143074

Received: June 13, 2023
Accepted: September 16, 2023
Published: September 19, 2023

Abstract

The text seeks to understand the relationship between innovation and Public Administration and, based on this understanding, promote a reflection on Brazil's transition to "Digital Government" (e-Government). The questions posed in the research were: Would there be other possibilities for innovation? What factors help and hinder the implementation of Digital Government? What lessons can be learned from this study? Through the hypotheti-co-deductive and inductive methodology, and from an individual analysis of countries that are ahead of Brazil in the World Bank's GovTech Maturity Index (GTMI), it was possible to confirm the hypothesis that there are other models of Digital Government, as well how to ascertain factors to ensure your implementation success. The research also opens space for further research on digital government.

Keywords

Digital Government, International Comparison, GovTech Maturity Index (GTMI), E-Government, Implementation

1. Introduction

Brazil recently enacted Law No. 14, 129, of March 29, 2021, which provides, among other provisions, on "principles, rules and instruments for the Digital Government". Among the aspects regulated by the Law are the principles and guidelines for the digitization process; the digital form of identification of public service users; the notion of government as a platform; electronic domicile rules; encouraging innovation; and the form of control of public services in this new context (Cabral & Sarai, 2023: pp. 952-955).

Among the scientific questions raised by this innovation in the legal system, three were selected: Would there be other possibilities for configuring Digital Government? What factors help and hinder the implementation of Digital Government? What lessons can be drawn from this research?

To answer the first question, the study will use the hypothetico-deductive methodology. The hypothesis that arises is that there are other configuration possibilities. The second and third questions will be approached mainly from the inductive method (Mezzaroba & Monteiro, 2009: p. 62, 68).

To understand this innovation, assess opportunities and challenges, as well as factors that help and hinder the implementation of "Digital Government", it is useful to resort to international experience. By the hypothetico-deductive method, a single country that brings a different configuration of Digital Government will already allow answering the first question. On the other hand, using the inductive method, based on the analysis of some countries, it is intended to assess generalizations for the two other questions, but also to shed light on the first.

This study will make it possible to verify whether the very concept of Digital Government varies from country to country, opening possibilities not only for the improvement of the national order, but even for the implementation of innovations.

The structure of the work is organized as follows: In the next section, the concept of e-Government is addressed, summarizing its key features, as well as the concerns involved with the theme, and the importance of the international perspective is already demonstrated. This section also justifies the reason for not using only a Comparative Law approach.

In Section 3, the criterion for selecting countries to be analyzed is justified and the Digital Government characteristics in chosen countries are examined.

Section 4 brings together general aspects of Digital Government, which can be better understood from the analysis undertaken in the previous section. Among them are the challenges and factors that collaborate and hinder the implementation of Digital Government.

From the exam, some important lessons for the Digital Government successful implementation emerge as a result: need, investment, planning, motivation, information, training, legislation and contingency.

The conclusion brings together the results obtained, answering the questions raised, in addition to raising others for further research.

2. A First Approach: The Fluidity of the E-Government Concept

The Public Administration movement towards digitization and the use of new technologies is not something exclusive to Brazil. The World Bank, by the way, has coined the term e-Government to refer to this phenomenon. It would encompass government use of information technologies, which have the ability to transform relationships with citizens, businesses and other government agencies.

Also according to the World Bank, these technologies would have several uses, such as improving the provision of public services, empowering citizens through information, improving relationships with companies and improving public management, all contributing to reducing corruption, increasing transparency, reducing costs and improving collection (The World Bank, 2015).

There are those who believe that the benefits arising from e-Government are divided into two groups: improving public management and increasing participation (Nixon & Koutrakou, 2017: p. 248; Lips, 2017: p. 43). However, it seems more appropriate to organize the factors into four groups. In the first place, as already mentioned, information technology allows greater access to public management information by citizens and control agencies, enabling greater control[1] and generating incentives to improve management. Second, technology enables better management of public resources, regardless of the role of social and institutional control. Third, and perhaps most importantly, technology enables better delivery of public services. Fourth, and no less important, it presents itself as a tool at the service of democracy, as a voice and even a means of voting, should this be regulated.

Miriam Lips, discussing the European Union, points out that the Ministerial Declaration presented at the 2005 Manchester e-Government Conference would have brought making citizen-centric services to improve their quality of life[2], reducing administrative costs and taxes paid and increasing citizens' trust in government and democracy as this innovation's implementation objectives (Lips, 2017: p. 33; EU, 2005).

However, not all innovations can benefit citizens. Technologies can raise concerns about privacy and other people's rights, which can be unduly harmed by other subjects or even by the government (Margolis et al., 2017: p. 12).

In regard to other people, the biggest concern is the use of the internet to cause harm to property and people. For some, the extreme of this abuse is in cyberterrorism, which, by the way, would be something different from the use of the internet by terrorists. The concept of cyberterrorism would normally be linked to attacks or threats of attacks through computers with political, religious or ideological objectives and capable of causing fear and significant damage to people and property, including data or the operation of equipment, that is, effects comparable to traditional means of terror. Thus, attacks with mere eco-

[1]On technology and state control activity, see Cabral & Sarai, 2023: pp. 940-943.

[2]This focus of administrative activity and public services on the citizen represents the key idea that conforms the principle of good administration. Juarez Freitas defines it as that fundamental right to efficient and effective public administration, "proportionately fulfilling its duties, with transparency, sustainability, proportional motivation, impartiality and respect for morality, social participation and full responsibility for its omissive and commissive conduct" (Freitas, 2007: pp. 20-21). In fact, the highlight of the good administration legal figure is precisely dealing with various principles that individually have their own autonomy and contents, but in a joint and coordinated way, in the sense that it is not enough for the Administration to meet one or the other, separately. This series of principles that structure good public administration has, in the first and last measure, the scope of assisting those under administration. It is a synthesis principle that has the citizen as its center of action (Cabral & Sarai, 2023: p. 159).

nomic effects or targeting non-essential services would be excluded (Conway, 2002; Denning, 2001). The notion of cyberterrorism is useful because it sheds light on situations that, although less serious, may be of interest to the Administration, such as offenses subject to state police power and even public security issues.

Focusing on the issue of terrorism also makes it possible to reflect on the fact that the fear it provokes ends up serving as a pretext for government abuses. This is because, due to the fear that terrorism provokes, people end up being convinced to allow the government, for example, to monitor their communications. Indeed, this monitoring can enable the government to detect any communication between two terrorists planning an attack (Swire, 2006). However, for this detection to be possible, the government needs to monitor every single communication, including those of law-abiding citizens, and the data and communications of these individuals would become available to the government. That is to say, with the excuse of ensuring people's safety, the government may eventually abuse its power by unduly invading the privacy of these same people (Rawal, 2017: p. 56). It would not be different with the use of common cybercrimes as justification for greater government intervention. The concern is increasing because advances are reaching the point where it is practically possible to read people's minds, that is, to know what people think, even when they don't want to talk. For no other reason, recently Chile became the first country with the intention of including in its Constitution the right to "psychic" integrity alongside physical integrity (República De Chile, 2021; Vicky, 2022).

Therefore, the big question that society needs to face is how to find the ideal balance between security and freedom.

The fact that the internet makes it difficult to identify interlocutors also raises reflections on the need to establish digital identities (Lips, 2017: p. 41). Interestingly, the possibility for people to act and express their will digitally from anywhere is already beginning to raise questions about the criteria even for defining citizenship, that is, in addition to the traditional criteria of *jus sanguinis* and *jus soli*, the digital world makes one consider the adoption of *jus informationis* (Lips, 2017: p. 44).

The fact is that despite the difficulties and risks brought by innovations, they are necessary to overcome several challenges, which brings to mind the investigation of factors responsible for encouraging or inhibiting innovations. In this regard, the point recalled by Paul Nixon is interesting, in the sense that, while in the private sector the innovator would be directly rewarded for innovation, in the public sector this reward would go to the State, which would remove the incentive for innovators within the Administration (Nixon, 2017: p. 23). This point is made by Elaine Kamarck (2004: p. 2), however, obviously it is a perception that cannot be generalized, even because nothing prevents the creation of incentives so that there is also innovation in the public sector. It is enough to see, for example, the legal figure of the competition, already foreseen at least since article 144 of Decree-Law No. 200, of February 25, 1967, which made it possible

to establish prizes for winners in the elaboration of projects. Now, in Law No. 14, 133, of April 1, 2021, the figures of the Competitive Dialogue, the Expression of Interest Procedure and the efficiency contract, may also have the potential to be important instruments of innovation. Likewise, the Digital Government Law (Law No. 14, 129, of 2021) brings the possibility for public entities to establish innovation laboratories, open to the participation and collaboration of society for the development and experimentation of concepts, tools and innovative methods for public management, the provision of public services, the processing of data produced by public authorities and citizen participation in the control of public administration (article 44).

Paul Nixon also draws attention, from the European perspective, to two worrying aspects with the e-Government implementation. The first is that the reduction of costs with this implementation cannot occur with the simple transfer of these costs to the citizen, especially when the citizens' economic conditions are different, as this would represent a kind of regressive taxation, burdening more heavily those with less contributory capacity. The second aspect is that there is no point in transferring services and assistance to the internet if the population does not have access to such services, due to lack of knowledge or material means to do so (Nixon, 2017: p. 28). In this case, the transition or implementation of the digital service would lead to the exclusion of the citizen.

Still in Europe, if we look at its main economy, Germany, a common problem of its public service has long been noticed: its governmental structure was complex and citizens had no way of knowing which body or authority would be competent to assist on their demands (Siegfried, 2017: p. 96). This is the problem that gives rise to the idea of single digital platforms, that is, a single portal for all government services, which makes it easier for citizens to find information on how to be assisted, something that in Brazil is already starting to be put into practice with Gov.br Website. This model is even foreseen as a guideline of the Digital Government brought by Law No. 14.129, of 2021, which provides for the availability of access to information and public services on a single platform (article 3, item II).

The vision of e-Government in Germany starts simply with the concern to offer online services to citizens, but evolves to seek the modernization of the Administration, even raising the question of which services should be provided by the State or by the private sector. It is also questioned whether or not face-to-face service is needed and the conception of the service location, when provided remotely (Siegfried, 2017: pp. 97-98). Another aspect related to this point concerns the decision between producing its own Information and Communications Technology (ICT) solutions or contracting them from the market. On the one hand, procuring from the market, depending on its format, may waive the need to worry about the constant updating and training of civil servants. However, on the other hand, it leaves the Administration dependent on the market, which often does not have adequate solutions for the reality of the public service (Kuhlmann et al., 2021: p. 332).

The fact that Germany is a federated state, like Brazil, also shows how important federative cooperation is in the implementation of a system that works in this context of autonomous entities and that allows dialogue between them and the standardization of their services. This cooperation is determined by article 91-c of the Basic Law of the Federal Republic of Germany (*Grundgesetzfür die Bundesrepublik Deutschland*) (Federal Republic of Germany, 2020). Another fact that cannot go unmentioned is that, although a large part (93%) of the German population is active in social networks and online shopping, only 5% used digital public services until around 2005. The cause seems to be distrust of the government and the need for additional equipment, such as tokens for digital identification (Kuhlmann et al., 2021: p. 333). This shows the importance of knowing the culture and expectations of the population so that there is no waste or misallocation of public resources with solutions that will remain idle or without adequate use.

An initiative recently adopted in Germany, which deserves mention, concerns the "Open Government", which only became possible precisely because of the current technological resources. According to the OECD, this initiative would be a culture of governance with innovative and sustainable policies based on principles of transparency, accountability, control and social participation, which foster democracy and inclusive growth (OECD, 2016: pp. 20-22).

It should be noted that, when looking at just one country, many aspects have already been of interest to illuminate Brazil's path in the modernization of its Public Administration. Imagine then if it were possible to analyze all countries. It turns out that such a deepening would escape the scope of the present study. Furthermore, given the speed with which innovation moves, by the time the analysis of all countries was ready, their situation would already have changed. It is essential, therefore, that only a few are chosen. And it is also necessary that some selection criteria be chosen.

Before determining the countries that will be studied, it is important to wrap up this topic with the main characteristics of digital government. The first one is digitalization itself, which means transforming paper-based document archives into digitized documents, as well as shifting work processes to computerized routines. This transition of processes to the computer allows for better management and process automation. The second key characteristic arises from the internet, enabling digital communication that allows for the provision of numerous public services without the need for citizens to physically visit a public building. It is precisely this ease of access and remote interaction that also enables society to exercise control over government activities and facilitates popular participation in politics.

3. Selection Criteria

In addition to the criteria for selecting countries, it is necessary to establish what will be analyzed in each country.

At first, the thought was to take a Comparative Law approach. From this

perspective, it would be necessary to address the legislation of each selected country to ascertain the main norms related to the transition to digital government. In Germany, as seen, even its Fundamental Norm already has a specific device related to the subject. In Italy, by the way, curiously there is even a Digital Administrative Code (Itália, 2005) to deal with the computerization of relations between the Public Administration and citizens and companies. It turns out that, as each country takes different paths in the digital transition, it would be difficult to survey the relevant norms, especially when it is noted that even in Brazil this task is arduous. More than that, as innovation is increasingly accelerated, such a task could be useless, not least because the portrait obtained would become obsolete very quickly.

Thus, instead of adopting a perspective of Comparative Law, it was preferred to seek to understand the context as a whole of the experience of the selected countries, either in terms of adopted strategies, or in terms of specific solutions that prove to be relevant.

All these questions raised so far only serve to show how the impacts of technology represent a worldwide phenomenon. For this reason, before understanding the impact of technology on Brazilian Public Administration, it is convenient to make this brief tour around the world to verify some international experiences, which may serve to forecast and prepare for possible situations that may eventually arise here, in addition to offering solutions and comparative elements.

In the next sections, it is intended to organize an account by country. As far as possible, initiatives that are present in more than one country will not be repeated.

To select the countries, the World Bank's GovTech Maturity Index (GTMI) was used (Dener et al., 2021). From this index, the first six countries were chosen: South Korea, Estonia, France, Denmark, Austria and the United Kingdom. It should be noted that in this ranking, which evaluated 198 countries, Brazil appears in seventh place, which is spectacular, considering the continental and demographic dimensions of the country in comparison with the others (Wikipedia, 2022a; 2022b). Indeed, the combined population of all these six countries is something around 200 million people while Brazil alone has a population of over 215 million people. As for territorial space, all six countries together have a territorial area of approximately 980 thousand km^2, while Brazil has more than 8.5 million km^2. These data give some idea of what Brazil's position in the ranking represents.

The GTMI looks at four aspects: a) central government systems; b) service provision; c) citizen participation; and d) institutional environment for the promotion of digital government. It was developed to fill a gap in existing indexes, which alone cannot capture all progress in these key aspects of analysis. The scope of the GTMI is guaranteed by the use of 48 indicators (Dener et al., 2021: p. ix; xiii-xiv).

The choice was to use this index because it is more recent and more comprehensive (including taking into account other indices such as the United Nations)

(Dener et al., 2021: p. xiv).

3.1. South Korea

South Korea has been one of the best evaluated countries in terms of the association between public administration and information and communications technologies (ICT). User acceptance and satisfaction are essential, as well as the political will of leaders to make everyone aware of the importance of innovation. Despite the change of administrations, the continuous search for improvement in this country occurs for a series of reasons such as a complete infrastructure already in 2000, a national policy that influences innovations, a cultural environment that continuously seeks to increase speed and a social demand for policies that serve this culture (Chung et al., 2022: pp. 1-2).

But what would be the reason for Korea to stand out so much? To provide a comprehensive explanation, Chung, Choi and Cho traverse the last 30 years and use a framework of analysis based on the new institutionalism, that is, on the theoretical approach that focuses on the importance of institutions to promote or hinder development. In this case, the authors mainly used historical institutionalism, assuming that in addition to the institutional context, the past would also influence subsequent facts (path dependence). Thus, they integrate the institutional context and the role of the actors as explanatory factors, that is: a) political characteristics would constitute an environmental factor that would influence the institutional context; b) the president would be a key player in overcoming institutional obstacles; and c) each government agency would also represent an actor in the implementation of digital government and could even advance the institutional context through interaction with other agencies (Chung et al., 2022: pp. 2-3).

From the point of view of political conditions, therefore, a national agenda focused on the implementation of digital government is essential. The president, in turn, needs to have the political will and commitment to enforce the national agenda, setting an example and forcing a change of culture in the Administration. Finally, cooperation between government agencies is essential, and in Korea the fact that there is an agency in charge of ICT policy, independent of other ministries, seems to have had an important role in the implementation and evaluation of this policy (Chung et al., 2022: pp. 3-4).

3.2. Estonia

Close to 99% of Estonia's public services are available online 24/7, with the exception of services relating to marriages, divorces and real estate transactions. One of the great achievements of this country is related to interoperability (Santos, 2022: p. 1; 37).

According to Cristiane Rodrigues Iwakura, **interoperability** is the possibility of operating systems working together, including the exchange of information (Iwakura, 2020: p. 122). Göran Goldkuhl (2008: p. 1) considers interoperability

as the greatest challenge for the success of e-Government. It may seem irrelevant, but when each agency adopts its own digital solutions independently, there is a great risk that the solutions will not interact. As a result, all agencies end up having to keep data in redundancy, generating rework and harming the Administration and, mainly, the citizens.

Estonia's solution to ensure interoperability, considered state-of-the-art by João Pedro Rego Santos, was to adopt a national identification card with a microchip containing all encrypted personal data. With this card, using a reader or even a cell phone, Estonian citizens can access all services on the Government website, Eesti.ee (Santos, 2022: p. 2). In addition to the digital identity, Estonian citizens also have a physical identity card and digital signature, which allow, among other things, even to vote (Santos, 2022: p. 36). As a matter of fact, it is the first country to allow voting over the internet and, curiously, the motivation for that was to draw younger people, starting from the premise that they would be more interested in politics if there was access via the internet (Ernsdorff & Berbec, 2017: p. 171; 178). Estonia also stands out for using Blockchain technology in identities (Schwab, 2016: p. 150).

A peculiar feature of Estonia is the X-Road. It is a technical and organizational environment that allows the exchange of data not only between government agencies, but also between citizens and companies (Republic of Estonia, 2014). At X-Road, each citizen establishes which personal data will be stored and with whom they will be shared (Santos, 2022: p. 36), that is, it is an infrastructure that at the same time, guarantees ease of access for those who legitimately need the data and also protects such data from improper access.

In addition to all this structure, Estonia also guarantees WiFi for 100% of the population (Santos, 2022: p. 37). Finally, it should be noted that Estonia is the best-evaluated country in Europe's ranking in terms of providing digital public services (Santos, 2022: p. 38) and that much of this success was due to the large investment made in this area. By 2002, the country was already investing something around 5% of GDP in ICT (Krull, 2003).

3.3. France

In France, e-Government is also conceived from three perspectives, such as: a) provision of digital services; b) use of technology in public management; and c) democratic participation via digital. However, the application of these technologies appears to have a consumerist and professional bias, that is, a view from the private sector, which would not understand the complexity of the public system (Greffet, 2017: pp. 75-76).

In 1998, the Governmental Action Program for the Information Society (*Programmed' Action Gouvernemental pour la Société de l'Information, PAGSI*) was instituted, to last until 2007, with the aim of expanding access to information about public services and own services (*République Française*, 2021). Another noteworthy initiative, within the scope of digital services, is VITALE, a national computerized national health insurance system implemented in 1998, which al-

lowed quick reimbursement through the use of an electronic card instead of filling out and sending of paper forms. This system reduced the reimbursement time from two to three weeks to about five days (Greffet, 2017: p. 76).

Between 2004 and 2007, the Electronic Administration Plan (*Plan ADministrationÉLEctronique, ADELE*) was created to implement digital government and the modernization of the State. Starting in 2008, the Digital France Plan sought to improve access to public websites, allow online payments and improve interoperability between agencies and their data. In 2016, France implemented France Connect[3] with the idea of allowing users to access all services using a single account and password. That year, the Lemaire Law was also enacted, aiming to establish a "Digital Republic" (*Républiquenumérique*), mainly by granting access to public data of general interest, including results of scientific research, in addition to protecting people's privacy, among other measures. (*République Française*, 2019).

The word used for digital in France is curious: *numérique*. One of the meanings of the word "digital" is to be composed of digits, that is, numbers. And this is most evident in the French language.

An interesting French initiative is that of "state startups", which seeks to select and hire entrepreneurs of general interest (*entrepreneurs d'intérêtgénéral, EIG*) through public notices to work for 10 months together with public agents in solving challenges proposed by the Administration (*République Française*, 2022). It is somewhat reminiscent of the Brazilian figures from the Competitive Dialogue and the Expression of Interest Procedure. Other measures being implemented include the adoption of artificial intelligence in the provision of public services, regulation of remote work for public agents, dematerialization (digitization) of data and procedures, and a cloud strategy for the State (*République Française*, 2021).

Some recommendations made for that country by YannAlgan, Maya Bacache-Beauvallet and Anne Perrot are relevant for use in Brazil. According to them (Algan et al., 2016: pp. 1-12): a) an open data policy is essential, including those related to scientific research and without prejudice to the protection of personal data of data providers; b) such data must be provided not only by the government, but also by the population, in a collaborative work; c) population participation is also important for the improvement of public services in general, in addition to the adoption of modern methods of implementing projects (usually called "agile" methods); d) one advantage of these methods, among others, is the possibility of discovering unfeasibility already in the execution, thus avoiding waste of public resources; e) such methods, instead of providing a large project entirely at once, deliver small solutions, ready for use and experimentation; f) they must be associated with a culture of experimentation, which allows for errors and continuous improvement; g) the public will need to be trained, supported and encouraged to use the new digital solutions; h) it is necessary for the government to hire technology professionals, such as computer

[3]See https://franceconnect.gouv.fr/.

scientists, programmers and data scientists, to update and improve its services; and i) it is essential that there be openness to a public and political debate about the forms of public service and their purpose.

3.4. Denmark

In the 2020 United Nations E-government Survey, Denmark ranks first among 193 members of the United Nations in providing online services to citizens and citizen participation in politics (United Nations, 2020).

Four cases of Danish success in the implementation of e-Government were in taxation, health sector, treatment of demands and public procurement. A peculiarity of this country was the fact that, around 2007, Denmark had practically 60% to 70% of its GDP allocated by the government and practically 1/3 of its economically active population employed in the public service (Andersen et al., 2017: p. 103).

A study by Andersen, Henriksen and Rassmussen, also based on institutional theory, as well as on the above topic of South Korea, brings important aspects to explain the success of digital government in Denmark. The analysis scheme used by them is based on the premise that institutional intervention can occur in two ways: a) through initiatives to influence behavior, such as the dissemination of knowledge, for example; and b) through regulation, which directly affects expected behaviors. In addition, this scheme also distinguishes actions into two types: a) direct: that directly target the implementation of e-Government, such as, for example, the establishment of protocols for certain user groups; and b) indirect: that seek to encourage the use and acceptance of e-Government in a smoother way, e.g., through the implementation of electronic public procurement (e-procurement). Direct and indirect actions can involve four forms of intervention: a) regulation and legislation: norms prohibiting or obligating; b) economic incentives: rewards and punishments; c) dissemination of knowledge: awareness campaigns and information to influence; and d) organizational management: government work process (Andersen et al., 2017: pp. 103-105).

According to the authors, when applying this scheme in the scenario of Denmark, the adoption of e-Government was analyzed in the four cases mentioned at the beginning of this topic. In general, the main change was the adoption of electronic communication. Thus, citizens' demands to the government and between government agencies began to be sent by e-mail. Proposals submitted in tenders and the sending of information for tax purposes also became electronic. Finally, in the health sector, discharge letters, prescriptions and test results were digitized. In the period from 1996 to 2002, almost all initiatives began through the dissemination of knowledge, but soon regulations began to be adopted determining the mandatory use of electronic documents in some cases. The successful implementation of e-Government, however, was only possible because Denmark already had a long history of technology diffusion among the population and even in the public sector, so that its model cannot be transplanted without awareness of this precondition requirement (Andersen et al., 2017: pp.

116-117).

Another study on Denmark points out that co-production was a key factor in Danish success. Co-production would consist of activities involving traditional and non-traditional areas of services and even activities unrelated to the provision of services, but linked in some way to public services and public policies. In addition, co-production also encompasses a pluralistic conception of public service based on relationships between multiple actors for formulating these policies and providing these services (Scupola & Mergel, 2022: p. 2, 8).

This study found some challenges for the implementation of digital transformation in the public sector with the use of co-production, including budgetary problems, reluctance of users to dedicate time in the planning phase, difficulties in obtaining data and services from different authorities in the distribution phase, and difficulties in managing shared responsibility in the management and evaluation phases. The main contributions of this study are the identification of four values created by the digital transformation and their empirical evaluation. Such values include, for example, providing personalized services, minimizing the burden of the State on business, facilitating business, offering a common platform for companies to access public data, lower public spending and time savings for authorities and companies (Scupola & Mergel, 2022: pp. 8-9).

3.5. Austria

Austria is among the top countries in Europe in four aspects analyzed by the GovTech Maturity Index: a) concern for the user; b) transparency; c) cross-border access; and d) infrastructure. The country has a website for innovation and public sector training and a platform for exchanging experiences among innovators, the GovLab Austria (Dener et al., 2021: p. 54).

As well as the Brazilian government website "Gov.br", Austria has the westerreich.gv.at portal so that its citizens can find help with administrative issues and information about the Public Administration.

Austria has a specific ministry to deal with the issue of government digitization, the Federal Ministry for Digital and Economic Affairs (*Bundesministeriumfür Digitalisierung und Wirtschaftsstandort, BMDW*), which, in addition to being concerned with innovation in the government sector, also supports the economic sector, with examples of good practice in digital transformation, as well as providing a legal regime favorable to digitization and providing adequate financing lines to attract investments (Republic of Austria, 2022a).

The country has a specific Law to deal with digital government, which has the following principles: a) freedom of choice of means of communication between citizens and authorities; b) protection and security of personal data; c) accessibility for people with disabilities; d) the "once one principle", according to which citizens need to give their personal data only once to the government, so that, in any future contact, the government is obliged to access the data provided, with the holder's consent, thus eliminating the need for the citizen to keep presenting documents every time he needs to formulate a demand to the State; and e) the

"one-stop principle", which seeks to ensure that citizens do not need to keep looking for the responsible body or place to meet their demands (Republic of Austria, 2022b).

The Austrian digital government strategy also has important principles: a) focus on the citizen; b) convenience through efficiency; c) confidence in digital services and security in the functioning of the system; d) transparency, including in the systems development process; e) accessibility; f) usability, that is, ease of use; g) data security; h) cooperation between all levels of government; i) sustainability through the modular structure of the systems, allowing the updating of functionalities regardless of the functioning of the system as a whole; j) interoperability; k) technological neutrality, that is, independence from a single technology; and l) commitment to maintaining a leading position in Europe and the world (Republic of Austria, 2022b).

The levels of interaction between citizens and the Austrian digital government cover not only the level of information, which merely represents the provision of information on the government portal, but also communication with the citizen, carrying out transactions with guaranteed authenticity and personalization with the aim of making communication more accurate (Republic of Austria, 2017: pp. 10-11).

An important actor and partner of the Austrian central Administration is the Austrian Federal Computing Center or, in German, *Bundesrechenzentrum-BRZ*. It is a public company, fully owned by the federal government, which is responsible for developing and implementing ICT solutions (BRZ, 2022).

3.6. United Kingdom

In the United Kingdom, e-Government is viewed from three different perspectives: a) political participation; b) improvement of public services; and c) social and economic inclusion of the disadvantaged, according to Nicholas Pleace (Pleace, 2017: p. 62).

With regard to political participation, technology allows for an easier way of access and communication between voters and politicians. Official communication channels also serve as a source for official pronouncements, to expose the government's side when the media publishes news that is unfavorable to it, and for direct contact between the people and politicians without the intermediation of journalists (Pleace, 2017: pp. 62-63). Although there are already proposals to allow electronic voting, including via the internet (UK, 2009), participation has not yet reached that point, admitting, at most, postal voting (UK, 2022b).

The improvement of public services, in practice, ends up being just a way to reduce expenses while maintaining the level of services. This is done by reducing administrative staff and adopting portals to centralize various services, again as a way to reduce redundant costs (Pleace, 2017: pp. 63-65).

The economic and social inclusion of the underprivileged includes granting access to broadband, in addition to training the population in the use of technology and training and support for employability. However, the refusal to

work, despite the ability to do so, can be subject to sanctions (Pleace, 2017: pp. 65-66).

In March 2022, the United Kingdom announced that it was preparing to implement a national digital identity system (Woollacott, 2022).

Recently, the United Kingdom published a guide for digital, data and technology solutions procurement (Digital, Data and Technology Playbook) (UK, 2022a). This document portrays relevant concerns that must be present in these procurements, arising from common problems that they can generate, such as risks of intrusion, data corruption, obsolescence, loss of warranty and support, among others. Broadly speaking, the important lessons from it are: a) approach based on results and user needs; b) avoid "technological legacy", that is, programs and equipment (software and hardware) that are obsolete, without guarantee and without support; c) constantly updated cybersecurity guarantee; d) ensure sustainability; e) promote the improvement of existing solutions and the creation of innovative solutions; and f) guarantee access and development of micro and small companies. It should be noted that this guide is mandatory for government agencies.

Until 2017, compared to other countries, the United Kingdom had the advantages of being a pioneer in some information and communications technology solutions, the stability of its democracy, the efficient functioning of its public management and the State. However, as weaknesses, there was a high level of bureaucracy, subjection to hacker attacks, security breaches and backwardness in relation to the European Union (Strielkowski et al., 2017: pp. 174-185).

4. Results: Lessons Learnt

The panoramic approach (albeit superficial to a certain extent) taken so far shows how important it is to understand the challenges and factors that favor an adequate transition to digital government. In a recent and extensive analysis, Mamdouh Alenezi points out the main challenges listed by other researchers (Alenezi, 2022).

Among the internal factors, which would be those found within the governmental structure, would be: a) the elaboration of an adequate plan; b) the need to face the organizational structure and culture and the forces that prevent changes; and c) the guarantee of security of the information and the service provided. The external ones, which concern all relationships maintained by the government, would include: a) the need for market expertise, which may be affected by inadequate regulation; and b) the form of relationship with interested parties (stakeholders), notably to allow their participation (Alenezi, 2022: p. 4).

As for the factors that are responsible for the successful implementation of digital government, Alenezi indicates: a) training of public agents; b) knowledge and commitment of leaders; c) adequate public agents' awareness of the importance of the transition to digital technology; d) accessibility, not only for people with disabilities, but for any citizen, in a simple and easy way; and e) establishment of a purpose in the transition to digital government, which should guide

not only public agents in this transition, but also the provision of the service in charge of their department (Alenezi, 2022: p. 5).

Anita Kon, also evaluating factors that positively or negatively influence the implementation of innovations in Public Administration, lists as harmful factors: a) the size or complexity of the environment where the innovation will be implemented; b) professional resistance and risk aversion; c) scale and intensity of the change incompatible with the structure in which it is intended to be implemented; and d) lack of resources. On the other hand, as facilitating or driving elements are: a) the involvement and interest of the agents, if they see an advantage in implementing the innovation, and the political will of the leaders; b) external pressures from public opinion and the media; and c) economic pressures and the need to seek efficiency (Kon, 2017: pp. 489-528).

Analyzing now the exposition of the previous topics and these generic approaches of factors, it is possible to summarize some lessons that are relevant to guide the successful implementation of the digital government, but without repeating what has already been exposed.

It is interesting to note, in the first place, that the classification of the first places in the GovTech Maturity Index ranking does not follow the same classification of the largest world economies.

Perhaps this can be explained by the fact that digitization often results from the search to save resources, something that would not be so pressing in economies with more resources available. The fact that necessity is an important motivating factor can be seen with the innovations that only occurred due to the recent Covid-19 pandemic. Another example of how needs generate innovations is in the case of Germany, where the 2015 refugee crisis spurred the implementation of a control system, which is integrated among the members of the European Union (Kuhlmann et al., 2021: p. 345). Finally, necessity is an important driver of digitization, but that does not mean that it alone can guarantee this process or its success.

Moreover, the factors above indicate that, although developed countries may potentially have an advantage in terms of having more resources available for the implementation of digital government due to their greater financial capabilities, this alone is not sufficient to guarantee success in the implementation.

Another important factor for the successful implementation of digital government is investment. When it was pointed out above that the largest economies on the planet were not necessarily the first in the ranking of digital government, it may seem that financial resources are irrelevant. Quite the opposite. Investment is essential to compensate material and human factors. But here is an extremely important warning: there can only be investment after proper planning. Indeed, public resources are limited and often insufficient for all social demands. When investing in the digital transition, other important demands may not be met. Therefore, to justify this investment, it is essential that it bears good fruit. If the failure in the inadequate implementation of the digital government is something to criticize, it will be even more criticizable if public resources

are wasted.

If need is a factor that drives the transition, motivation is a factor that attracts the resources to make it successful. From the moment that public agents begin to perceive the advantages of the digital transition, motivation comes into play for the sustainability of the process. As an example, the fact that the digital administrative process within the scope of the Brazilian federal government has made remote work possible in the most critical period of the pandemic. The possibility of working remotely was an important incentive for public agents to learn how to operate the new technological resources.

Still regarding motivation, from the moment that the organizational climate improves due to the advantages offered by new technologies, including in terms of saving time and resources, this can have a positive impact on the provision of public service and on the relationship with citizens. The government on duty will be able to reap the rewards in the form of a good evaluation in the elections. This will give government leaders every reason to be committed to ensuring the success of digital government.

In order to have this motivation, it is essential that there is adequate information, in order to clearly show the advantages of digital government. This information also covers the training of public agents and even educational campaigns for the general public. In short, for any party involved, it should be evident that digital government is better than traditional government.

These factors all need to be adequately provided for in legislation, including to ensure uniformity and cooperation between public bodies.

Finally, the digital government must seek to make its functionalities meet all the needs that are already met in the traditional way and go beyond, in addition to bringing contingency plans for problems that only exist in the digital form, such as cybernetic attacks, the power outages and communication failures, among others.

By the way, if there are problems that only exist in the digital government, likewise there are questions that are raised precisely because of the use of new technologies. Hence the importance of addressing how the traditional institutes of Administrative Law are when they collide with these innovations, something that this article proposes as a suggestion for further research.

5. Conclusion

The main characteristics of Digital Government arise from the digitization of document archives and work processes, which allow, through the internet, communication and remote interaction for citizens, including participation in the democratic control of state activity.

On one hand, Digital Government can offer completely new public services. For example, based on a citizen's data and utilizing artificial intelligence technology, it could provide personalized tips and suggestions for a healthy lifestyle. On the other hand, it is undeniable that there will still be services that require

in-person assistance, such as certain medical procedures, including surgical interventions.

Since the first approach of Digital Government abroad, interesting distinctions have already been made.

The analysis of the Digital Government models of the countries that are ahead of Brazil in the World Bank's GovTech Maturity Index (GTMI) ranking opens up perspective for opportunities for improvement in the national model.

The examination of these countries and the specialized literature indicated factors that contribute and that hinder the implementation of the Digital Government, in addition to having made it possible to answer the questions posed at the beginning of the work.

As seen, the hypothesis that there are other models of Digital Government around the world was confirmed.

Regarding the second question, it was found that success depends on planning, training and awareness of public agents, accessibility and establishment of purpose. Social pressure and the involvement of agents, especially government officials, also help in success.

Lessons learned indicate that need is a major catalyst for change. Investment is indispensable and needs to be accompanied by planning, which includes contingencies. Motivation needs to be present to involve the responsible agents. Information about changes, training agents and educating citizens is essential to raise awareness and engage stakeholders. In addition, the legislation needs to be compatible with the implementation phase.

It is hoped that this research will arouse interest in deepening the theme, with new contributions to the progress of the Digital Government.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Alenezi, M. (2022). *Understanding Digital Government Transformation*. https://arxiv.org/abs/2202.01797

Algan, Y., Bacache-Beauvallet, M., & Perrot, A. (2016). Administration numérique. *Notas du conseil d'analysis économique, 34,* 1-12. https://www.cairn.info/revue-notes-du-conseil-d-analyse-economique-2016-7-page-1.htm https://doi.org/10.3917/ncae.034.0001

Andersen, K. V., Henriksen, H. Z., & Rasmussen, E. B. (2017). Re-Organising Government Using IT: The Danish Model. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 103-118). Routledge.

BRZ (2022). *Who We Are*. https://www.brz.gv.at/en/who-we-are.html

Cabral, F. G., & Sarai, L. (2023). *Manual de Direito Administrativo* (2nd ed.). Mizuno.

Chung, C.-S., Choi, H., & Cho, Y. (2022). Analysis of Digital Governance Transition in

South Korea: Focusing on the Leadership of the President for Government Innovation. *Journal of Open Innovation: Technology, Market, and Complexity, 8,* 2. https://doi.org/10.3390/joitmc8010002

Conway, M. (2002). Reality Bytes: Cyberterrorism and Terrorist "Use" of the Internet. *First Monday, 7*. https://firstmonday.org/ojs/index.php/fm/article/view/1001 https://doi.org/10.5210/fm.v7i11.1001

Dener, C., Nii-Aponsah, H., Ghunney, L. E., & Johns, K. (2021). *GovTech Maturity Index: The State of Public Sector Digital Transformation*. International Development in Focus, World Bank. https://doi.org/10.1596/978-1-4648-1765-6 https://openknowledge.worldbank.org/handle/10986/36233

Denning, D. (2001). *Is Cyber Terror Next*? U.S. Social Science Research Council. http://essays.ssrc.org/sept11/essays/denning.htm

Ernsdorff, M., & Berbec, A. (2017). Estonia: The Short Road to e-Government and e-Democracy. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 171-183). Routledge.

EU: Manchester Ministerial Declaration 2005 (2005). https://joinup.ec.europa.eu/collection/egovernment/document/eu-manchester-ministerial-declaration-2005

Federal Republic of Germany (2020). *Basic Law for the Republic of Germany*. In the Revised Version Published in the Federal Law Gazette Part III, Classification Number 100-1, as Last Amended by Article 1 of the Act of 29 September 2020 (Federal Law Gazette I p. 2048). https://www.gesetze-im-internet.de/englisch_gg/englisch_gg.html#p0504

Freitas, J. (2007). *Discricionariedade administrativa e o direito fundamental à boa administração pública*. Malheiros.

Goldkuhl, G. (2008). The Challenges of Interoperability in E-government: Towards a Conceptual Refinement. In *Pre-ICIS 2008 SIG eGovernment Workshop*. https://www.researchgate.net/publication/228903679

Greffet, F. (2017). The Digital Republic: Renewing the French State via e-Government. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State*. Routledge.

Itália. Governo Italiano. Presidenza del Consiglio dei Ministri (2005). *Codice Amministrazione Digitale*. Decreto legislativo 7 marzo 2005, n. 82, modificato e integrato con il decreto legislativo 22 agosto 2016 n. 179 e con il decreto legislativo 13 dicembre 2017 n. 217. https://www.agid.gov.it/it/agenzia/strategia-quadro-normativo/codice-amministrazione-digitale

Iwakura, C. R. (2020). *Princípio da interoperabilidade: Acesso à justiça e processo eletrônico*. Dialética.

Kamarck, E. C. (2004). *Government Innovation around the World*. Ash Institute for Democratic Governance and Innovation. John F. Kennedy School of Government. Harvard University. https://ash.harvard.edu/publications/government-innovation-around-world

Kon, A. (2017). Inovação nos serviços públicos: Condições da implementação do governo eletrônico. *Planejamento e Políticas Públicas PPP, No. 52,* 489-528. https://www.ipea.gov.br/ppp/index.php/PPP/article/view/985/517

Krull, A. (2003). *ICT Infrastructure and E-Readiness Assessment Report: ESTONIA*. Praxis. https://core.ac.uk/download/pdf/11870795.pdf

Kuhlmann, S., Proeller, I., Schimanke, D., & Ziekow, J. (2021). *Public Administration in Germany. Part of: Governance and Public Management*. Springer Publishing. https://doi.org/10.1007/978-3-030-53697-8

Lips, M. (2017). E-Government under Construction: Challenging Traditional Conceptions of Citizenship. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 33-47). Routledge.

Margolis, M. (2017). E-Government and Democratic Politics. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 1-18). Routledge.

Mezzaroba, O., & Monteiro, C. S. (2009). *Manual de metodologia da pesquisa no direito* (5th ed.). Saraiva.

Nixon, P. G. (2017). Ctrl, Alt, Delete: Rebooting the European Union via e-Government. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 19-32). Routledge.

Nixon, P. G., & Koutrakou, V. N. (2017). *E-Government in Europe: Re-Booting the State* (p. 248). Routledge.

OECD (2016). *Open Government: The Global Context and the Way Forward*. OECD Publishing. https://doi.org/10.1787/9789264268104-en https://www.oecd.org/publications/open-government-9789264268104-en.htm

Pleace, N. (2017). E-Government and the United Kingdom. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 61-74). Routledge.

Rawal, R. (2017). Danger Mouse? The Growing Threat of Cyberterrorism. In P. G. Nixon, & V. N. Koutrakou (Eds.), *E-Government in Europe: Re-Booting the State* (pp. 48-60). Routledge.

Republic of Austria. Federal Ministry for Digital and Economic Affairs (2022a). *Digitalisation*. https://www.bmf.gv.at/en/topics/digitalisation.html

Republic of Austria. Federal Ministry of Digital and Economic Affairs (2022b). *What Is Digital Government*? https://www.bmf.gv.at/en/topics/digitalisation/Administration/What-is-digital-Government.html

Republic of Austria. Federal Ministry of Digital and Economic Affairs (2017). *Administration on the Net: The ABC Guide of eGovernment in Austria*. Vienna. https://www.bmdw.gv.at/dam/jcr:8fc815bb-1dc7-4e45-9610-78d63560944a/E-Government-ABC_2019_EN.pdf

Republic of Estonia (2014). *X-Road Factsheet*. https://www.ria.ee/sites/default/files/content-editors/publikatsioonid/x-road-factsheet-2014.pdf

República de Chile (2021). *Senado. ConstituciónPolítica de la República*. https://www.senado.cl/constitucion-politica-capitulo-i-bases-de-la-institucionalidad

République Française (2019). *République numérique: Qu'a changé la loi du 7 octobre 2016*? Vie publique. https://www.vie-publique.fr/eclairage/20301-loi-republique-numerique-7-octobre-2016-loi-lemaire-quels-changements

République Française (2021). *E-administration: Du PAGSI au programme Action publique 2022*. Vie publique. https://bit.ly/3x7Ii4Q

République Française. Ministère de la Transformation et de la Fonction Publiques (2022). *Entrepreneurs d'intérêt général*. https://eig.etalab.gouv.fr/programme

Santos, J. P. R. (2022). *Portuguese Public Administration's eServices: The Case of Technology in the Portuguese Public Administration's Services Portrayed against Estonia's Reality*. Dissertação (Mestrado em Gestão da Informação)-Universidade Nova de Lisboa. https://run.unl.pt/bitstream/10362/134204/1/TGI0544.pdf

Schwab, K. (2016). *A Quarta Revolução Industrial. Tradução Daniel Moreira Miranda*. Edipro.

Scupola, A., & Mergel, I. (2022). Co-Production in Digital Transformation of Public Administration and Public Value Creation: The Case of Denmark. *Government Information Quarterly, 39,* Article ID: 101650. https://reader.elsevier.com/reader/sd/pii/S0740624X21000861?token=6E1BE7F418115D49A0111C8EF2FB0D80F50A62F23A5276B848A6D78814D2ED8E017E4CEB3FD704A9ECA96CC7EECC2F0D&originRegion=us-east-1&originCreation=20220409202307

Siegfried, T. (2017). E-Government in Germany. In P. G. Nixon, & V. N. Koutrakou (Eds.). *E-Government in Europe: Re-Booting the State* (pp. 90-102). Routledge.

Strielkowski, W., Gryshova, I., & Kalyugina, S. (2017). Modern Technologies in Public Administration Management: A Comparison of Estonia, India and United Kingdom. *Administration & Public Management Review, 28,* 174-185. https://www.ceeol.com/search/viewpdf?id=743057

Swire, P. P. (2006). Privacy and Information Sharing in the War on Terrorism. *Villanova Law Review, 51,* 951-980.

The World Bank (2015). *e-Government*. https://www.worldbank.org/en/topic/digitaldevelopment/brief/e-government

UK. Her Majesty's Government (2022a). *The Digital, Data and Technology Playbook: Government Guidance on Sourcing and Contracting for Digital, Data and Technology Projects and Programmes*. https://www.gov.uk/government/publications/the-digital-data-and-technology-playbook/the-digital-data-and-technology-playbook

UK (2022b). *How to Vote*. Gov.uk. https://www.gov.uk/how-to-vote

UK. Parliamentary Office of Science and Technology (2009). *E-Democracy*. Postnote. n. 321. https://www.parliament.uk/globalassets/documents/post/postpn321.pdf

United Nations (2020). *United Nations Department of Economic and Social Affairs. United Nations E-Government Survey 2020*. https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf

Vicky, M. (2022). *A tecnologia que consegue ler e transmitir pensamentos*. Nexo. 31 mar. 2022. https://www.nexojornal.com.br/expresso/2022/03/31/A-tecnologia-que-consegue-ler-e-transmitir-pensamentos?posicao=8

Wikipedia (2022a). *Lista de países e territórios por área*. 13 jan. 2022. https://pt.wikipedia.org/wiki/Lista_de_pa%C3%ADses_e_territ%C3%B3rios_por_%C3%A1rea

Wikipedia (2022b). *Lista de países por população*. 3 Apr. 2022. https://pt.wikipedia.org/wiki/Lista_de_pa%C3%ADses_por_popula%C3%A7%C3%A3o

Woollacott, E. (2022). UK Announces Initial Steps For National Digital Identities. *Forbes*. https://www.forbes.com/sites/unicefusa/2022/03/28/more-than-half-of-ukraines-children-displaced-by-war/?sh=3a8ca14e67fa