THE DIGITALIZATION PROCESS OF PUBLIC ADMINISTRATION IN EUROPEAN UNION: ADVANCES AND PERSPECTIVES

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Abstract: On the background of the fast development of the information and communication technology and of the significant impact of this process on the entire society, but also as result of the issues raised especially recently by the effects of the COVID 19 pandemic governments from all over the world have acknowledged the necessity of developing a new kind of public administration able to offer digital public services. Therefore, also European Commission has set as a primary objective for this decade the digitalization of the public administration in all EU countries, encouraging and financially sustaining accelerating the digitalization process in this area. In this regard, the present paper aims to identify the most representative advances obtained in EU countries till now regarding digitalization process of public administration in EU and to comment on the perspectives of this process for the upcoming years, by analysing specific indicators that measure the needed elements for ensuring a performant digital public administration.
Keywords: digitalization, public administration, digital public services, European Union.
JEL Classification: H83, D73, O33

Introduction

It is obvious that the past three decades in the mankind evolution have been significantly impacted by the extremely fast development in the area of the Information and Communication Technologies (ICT). Especially the invention of Internet, but also the development of new hardware devices and of a large variety of software applications have changed and continue to change almost all processes and in the end the way of life for all people and organizations. Moreover, the appearance of other new technologies such as artificial intelligence (AI), cloud, Big Data and so on leads on the one hand to a different kind of demands from the society towards the governments but also opens on the other hand new ways and opportunities for the governments to fulfil, usually more efficiently, this expectations from of citizens and companies. On the other hand, both governments, as suppliers of public services, and most of the beneficiaries of such services, represented by citizens and businesses, have deeply acknowledged the benefits that are brought by the digitalization of public administration, consisting mainly, but not limited to savings of time and money, simplicity and convenience for both parties. Also, these benefits and the need of digital public services were stressed out (Agostino et al., 2020; European Commission, 2022) because of the restrictions imposed by the COVID 19 pandemic.

Literature review

While the new technologies change more and more the entire society, the subject regarding the digitalization process of public administration remains an important one, considering

that, one way or another, whether we like it or not, each of us needs to interact with the public administration and needs access to public services. Therefore, especially during the past decade, more and more researchers, but also governments, international authorities or institutes of research have studied the necessity and the possibilities of digital transformation of public administration. Dunleavy et al. (2009) have stressed and somehow anticipated the fact that "a range of connected and information technology–centered changes will be critical for the current and next wave of change" and that public administration will inexorably shift towards digital era-governance. Moreover, other studies (Alvarenga et al., 2020; Battisti, 2020; Castro and Lopes, 2021) have also approached the subject regarding the digital transformation of public administration under the impact of the new ICT, stressing both the necessity of this process and its advantages consisting in growing effects on businesses, intensifying of citizens' engagement, sustainable and inclusive economic growth, social development and environmental protection, but also efficient resource management.

Beyond accepting the necessity for a modern digital public administration, some studies (Clausen et al., 2020; Demircioglu and Audretsch, 2017; de Vries et al. 2016) have also approached the conditions needed to be fulfilled in order to achieve this goal, which implies innovation in the public sector, identifying push and pull factors that enhance the digitalization process of public administration. Clausen et al. (2020) observe that "the public sector is under pressure to provide new public services with increasingly scarce resources" and innovations are necessary in the public sector. Moreover, innovation and generally the digitalization of public administration are determined by technology-push and demand-pull factors that will decide the success of this process.

Literature also contains studies on several specific aspects regarding the digitalization process of public administration such as: identifying the users of digital public services and their needs (Distel and Lindgren, 2019; Tassabehji et al., 2019), striving the role of all stakeholders (government, citizens and businesses) for a successful digital public administration (Edelmann et al., 2021), the impact of interoperability on the use of digital public services (Campmas et al., 2022), the impact of specific internal or external factors on e-government (Jacobsen, 2018; Mesa, 2023; Wirtz et al., 2019), strategies for digitalizing the public administration (Lee et al, 2018), but also impacts of the digitalization of public administration on specific areas such energy (Ha, 2022) or participation (Welch and Feeney, 2014).

On the other hand, the digitalization of public administration is constantly approached and analyzed by specialized institutions of research such as Deloitte or McKinsey and Company. According to McKinsey and Company (2022) "digital public services are an imperative" because the society that changed its way of life by adopting and using extensively the new technologies and benefiting from them expects also that the interactions with the government to be modernized based on the same technologies and to bring similar benefits. Deloitte, as well as McKinsey and Company recognize the benefits and the need for implementing the digital government (Deloitte, 2021) and remarks the government transformation trends, especially the need of accelerating the digitalization process of the public administration as consequence of the experience brought by the restrictions imposed as protective measures towards the COVID 19 pandemic.

International organizations such as United Nations, European Union and more recently also OECD have clearly stated the need for digitalizing the public administrations, some of

them also issuing recommendations, developing strategies and establishing specific targets to be achieved by the member states according to a calendar. Beside these things they also created mechanisms and instruments, represented by indexes, meant to show the progresses made by their member states in the process. United Nations have introduced since 2003 (United Nations, 2023) the E-Government Development Index (EGDI), OECD calculated in 2019 the OECD Digital Government Index (OECD, 2022). However, these indexes are still subject of debate (Dobrolyubova, 2021) regarding their capability of measuring the digitalization advances.

An interesting fact is that OECD has conceived the digitalization of public administration as a process with three stages (OECD, 2016): 1) Digitisation, consisting in greater use of digital technologies to improve cross government activities and data management; 2) E-Government, regarding the use by governments of digital technologies, particularly the Internet, to achieve better government and finally 3) Digital Government, meaning digital technologies and user preferences integrated in the design of services and broad public sector reform, part of governments' modernization strategies to create public value. European Union also created since 2014 the Digital Economy and Society Index (European Commission, 2023b) that includes a specific component named Digital Public Services that evaluates the digitalization of public administration.

Analisys of EU digital public services development

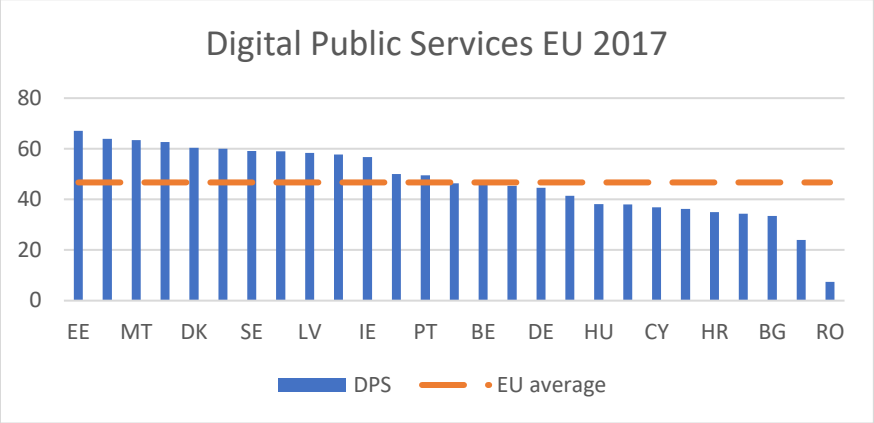
Amongst other organizations and institutions from all over the world, the European Commission recognized also the advantages and the importance of the new ICT in reshaping the interactions within the society and, therefore, started from 2014 to supervise and to sustain, even financially, the transition of The EU countries towards a digital society. Moreover, the European Commission started then to assume the role of a coordinator of this transition, by establishing specific targets to be achieved and also a special instrument in order to evaluate the progress, consisting in the so-called DESI (Digital Economy and Society Index), meant to estimate the advances of each European country on a few specific areas, considered to be the pillars of a digital society.

Starting from 2014 DESI was determined based on evenly weighting five basic components, namely Connectivity, Human Capital, Use of Internet, Integration of Digital Technology and Digital Public Services. Later, after 2020, the European Commission reconsidered the componence of DESI, which now includes only four evenly weighted parts, represented by Human Capital, Digital Infrastructures, Integration of Digital Technology and Digital Public Services and also recalculated the index starting from 2017, based on this new componence. By analysing both structures of DESI it is obvious that in any approach the European Commission continuously puts accent on the development of the Digital Public Services that represent in this vision a basic pillar of the future society. However, the European Union remains basically a union of different countries, which even they share common values or ideals, manifest also significant discrepancies between them. Therefore, the general goal of achieving the digital society by the European Union becomes a common goal for all EU countries, but at the same time implies different efforts of these countries, because of the specific situation of each of them.

Our analysis on the advances in the digitalization process of public administration in EU is based on the data from the European Commission regarding the level of development of Digital Public Services for the period starting from 2017, till 2022, the only period for

which the data are now consistent and for which DESI was determined based on four components.
In order to evaluate the way EU countries advanced on the road towards a digital public administration, a first look should be put on the level of development of the Digital Public Services at the beginning of the analysed period and Figure 1 shows this level for each of the EU countries, also compared to the medium level registered by EU itself.

Figure 1. EU Digital Public Services in 2017

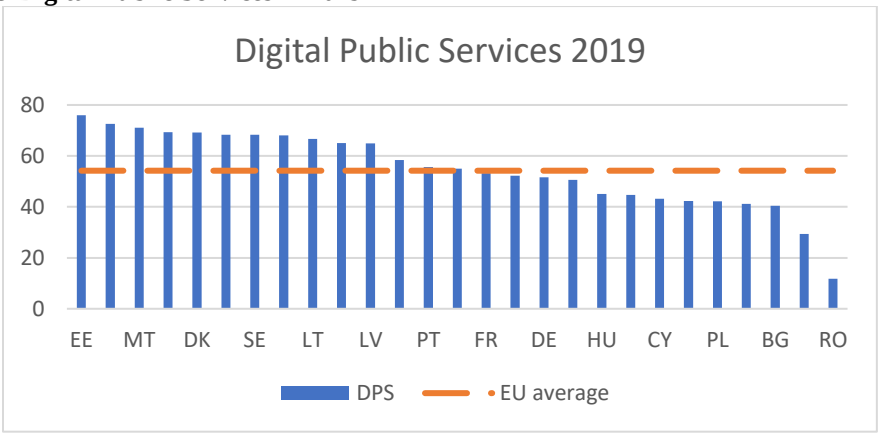


Source: European Commission – DESI by components (European Commission, 2023a)

According to the latest structure of DESI index, based on only four components, in 2017, the average development of the Digital Public Services in EU was of 46.7% that implies EU needs to more than double the efforts to digitalize the public administration in order to fulfil the goal of achieving a developed Digital Public Administration. Moreover, Figure 1 shows also significant discrepancies between the EU countries, some countries having a much higher level than the EU average in digitalizing the public administration, while others having more to catch up in this process to approach even the EU average. The best performing countries in digitalization of public services were at that time Estonia (67.12%), Finland (63.98%) and Malta (63.4%), while the lowest levels of digitalization were registered in Romania (7.41%), Greece (23.98%) and Bulgaria (33.43%). We notice also that even most of the low performers in digitalizing the public services are former communist countries from eastern Europe, the best performer is Estonia also a former communist country. At the same time, while almost all developed western European countries are performing above EU average or at least close to it (as France or Germany), Italy, another developed country, reached only a level of 37.98% in this process. Therefore, we may conclude that the fact a country is more economically developed than another may be an advantage in the digitalization process of public services, but is not the main condition in performing better and that it is probably more important the involvement of the government in sustaining and implementing this process, both by funding it and by creating the framework for developing and using digital public services.
Before looking at the most recent image regarding the development and implementation of Digital Public Services in EU, we looked also at an intermediary stage of the digitalization process and Figure 2 shows the situation for each country from EU, by the end of 2019,

the year before the start of the Covid 19 crisis, that changed significantly the interactions within the society.

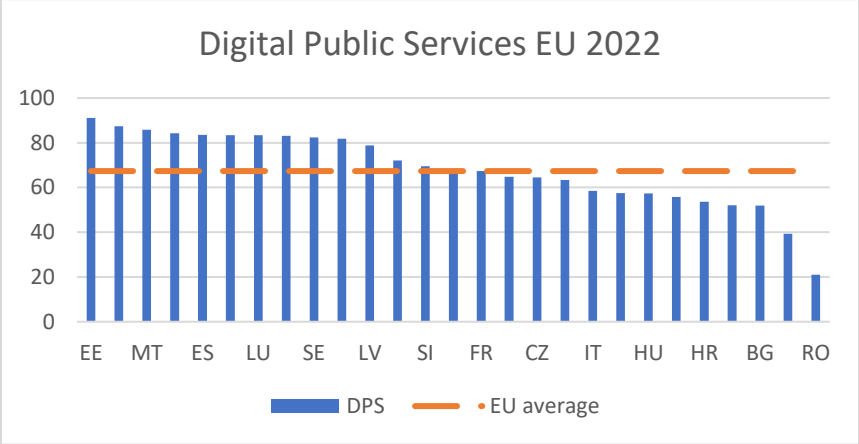
Figure 2. EU Digital Public Services in 2019



Source: European Commission – DESI by components (European Commission, 2023a)

Figure 2 shows that the hierarchy of the countries in the digitalization of public services remained quite the same, but there were small progresses both in the EU average that reached 54.2%, and in all the countries. For instance, Estonia reached the level of 76%, Finland reached 72.55% and Malta 71.04%, while Romania reached 11.83%, Greece reached 29.36% and Bulgaria reached 40.37%. Beyond these progresses in each of the EU countries the general goal of EU remains the full implementation of the Digital Public Administration, which depends on the performance of each EU country, meaning also that the low performers to catch up the most advanced ones. However, we notice that instead of this, while EU average raised by 7.5 points from 2017 till 2019, Estonia raised by 8.88 points and Finland by 8.57 points, but Romania only by 4.41 points and Greece by 5.38 points, meaning that instead of closing the gap between the best performers and the low ones, this gap continued to grow, which is against the general goal.
The most recent image on the Digital Public Services development in the EU, is based on the data from 2022, and can be observed in the following figure (Figure 3).

Figure 3. EU Digital Public Services in 2022



Source: European Commission – DESI by components (European Commission, 2023a)

As well as in 2019, in 2022 the ranking of the EU countries regarding the implementation of Digital Public Services remained quite the same as the from 2017. The most advanced countries remained Estonia (91.18%), Finland (87.37%) and Malta (85.81%), while the less advanced ones were still Romania (21.04%), Greece (39.39%) and Bulgaria (51.9%). At the same time the EU average advanced with 20.64 points compared to 2017 and with 13.15 points compared to 2019, reaching the level of 67,35%. Forced especially by the restrictions imposed because of the Covid 19 crisis, all governments in the EU had to speed up digitalizing the public services and therefore the period between 2019 and 2022 was marked by important advances in this process. However, beside this positive aspect, the other aspect regarding the higher advances of the already most advanced countries compared to the less advanced ones remained an issue. For instance, while Estonia raised from 76% in 2019 to 91,18% in 2022 gaining 15.17 points and overall gaining 24.05 points from 2017, Romania raised from 11.83% in 2019 to 21.04% in 2022, gaining only 9.21 points and, overall, only 13.15 since 2017.

Taking as examples these two countries, Estonia as the highest performer in digitalizing the public administration and Romania, as the lowest one, we should look also, for each of these countries, on the specific components that are characterizing the level of the digital public services, consisting in e-Government Users, Pre-filled Forms, Digital public services for citizens, Digital public services for businesses and Open Data.

Tables 1 and 2 show the evolution of each of the five components that characterize the level of Digital Public Services in Estonia, respectively in Romania, during the period between 2017 and 2019.

Table 1. Evolution of Digital Public Services by components in Estonia percentage of 100%

Year	e-Government Users	Pre-filled Forms	Digital public services for citizens	Digital public services for businesses	Open Data
2017	87.3817	68.2732	72.3904	72.9375	32.7661
2018	87.6953	74.6221	77.6547	76.5112	43.5603
2019	87.6498	81.0404	80.718	79.1519	53.7723
2020	88.0565	83.0949	84.3891	85.027	66.3784
2021	89.2892	85.1725	88.1918	91.141	81.9399
2022	89.3711	87.3019	92.0973	97.5	94.2305

Source: own calculations based on European Commission data– Compare the evolution of DESI components

Table 2. Evolution of Digital Public Services by components in Romania percentage of 100%

Year	e-Government Users	Pre-filled Forms	Digital public services for citizens	Digital public services for businesses	Open Data
2017	13.7169	14.896	16.1453	0	26.2664
2018	12.5506	16.2812	23.6507	0	34.9194
2019	12.0902	17.6816	28.0184	0	43.1057
2020	14.6122	18.1298	33.2521	0	53.2111
2021	15.8859	18.583	38.6737	11.9815	65.6856
2022	16.7178	19.0476	44.2418	42.2688	75.5384

Source: own calculations based on European Commission data– Compare the evolution of DESI components

The data from the tables above show significant gaps between the two considered countries. First of all, even in 2017 more than 87% of the Estonian individuals were using Digital Public Services and by the end of 2022 more 2 percents started also to use such services. On the other hand, in 2017 only 13.7% of the individuals have used Internet to interact with public authorities and use Digital Public Services, and the usage of this services increased only to 16.7% by the end of 2022, meaning a gap of more than 70% compared to Estonia. Moreover, between 2017 and 2022, the proportion of the accessible pre-filled forms raised from 68.27% to 89.3% in Estonia, while in Romania increased only from 14.9% to 19.05%, meaning another gap of 70%. During the same period the digital public services for citizens increased from 72.4% to 92.1% in Estonia, while in Romania they increased from 16.1% to 44.2% which gives some hope that the gap between the two countries can be recovered in the next several years. On the other hand, the digital public services for businesses appear to be available in Romania starting from 2021, but their level increased fast from 11.98% in 2021 to 42.27% in 2022. Comparatively, in Estonia such services had a level of 72.94% even in 2017 and increased to 91.5% in 2022, meaning that companies have almost entire electronic access to the public services. Finally, we observe that the Open Data component had the fastest grow in both countries in the analysed period. While in Estonia the growth was from 32.77% to 94.23%, in Romania the growth was from 26.26% to 75.54%, the target of reaching 100% on this component looking to be the most attainable.

Considerations on the perspectives of digital public services development

The digitalisation of public services has been an objective of the European Commission as part of its previous strategy called The Digital Agenda for Europe 2020 and remains an important one within its new strategy known as Europe's Digital Decade that includes the digital targets for 2030. According to the new European strategy (European Commission, 2023c) the digitalisation of public services should target to fulfil till 2030 three main objectives consisting in the complete digitalisation of the key public services, ensuring access to medical records online for all citizens and access to digital ID for all citizens. This means that it is expected for all countries that all key public services for businesses and citizens to be fully online by 2030, an ambitious objective that may be reached only especially if the low performing countries in this area will be able to recover the gap to the advanced ones and to finish successfully the transition process towards transforming the public administration in one accessible online. In this regard, based on the former experience regarding the public administration digitalisation process, that showed important gaps between the European countries, but also different rhythms of development it appears that the full implementation of the digital public services for businesses by 2030 is a more attainable goal than the one regarding the services for the citizens.

However, achieving these goals depends essentially on the willingness and the capability of each government to focus on them in the next years. In this context, the capability of the governments to fulfil the digitalisation of public administration implies also major investments in technology and in reshaping electronically the public services and therefore European Commission launched also the €7.5 billion Digital Europe Programme for funding the implementation of digital technology to businesses, citizens and public administrations. On the other hand, according to European Commission (European Commission, 2023b) even more than 60% of European citizens had an eID in 2022 and at

least one eID scheme was in place in 25 member states, Romania and Cyprus still had no eID scheme. Beyond ensuring access to digital public services for all citizens and businesses from EU, till 2030, which appears to be at least an ambitious target with debatable chances to be achieved in all EU countries, the full benefits of these services can only be achieved in our opinion only if the beneficiaries will be able to use them, implying the need of access means and also of knowledge and willingness of citizens and companies to use them.

Conclusions

The digitalization of public administration has become an important target for all governments because of the demand of the society for new channels for communication with them and more simple and convenient ways to access the public services that can be delivered by using the new information and communication technologies, that already changed significantly the interactions and the way of life within the society. It has also become a major objective for international organisations such as United Nations OECD or European Union and also a subject of research and debate for researchers and research bodies. Specifically, European Union has developed strategies to attain the goal of ensuring the digital government in all its member states and also supports the digitalization process both by establishing specific steps to be made and by funding substantially the efforts of the member states. The digitalization process of public administration in EU is marked till now by important gaps between countries, but shows also a general tendency of advance in all member states, that has been enhanced also by the experience gathered during the Covid 19 pandemic, which forced the society to interact mainly digitally with the government. Considering the previous rhythm in digitalizing the public administration in EU, the strategic targets set for 2030, regarding the full digitalisation of the key public services, full access to medical records online for citizens and total access to digital ID for citizens are achievable, but only if the low performing countries will fasten the process. However, we consider that beside the governments' efforts to deliver digital public services, there is needed also the involvement of the society for designing and using such services, in order to fully benefit from the advantages of digital government.

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