Digital public policy and e-governance as factors of the enhanced socio-economic cohesion in the European Union

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Abstract

The author will examine how public policies in the domain of digital transformation and e-governance have contributed to the socio-economic cohesion in the European Union (EU) and its Member States by considering the DESI measurement indicators and eGovernment benchmarks in the period from 2016 to 2021. By using the methods of data analysis and document content analysis, the main argument is that the process of the digitalization of the EU's single market and public services of the Member States' governments have had an impact on the economic productivity and capacity resilience of the Member States' economies, thereby reducing economic differences and promoting social development. The author concludes that the digital public policies and e-governance have profoundly affected the economic sectoral integration processes thus enhancing the state of the socio-economic cohesion in the European Union and its Member States.

Keywords: digitalization; public policy; e-governance; DESI index; European Commission

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Introduction

There is substantial evidence that advancements in information and communications technologies (ICT), digitalization and automation have contributed substantially to productivity growth in the past decades (Graetz and Michaels, 2018). However, this productivity growth has primarily occurred in the United States. Digitalization has progressed more slowly in Europe, and productivity growth has been weaker. Not only do Member States within the European Union (EU) differ in the pace, but there are also substantial differences in the use of digital technologies and digital tools between different industries and even between firms within the same industry. However, this slow progress also suggests that increased digitalization in Europe can bring about major productivity gains in the future. By implementing reforms to increase the ability of firms and employees to adopt the new technologies, the EU could create more jobs and achieve increased productivity growth. An expert report to the European Parliament put forward that a well-functioning digital single market could increase economic gains in the EU by EUR 177 billion annually (Marcus et al., 2019).

This paper will examine how the digital public policy and e-governments of the EU's Member States have had an impact on the enhancement of the socio-economic cohesion within the European Union. The author will use the data analysis and document analysis methods by reducing a large amount of empirical material, selecting what is significantly indicative with regards to the research question, and categorizing the empirical material. Namely, these methods are used in order to provide the empirical basis for the paper's main argument.

According to the founder of the World Economic Forum, Klaus Schwab (2017), who introduced the concept of the fourth industrial revolution, this technological phase will result in a substantial increase in productivity. This is enabled by various improvements in efficiency related to how firms produce goods and services, lower transportation and communication costs, new logistics solutions and the emergence of new global value chains that will not only make firms more efficient in terms of production but will also lead to lower trading costs. These technological advancements will, in turn, lead to increased global economic growth, higher prosperity and higher incomes in the countries that can make use of the new technologies. But technological developments also entail challenges for employees when the demands in the labour market change regarding skills and knowledge, possibly leading to social tension and increasing differences in income between winners and losers. Therefore, "digitalization has brought fears of changes in domestic politics, but also in international relations" (Djurković, 2022, p. 28).

Various digital strategies are being developed at both the national and EU level. In many cases, these strategies are comprehensive and aim to ensure that technological developments are inclusive and promote growth. In 2010, the EU launched the *Europe 2020* strategy aimed at lifting Europe by adopting targets related to employment, research and innovation, climate change, energy, education and poverty reduction. An important element was the programme *Digital Agenda for Europe* with the overall aim of creating a European digital single market by 2020 (European Commission, 2010). This includes broadband expansion for EU citizens, a common telecommunications market and increased digital participation. To ensure a fair, open and secure digital environment, the digital single market strategy is based on three pillars: offering better access for consumers and firms to digital goods and services in the EU, creating the right conditions for digital networks and services to develop and maximizing firms' growth potential in the digital economy. As part of the *Europe 2020* strategy, the European Commission also compiles annual statistics on the level of digitalization in the EU compared to the set objectives.

Closely linked to the objectives in the digital agenda manifested in the *Europe 2020* strategy are changes in the EU industrial policy, which now also highlights digitalization and new technologies. The new common industrial policy emphasizes digitalization and innovation as key for the future competitiveness of the EU. Furthermore, this policy is based on the international discussion regarding the fourth industrial revolution (Schwab, 2017). The focus on big data, Internet of things, robotics, 3D technologies and artificial intelligence seeks to improve Europe's digital competitive position. By means of an up-to-date and modern common industrial policy, the objective is to strengthen the competitiveness of the EU and to improve the digital skills of its firms and workers to increase growth and productivity. So far, several studies have pointed to a lack of digital knowledge among large segments of EU citizens. For instance, a report by the European Parliament shows that in 2015, more than 20 per cent of EU citizens completely lacked digital skills, measured as access to the Internet (Kiss, 2017). This study also points out that these skills were very unevenly distributed, with over 30 per cent lacking digital skills in several countries in South-Eastern Europe, while this group was very small in Northern Europe.

However, there is a consensus in the literature that globalization has significantly affected the conditions for national policy-making. On the one hand, globalization created a range of problems that exceed the scope of national sovereignty and can therefore no longer be sufficiently resolved by the unilateral action of national governments. Examples include the regulation of electronic commerce and the protection of intellectual property rights over digital information. On the other hand, the emergence of globally integrated markets puts pressure on national governments to redesign national regulations to avoid excessive regulatory burdens being imposed on domestic industries (Knill and Lehmkuhl 2002a; 2002b). In view of this constellation, national governments consider cooperation in order to establish international regimes and international organizations that would allow them to maintain their capacity to address problems that extend beyond the parameters of national sovereignty.

Digital public policy and e-governance as the drivers of the socio-economic cohesion

In literature, definition of cohesion is not a simple concept and can be interpreted in different ways. For some authors, it means the territorial and social relations stability; for others, the process of convergence between regions and social groups, moreover, some scientists even narrow the concept till employment opportunities and preferred living standards (Hulse & Stone, 2007). We could say that cohesion policy's aim can be to equilibrate regional and social disparities within the transparent redistribution of GDP, employment, etc. EU Member States are characterized by the large disparity in development level – the EU old members' and the EU new members' social and economic development varies significantly. Moreover, EU countries show convergence and divergence processes of economic and social cohesion at the same time (Rakauskiene & Kozlovskij, 2014).

The European Commission in its reports on economic, social and territorial cohesion from 2017 and 2022 indicated that the digital transition represents a new driver of European Union's growth, but that without appropriate policy action new economic, social and territorial disparities may appear (European Commission, 2017, 2022b). Namely, it is clearly pointed out that the digital transition should be fair and just, managed in an inclusive manner and developed in partnerships with regional and local governments. Therefore, the digital technologies have the potential to boost more inclusive and sustainable growth by spurring innovation, generating efficiencies and improving services. One of the main goals of the European Commission is to enhance the digital transformation of businesses by encouraging the take-up of three digital technologies: cloud computing services; use of big data; and artificial intelligence (AI). Furthermore, these reports confirm that digitalization may further fuel the research and innovation divide, at least between Member States. Given the increasing importance of the use of digital technologies for enterprises to remain competitive, this is a cause for concern from a cohesion perspective. Since technology take-up is an important driver of economic convergence, less developed Member

States risk falling further behind rather than catching up more developed Member States, if their businesses do not innovate by adopting digitalization. Also, moderately developed Member States may see their capacity to compete diminished if they fail to do likewise, so risking falling into, or remaining in, a development trap (European Commission, 2017, 2022b).

Thus, when European Commission President Ursula von der Leyen assumed office, enhancing digital capabilities across the European Union immediately emerged as a top priority. In her first State of the European Union speech, President of the European Commission announced Europe's Digital Decade (European Commission, 2019). This call represents the peak of a period defined by an increasing focus on digital matters, especially in relation to artificial intelligence (AI) and digital markets, increased investment, and a more robust application of competition rules to digital platforms. The blueprint of this Digital Decade is the *European Digital Strategy*, released in February 2020, resting upon four pillars: (1) Technology that works for people; (2) A fair and competitive digital economy; (3) An open, democratic and sustainable digital society and (4) Europe as a global digital player. The Digital Decade will be shaped by the way these themes will be translated into concrete action, backed up by roughly 20% of the whole EU budget and a significant share of the Recovery Fund, which similarly counts on digitalization as the way to increase the capacities of the single market. Specifically, Von der Leyen called for Europe to achieve "technological sovereignty in some critical technology areas" (Burwell & Propp, 2020, p. 1.) Furthermore, COVID-19 pandemic further reinforced the significance of digital policymaking for both national governments and European institutions, as individuals found themselves working remotely on platforms with questionable security (Burwell & Propp, 2020, p. 2).

In March 2021, the EU adopted the *2030 Digital Compass*, which set the EU's digital ambitions for 2030. The Compass established a monitoring system and outlined key milestones and the means for achieving these ambitions. According to the Digital Compass, Europe will be digitally sovereign in an interconnected world by building and deploying technological capabilities to empower people

and businesses to seize the potential of the digital transformation and enable them to build a healthier and greener society. The European way to a digitalized economy and society is about solidarity, prosperity, and sustainability, and is anchored in the empowerment of its citizens and businesses. By adhering to these principles, the EU aims to ensure the security and resilience of its digital ecosystem and supply chains. The Compass seeks to track the EU's pace of digital transformation, gaps in its strategic digital capacities, and the implementation of European digital standards.

Overall, the EU assists its Member States in developing standards and establishing institutional mechanisms for the effective implementation of digital policies. The ethical and legal frameworks of the EU create guarantees that safeguard fundamental rights, such as the right to privacy, and prohibit the use of machines that can cause damages in various aspects. The EU's risk-based approach promotes the use of secure applications and the protection of basic rules. Also, the EU is actively proposing initiatives to enhance international digital cooperation with its partners.

DESI index and e-Government benchmark as indicators of the enhanced socio-economic cohesion

As the policy outputs, outcomes and impacts are three categories used in public policy analysis, the discussion of the role of policy instruments dates back to the work of Dahl and Lindblom (1953), which recognized that the capacity of modern societies to solve problems crucially depends on the policy instruments chosen. Similarly, Lascoumes and Le Galès (2007) argue that policy instruments are not purely technical, but that they tend to produce original and sometimes unexpected effects. In this regard, they stress three main effects of instrument choice. First, the instrument chosen creates inertial effects, resulting in a resistance to outside pressures such as conflicts of interest between the actors involved in the policy-making process. Second, the instrument chosen produces a specific representation of the issue it is handling. Third, the instrument leads to a particular problematization of the issue.

Having this in mind, the indicators used by the European Commission to track how the EU and its Member States are developing digitally (*the Digital Economy and Society Index, or DESI Index*) through their digital policy domains show that all Member States have gradually improved their market capacities and outputs in terms of productivity (European Commission, 2022a). The majority of DESI indicators come from Eurostat, the statistical office of the European Union. The DESI indicators cover four main key areas – Human capital, Connectivity, Integration of digital technology and Digital public services. The Human capital dimension assesses both internet user skills of citizens and advanced skills of specialists. Under Connectivity, both fixed and mobile broadband are analyzed with indicators measuring the supply and the demand side as well as retail prices. Also, the Integration of digital technology dimension is made up of three sub-dimensions: digital intensity, take-up of selected technologies by enterprises and e-commerce. At the end, the Digital public services dimension describes the demand and supply of e-government as well as open data policies.

As previously mentioned, the Member States have been advancing in their digitalization efforts, but still struggle to close the gaps in digital skills of citizens, the digital transformation of small and medium enterprises, and the roll-out of advanced 5G networks. However, major differences emerge between the Member States where the digital skills of their residents are concerned. In Estonia, the Netherlands and the Nordic countries, digital skills are among the best in the world. In Southern and Eastern Europe, by contrast, the situation is different. In Bulgaria, Portugal and Romania, more than 20 per cent of the workforce has no digital skills at all. These figures must be seen as alarmingly high, for participation in the labour markets of tomorrow will require a great deal in the way of digital skills.

As is shown in Table 1, the most significant progress in the period between 2016 and 2021 is recorded in Ireland and Denmark, followed by the Netherlands, Spain, Sweden and Finland. These countries also perform well above the EU's DESI average, based on their scores in DESI 2021. Overall, Denmark, Finland, Sweden and the

Netherlands have the most advanced digital economies in the EU, followed by Ireland, Malta and Estonia. However, Romania, Bulgaria and Greece have the lowest DESI scores. On the other hand, the digitalization and automation process has been quite extensive in some Northern European countries. Namely, Finland, the Netherlands, Denmark and Sweden have the highest ratings. Given Sweden's prominent position in the field of ICT, it is interesting to note that this has also covaried with strong productivity growth in the Swedish economy up until the global financial crisis. This implies that the EU may indeed benefit from the lessons learned in terms of how Sweden has managed the increasing digitalization.

When we look at the main findings of DESI 2021 in Table 2, as part of the commitments put forward in the EU's *2030 Digital Compass*, the digital skills target aims for at least 80% of EU citizens to have basic digital skills by 2030. We can state that the large part of the EU population lacks digital skills, but there are country-specific differences: the Netherlands and Finland are the frontrunners in this area, while Bulgaria and Romania are lagging behind. Moreover, a rate of 56% of the population having digital skills is only a slight increase (two percentage points) since 2015, representing a yearly growth rate of only 0.9%. This growth rate needs to increase threefold to reach the 2030 target of 80% (European Commission, 2021a).

The EU's *2030 Digital Compass* also sets the target that gigabit networks should be available and deployed by the year 2030. According to the data from 2020, only 59% of households can benefit from fixed very high capacity network (VHCN) connectivity with the potential of offering gigabit connectivity. Rural VHCN also improved – from 22% in 2019 to 28% in 2020 – but a large gap between rural and national figures remains. Malta, Luxembourg, Denmark and Spain are the European leaders on total VHCN coverage (all with more than 90% of homes covered). By contrast, in Greece, less than one in five households have access to VHCN (European Commission, 2021a).

The DESI 2021 demonstrates that, while businesses are becoming more and more digitalized, the use of advanced digital technologies remains low; for example, only one in four companies use AI or cloud computing and 14% use big data. In this area, Finland

and Sweden lead on the use of cloud, Malta and the Netherlands on big data, and Czechia and Austria on AI. Also, the DESI monitors the online provision of public services by giving each Member State a score on whether or not it is possible to complete each step of key services completely online. Estonia, Denmark, Finland and Malta have the highest scores for digital public services in DESI, while Romania and Greece have the lowest.

When we refer to the e-government benchmark, which compares how governments of the Member States deliver digital public services based on specific indicators, there is an upward tendency in making sizeable investments of Member States to further digitalize their public administrations. These indicators are clustered within four main top-level benchmarks: 1. User Centricity – indicates the extent to which a service is provided online, its mobile friendliness, and usability in terms of available online support and feedback mechanisms. 2. Transparency – indicates the extent to which governments are transparent about the process of delivery; the responsibilities and performance of public organizations; the personal data processed in public services; 3. Cross-Border Mobility – indicates the extent to which users of public services from another European country can use the online services; 4. Key Enablers – indicates the extent to which technical and organizational pre-conditions for e-government service provision are in place, such as electronic identification and authentic sources (European Commission, 2021b).

As published in the European Commission's report titled *eGovernment Benchmark 2021 – Entering a New Digital Government Era*, the maturity of e-government is determined by averaging the score of the four key dimensions - User Centricity, Transparency, Key Enablers and Cross-Border Services. As is shown in the report, Malta is Europe's top performer in e-government with a score of 96%, followed by Estonia at 92%. Following these countries is a cluster of ten other Member States that all score between 85% and 81%, including Denmark, Finland, Luxembourg, Austria, Iceland, Portugal, the Netherlands, Latvia, Norway and Lithuania (European Commission, 2021b).

However, the level of citizens' use of e-government services in the EU is influenced by the quality of the national offer of such services, the levels of citizens' trust in governments, the digital divide generated by populations' per capita income and citizens' level of education (Pérez-Morote et al., 2020). In 2020, 64% of Internet users interacted with public administration online, compared to 58% in 2015. The online availability of public services has grown steadily over the last decade and accelerated greatly as a result of the COVID-19 pandemic, during which digital interaction became prevalent. Moreover, building trust in the online environment is key to economic and social development. Lack of trust, in particular because of a perceived lack of legal certainty, makes consumers, businesses and public authorities hesitate to carry out transactions electronically and to adopt new services. Therefore, the *Regulation (EU) No. 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC* (eIDAS Regulation) has the primarily aim to enhance trust in electronic transactions in the internal market by providing a common foundation for secure electronic interaction between citizens, businesses and public authorities, thereby increasing the effectiveness of public and private online services, electronic business and electronic commerce in the Union. However, the eIDAS Regulation has only partially fulfilled the objectives set out in 2014. There remain significant shortcomings, stemming notably from the structure of the act, its limited implementation, and the changing technical environment, together with evolving user expectations.

Conclusion

At the regional level, the European Union has demonstrated a human-centered and risk-based approaches in the process of defining and implementing digital public policies, whilst giving impetus for the digitally driven transformation of the national public administration of its Member States. By encouraging the acquisition of digital skills by the general population and by enhancing the productivity of the single market by introducing the new digital technologies, the EU has stepped up the level of economic and social cohesion on the territory

of its Member States. Also, by creating a strong legal basis for the protection of data and generating standards that safeguard the right to privacy, the EU created a sound regulatory environment for the process of the digital transformation of its single market and public services that it provides.

Since the increased process of digitalization can lead to higher prosperity in the EU by the means of better matches in the labour market, increased productivity in the labour force, but also as a result of higher labour force participation, this paper examined the very process of the digitalization and the increase of productivity which has been incentivized by the digital public policies and e-governance. The overall picture from our analysis is that the digitalization and automation of the economy have accelerated over the period between 2016 and 2021. However, this processual development takes place with the parallel existence of large differences between EU countries in terms of how far digitization has progressed. In general, Europe and individual European countries underutilize digital opportunities. Achieving the objective of a functioning internal digital market by 2020 seems far from realized, as only 15 per cent of European consumers buy goods online from another EU country. The digital economy, as measured as a share of the gross domestic product (GDP), accounts for 5 per cent in the EU, while the corresponding figure in the United States is 8 per cent.

The digitalization-driven structural transformation of the single market economy promoted by the supranational institution, such as the European Commission, and organized economic interests, such as private companies, made progress differently in the different EU countries and has also differed in terms of efficiency. Empirically, efficient institutions, regulatory frameworks and well-functioning competition then appear to be key factors for achieving an efficient and inclusive digitalization-driven structural transformation.

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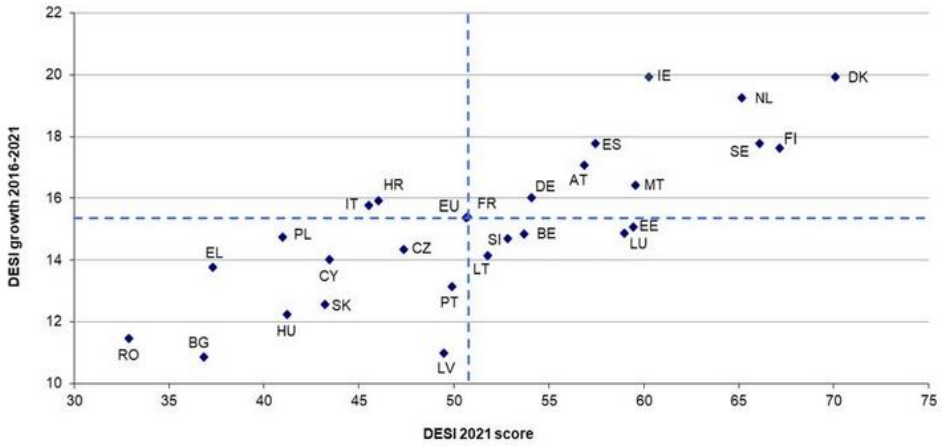
Appendix

Table 1.

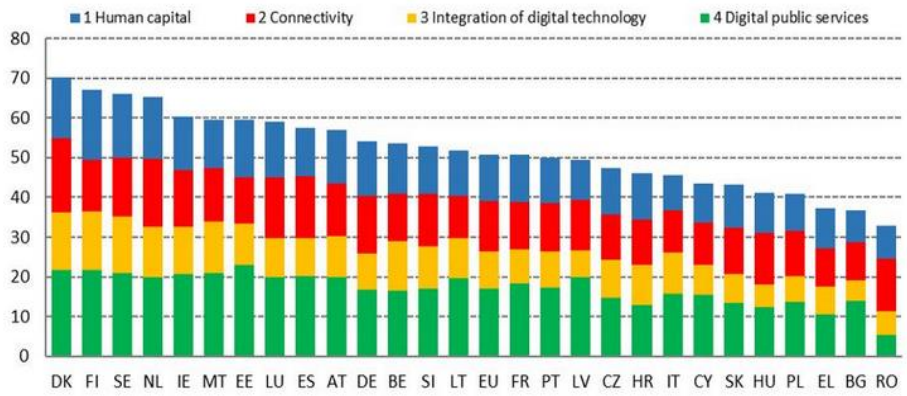
Digital Economy and Society Index – Member States' progress, 2016-2021



Note. Source: DESI 2021, European Commission

Table 2.

Digital Economy and Society Index, 2021



Note. Source: DESI 2021, European Commission