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Digital Transformation in Romania and Bulgaria

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Abstract: *Innovative approaches to and methods for designing successful business strategies have changed consumer requirements and habits. Traditional business processes have thus been adapted to a virtual environment and the process of digital transformation.*
Digitization is a process which can be defined as transforming business models and processes into digital ones. In most cases, they are a combination of different types of operations, such as e-commerce, Internet marketing or smart manufacturing. One of the major advantages brought by digitalisation is the improvement of workforce through the use of robots, CNC machines (digital software control), computers and mobile devices.

Keywords: *digital transformation; digital economy; digitization; e-commerce.*

JEL: C80

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1. Introduction

The progress of digital transformation has an enormous impact on the economic situation in and the competitiveness of EU member states. A special composite index, the Digital Economy and Society Index (DESI), is employed to rank each country. The index summarizes relevant indicators of Europe's digital performance and tracks the evolution of EU member states in terms of their digital competitiveness.

The latest data about the index for the year 2019 indicate that Sweden, Netherlands and the Finland are the countries with most advanced digital economies in the EU, while Romania and Bulgaria are the two countries that rank lowest according to the Digital Economy and Society Index (DESI) of the European Commission in 2019.

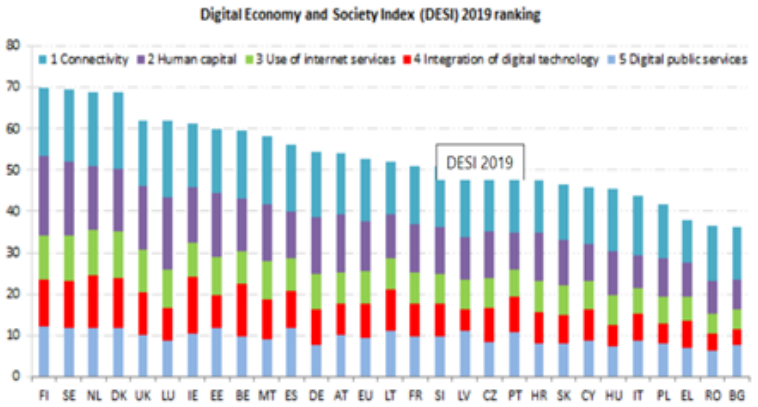


Figure 1. Ranks of EU countries according to DESI in 2019
Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

An interesting fact is that in the last three years Romania and Bulgaria constantly swapped their places. At the beginning of the period, in 2017, Bulgaria ranked 27th and Romania ranked 28th. In 2018, both countries moved ahead, Bulgaria ranking 26th and Romania – 27th. In 2019, Romania ranked 27th while Bulgaria ranked 28th among the 28 EU member states. We need to point out that over the period, there was a steady improvement in the overall performance of both countries, yet their scores were still lower than the average for the EU.

	Bulgaria		Romania		EU
	rank	score	rank	score	score
DESI 2017	27	32,4	28	32,0	46,9
DESI 2018	26	35,5	27	35,4	49,8
DESI 2019	28	36,2	27	36,5	52,5

Table 1. Bulgaria and Romania's ranking

Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

Overall, all EU member states registered a positive growth in the DESI index in 2019 and Romania and Bulgaria did not make an exception. Despite their higher overall scores, the two countries ranked poorly, firstly, due to their unsatisfactory performance in some of the dimensions of the DESI Index and secondly, since the other EU member states performed significantly better.

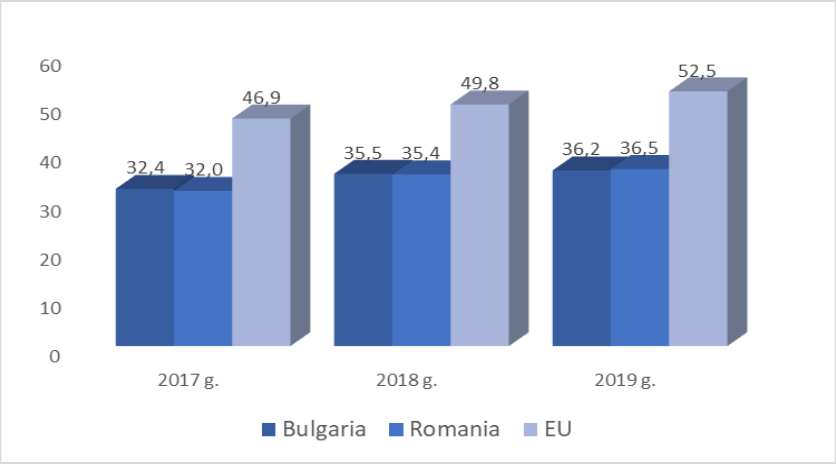


Figure 2. The dynamics in the values of the DESI index in the period from 2017 to 2019
Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

The aim of this paper is to identify the reasons behind the changes in the positions of the two neighboring countries in the DESI Index ranking. To accomplish this, we analyse the five major dimensions that are used to calculate the score of each country for the DESI Index.

2. Connectivity

The first dimension is used to measure and assess broadband infrastructure and its quality. Access to fast and ultrafast broadband-enabled services is one of the major requirements for competitiveness. In terms of connectivity, Romania scores considerably better than Bulgaria. Major investments in those technological solutions in 2017 and 2018 enabled Romania to catch up with, and, in some aspects of the indicator, even to exceed average EU values.

1 Connectivity	Bulgaria		Romania		EU
	rank	score	rank	score	score
DESI 2019	**25**	**51.6**	**22**	**53.5**	**59.3**
DESI 2018	24	48.8	19	52.5	54.8
DESI 2017	21	45.9	23	45.2	51.2

Table 2. Comparison of ranks and scores in terms of Connectivity

Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

Bulgaria achieved some good results in connectivity, especially in terms of the access to ultra-fast and mobile broadband networks, its scores for the dimension being very close to the average for the EU, yet the country did not rank as well as it had earlier. This was largely due to the fact that the country was seriously lagging behind in the provision of ultra-fast broadband access with only 10%, in contrast to Romania with 20% of the EU average.

In our analysis of the performance of both countries in terms of connectivity we need to point out that Bulgaria did extremely well in 2019 when it ranked second among all EU member states with the number of municipalities that became part of the WiFi4EU initiative.

3. Human Capital

The Human Capital dimension measures the level of digital skills of people. Its measurement is based on the complexity of the activities that people engage in when using digital devices.

Bulgaria ranks 28th among all EU member states, its scores being much below the EU average. This is primarily due to the overall low level of digital skills of the population. The relative share of people with basic skills

in using digital technologies is 29%, in contrast to the EU average of 57 %. The difference between young citizens aged 16 to 24 who have at least basic digital skills is striking. Their share in Bulgaria is 54%, much below the EU average of 81 %. Another worrying fact is that only 11% of the entire population are people with more advanced Internet skills, whereas the average share of such people in other EU countries is much higher.

The situation is similar in Romania, its scores being close to those of Bulgaria. The country ranked 27th in terms of the Human Capital dimension. That finding is true about digital skills as well. Only 29 % of people aged between 16 and 74 have basic digital skills) and 10 % have advanced digital skills (against the EU average of 31 %).

The scores in terms of the share of ICT specialists in the total number of employed people are similar - 2.3 % for Bulgaria and 2.1% for Romania, compared to the EU average of 3.7%. A positive fact is that in both countries the share of women specialists in the ICT sector is similar to the EU average of 1.3%.

4. Use of Internet Services

People in the EU take part in various online events – they use the Internet to get access to the latest news, to surf social networks, to communicate, to do their shopping, to do online banking, etc. Bulgaria and Romania have been steadily improving their scores in terms of that indicator, yet both countries are still below the EU average in terms of the use of Internet services. The share of people who use the Internet in Bulgaria is 64%, and that in Romania – 68%, the EU average being 83%.

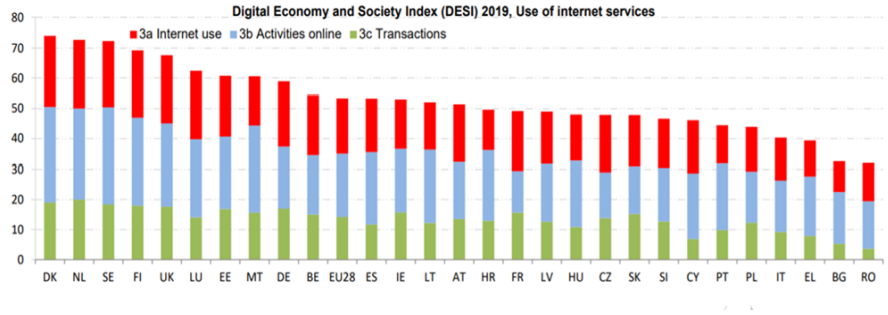


Figure 3. Ranks of EU countries in the use of Internet Services
Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

In our opinion, the main reason for those disappointing results is that the Internet users in Bulgaria and Romania are less interested in using some Internet services. Online banking in either country is not very popular – it is used by only 11% of the Internet users, in contrast to the EU average of 64%. Only a third (i.e. 31%) of Internet users in Bulgaria do their shopping online, the figure for Romania being even lower - – 26 %, while the average percentage of people in other EU countries who do their shopping online is 69%. Another alarming fact is that in both countries, 27% of the people have never used the Internet, the figure being one of the highest in the entire European Union.

5. Integration of Digital Technology

This dimension refers to the level of digitization of business and electronic commerce. By adopting digital technologies, businesses can enhance their efficiency, reduce costs and better engage customers and business partners. Unfortunately, this is the indicator in terms of which both countries are lagging behind most seriously with Romania ranking 27th and Bulgaria 28th among other EU countries.

Bulgarian and Romanian enterprises are not making the most of the opportunities which online commerce provides – the share of Bulgarian businesses which engage in online commerce is 6% and that of Romanian companies is 8%, while the average share in the EU is 17%. Only 3% of all small and medium-sized enterprises in Bulgaria make sales abroad, in Romania this is the case with 5% of the SMEs. As little as 2% of the turnover of SMEs in both countries is from online commerce.

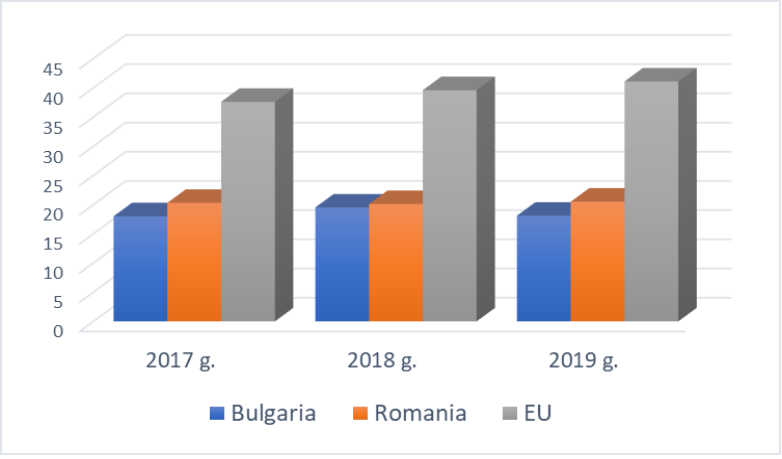


Figure 4. Scores in digital integration
Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

6. Digital Public Services

This dimension measures the digitization of public services, focusing on eGovernment and eHealth. Modernisation and digitization of public services can lead to efficiency gains for the public administration, citizens and businesses.

Bulgaria has made considerable progress in the Electronic Government dimension with an increasing number of users and a high score for the provision of digital public services to enterprises. Those are the reasons for the country's relatively good ranking – Bulgaria ranks 25th, while Romania ranks 28th although it has performed very well in terms of the online interaction between public authorities and citizens. Romania ranks 7th in terms of e-government users but is lagging behind in the other sections. The main factors which determine the scores for this dimension are e-Government and e-Health.

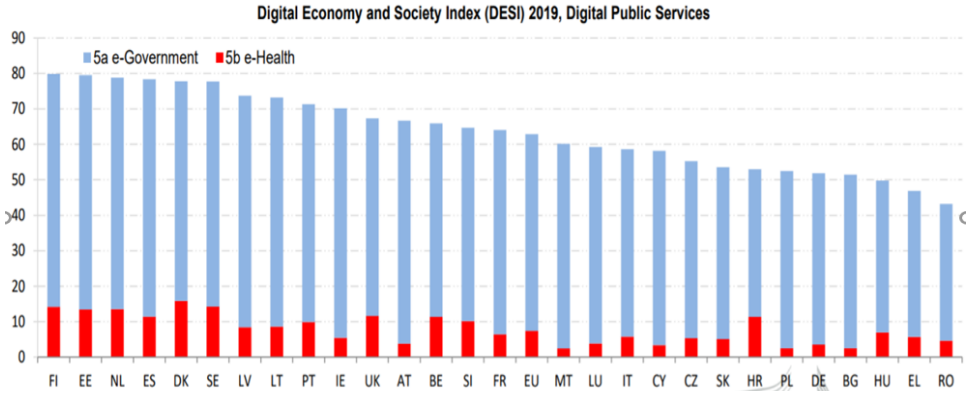


Figure 5. Ranking of EU member states in terms of Digital public services
Source: The Digital Economy and Society Index (DESI), https://ec.europa.eu [1]

Digital economy offers numerous opportunities to Romania and Bulgaria, yet in order to be able to fully benefit from those opportunities both countries need to be aware of the nature, the specifics, and the principles which govern the functioning of digital economy. Our analysis of the scores for the major indicators has identified that the two countries are definitely lagging behind the leaders in this respect. It has also identified a number of weaknesses in the implementation of digital transformation. At the same time, the findings of our analysis indicate that there are good opportunities for overcoming those weaknesses as long as the two countries pay attention problematic areas and make the effort required to deal with existing shortcomings and problems.

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