

Assessment of the Level of Digital Technologies Penetration in Bulgaria after Covid-19 Outbreak

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Abstract

The emergence of COVID-19 has had a strong negative impact not only on the health systems in the countries, but also on the global economy. As a result of implemented national lockdowns many businesses and households transitioned online. Thus, the digital transformation that has been underway for decades was accelerated significantly. The state of emergency in Bulgaria has also led to an acceleration of the digitalization processes in the country. The main goal of the paper is to assess the level of digital technologies penetration in Bulgaria after the COVID-19 outbreak. The main conclusion of the paper is that although the country is making progress in the digitalization processes, there is still a large lag relative to the average European levels.

Keywords: digital, digitalization, digital technologies

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Introduction

In the end of 2019, an unknown coronavirus emerged from the Wuhan region in

China. The imposed lockdown in the region failed to contain the outbreak, and it quickly spread to other parts of China and around the world. The development of the pandemic has put the health systems of many countries under enormous pressure. Governments across the world introduced policies to ensure public health. Policy responses applied at the beginning of the pandemic seriously impacted economies and labor markets. The use of digital technologies during the lockdowns imposed has proved to be an appropriate means of mitigating the negative effect of the pandemic on the economies of the countries.

As vaccination progresses and medicines against coronavirus are found, some of the digital activities may decrease, but digital transformation processes are likely to intensify in many areas. For example, in order to ensure its future prosperity in September 2021, the European Commission proposed a concrete plan to achieve the digital transformation in the society and the economy by 2030. The state of emergency in Bulgaria has also led to an acceleration of the digitalization processes in the country.

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This article expands research on digital transformation by investigating the digital technologies penetration in Bulgaria. The research problem addressed in the article is related to determining the level of digital penetration in the country and its comparison with average European levels. Correspondingly the main goal of the paper is to assess of the level of digital technologies penetration in Bulgaria after the COVID-19 outbreak.

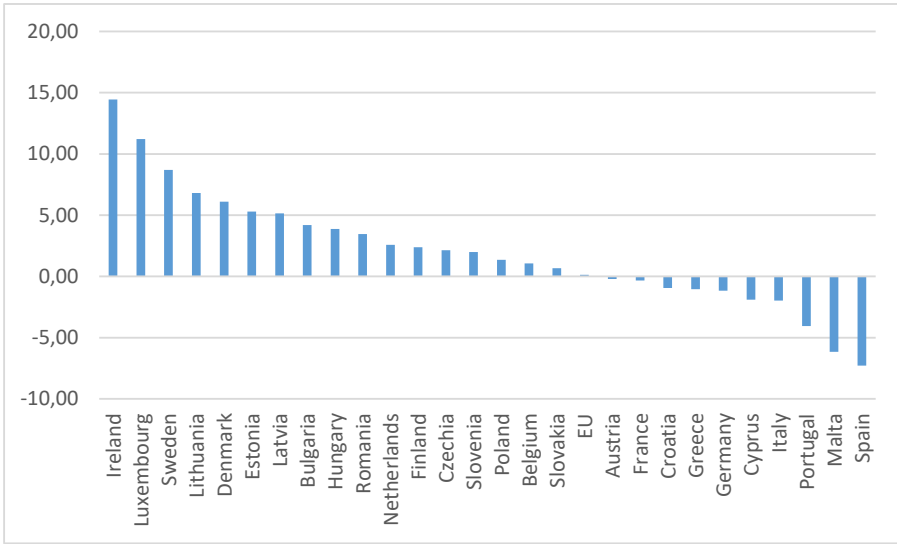
Analytical and comparative methods are used in order to draw the needed conclusions related with the main goal of the study. Information has been used from a variety of sources including the Organisation for Economic Co-operation and Development (OECD), Eurostat and European Commission. On the basis of the data collected from those sources the methods used allow to be identified and assessed the various effects on the economy and society that will arise as a result of the coronavirus crisis and the measures taken to address its effects. In addition, it will be possible to bring out the areas where Bulgaria is making the most progress and the areas with the greatest lagging behind to the EU average in terms of the digitization process.

The main limitations of the study are related to the fact that for some of the indicators studied there is data only from the pre-pandemic years. However, this data can

be used to highlight emerging trends for the digital technologies penetration in the country. To date, the problem has not been explored in the necessary entirety partly because of the continuing influence of COVID-19 on the country's health and economic system. However, there is some research at the state level on the issues, and results of these are presented in some national strategic documents.

Impact of COVID-19 on economies in the European Union

The emergence of COVID-19 has had a strong negative impact not only on the health systems in the countries, but also on the global economy. In the months following the outbreak, there has been a significant deterioration in a number of economic indicators, both in the world as a whole and in the European Union (EU). According to Eurostat (Eurostat, 2021), the amount of GDP for the EU in the second quarter of 2020 decreased by EUR 4868 million compared to the fourth quarter of 2019 (the last quarter before the pandemic occurred in Europe), representing a decrease of almost 15%. The EU only managed to recover pre-pandemic GDP levels in the second quarter of 2021. However, as many as ten EU countries in the second quarter of 2021 failed to restore their pre-pandemic levels.

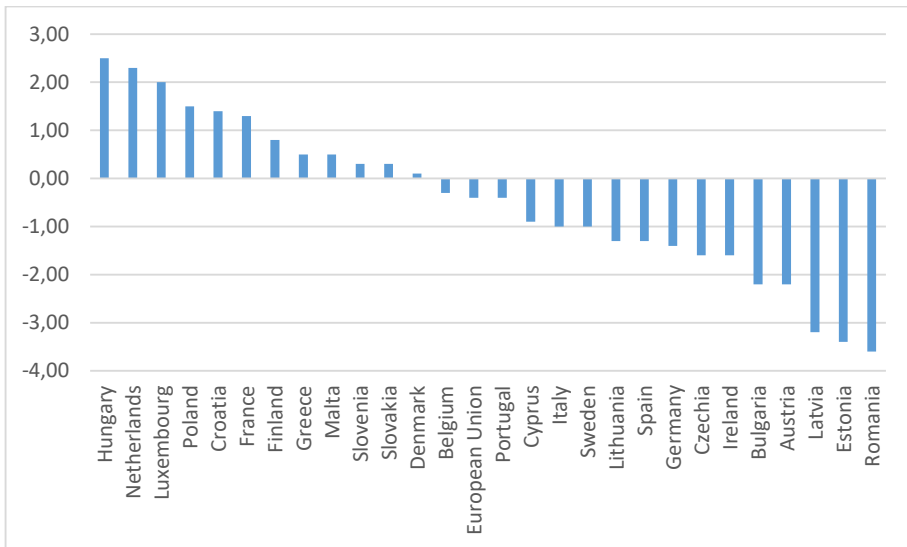


Source: Eurostat, own calculations

Figure 1. GDP growth rate in EU (2021-Q2 vs 2019-Q4)

An even more unpleasant picture is seen when employment in the EU is tracked. In the fourth quarter of 2019, employment in the EU was 68.6% and fell to its lowest point of 66.9% in the second quarter of 2020. In subsequent

quarters there was a trend of growth, but in the second quarter of 2021 employment in the EU reached only 68.2%. Apart from the EU as a whole, 15 more countries are failing to reach pre-pandemic levels.



Source: Eurostat, own calculations

Figure 2. Employment growth rate in EU (2021-Q2 vs 2019-Q4)

One of the first measures since the outbreak of the pandemic taken by governments in different countries was to introduce national lockdowns. In addition to the lockdowns in place, individual countries began to use state aid as a tool to combat the economic consequences of COVID-19. The number as well as the budget size of state aid cases launched to deal with the COVID-19 crisis is historically unprecedented (Van Hove, J., 2020). Significant differences were observed within the aid used to fight the crisis. According to the European Court of Auditors survey Germany launched the largest response with measures amounting to about 43 % of its GDP, followed by Italy (37 %), Lithuania (29 %), France (23 %) and Spain (22 %) (European Court of Auditors, 2020). According to the survey the worst performing countries are Slovakia (5%), Romania (5%) and Bulgaria (2 %).

The negative effect of the pandemic on the economy is undeniable. Sectors that require physical proximity, such as the cultural and creative industries, have been the hardest hit by the crisis (de Vet, J.M, et al, 2021). Among other sectors which have suffered from the crisis are aviation and rail industries, oil and energy as well as heavy industries of different kinds.

Despite the overall negative effect on the economy from the lockdowns introduced, certain sectors thrived. In addition to producers of medical supplies, personal protective equipment, the four Big Tech and other IT companies, as well as e-commerce retailers, video communications companies and media streaming service providers have provided meaningful alternatives to shops, offices and travel and even social life (Böhme, K., and Toptsidou, M., 2020).

In response to the challenges posed by the pandemic, the European Commission adopted the EU Recovery Plan NextGenerationEU. The proposed plan anticipates investments of EUR 750 billion to help rebuild Member States' economies. Investments are intended to address the challenges of implementing the green and digital transition in the EU.

Individual Member States have also taken measures to limit the impact of the pandemic. One of the most common measures undertaken was to strengthen digital infrastructure as a result of increased demand. In many countries, support for the digitalization of businesses, especially the SME, and for stimulating e-commerce, work from home and online employee training has been strengthened. It is important to underline that the largest EU economies in terms of GDP are not among the digital frontrunners and this impacts on the overall performance of the single market (DESI, 2020a, p.14).

The current situation poses significant challenges for individual countries. It is unlikely that economies and societies will return to "pre-COVID" patterns; the crisis has vividly demonstrated the potential of digital technologies and some changes may now be too deep to reverse (OECD, 2020). Sixty percent of executives surveyed by the IBM Institute for Business Value (IBV) indicated that they are using this time to dramatically accelerate their company's digital transformation. And fully two-thirds said that the pandemic has allowed them to advance specific transformation initiatives that previously had encountered resistance (IBM Institute for Business Value, 2020, p. 2).

The level of digital technologies penetration in Bulgaria after the COVID-19 outbreak

At the beginning of 2021, the European Commission proposed a document entitled 2030 Digital Compass: The European Way for the Digital Decade, where is stated the ambition to pursue digital policies that empower people and businesses to seize a human centred, sustainable and more prosperous digital future (European Commission, 2021, p.1). One of the most significant tools to track the EU's progress towards the targets set in the document is the Digital Economy and Society Index. The Index summarizes the relevant digital efficiency indicators in Europe and tracks member states' development in five main dimensions: connectivity, human capital, use of internet services, integration of digital technology and digital public services.

Bulgaria ranks last in the EU in the 2020 Digital Economy and Society Index (European Commission, 2020b). Although the country's overall score has steadily increased over the past five years to 36.4 in 2020, there is an unfavorable trend of increasing distance from the EU average. This is due to the fact that the other Member States are developing the digitalization processes at a higher rate than Bulgaria. The structural differences in Bulgaria's economy and that of the other EU members (Kalinkova, 2019) as well as the integration and specialization of the Bulgarian economy in the EU (Donchev, 2013) have an impact on the difference in the degree of digitalization.

The coronavirus crisis displayed the importance of the built digital infrastructure. In recent years, little progress has been made in some of the connectivity indicators for Bulgaria. For example, next-generation fast broadband coverage reaches 77% in 2019, up

from 75% in 2018. The fixed very high capacity network coverage reaches 42% of households in 2019, up from 38% a year earlier. The 4G network coverage is in a sustained growth trend. In 2017, 72% of the territory of the country was covered by 4G networks, while in 2019 the coverage reached 81%. There is a high spreading of mobile broadband take-up with 103 subscription per 100 people in 2019, which is slightly above the EU average.

Despite the positive facts noted, Bulgaria is still very far from the European average in terms of connectivity. For a number of indicators, the lagging behind compared to other EU countries is significant. Bulgaria is last in the EU in terms of overall fixed broadband take-up. Only 58% of households have a subscription in 2019. The spreading of at least 100 Mbps fixed broadband take-up is at unsatisfactory levels, with only 11% of households having a subscription in 2019.

The results achieved contrast with what is set out in the National Broadband Infrastructure Plan for Next Generation Access adopted in 2014. It states that it pledges "developing fixed broadband networks to achieve 90% access at speed of over 100 Mbps", as well as "providing next generation access with full coverage throughout the territory of the country" (National Broadband Infrastructure Plan for Next Generation Access, 2014, p.75).

Another important dimension concerning the digitalization of the economy is related to human capital. Digital skills allow people to participate online in business life. The coronavirus crisis has shown that the right digital skills enabling citizens to access the information they need are of utmost importance to society as a whole. Digital skills were and still are needed across the business spectrum, both in the public sector and in the private sector.

Despite a slight improvement observed in recent years in terms of the overall level of digital skills, Bulgaria still ranks at the bottom in the EU. The share of people with at least basic digital skills for 2019 amounts to 29% of the population, while the EU average is 58%. Only 11% of people in Bulgaria have above basic digital skills, with an average European level of 33%.

A little better is the situation in the field of advanced skills. In 2018, 3% of employees were ICT specialists, up from 2.7% in 2016. Despite the progress made, the country still lags behind the European average, which stands at 3.9% for 2018. There are two indicators in the field of human capital, where the levels in Bulgaria are above the European average. The first relates to the female ICT specialists as a percent of female employment and the second relates to ICT graduates as a percent of total graduates.

The data for Bulgaria in the human capital dimension show a low level of overall digital skills and a large lag of the country from the average European levels. Greater, targeted investments are needed to improve the qualification of the workforce. Achieving a high relative share of the working-age population with at least basic digital skills is a prerequisite for absorbing new technologies and achieving the desired economic growth of the country.

The use of Internet by individuals increased significantly during the recent years. The social exclusion measures put in place have led to increased use of social networks, entertainment platforms, remote work, e-commerce and e-government services. This trend was present in the EU even before the pandemic occurred.

With regard to the use of internet services in Bulgaria, two conclusions can be drawn. The

first is that they have grown in recent years. The second is that the country continues to lag behind in terms of average European levels. In 2019, only 67% of Bulgarians use the Internet at least once a week, and as many as 24% of Bulgarians have never used the Internet. Bulgaria's lagging relative to average European levels is particularly significant in terms of video-on-demand usage, internet banking, online shopping and participation in online training courses. When we talk about internet services, Bulgaria stands better than the EU average by only two indicators. The first relates to conduction of video calls, and the second to carrying out activities on social networks.

The next dimension concerning the digitalization of the economy is related to the integration of digital technologies by enterprises. Social exclusion measures that were introduced in the country were supposed to incentivize businesses to implement remote work for their employees. It turned out that for small and medium-sized enterprises (SMEs) in Bulgaria is extremely difficult to make their staff start working remotely. One of the main hurdles for that is the lack of the necessary digital skills among the owners and the employees.

In terms of integration of digital technologies Bulgaria ranks last among EU countries. The reached level of the country is well below the EU average. Only 23% of enterprises in the country share information online at an average European level of 34%. Only 6% of Bulgarian enterprises use cloud computing services, which is three times lower than the European average.

The COVID-19 pandemic made a significant impact on ecommerce trends around the world. According to data from IBM's U.S. Retail Index, the pandemic has accelerated

the shift away from physical stores to digital shopping by roughly five years (Perez, 2020). Despite the emerging trends worldwide, the development of online commerce in Bulgaria is still in its infancy. Small and medium-sized enterprises selling online are only 7%, with an E-commerce turnover of SMEs of only 2%. The opportunities to increase the sales provided by social networks are also not sufficiently exploited. For a large number of consumers, the top priority when making a purchase is the convenience that social media creates. On the other hand, social networks use a huge amount of data to personalize users' shopping experiences. The combination of convenience and customization enhances user engagement. Based on an ARK research, during the next five years, social commerce is likely to grow 50% at a compound annual rate from approximately \$390 billion to nearly \$3 trillion (ARK Invest, 2021). Despite the high relative share of Bulgarians using social networks, only 10% of enterprises use them to promote and develop their business.

Nowadays, social networks provide great opportunities for sellers to sell on a global customer base. With the reach of platforms such as Facebook, Instagram, Twitter, TikTok, Snapchat and Pinterest, retailers have access to millions of customers in different regions of the world. Although social media provides the opportunity to make sales in other countries, these opportunities are not yet used in Bulgaria. Only 3% of SMEs in the country in 2019 make cross-border sales online.

The last major dimension concerning the digitalization of the economy is related to the digital public services. The COVID-19 crisis has shown the importance of ensuring that public services are provided in an environment of social exclusion. Thus, naturally, the restrictions introduced in the

country have led to the appearance of new services that are provided online. This has accelerated the process of digitalization of public administration and the exchange of information between state institutions and citizens.

Despite the positive signals shown, Bulgaria is still lagging behind the European average. The share of users of e-Government services in the country in 2019 was 61%, which is close to the European average of 67%. It is important to note that the country achieves satisfactory results in the field of digital services provided for the business.

Conclusion

As a result of the advent of COVID-19 and the measures taken by individual countries, many businesses and households in Europe and around the world transitioned online. Thus, the digital transformation that has been taking place in Europe in recent years has accelerated significantly. The pandemic also contributed for acceleration of the penetration of the digital technologies in Bulgaria.

Notwithstanding the shown positives, the reported progress can be identified as insufficient when comparing the country with the other EU Member States. Overall, the country lags significantly behind the European average in terms of digital penetration into the economy and society. Moreover, there is an unfavorable trend of increasing distance from the EU average. This is due to the fact that the other Member States are developing the digitalization processes at a higher rate than Bulgaria. The lagging behind of average European levels was observed in each of the dimensions studied - connectivity, human capital, use of internet services, integration of digital technology and digital public services. More targeted investments are needed in

terms of the development of digitalization processes in the country. Otherwise, the country risks continuing to lag behind modern trends in the development of the economy and society.

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