
Use of Internet-Based Services in EU in 2019 and 2020

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Abstract

The consumption of internet-based services may vary among the EU countries and regions as they have different economic and demographic profiles. Since the consumption of this kind of services is crucial for the development of the EU digital economy, understanding the differences among countries, in terms of internet-based services consumption, may be crucial. The findings may support companies to adjust their business strategies and increase their competitiveness in the current economy that is moving online. Also, the findings may support policies that could stimulate the economy to become more digital.

The purpose of this paper is to point out the major differences between EU countries in terms of internet-based services usage.

We will perform a comparative analysis of the indicators aggregated under *Take up of internet services* indicators group of the Digital Economy and Society Index, among EU countries (Italy France and Ireland excluded due to the lack of data).

This article may add value by increasing the awareness regarding the importance of internet-based services consumption and the importance of digital economy. The degree of novelty is high considering the context of COVID-19 pandemic that made many markets totally or partially dependent on technology, where both the citizens/consumers, and the staff of the private and public organizations were forced by the circumstances to consume and to provide goods and services via online. At the same time, based on well-defined statistical data, an analysis of the impact of Internet use at EU level in the main socio-economic branches is performed.

Keywords: *Internet-based services, digital economy, internet.*

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Introduction

There are multiple reasons, both social and economic, for which individuals use internet. Also, the purposes of using internet are multiple, e.g. shopping, research, entertainment, to start or run a business, to work etc. Digital technology and internet have penetrated almost all socioeconomic fields, including those that are considered person-centred like healthcare. (Laar, et al., 2019)

As defined by Thomas Mesenbourg (2001), the concept of Digital Economy has 3 main components, as following: 1) E-business infrastructure (human capital, networks, software, hardware, telecom, etc.); 2) E-commerce (online commercial transactions); 3) E-business (any process that is mediated by a computer and/or a network in an organization and, generally, the way businesses are conducted).

There are a lot of internet-based services that are free of charge, e.g.: accessing information about goods and services, finding and applying for jobs, participating in social networks, using internet storage space and even online banking. For these kinds of services and many others, the digital consumers need only an internet connection. (Donnelly, et al., 2020).

Tkaczyk, J., 2016. focuses on the upward trends of digital consumption, while innovating through the perspective of impact in the fields of management and marketing.

Neubert, J., et al., 2015 focuses on assessing the skills of the 21st century in industrial and organizational psychology, on complex problem solving and collaboration.

Another approach in the field is the work of Van de Oudeweetering, K., Voogt, J., 2018, which emphasizes the conceptualization and implementation of skills in the 21st century, respectively exploring the dimensions for new programs.

Unlike in the traditional economy, the available quantity of many services specific to the digital economy does not decrease as the services are used by more individuals.

In 2015, the European Commission started to use Digital Economy and Society Index (DESI) to measure the digital economy. The most recent report is based on 2019 data and it was published in 2020. It can be considered an assessment of the status of the EU digital economy and society.

DESI purpose is to monitor Europe's overall digital performance and tracks the progress of European countries regarding their digital competitiveness (EC, 2020). Measuring the digital economy and tracking its progress is essential since the Commission wants a European Society powered by digital solutions that work for people and respect the EU core values, as stated in the *Shaping Europe's digital future* communication. (EC, 2020). DESI is an aggregated indicator having 5 dimensions:

- Connectivity: fixed broadband coverage, fixed broadband take-up, mobile broadband, and broadband prices
- Human capital: internet user skills and advanced skills
- Use of internet: Citizens' use of internet services and online transactions
- Integration of digital technology: Business digitisation and e-commerce
- Digital public services: e-Government

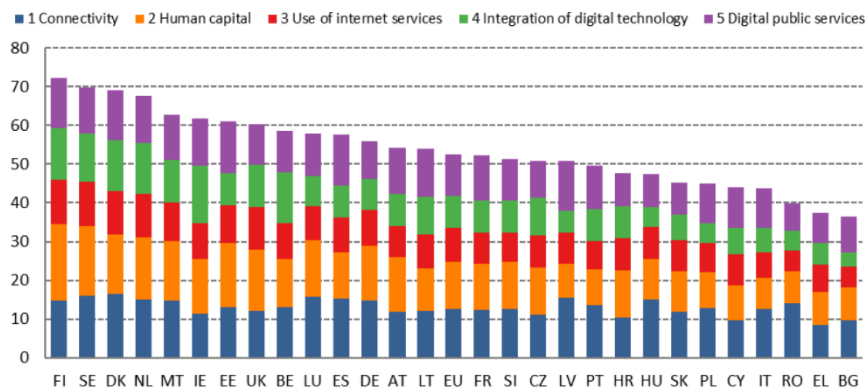


Figure no. 1. Digital Economy and Society Index, 2020
 Source: DESI 2020, European Commission, p. 14

Figure no.1 presents us the EU countries sorted by DESI index, with Finland, Sweden and Denmark having the most advanced digital economies in EU. They are above the EU average in all the 5 dimensions of DESI. Also, the figure indicates that the least advanced digital economies in EU are Bulgaria, Greece, and Romania. Taking the case of Romania, access to the internet or connectivity, which is the prerequisite of the digital economy, does not seem to be the cause of the low aggregated score since Romania's connectivity is above the EU average. The dimension that seems to have a

negative impact on the aggregated score is *Use of internet services* where Romania has the poorest performance among the EU countries.

This kind of data reveals, among others, the potential of the e-commerce. In a recent study, Kuceba (et al, 2021) found out that the development of e-retailing is directly proportional with internet usage regardless of other factors.

We consider these as strong reasons to take a closer look some of the indicators aggregated under *Use of internet services* dimension of DESI 2020. The next section of the article gives as an in depth understanding of the internet-based services concept.

Review of the scientific literature

Having digital services and goods developed by tech providers is not enough to boost the EU digital economy. Having digital consumers willing to take advantage more of the internet-based services is equally important for the digital economy development as technology and innovation. A digital consumer can be defined as an individual being aware of his/her needs, searching for and buying services and goods on the Internet, consuming online content, willing to simplify the decisions they have to make (Tkaczyk, et al, 2016). The contemporary society is not characterized only by technological advancements, but also by globalization and accelerated accumulation of knowledge (van de Oudeweetering, et al, 2018) which makes searching information on the internet one of the most used services ever.

In the digital economy, according to van Laar, et al. (2019) people (either in a domestic or work environment) use information communication technologies to access and spread information, to interact and exchange experiences with experts in learning communities, and to generate and refine their ideas. ICT is also used for searching and applying for jobs, searching information about products, online banking, e-learning and many more.

An increasing number of consumers are replacing traditional marketing channels with electronic ones and becoming loyal to e-retail (Donnelly, et al., 2020). Regarding consumers' purchasing decision-making in the context of e-commerce, it is certain that the future commercial outcomes of the Internet depend, to some degree, upon whether current and future users will continue to use and increase their use of this medium for shopping activity. The impact of demographic factors, education, economic development, modern technology, etc., on understanding the process of Internet purchasing is evident. (Ristevska and Temjanovski, 2019; Sanap, 2020; Donnelly, et al., 2020; Deka and Borman, 2020)

Recent studies show that the typical Internet consumers belong to the age group ranging from 18 to 34 (87.8%), more than half are women (66%), with higher education (64.8%) and living in urban areas (74.1%), in which the country of origin of the respondents is relatively uniform. (Koncar, et al., 2021). Also, the correlation between the use of the Internet and the number of individuals who purchased on the Internet has been proved to be very high, positive and statistically significant. In case that a country has a higher level of Internet usage, accordingly, there are a growing number of consumers who purchase on the Internet regardless of the development of e-retailing in a certain country. (Kuceba, et al., 2019)

Research methodology

The current analysis that compares 24 EU countries (Italy, France and Ireland excluded due to the lack of data) is based on Digital Economy and Society Index 2020 (DESI 2020) raw data that are available at <https://digital-agenda-data.eu/datasets/desi/visualizations>. The graphics are generated by the authors using the advanced data visualization tool on the platform.

Considering the purpose of this analysis:

- we chose the age group (25-54) that is the most active in society and economy and which is also hard to change and therefore predictable.

- we selected four indicators aggregated under *Use of internet services* dimension of DESI based on which we compared the 24 EU countries: 1) Individuals looking for information about goods and services online in 2020; 2) Individuals using online banking in 2020; 3) Individuals looking online for a job or sending a job application in 2019; 4) Individuals doing an online course in 2020.

Results and discussion

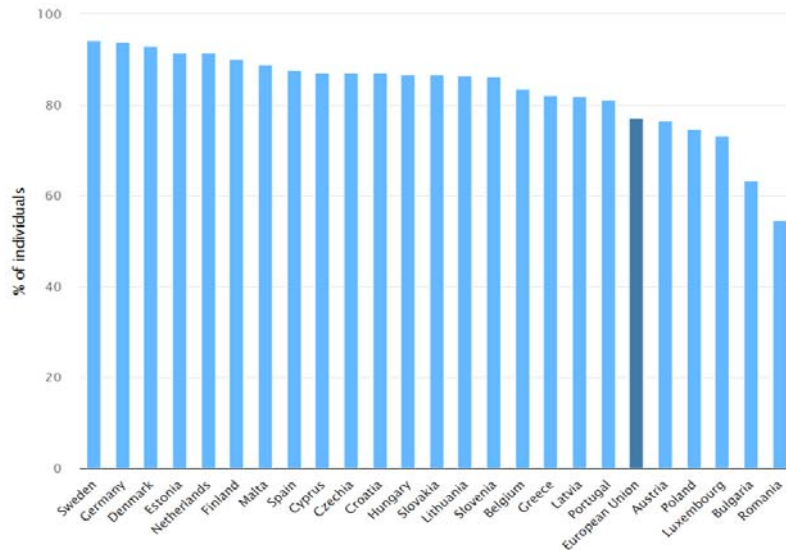


Figure no. 2 Individuals looking for information about goods and services online in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Figure no. 2 presents the percentage of individuals (age 25-54) who have used Internet, in the last 3 months, for finding information about goods and services. These individuals are the only who may buy online using e-commers platforms. Sweden, Germany, Denmark, Estonia, Netherlands, and Finland are the countries where almost all individuals (90 – 95%) are looking for information about goods and services online. The countries with the lowest rates are Bulgaria (63.3%) and Romania (54.7%). These are the countries where e-commerce may struggle to grow because individuals do not use Internet to gain information about goods and services which is the first step in online purchasing.

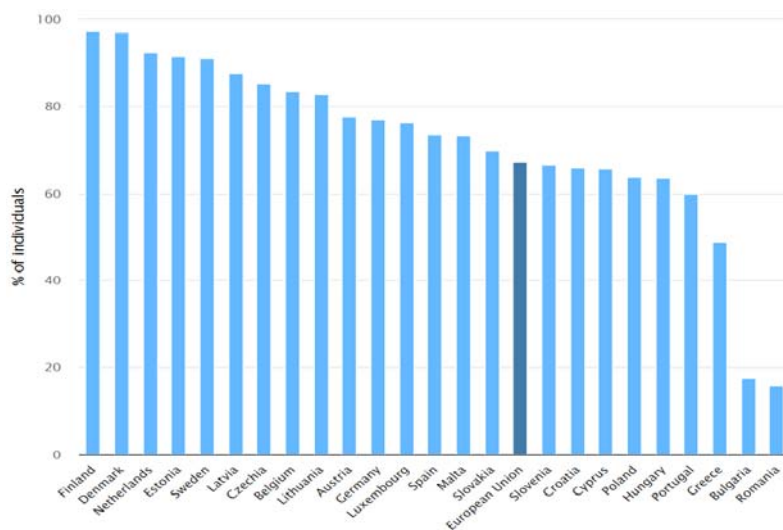


Figure no. 3. Individuals using online banking in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Figure no. 3 presents the percentage of individuals (25-54) who have used Internet, in the last 3 months, for online banking. In 5 EU countries (Finland, Denmark, Netherlands, Estonia, and Sweden) almost all individuals (90.9 – 97.2%) use online banking. The countries with the lowest rates are Bulgaria (17.6%) and Romania (15.9%). These scores reflect the market potential of banks in Romania and Bulgaria where the transition from traditional bank services to online banking, which is more cost effective) is hard due to the low interest or skills of individuals in using online banking.

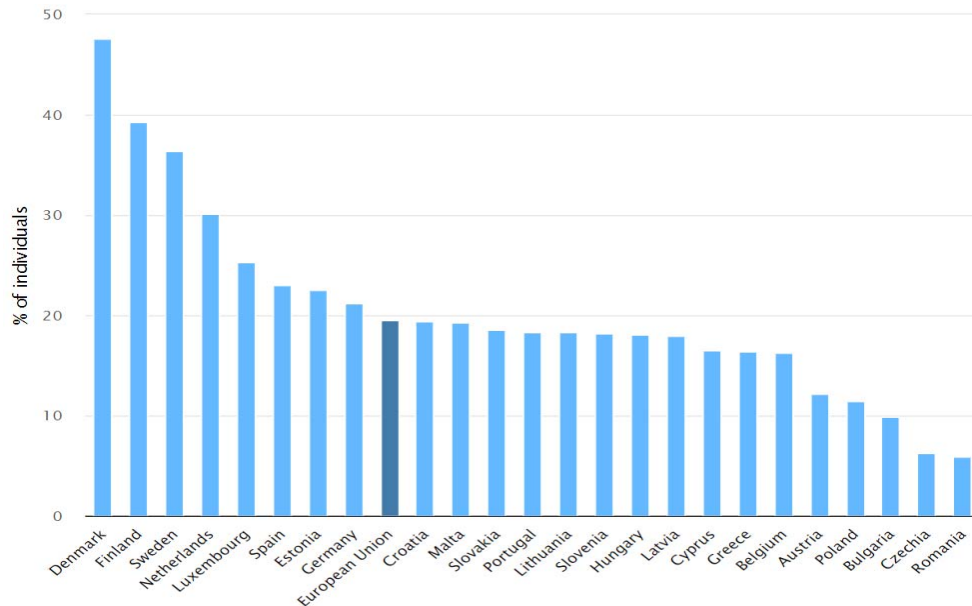


Figure no. 4. Individuals looking online for a job or sending a job application in 2019

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 4 we can see the percentage of individuals (age 25-54) who have used Internet, in the last 3 months, looking online for a job or sending a job application. The top 3 countries are Denmark (47.7%), Finland (39.3%) and Sweden (36.4%). The countries with the lowest scores are Austria (12.2%), Poland (11.4%), Bulgaria (9.84%), Czech Republic (6.21%) and Romania (5.9%). These low scores may reflect the labour market profile associated with low level of digital skills, the low employee turnover rates, and the success of traditional methods to find and apply for jobs (exp.: through recommendations).

In Figure no. 5 we can see the percentage of individuals (age 25-54) have used Internet, no more than 3 months prior to the survey, for doing an online course of any kind. The top 4 EU countries are Finland (32%), Spain (30.7%), Sweden (27.2%) and Estonia (26.3%). The countries with the lowest scores are Czech Republic (9.2%), Poland (7.9%), Bulgaria (5.93%) and Romania (2.21%). These scores reflect on one hand, the low potential of online courses market and, on the other hand, the fact that the population is not taking part in lifelong learning activities that may suggest a high percentage of jobs that require low level of skills, not specific to the digital economy.

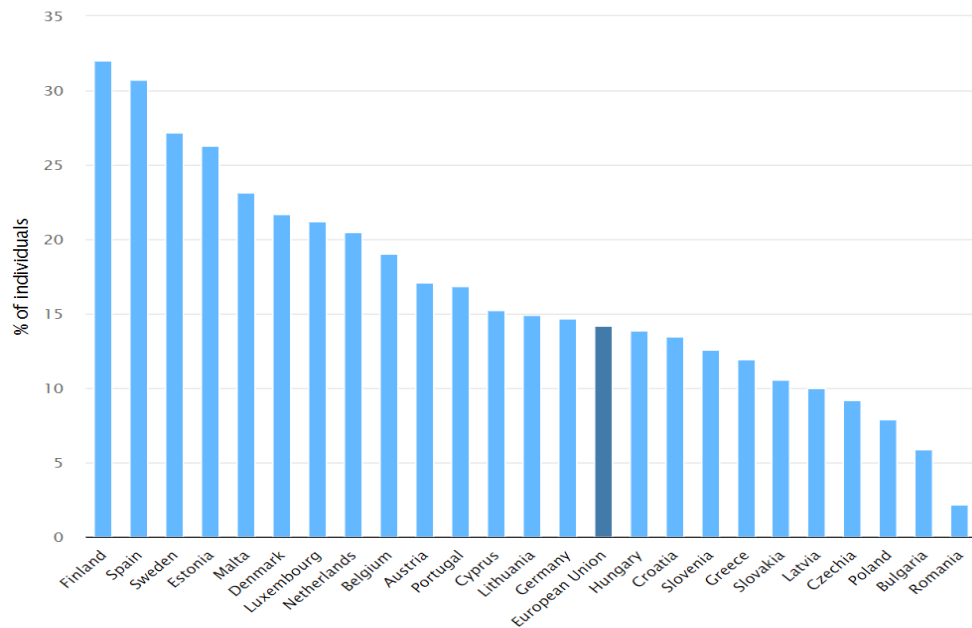


Figure no. 5. Individuals doing an online course in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Conclusions

Considering the context and characteristics of digital global economy, the consumption of internet-based services must be stimulated. The consumption of such services is as important as innovation and the adoption of new technologies in industry.

Western and Northern EU countries give a boost to the digital EU market through their high percentage of individuals using internet-based services. Finnish, Swedish, Dutch and Danish are among the top EU digital consumers while Romanians, Bulgarians and Greeks are the least. In these markets, both the private sector and the governments must stimulate the consumption of internet-based services as the current consumption rate does not make the Romanian/Bulgarian/Greek markets attractive for investments in internet-based services.

To boost e-commerce, the EU has agreed on a range of measures, from removing unjustified cross-border barriers and facilitating cheaper cross-border parcel deliveries, to ensuring the protection of online consumer rights and promoting cross-border access to online content.

Connectivity has improved, but much remains to be done to meet the rapidly growing needs. Member States are working to transpose the new EU rules adopted in 2018 into national law, in order to promote investment in high-capacity networks, both fixed and mobile.

Although the pandemic caused a sharp increase in internet use, this trend was already present before the crisis, with 85% of the population using the internet at least once a week (up from 75% in 2014). The use of video calling has increased the most, from 49% of internet users in 2018 to 60% in 2019. Banking and internet shopping are also more popular than in the past, being used by 66% and, respectively, 71% of internet users.

The main limitation of this research is related to its level of generalization. Even if the data refers to a specific age group, more relevant data breakdowns can be based on residency, employment status and level of education. Further research may consider these breakdowns.

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