



COUNTRY PROFILES

-  Slovakia
-  Czech Republic
-  Poland
-  Hungary

Digitalisation of SMEs as the Precondition for Boosting the EU Competitiveness

The whole society is currently facing the significant impacts resulting from the war in Ukraine, the rising inflation or increasing energy prices. It is not just the economic indicators which are being tested these months, but also our democratic values. The upcoming period is a huge challenge, especially for small and medium enterprises (SMEs). SMEs play an indispensable role in the economy of all European countries, and supporting them must be among the top priorities of European institutions, governments, local administrations and municipalities, and for all key players of the ecosystem, including big companies and the third sector.

The rapid development of modern technologies brings numerous opportunities for individuals, businesses, but also for society. To use them correctly, we first have to understand how they could help us, why and how to implement them and to work with them, thus becoming more resilient, sustainable and even more competitive. In order to stay relevant, the nature of skills needed, or the character of support provided should be evolving in the coming months. Additionally, it has to go in hand with cross-sectoral cooperation underlined by a stable, transparent and predictable regulatory environment.

Digitalisation opens up new possibilities to improve the life of citizens ranging from automation of production and processes, to the wider-than-ever availability of digital products and services, or the provision of electronic public services. We see that it is inevitable to promote democratic digital governance in various industries and sectors, including businesses, since they affect a countless number of individuals both in their professional and personal lives by using the customers' private data, providing online purchase or delivery, or building critical infrastructure.

SMEs at the heart of European digital transformation

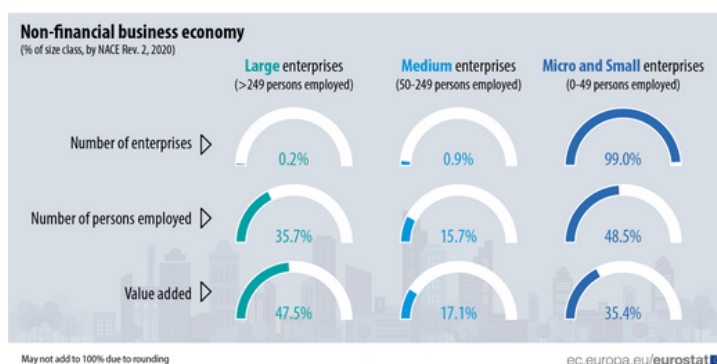
SMEs are regularly referred to as the backbone of the European economy. According to the European Commission's data, they represent 99% of all businesses in the EU, provide 2 out of 3 jobs in the EU and generate 50% of Europe's GDP and, importantly, SMEs undertake about half of all innovation activities within the EU.¹

Digital transformation offers a number of opportunities to SMEs. By digitalisation, SMEs could secure their survival, sustainability and growth. The benefits include working more efficiently, attracting new customers and reaching the needs or changing habits of existing customers, developing new business models and processes, working proficiently with data, and overall, saving more money and time.

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Digitalisation will not happen from one day to another and it needs to be planned and managed properly. It all begins with an open and innovative mindset of the owners and managers and their willingness to digitalise. The process itself should follow a number of specific steps.

GRAPH 1. IMPORTANCE OF SMEs IN THE ECONOMY
SOURCE: [HTTPS://EC.EUROPA.EU/EUROSTAT/EN/WEB/PRODUCTS-EUROSTAT-NEWS/-/DDN-20221028-3](https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/DDN-20221028-3)



¹ [Unleashing the full potential of European SMEs. European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_20_426](https://ec.europa.eu/commission/presscorner/detail/en/fs_20_426)

SME owners and managers should start by pinpointing their vision and the goals they want to achieve. Next steps involve the preparation of a digital strategy, assigning CXOs who will lead the process of digitalisation, the creation of an innovation organisation culture, and setting up proper KPIs and SMART goals, which will be elaborated and evaluated on a regular basis. Digitalisation cannot happen without access to the internet and basic infrastructure sheltered by cybersecurity solutions, or without employees having a proper set of skills (both hard skills and soft skills). Integration of digital tools is closely tied up to dozens of particular digital processes, in line with the legislations and regulations.



According to the study Europe's SMEs in the Digital Decade 2030², 89% of SME survey respondents believe that increasing digitalisation is important to support and enable their business plans in the year ahead and 59% say it is very important or critical. Statistics also show that the adoption of digital tools has more than doubled in the past two years. SMEs particularly value the benefits of servicing and reaching customers, being able to make productivity gains, or improve work-life balance for many employees. Additional data also displays that highly digitalised businesses are 73% more confident in achieving their goals in the next 12 months.

Areas such as human capital, connectivity, integration of digital technologies and digital public services are all parameters measured in the Digital Economy and Society Index (DESI) on an annual basis. DESI 2022³ serves as a source of information for the comparison of the level of SME digitalisation in Slovakia, Czech Republic, Poland and Hungary in the next section. We will look closer at the ranking of individual V4 countries, their strengths and weaknesses. Generally speaking, the European Commission identifies three areas⁴ where EU Member States struggle the most and these are gaps in digital skills, digitalisation of SMEs, and putting cutting-edge 5G networks in place.

All V4 countries lacking behind the EU average

When looking at DESI 2022, all V4 countries ranked among the least digitalised, far behind the frontrunners, but also the EU average, with the Czech Republic, ranked 19th, Hungary 22nd, the Slovak Republic 23rd and Poland 24th.

Slovakia

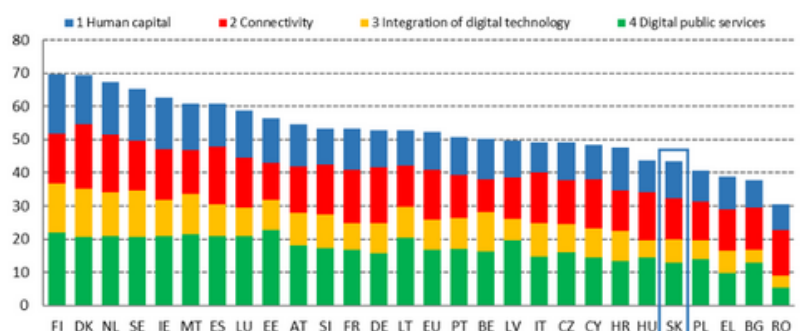
DESI 2022

DESI 2022 ranks Slovakia⁵ 23rd out of 27 EU Member states with a score⁵ of 43.4 points, compared to the average EU score of 52.3 points. Slovakia has been progressing in DESI over the years, except for a slight decrease in 2021. The data also show that the gap between Slovakia and the EU average was 7.9 points in 2017, which grew to 8.9 points last year, making it clear that the country's progress is lagging behind the EU pace.

Human capital dimension

Slovakia ranked 19th out of 27 EU Member States. According to data, 55% of Slovaks have at least basic digital skills, which is slightly above the average of the EU of 54%, and a 1% improvement compared to 2021. The country has also recorded an increase in the percentage of ICT graduates with 4.4% compared to 3.9% in 2021. On the other side, only 21% of Slovaks possess above basic digital skills compared to 27% in the previous year.

GRAPH 2. DIGITAL ECONOMY AND SOCIETY INDEX 2022 - SLOVAKIA
SOURCE: [HTTPS://DIGITAL-STRATEGY.EC.EUROPA.EU/EN/POLICIES/DESI-SLOVAKIA](https://digital-strategy.ec.europa.eu/en/policies/desi-slovakia)



² European's SMEs in the Digital Decade 2030. Google https://storage.googleapis.com/grow-with-goog-publish-prod-media/documents/Europes_SMEs_in_the_Digital_Decade_2030_report.pdf

³ Digital Economy and Society Index 2022. European Commission <https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022>

⁴ New DESI 2022: EU countries still struggle to close gaps in digital skills. Digital Skills and Jobs Platform. <https://digital-skills-jobs.europa.eu/en/latest/news/new-desi-2022-eu-countries-still-struggle-close-gaps-digital-skills>

⁵ Slovakia and the Digital Economy and Society Index 2022. European Commission. <https://digital-strategy.ec.europa.eu/en/policies/desi-slovakia>

Connectivity dimension

Slovakia ranked 21st out of 27 EU Member States with a score of 49.8 points, which is below the average of the EU of 59.9 points. In overall fixed broadband take-up Slovakia has reached 81%, an increase of 3% compared to 2021. The country needs to invest in 5G because although there is access to 67% of the harmonised 5G spectrum, only 14% of populated areas were covered by 5G. Still, this is better than in 2021, when almost no areas were covered by 5G.

Integration of digital technology dimension

Slovakia reached a score of 27.8 points, 8.3 points below the average of the EU, ranking 21st. 31% of SMEs in Slovakia are using Cloud in their businesses, while only 18% of SMEs were using this technology in 2021. Based on the DESI, Slovak SMEs are using Social media more, with an increase from 18% in 2021 to 21% in 2022. Unfortunately, the number of SMEs with at least a basic level of digital intensity has decreased to 43% from 52% in 2021.

Digital public services dimension

Slovakia's rank in this dimension was 24 out of 27 EU Member states. 62% of Slovaks used e-Government tools, which is below the EU average of 65%, and a small decrease from 68% in 2021. In terms of digital public services for businesses, Slovakia reached 75 points (the EU average is 82). In the previous DESI the country scored 79 points.

Global Skills Report



A world-known online platform for online learning, courses and certificates, Coursera, publishes a Global Skills Index and the Global Skills Report⁶ each year, based on the platform's data and research. When we look into Graph 3, we see Slovakia ranks 48th, thus dropping by four places compared to 2021.

The Skills report covers three dimensions - Business, Technology and Data Science. In the Business dimension (such as Accounting, Marketing or Sales), the country reached 37%. In the Technology dimension, which includes Computer Networking or Cloud computing, Slovakia improved its score to 55% and in the Data Science dimension (covering Data Analysis or Data Visualisation) the country's assessment decreased to 63% while in 2020 it reached 66%.

GRAPH 3. COURSERA: GLOBAL SKILLS REPORT 2022 - SLOVAKIA
SOURCE: COURSERA GLOBAL SKILLS REPORT 2022

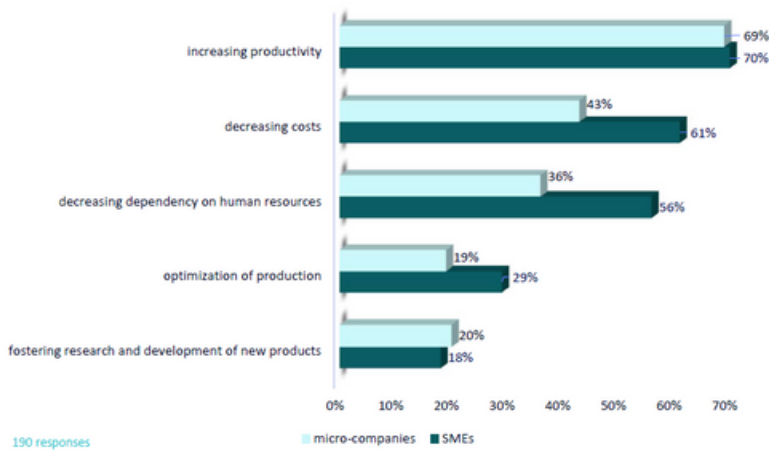
Global Rank	Rank Change	Country Name	Business	Technology	Data Science
1	0	Switzerland	99%	94%	97%
2	+5	Denmark	94%	97%	97%
4	+1	Belgium	98%	89%	90%
7	+8	Netherlands	82%	90%	93%
8	+2	Sweden	81%	87%	94%
9	+5	Germany	92%	85%	88%
10	+3	Bulgaria	80%	86%	95%
11	+9	Austria	97%	74%	92%
12	+2	Belarus	26%	99%	96%
13	+1	Finland	65%	91%	98%
15	+1	Italy	86%	84%	79%
16	+9	France	68%	88%	87%
17	+8	Norway	75%	80%	89%
19	+11	Serbia	73%	79%	83%
20	+7	Poland	41%	92%	80%
21	+3	Ukraine	21%	93%	81%
22	+32	Armenia	44%	81%	84%
25	+4	Spain	61%	69%	85%
27	+11	Hungary	60%	72%	78%
28	+8	Greece	89%	42%	69%
30	+8	Latvia	78%	66%	53%
32	+35	Georgia	53%	82%	49%
37	+8	Lithuania	20%	75%	75%
38	+10	United Kingdom	38%	60%	74%
40	+6	Romania	46%	76%	46%
42	+9	Estonia	25%	62%	75%
45	+26	Croatia	64%	45%	59%
47	+10	Turkey	52%	57%	47%
48	+4	Slovakia	37%	55%	63%
58	+27	Ireland	43%	38%	52%
62	+51	Czech Republic	19%	41%	67%
66	+38	Portugal	36%	37%	38%
74	+5	Azerbaijan	76%	12%	25%

League for Digital Boost survey on the level of digitalisation of SMEs in Slovakia

A spinoff project of SAPIE, the League for Digital Boost, which is a CEE initiative to support digitalisation of SMEs, conducted a survey mapping the level of digital transformation of Slovak SMEs in cooperation with Slovenská sporiteľňa in February 2023. The group of more than 500 respondents included almost 200 SMEs and more than 300 micro-companies. To some extent, digitalisation is a priority for more than 60% of the surveyed SMEs and almost 40% micro-companies. We see that the pandemic kick-started the process of digital transformation in many Slovak companies. Digitalisation is considered to be a tool to increase the profitability by more than 10% for more than 40% SME survey respondents. Businesses also expect increased productivity, decreasing costs and decreasing dependency on human resources.

⁶ Global Skills Report 2022, Coursera, https://www.coursera.org/skills-reports/global?utm_medium=blog&utm_source=enterprise&utm_campaign=gsr2022&utm_content=body-link&utm_term=gsr-blog&utm_cta_location_source=main-nav&utm_cta_text=global-skills

GRAPH 4. EXPECTATIONS FROM DIGITALISATION
SOURCE: LEAGUE FOR DIGITAL BOOST & SLOVENSKÁ SPORITEĽNÁ SME SURVEY (2/2023)



Only one third of SMEs and 43% of micro-companies state that employees have all the necessary skills. Cybersecurity is very important for 31% of SMEs and 32% of micro-companies. An additional 37% of SMEs and 30% of micro-companies consider it rather important, while only 1% of SMEs and 8% of micro-companies define this topic as completely unimportant.

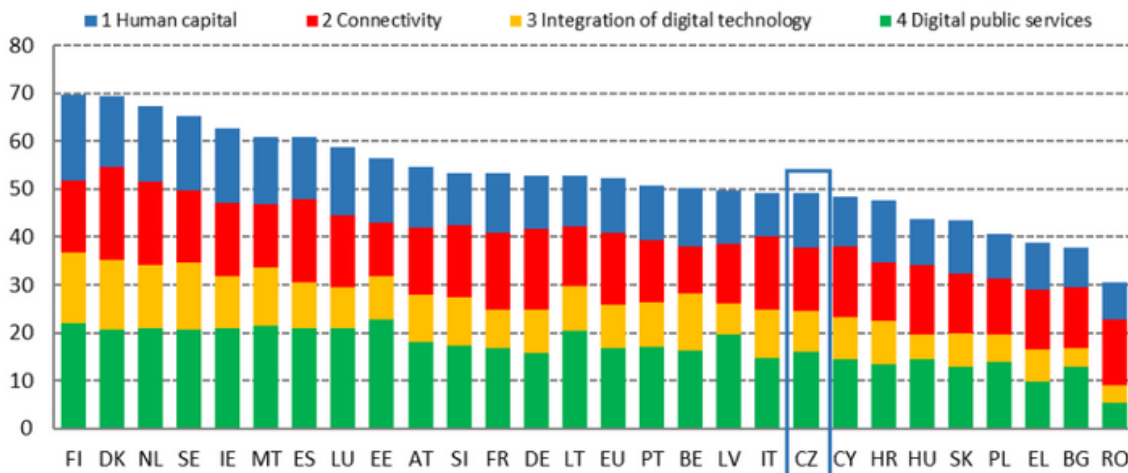
There are a number of reasons why SMEs have struggled to digitalise such as high bureaucratic burdens, cyber attacks, costs outweighing the benefits, employees not willing to use digital tools, lacking state support or lack of skills. Therefore, there is still a significant role that governments, big companies, and business associations can play in helping to accelerate the adoption of digital tools and solutions to unlock further growth of SMEs and economies of individual states.

Czech Republic

DESI 2022

The Czech Republic⁷ ranked 19th out of 27 EU Member States in DESI 2022 with a score of 49.1 points, which is below the EU average of 52.3 points, as you can see in Graph 5. In 2022, the country scored 1.7 points above its score from 2021, but its rank decreased by a single position. From The Visegrad Group, Czechia ranks the highest, while Hungary, Slovakia, and Poland placed lower in DESI 2022.

GRAPH 5. DIGITAL ECONOMY AND SOCIETY INDEX 2022 - CZECH REPUBLIC
SOURCE: [HTTPS://DIGITAL-STRATEGY.EC.EUROPA.EU/EN/POLICIES/DESI-CZECH-REPUBLIC](https://digital-strategy.ec.europa.eu/en/policies/desi-czech-republic)



Human capital dimension

Out of four areas that are measured by DESI, the Czech Republic ranked 15th in Human capital, the same as in the previous year, even though its score decreased slightly. Although the country records 60% of Czechs having at least basic digital skills, which is above the EU average, it has much to improve in the area of female ICT specialists, which make up only 10%.

Connectivity dimension

The Czech Republic ranked 17th with a score of 52.7 points, which puts it below the EU average. Still, the country has improved, moving up from the 22nd rank in 2021. The highest improvement was recorded in the category of the percentage of households covered by Fixed Very High Capacity Networks, which has improved from 33% in 2021 to 52% in 2022.

Integration of digital technology dimension

It is the category in which the Czech Republic recorded the worst ranking of the DESI dimensions, being ranked 19th. It has dropped from the 15th rank, which it occupied in 2021. The decrease is also evident in the sub-categories, such as SMEs with at least a basic level of digital intensity (53% compared to 59% in 2021), the percentage of SMEs selling online (23%), e-commerce turnover (17%) or selling online cross-border (11%).

⁷ [Czech Republic in the Digital Economy and Society Index 2022, European commission, https://digital-strategy.ec.europa.eu/en/policies/desi-czech-republic](https://digital-strategy.ec.europa.eu/en/policies/desi-czech-republic)

Digital public services dimension

The Czech republic ranked 17th in 2022, with a better score compared to its 20th spot in 2021. While the percentage of people using e-Government services is higher and it scored 76% and high above the EU average of 65%, the country is still struggling with the pre-filled forms, reaching a score of 41.

Global Skills Report

In the global ranking of Coursera's Global Skills Report 2022⁸, the Czech Republic ranks 62nd. In each dimension, the country has recorded a huge decline compared to 2021, which resulted in its classification among emerging countries. Back in 2021, it was considered to belong in the category of cutting-edge countries. In 2021, the Czech Republic recorded over 60% in each dimension - Business, Technology and Data Science. However, in 2022, the country recorded a significant drop in business (19%) and technology (41%), and is relatively at the same level in data science (67%).

GRAPH 6. COURSERA: GLOBAL SKILLS REPORT 2022 - CZECH REPUBLIC
SOURCE: COURSERA GLOBAL SKILLS REPORT 2022

Global Rank	Rank Change	Country Name	Business	Technology	Data Science
1	0	Switzerland	99%	94%	97%
2	+5	Denmark	94%	97%	97%
4	+1	Belgium	98%	89%	90%
7	+8	Netherlands	82%	90%	93%
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66	+38	Portugal	36%	37%	38%
74	+5	Azerbaijan	76%	12%	25%

Strive Czechia

The program Strive Czechia was launched in 2022 as a three-year initiative to support 250 000 small businesses to thrive in the digital economy. The data gathered by the Strive Czechia Barometer⁹ shows that the biggest obstacles preventing entrepreneurs in the Czech Republic from digitalization are high costs of technologies (59% of survey respondents), implementation costs (41%), uncertainty about their benefits (20%), or concerns that digital solutions are not suitable for small businesses. Some of the data are listed below.

Various industries have a different level of implementation and usage of specific technologies in their business. Out of almost 800 survey respondents, the majority of new technologies are used in finance and accounting (27% very high level and 45% high level), followed by sales (19% very high level and 44% high level) and marketing (15% very high level and 38% high level). The additional areas in the top 6 are supply chains and operations; research and development; HR and recruiting.

Generally speaking, 58% of micro and small entrepreneurs think that using modern technologies has an impact for the future success of their businesses. When we look into the numbers within specific sub-categories, 50% of solo entrepreneurs, 60% of micro entrepreneurs, and 73% of small entrepreneurs see the positive impact of using modern technologies. It is also interesting to note that while 63% of businesses led by men claimed to see a positive impact of using modern technologies, the same was true only for 48% of businesses led by women.

Out of 792 survey responses, the most frequently used technologies are Enterprise resource planning systems - ERP, such as SAP or Oracle (60%), followed by social media (56%), e-invoicing (51%). On the other side of the spectrum are categories such as big data (7%), products labelling using RFI (4%) or customer relationship management (4%).

When talking about support in implementing technologies, 68% of survey respondents would benefit from access to training, 27% would welcome government support, 19% would need access to technologies and tools and 5% access to funding.

⁸ Global Skills Report 2022. Coursera. https://www.coursera.org/skills-reports/global?utm_medium=blog&utm_source=enterprise&utm_campaign=gsr2022&utm_content=body-link&utm_term=gsr-blog&utm_cta_location=source=main-nav&utm_cta_text=global-skills

⁹ Touha prosperovat. Situace českých mikro a malých podniků 2022. Mastercard https://care.cz/wp-content/uploads/2022/11/Barometer_studie_Q42022_CZ.pdf

Survey of the Confederation of Industry of the Czech Republic

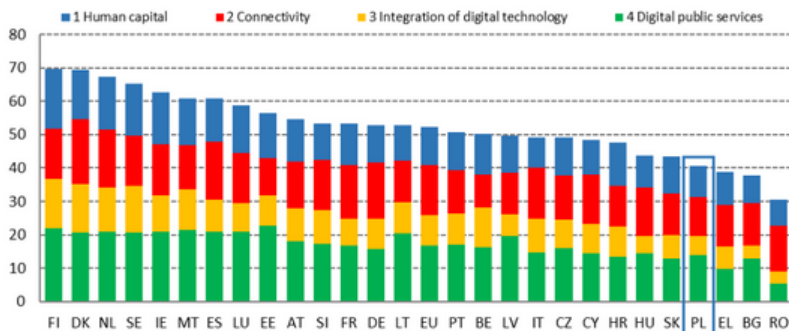
Another source of data is the survey conducted by the Confederation of Industry of the Czech Republic¹⁰ in the second half of 2022. Based on the data analysis, businesses are divided into three groups: digital leaders - those who have their digital strategy set and implemented; digitally aware - those who are working on their digital strategy; and digital sceptics - those for whom digitalisation is not a priority at all. Since digital transformation still happens slowly, the positive trend is undeniable. Digitalisation is considered to be a tool for becoming more competitive than the rest of the players in the market. Through digitalisation, 61% of respondents would like to modernise IT infrastructure and 63% of them would like to increase productivity. While SMEs are among the most vulnerable actors when it comes to cybersecurity, it is a great sign that 63% of respondents see digitalisation as a tool to increase security within the next two years.

Poland

DESI 2022

Based on the DESI 2022 data, Poland¹¹ ranked 24th out of 27 EU Member States with a score of 40.5 points, far below the EU average of 52.3 points. The DESI rating of Poland has been increasing over the years until 2020, when we witnessed a slight decrease. This has started a negative trend that the country is currently facing, marked by a continuously widening gap between the EU average and Poland when it comes to the growth of the digital economy.

GRAPH 7. DIGITAL ECONOMY AND SOCIETY INDEX 2022 - POLAND
SOURCE: [HTTPS://DIGITAL-STRATEGY.EC.EUROPA.EU/EN/POLICIES/DESI-POLAND](https://digital-strategy.ec.europa.eu/en/policies/desi-poland)



Human capital dimension

Poland ranked 24th out of 27 EU Member States. The strongest indicator within this dimension relates to 57% of individuals having at least basic digital content creation skills followed by 43% of individuals having at least basic digital skills. This indicator is 11% below the EU average and far below the goal to reach 80% of Europeans having at least a basic level of digital skills by 2030, as set in the Digital Decade¹² by the European Commission. The narrowest difference concerns the indicator of ICT graduates, with 3.7% Polish graduates compared to 3.9% EU graduates.

Connectivity dimension

Poland ranked 25th out of 27 EU Member States reaching a score of 46.5 points, lagging behind the EU average score of 59.9. On the positive note, the country has improved almost in each of the indicators compared to previous years and in some of them it has even surpassed the EU average - such as the percentage of households covered by FTTP (52%), or the broadband price index (87). On the other hand, there is opportunity for considerable improvement in other categories, such as the percentage of households covered by NGA (78%), or the percentage of populated areas covered by 5G (34%).

Integration of digital technologies dimension

Similarly to previous dimensions, Poland reached 22.9 points which put the country in the 24th position. Although it has maintained its rank from the previous year, the country recorded a drop of 3 points in comparison. There is an increase in indicators mapping the percentage of enterprises using social media (from 14% to 18%), the percentage of enterprises using the system of electronic information sharing (from 29% to 32%) or the percentage of SMEs selling online (increase from 13% to 14%). Poland lacks behind the EU average in several areas, including using e-invoicing (reaching only 13%), cloud (19%) or SMEs with at least a basic level of digital intensity (40%).

Digital public services dimension

It is the dimension which places Poland to 22nd, but still lacking behind the EU average by more than 11 points. Among the most challenging areas to tackle are digital public services for citizens (score of 57), digital public services for business (score of 70) as well as e-government users (55%).

Global Skills Report

In the global rank of Coursera's Global Skills Report 2022¹³ Poland ranked 20th. Compared to 2021 Poland has recorded an increase by seven places. In the Business dimension, the country reached 41%, which is below its score of 52% from 2021. In the Technology dimension, Poland has improved its score from 64% in 2021 to 92%. The last dimension measured is Data Science, where Poland reached 80%, an improvement compared to 76% in 2021.

¹⁰ Průzkum SP ČR: Firmy řeší digitální transformaci komplexně. Svaz průmyslu a dopravy ČR.
<https://www.sp-cr.cz/pro-media/tiskove-zpravy/15741-pruzkum-sp-cr-firmy-resi-digitalni-transformace-komplexnej>

¹¹ [Poland in the Digital Economy and Society Index 2022, European Commission.](https://digital-strategy.ec.europa.eu/en/policies/desi-poland)
<https://digital-strategy.ec.europa.eu/en/policies/desi-poland>

¹² [Europe's Digital Decade: digital targets for 2030, European Commission.](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en)
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

¹³ [Global Skills Report 2022, Coursera.](https://www.coursera.org/skills-reports/global?utm_medium=blog&utm_source=enterprise&utm_campaign=gsr2022&utm_content=body-link&utm_term=gsr-blog&utm_cta_location=source-main-nav&utm_cta_text=global-skills)
https://www.coursera.org/skills-reports/global?utm_medium=blog&utm_source=enterprise&utm_campaign=gsr2022&utm_content=body-link&utm_term=gsr-blog&utm_cta_location=source-main-nav&utm_cta_text=global-skills

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13	+1	Finland	65%	91%	98%
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16	+9	France	68%	88%	87%
17	+8	Norway	75%	80%	89%
19	+11	Serbia	73%	79%	83%
20	+7	Poland	41%	92%	80%
21	+3	Ukraine	21%	93%	81%

Global Rank	Rank Change	Country Name	Business	Technology	Data Science
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25	+4	Spain	61%	69%	85%
27	+11	Hungary	60%	72%	78%
28	+8	Greece	89%	42%	69%
30	+8	Latvia	78%	66%	53%
32	+35	Georgia	53%	82%	49%
37	+8	Lithuania	20%	75%	75%
38	+10	United Kingdom	38%	60%	74%
40	+6	Romania	46%	76%	46%
42	+9	Estonia	25%	62%	75%
45	+26	Croatia	64%	45%	59%
47	+10	Turkey	52%	57%	47%
48	+4	Slovakia	37%	55%	63%
58	+27	Ireland	43%	38%	52%
62	+51	Czech Republic	19%	41%	67%
66	+38	Portugal	36%	37%	38%
74	+5	Azerbaijan	76%	12%	25%

Green, Digital and Competitive Index

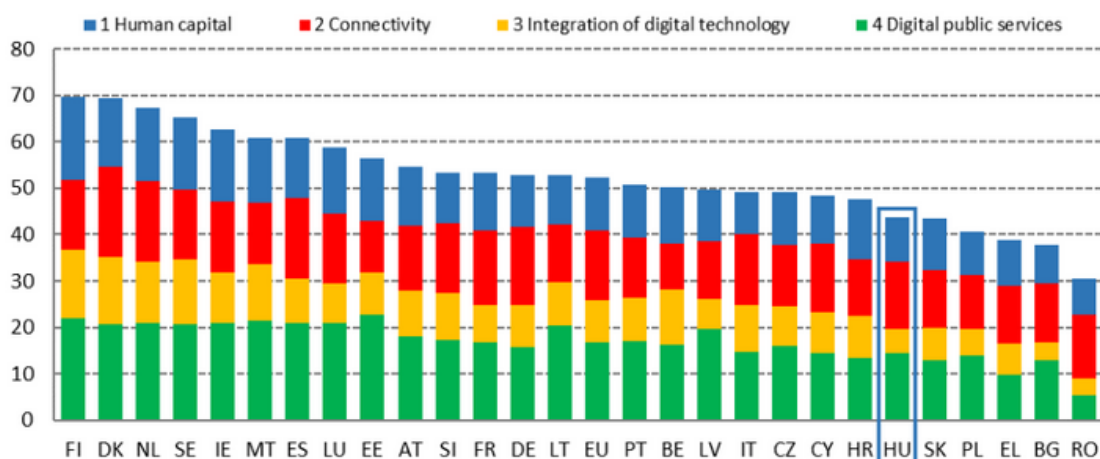
Green, Digital and Competitive Index¹⁴ is an initiative of the Lisbon Council which ranks 27 EU countries based on nine indicators divided into three pillars - Digital Transition, Green Transition and SME Competitiveness. Based on the Index, Poland placed among the last five countries in the 23rd spot, followed by Latvia, Cyprus, Bulgaria and, lastly, Romania. The data show that within the indicator 'SMEs using big data analytics', Poland performed similarly to the Czech Republic, Spain, Italy, Latvia and Austria, reaching only 8%. Malta performed best with a 30% share, while Slovakia and Romania were worst, reaching only a 5% share. These are all areas where the Visegrad countries have much work to do. On the other hand, Poland had good results in the indicator mapping 'SMEs that employ ICT specialists', with a 23% share. In comparison to the leader in this indicator - Ireland - it lagged behind only by 6% and was positioned in the 8th spot.

Hungary

DESI 2022

As visualised in Graph 9, Hungary¹⁵ ranked 22nd out of 27 EU Member States in DESI 2022 with a score of 43.8 points, lagging behind the EU average of 52.3 points. With the exception of 2021, Hungary has been constantly progressing in DESI over the years. Similarly to other V4 countries, Hungary is facing the same trend, thus progressing slower than the rest of the EU countries and constantly lagging behind the EU average.

GRAPH 9. DIGITAL ECONOMY AND SOCIETY INDEX 2022 - HUNGARY
SOURCE: [HTTPS://DIGITAL-STRATEGY.EC.EUROPA.EU/EN/POLICIES/DESI-HUNGARY](https://digital-strategy.ec.europa.eu/en/policies/desi-hungary)



¹⁴ [Green, Digital and Competitive Index - Poland. The Lisbon Council. https://gdc.lisboncouncil.net/en/poland](https://gdc.lisboncouncil.net/en/poland)

¹⁵ [Hungary in the Digital Economy and Society Index 2022. European Commission. https://digital-strategy.ec.europa.eu/en/policies/desi-hungary](https://digital-strategy.ec.europa.eu/en/policies/desi-hungary)

Human capital dimension

Hungary ranked 23rd in this dimension. The areas with the biggest gap in comparison to the EU average include the percentage of individuals having at least basic digital skills (49%), percentage of individuals having at least basic digital content creation skills (59%), or percentage of female ICT specialists (14%). In other categories, such as 'the percentage of ICT specialists in employment aged 15-74' with a value of 3.9%, or 'the percentage of ICT graduates' with 3.1%, Hungary's results are comparable to the EU average.

Connectivity dimension

Connectivity is a dimension in which Hungary is a leader in the V4 region. In total, the Hungarian score almost reaches the EU average. Only three areas are below the EU average, namely 'the percentage of populated areas covered by 5G' (18% compared to the EU average of 66%), 'the percentage of individuals with mobile broadband take-up' (84%), and 'broadband price index' (score of 70 points). In all other areas, the country could be considered a trend-setter. The biggest advancement concerns the percentage of households with the overall fixed broadband take-up (83%), the percentage of households with at least 1 Gbps take-up (almost 22%), or the percentage of households covered by FTTP (64%).

Integration of digital technologies dimension

Hungary ranked 25th in this dimension. Only the percentage of SMEs selling online equaled the EU average of 18%, the rest was lagging behind. The most notable differences were found for the percentage of SMEs with at least a basic level of digital intensity (34%), the percentage of enterprises using e-invoicing (13%), the percentage of enterprises sharing electronic information (21%) or the number of enterprises using social media (13%).

Digital public services dimension

Hungary ranked 21st and performed very well in the 'percentage of internet users of e-government tools' category. It reached 81%, which is high above the EU average of 65%.

Global Skills Report

In the global rank of Coursera's Global Skills Report 2022,¹⁶ Hungary placed 27th. In comparison to 2021, we see a huge drop from 18th place. In the Business dimension, Hungary reached 60%, improving its result by 5%. In the Technology dimension, Hungary reached 72%, while in 2021 it reached a much more impressive 96%. In the dimension of Data Science, Hungary scored 78% in 2022, which is also below its score of 84% in 2021.

GRAPH 10. COURSERA: GLOBAL SKILLS REPORT 2022 - HUNGARY
SOURCE: COURSERA GLOBAL SKILLS REPORT 2022

Global Rank	Rank Change	Country Name	Business	Technology	Data Science
1	0	Switzerland	99%	94%	97%
2	+5	Denmark	94%	97%	97%
4	+1	Belgium	98%	89%	90%
7	+8	Netherlands	82%	90%	93%
8	+2	Sweden	81%	87%	94%
9	+5	Germany	92%	85%	88%
10	+3	Bulgaria	80%	86%	95%
11	+9	Austria	97%	74%	92%
12	+2	Belarus	26%	99%	96%
13	+1	Finland	65%	91%	98%
15	+1	Italy	86%	84%	79%
16	+9	France	68%	88%	87%
17	+8	Norway	75%	80%	89%
19	+11	Serbia	73%	79%	83%
20	+7	Poland	41%	92%	80%
21	+3	Ukraine	21%	93%	81%

Global Rank	Rank Change	Country Name	Business	Technology	Data Science
22	+32	Armenia	44%	81%	84%
25	+4	Spain	61%	69%	85%
27	+11	Hungary	60%	72%	78%
28	+8	Greece	89%	42%	69%
30	+8	Latvia	78%	66%	53%
32	+35	Georgia	53%	82%	49%
37	+8	Lithuania	20%	75%	75%
38	+10	United Kingdom	38%	60%	74%
40	+6	Romania	46%	76%	46%
42	+9	Estonia	25%	62%	75%
45	+26	Croatia	64%	45%	59%
47	+10	Turkey	52%	57%	47%
48	+4	Slovakia	37%	55%	63%
58	+27	Ireland	43%	38%	52%
62	+51	Czech Republic	19%	41%	67%
66	+38	Portugal	36%	37%	38%
74	+5	Azerbaijan	76%	12%	25%

Green, Digital and Competitive Index

Based on this Index¹⁷, Hungary ranked 16th, and around the middle in each category - 19th in Digital Transition, 13th in Green Transition and 17th in SME Competitiveness. The country performed the best in the indicator of the share of SMEs that employ ICT specialists in total with a score of almost 90 points, and in sub-categories of digital skills and growth. The least developed area is SME Digitalisation and all indicators in it.

¹⁶ Global Skills Report 2022, Coursera.
https://www.coursera.org/skills-reports/global?utm_medium=blog&utm_source=enterprise&utm_campaign=gsr2022&utm_content=body-link&utm_term=gsr-blog&utm_cta_location_source=main-nav&utm_cta_text=global-skills

¹⁷ Green, Digital and Competitive Index, The Lisbon Council.
https://gdc.lisboncouncil.net/assets/misc/LISBON_COUNCIL_Green_Digital_and_Competitive-en.pdf

Key areas to focus on to digitalise better and faster

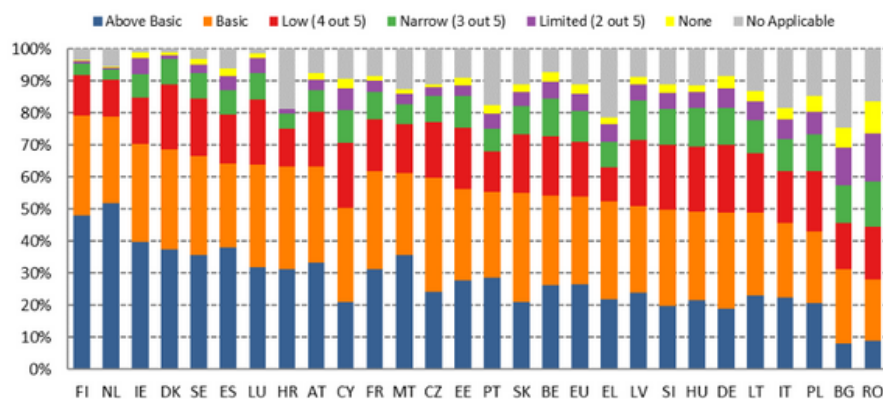
The starting point for SMEs is to know what digitalisation is, how it could help them and why business owners and managers should pursue it. The League for Digital Boost is a CEE initiative founded by the Slovak Alliance for Innovation Economy (SAPIE). The initiative aims to support the digitalisation of SMEs, mobilise key players in the CEE countries in order to highlight the critical challenges of this topic and propose solutions for policymakers and businesses. In the light of the challenges of CEE SMEs and according to our research and surveys, we have identified the following areas as crucial to focus on in the years to come.

Skills

Skills are an integral part of the development of each of us - in both the professional and personal life. The demand to possess the relevant skills is even higher today, when specific technologies are on the rise. And what is more - despite the pandemic, thousands of individuals used their time to pursue online training and learn new skills. It has become a necessity to obtain at least a moderate level of digital skills combined with soft skills, as these allow individuals to improve their confidence to use technology for work, help them to work efficiently in a digitally charged workplace and make a workplace simpler to navigate. However, the term “digital literacy” means more than mere technical know-how; it includes financial literacy, communication skills, media skills, but also critical thinking, creativity, leadership and other soft skills. It is their combination which could help drive the digital transformation of the company and the company’s sustainability and growth.

From the European perspective, the year 2023 is designated as the European Year of Skills¹⁸ and its goal is to address the skills shortage in the EU, to help companies, in particular SMEs, to promote a reskilling mindset and help employers and businesses get the right skills for individual job positions. Digital Skills are among the key indicators in the Commissions’ Digital Decade.¹⁹ These goals include at least 80% of EU citizens aged between 16 to 74²⁰ having at least basic digital skills by 2030. Currently, 54% of Europe’s workforce meets this target in the EU average, which means we have a long way to go to achieve this goal. In 2022, none of the EU countries reached 80%. The Netherlands and Finland scored the highest at 79%. On the other side of the spectrum lies Romania, Bulgaria and Poland with the lowest share of basic overall digital skills at 28%, 31% and 43%, respectively.

GRAPH 11. DESI 2022: LEVELS OF DIGITAL SKILLS
SOURCE: [HTTPS://EC.EUROPA.EU/NEWSROOM/DAE/REDIRECTION/DOCUMENT/88764](https://ec.europa.eu/newsroom/dae/redirection/document/88764)



In order to improve the workforce skill quality for SMEs, it is necessary to continue supporting the development of digital skills throughout all levels of education. SMEs would also benefit from mentoring programmes which could help them identify the benefits of digitalisation. Mentorship could help them navigate through the process of digitalisation and to set up their strategies, including focusing on online marketing and sales, selecting the appropriate level of digital technologies and tools, improving security systems as well as their social media strategy and communication. It is also **important that skills development is available for diverse groups and that everyone has an equal opportunity to grow.**

Connectivity

One of the key driving forces of successful digital transformation of SMEs is a stable, secure and sustainable digital infrastructure. Digital connectivity is not only a precondition for the digitalisation of businesses, but also for boosting the competitiveness of individual countries. The term infrastructure in this context does not cover only the transport routes or supply chain. It encompasses a lot more, including information and communication technologies (ICT) as central and connecting infrastructure. ICT opens new doors and it is becoming an inherent part of digitalisation. Other areas of the connectivity dimension which are especially important for SMEs we can mention are: development of critical IT infrastructure; ensuring quality and secure online access for customers and consumers; and the development of big data, or cloud which we will elaborate further in the next section.

Digital infrastructure interconnects our physical world and the world of virtual technologies. With the rise of the volume of data exchanged over the internet, digital traffic infrastructure is among the topics of immense interest. The stability of digital infrastructure has a great impact on the speed of sharing information, deployment of digital tools, the power of computing, data storage technologies, or the increase of the services provided remotely. Technologies which are in place today help businesses to connect faster only if they are accessible. By accessibility, we mean the availability of technologies to enable their users to connect to the internet and use the full potential of technologies daily. The main challenge here is the geographical coverage of technical infrastructure which facilitates the network connectivity.

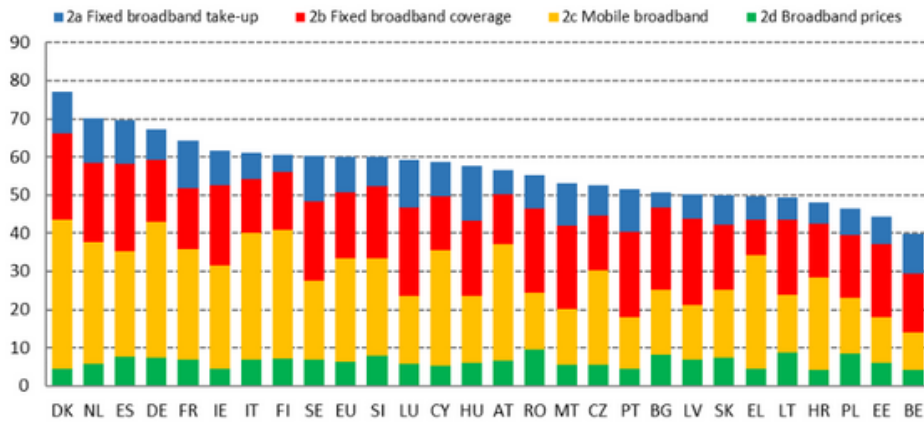
¹⁸ [European Year of Skills 2023. European Commission. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-year-skills-2023_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-year-skills-2023_en)

¹⁹ [Europe's Digital Decade: digital targets for 2030. European Commission. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en)

²⁰ [Europe's Digital Decade. European Commission. https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade](https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade)

Therefore, the intention²¹ of the European Commission is to ensure an edge node density that would allow for an optimal coverage across the EU territory, including less populated areas. The Digital Decade targets to ensure gigabit coverage for all households, as well as 5G in all populated areas by 2030. These goals, which are linked to connectivity and infrastructure, have an important role to play as all other dimensions of digitalisation rely on a stable infrastructure. The highest score in the connectivity dimension belongs to Denmark, followed by the Netherlands and Spain. On the contrary, countries with the weakest performance are Belgium and Estonia.

GRAPH 12. DESI 2022: CONNECTIVITY SUB-CATEGORIES
SOURCE: [HTTPS://EC.EUROPA.EU/NEWSROOM/DAE/REDIRECTION/DOCUMENT/88764](https://ec.europa.eu/newsroom/dae/redirection/document/88764)



Cloud & data

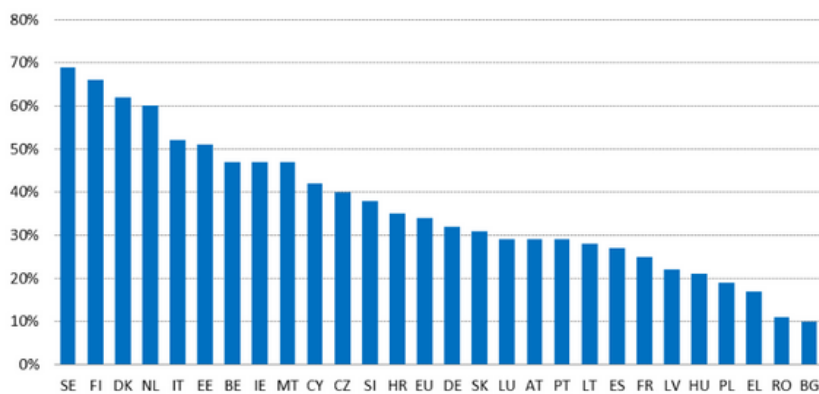
Cloud is another of the key components of a digital transformation, not only for businesses. Cloud users are able to store databases, software, or applications on accessed servers. The value added of integrated cloud solutions includes:

- easy access at any time to storage, network and databases without requiring in person interaction with the provider, thus saving time;
- easy and quick access through different platforms, such as mobile devices, notebooks, tablets, etc. from anywhere in the world;
- automated syncing of data and information at all time;
- tailor-made solutions based on the customer's needs, thus saving costs;
- monitoring, measuring and reporting tools which help analyse efficiency, productivity, costs and other areas which are important for individual cloud users.

The cloud is interlinked with the big data. Over the past years, data has become a central ingredient of knowledge and predictability. The more data you have, the more reliable choice you can make. Thanks to data, businesses could boost productivity, understand the customers' behaviour, address the most pressing challenges, reduce costs, or increase efficiency. Working with data properly is a cornerstone to get accurate insight - data has to be filtered, categorised and analysed. And it is the cloud that runs the entire data management.

The EU's Digital Decade targets²² for cloud are clear. The goal is having more than 75% of EU companies adopt cloud computing, using big data or AI by 2030. According to DESI 2022, 34% of EU enterprises purchased sophisticated or intermediate cloud computing services in 2021, e.g. enterprise resource planning (ERP) software applications; customer relationship management (CRM), finance or accounting software applications or others.

GRAPH 13. DESI 2022: CLOUD COMPUTING SERVICES OF SOPHISTICATED OR INTERMEDIATE LEVEL PER COUNTRY (% OF ENTERPRISE)
SOURCE: [HTTPS://EC.EUROPA.EU/NEWSROOM/DAE/REDIRECTION/DOCUMENT/88764](https://ec.europa.eu/newsroom/dae/redirection/document/88764)



European data also shows that in 2021, the cloud uptake of large companies reached 60%, almost doubling that of SMEs with 33%. Leaders in incorporated higher cloud services are again the Nordic countries - Sweden, Finland, Denmark and the Netherlands, since more than 60% of their enterprises bought such services, as displayed in the Graph 13. The gap between the leaders and the countries with the weakest performance in this dimension is extremely large, with Bulgaria and Romania scoring below 15%.

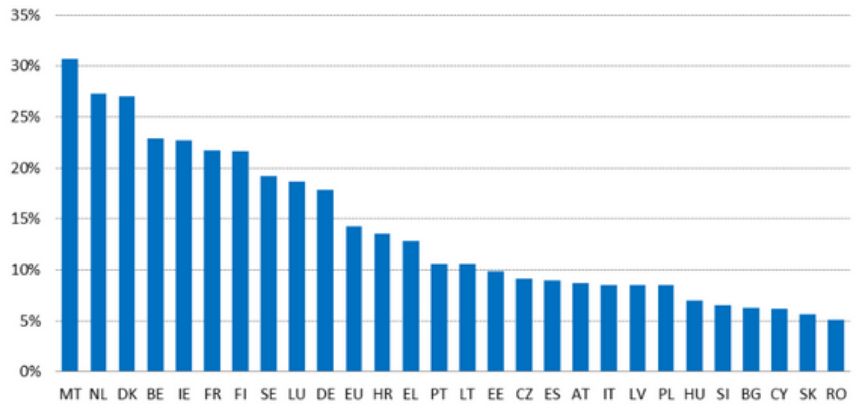
²¹ [Digital Economy and Society Index 2022 - Thematic Chapters. European Commission. https://ec.europa.eu/newsroom/dae/redirection/document/88764](https://ec.europa.eu/newsroom/dae/redirection/document/88764)

²² [Europe's Digital Decade: digital targets for 2030. European Commission. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en)

According to DESI 2022, the European leader with almost a third of its enterprises analysing big data is Malta, followed by the Netherlands and Denmark. The lowest performance was recorded for Romania (5%) and Slovakia (6%).

The challenge concerning cloud solutions is how to make sure we deploy the energy-efficient and reliable edge computing and cloud infrastructures, enabling us to innovate in a sustainable way. Cloud solutions also demand new qualifications and expertise, such as data science knowledge, cybersecurity skills, programming skills or specialised technical skills and it is necessary to think about all these areas comprehensively. The ability to deploy and use cloud solutions goes hand in hand with the knowledge of its benefits, but also of the possible challenges such as data leaks or breaches, the ability to control sensitive personal data, data loss or security. Users have to learn how to use these technologies better and smarter, such as audit personal files and folder shares, use two-factor identification, and more.

GRAPH 14. DESI 2022: ENTERPRISE ANALYSING BIG DATA (% OF ENTERPRISE)
SOURCE: [HTTPS://EC.EUROPA.EU/NEWSROOM/DAE/REDIRECTION/DOCUMENT/88764](https://ec.europa.eu/newsroom/dae/redirection/document/88764)



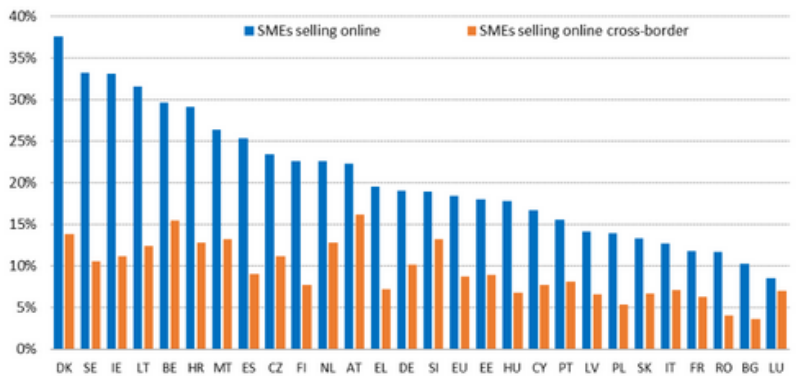
E-commerce

The Covid-19 pandemic and its implications for retail boosted digitalization worldwide. Slovakia was no exception, as businesses were forced to adapt their strategy to the pandemic situation. Innovative digital solutions and online sales channels were no longer a bold fantasy but a necessity to survive.

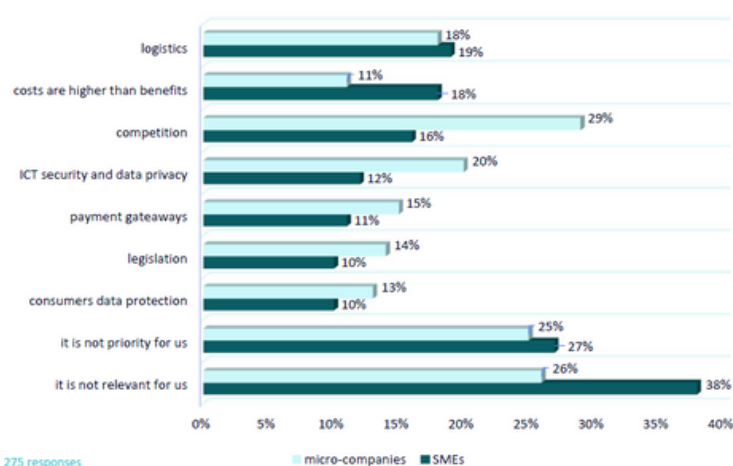
As stated in DESI 2022, the percentage of EU SMEs selling online increased by 3 percentage points and the turnover of these companies achieved from online sales increased by 2 percentage points between 2015 and 2021. With the exception of Poland, V4 countries have a relatively small e-commerce market, thus the potential for further growth and international expansion remains strong. For thousands of SMEs, it is a huge challenge to expand their business abroad. Austria, Belgium and Denmark are the top three EU countries leading the cross-border online sales.

While the majority of SMEs in EU countries have no difficulties when selling online, it is not true for all SMEs. According to DESI 2022 data, 43% of SMEs describe at least one obstacle obstructing them to sell their products or services online cross-border. Some of these are high costs of delivering or returning products, lack of knowledge of the needed foreign language, local legal environment, customer behaviour or local main competitors.

GRAPH 15. DESI 2022: SMEs SELLING ONLINE AND SELLING ONLINE CROSS-BORDER (2021) (% OF SMEs)
SOURCE: [HTTPS://DIGITAL-STRATEGY.EC.EUROPA.EU/EN/POLICIES/DESI](https://digital-strategy.ec.europa.eu/en/policies/desi)



GRAPH 16. BIGGER E-COMMERCE CHALLENGES
SOURCE: LEAGUE FOR DIGITAL BOOST & SLOVENSKÁ SPORITEĽŇA SME SURVEY (2/2023)



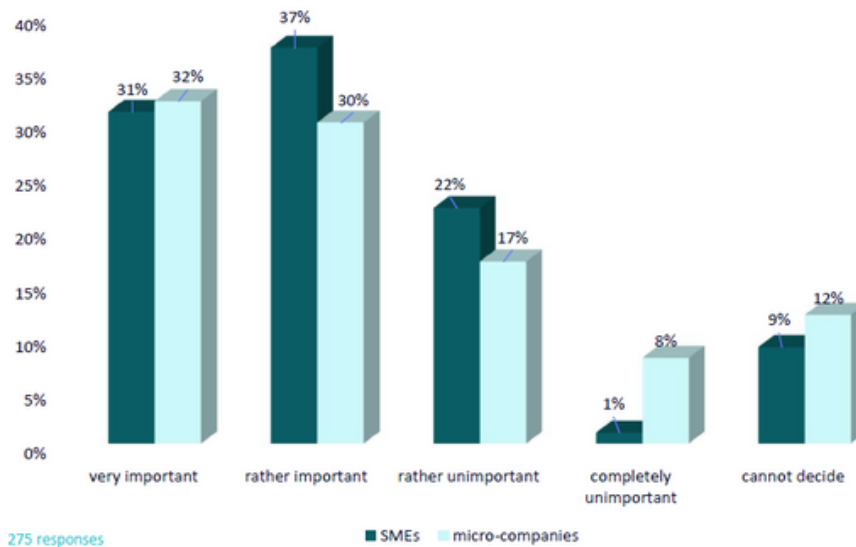
According to the SME survey of SAPIE and Slovenská sporiteľňa conducted in February 2023 on a sample of Slovak companies, the biggest e-commerce challenges listed include high competition, logistics, ICT security and data protection, paywalls, costs outweighing the benefits, consumer protection laws, or the legal framework.

All those SMEs which state that e-commerce is not relevant nor a priority perhaps do not realise the full scale of benefits arising from online selling, including reducing costs, increasing efficiency, improving productivity, saving time or becoming more competitive. Thus, it is necessary to increase the awareness about the benefits of e-commerce and share the stories of dozens of entrepreneurs across the V4 or CEE region who were able to compete with the best and enforce their place in the market.

Cybersecurity and digital resilience

With the rise of new technologies, the increase of sharing information online, online payments or e-commerce, we see an increase in cyber attacks as well. SMEs are considered to be among the most vulnerable sectors since they often lack internal capacities, financial resources or long-term strategy on how to deal with cybersecurity as a priority for their business. Most Slovak SMEs are aware that cyber risks are interlinked with the process of digital transformation, which is underlined by the feedback from SMEs themselves. Based on the survey responses, 51% of SMEs and 44% of micro companies see the threat of cyber attacks against the company as the biggest challenge in the upcoming 12 months. It is also interesting that 33% of SMEs and 24% of micro companies consider cyber attacks as an obstacle to implementing new technologies and going digital.

GRAPH 17. CYBERSECURITY IN SLOVAK SMEs
SOURCE: LEAGUE FOR DIGITAL BOOST & SLOVENSKÁ SPORITEĽNÁ SME SURVEY (2/2023)



The main role of cybersecurity is to protect information technology and computer systems from these attacks. The process of cybersecurity starts by adopting legislation on the national level which refuses all types of cybercrimes, such as phishing and spamming, and should take effective steps to prevent these crimes. Businesses also play an important role in the cybersecurity process because of initiating standards and guidelines, and both the public and the private sector should follow comprehensive cybersecurity regulations. Additionally, in order to stay a step ahead of the sophisticated techniques used by cyber criminals, the field depends on constant innovation and new technologies such as AI and machine learning.

Transparency, data privacy & regulations

The internet is a place with a lot of opportunities not only for human beings, but for everyone including businesses and governments. It is therefore important to make this environment based on the rule of law or shared democratic values. According to the study of Internet Rights and Principles Dynamic Coalition, there are ten basic principles and rights which should be applied to secure the rights within the internet environment. One of the principles and rights is universality and equality, meaning everyone is born free and equal, which has to be respected, protected and fulfilled. Accessibility means that everyone should have equal access to an open and secure internet. Additional principles identified by the study are rights and social justice, expression and association, privacy, liberty, diversity, network equality, standards or governance.

With the rise of new technologies, implementation of cloud solutions, or the gathering and analysing of data, data protection has a great role to play. The online environment should be focused on protecting the data where businesses sell products and services and customers buy them while using their personal information and sensitive data. We need to apply the real world behavioural standards in the digital world, or we have to know what to share and with whom. Only by understanding the legal and economic aspects of data can we learn to turn it into real value, and thus use it to navigate the businesses, restructure the business models into more efficient and sustainable ones.

The creation of a safer, more open and stable digital environment goes in hand with the adoption of regulations which protect both consumers and businesses. To ensure a better digital future, the European Union is simultaneously working on several legislative pieces that will affect multiple ecosystem players, including large companies and SMEs. The European Commission put forward two major legislative proposals to upgrade the digital policies in the EU - these are the Digital Services Act (DSA) and the Digital Markets Act (DMA) with the goals to regulate digital platforms and to ensure that fundamental rights of all users in the online environment are protected, but also to foster innovations, growth and competitiveness. The year 2022 was a landmark for EU digital policy. DMA and DSA were concluded. The revision of the Network Information Security and Protection Directive (NIS2) was adopted. The French and Czech Presidencies made significant progress on files such as the Artificial Intelligence Law, Data Law and others. In 2023, the digital agenda is expected to move farther again.

On one hand, this unprecedented rise of technologies opens the door to a number of opportunities, but on the other hand, there are concerns which must be addressed and discussed across all industry and ecosystem players to ensure that our fundamental rights and democratic values are protected.

SUMMARY

Our paper identifies several key areas for policymakers and SME representatives to focus on, including how to:

- ensure that skills development is available to a diverse group of employees and employers and that everyone has an equal opportunity to grow;
- make sure technologies are accessible and everybody can connect from anywhere;
- assure a general understanding of the legal and economic aspects of data; proper and careful handling of data by those who work with it;
- have enough properly skilled workforce;
- increase awareness about all the above mentioned key components of digital transformation, its benefits but also challenges and discuss the concerns across all industry and ecosystem leaders;
- stay informed and educated about legislative proposals and regulations which are to be implemented on the national as well as European level before the implementation itself and to be aware of the consequences, deliverables and changes resulting from these directives or a failure to meet them;
- ensure we adopt comprehensive cybersecurity regulations and that everyone implements and follows them;
- share the success stories of entrepreneurs in the region which could serve as a source of inspiration.

The League for Digital Boost, an initiative founded by the Slovak Alliance for Innovation Economy (SAPIE) is emerging in Central and Eastern Europe with an ambition to create a broad coalition of actors in the field of digital economy to support the digitization of SMEs.

The digitalisation of SMEs entails processes that involve a large number of changes. The adjustments include the preparation of a new business model, process automation, data processing, modification of payment systems, sales platforms and marketing channels. In order to undergo such transition, companies need financial support, counselling, favourable policies and low bureaucratic barriers. This is where the public sector can help to maximise the benefits of this trend. Connecting business and the public sector is one of the goals of the League for Digital Boost. We believe that by bringing together both private and public stakeholders and by sound implementation of digital technologies, we will be able to build, promote and continue to advocate for strong pillars of democratic accountability, fair competition, or prevent negative consequences arising from the digital world.

The League for Digital Boost aims to tailor policymaking to business needs via organising discussions, building networks of experts and organisations, and launching media campaigns to make the topic resonate. The activities are spread over several countries in the region with the involvement of key unions, associations and individuals active in the space of digitalization or SMEs.

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Partners of the League for Digital Boost:

