

DIGITAL SKILLS – AN ASSET FOR FUTURE ACCOUNTING PROFESSIONALS. ANALYSIS OF ROMANIA’S POSITIONING WITHIN THE EU MEMBER STATES

Veronica MÎȚA¹, Mariana MAN²

¹Doctoral School of Economic Sciences, University of Craiova, Craiova, Romania;

²Faculty of Economic Sciences, University of Petrosani, Petrosani, Romania;
Doctoral School of Economic Sciences, University of Craiova, Craiova, Romania.

vera.nica.mita@gmail.com

man_mariana2006@yahoo.com

Abstract: *Globalisation, digitisation and technological advances describe the present and future of accounting. In order for accounting professionals to remain always connected to the present and prepared for the future, they constantly need to update their knowledge and skills acquired to date and not hinder their continuous learning process. The focus of this paper is on the digital skills of accounting professionals, which are an imperative in a digital economy. This paper is based on the analysis over time, using mathematical calculation methods, of 5 indicators, which describe the level of information and communication technology skills of the European population. The aim of this analysis is to determine the level of digital skills of the Romanian population in comparison with other EU member countries. Romania, in terms of the 5 indicators, ranks lower in the European ranking. This analysis shows that Romanians, compared to other European populations, use basic digital technologies, are more adaptable in their use, but do not use technologies in a competitive way and do not use them in a more efficient way. For Romania's population to achieve an advanced level of digitisation, they need to develop digital and information skills, digital problem-solving skills, digital communication skills and cybercrime safety skills. These skills must be mandatory in the knowledge portfolio of accounting professionals. These are the most current requirements of financial jobs. Accounting professionals must comply with the new requirements of the digital economy which is extending to all fields of activity, such as social relations, health, public administration.*

Keywords: digitalization, digital skills, information skills, digital communication, digital security, accounting profession

JEL classification: M41

1. Background

The Digital Economy Initiative for Latin America and the Caribbean (The World Bank, 2018) identified six pillars of the digital economy framework:

- *digital infrastructure* involves connectivity, including: high-speed internet access, mobile devices, computing, sensors, voice-activated devices, geospatial tools, vehicle-to-vehicle communications and data devices, data centres and clouds;

- *digital skills* support innovation. Digital skills include both technological and business skills, setting up and managing a digital entity;
- *digital platforms* support data exchange, transactions and access to public and private digital services. They play an intermediary role between two or more players involved in digital transactions;
- *digital financial services* remove geographical and market barriers;
- *digital business* stimulates employment and innovation;
- *the trusted environment* requires a governance framework that balances data protection factors and supports digitisation. Strengthening data protection regulations, cyber security capabilities and digital identification system is essential for people to improve their trust in digital transactions.

The European Union defines the digital decade as the period from 2020 to 2030. According to the Digital Agenda (European Commission, 2021), among the major targets to be achieved by 2030 is the threshold of 80% of adults having basic digital skills. The Digital Europe Programme (European Commission, 2021) is a funding programme for the implementation of digital technologies. Supercomputing, artificial intelligence, cyber security, advanced digital skills and ensuring widespread use of digital technologies across the economy and society are the 5 areas supported financially by this programme.

The European Commission (European Commission, 2018) has designed a framework, called DigComp (The Digital Competence Framework for Citizens), of digital competence for citizens. DigComp is an important tool to support the EU Action Plan on Digital Education 2021-2027 (Commission, 2020), which in turn supports the European Commission's priority of A Digital Europe. This framework is structured into five areas, which are graphically represented in Figure 1.

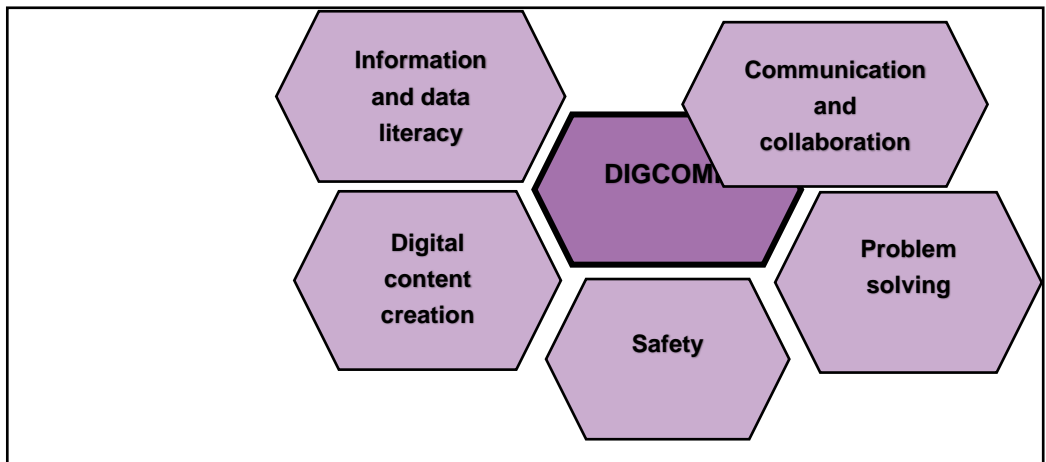


Figure 1: DigComp Framework

Source: processing according to European Commission, 2018

Digital and information literacy is about identifying information needs, location and access to data, source and content relevance analysis, storage and management of digital content data.

Communication and collaboration involves interaction through digital technologies, citizen participation through digital public services, including digital private services, and managing their own digital identity.

Digital content creation involves creating, editing and integrating information into a knowledge base or information system, while respecting copyright.

Safety is the protection of devices, content and personal data in digital environments.

Problem solving includes the solution of conceptual problems that occur in the digital environment. This domain keeps up to date with digital developments as it uses innovative digital tools.

Current technical advances due to the use of computers have changed the accountant's work in terms of methodology and principles, and having digital skills is an imperative.

2. Literature review

Kushakov (2022) notes a number of issues that need to be solved before the digital economy implementation process can start. These include: low levels of digital literacy among the population, lack of infrastructure, lack of specialists in the field, tradition-based consciousness and lack of cyber security. These impediments do not allow the correct implementation of digital technologies which in the future may create unfavourable consequences for economic activities.

Following a systematic literature review conducted (Ferreira C., 2021) on the Web of Science database for the period 2015-2020, researchers found that for accounting professionals, digital skills play a significant role in the development and exploitation of technologies at the level of economic entities. Şova (2016) is of the opinion that certain skills are indispensable for accounting professionals in the conditions generated by the digital economy, such as: data mining tools in the business intelligence mining process, tools that support data analysis and modelling, management skills, digital skills and knowledge in the field of cyber security.

Most accounting professionals see digital technology and the transformation of the profession as a threat to the human being. We see this threat as a result of low levels of digital skills, knowledge of information technology systems and lack of interaction with IT applications. Guşel and Mangiuc (2022) found, following a study of curricula published on the websites of four major Romanian universities, that accounting education needs to be rethought. The accounting education curricula must contain subjects that present and allow interaction with digital technologies such as cloud, big data, blockchain to develop digital skills and promote interaction with various software. The role of the education system is to support evolution.

The fact that digital technology is not treated as a privileged subject in accounting curricula is also confirmed by the survey of 1161 accounting professionals from 112 United Kingdom and Northern Ireland universities (Kotb, et al., 2019). Technological developments and digital skills are a relevant area for accounting education curricula.

Digital competences (Vuorikari, et al., 2022) involve the confident and responsible competitive use of digital technologies for efficient work and active participation in society. Accounting professionals need to implement digital

technologies in order to reduce time spent on repetitive tasks and manual work in favour of financial advisory activities. Digital skills are the catalyst for transforming accounting professionals from manipulators of numbers to interpreters of financial statements.

3. Database and methodology

This study is focused on the analysis over time of five indicators describing the level of information and communication technology skills of the European population. This study is quantitative research. The method used is a mathematical method for calculating the extreme minimum and maximum points in the range of values of the selected indicators. The main objective of the research is to analyse the level of information and communication technology skills of the Romanian population at EU level. The research is based on the following hypotheses:

H₁- The Romanian population has digital skills. Romanians know how to use a spreadsheet or text processing software.

H₂- The Romanian population has information skills. Romanians have adapted to online news and digital newspapers.

H₃- The Romanian population has digital communication skills. Romanians know how to use e-mail and prefer internet conversations over face-to-face meetings.

H₄- The Romanian population doesn't have any skills in digital problem solving. Romanians make purchases online but don't look for a job on digital platforms.

H₅- The Romanian population doesn't have digital security skills. Romanians don't know how to manage access to confidential personal data.

For the analysis of the level of digital skills of the Romanian population in comparison with other EU member countries, we used the information provided by Eurostat - the statistical body of the European Commission - from the general archive on digital skills. These data were collected from the population aged 16 to 74 in the European Union. For most of the countries, the final sample size was between 3000 and 6000 participants. The digital competence indicators selected and analysed over the period 2015-2021 as follows:

- the percentage of the population with digital skills in the survey population aged 16-74 (Appendix 1);
- the percentage of the population with information skills in the population surveyed aged 16-74 (Appendix 1);
- the percentage of population with digital communication skills in the population surveyed aged 16-74 (Appendix 1);
- the percentage of population with digital problem-solving skills in the survey population aged 16-74 (Appendix 2);
- the percentage of population with digital security skills in the survey population aged 16-74 (Appendix 2).

Indicators are expressed in percentages and represent the percentage of the population with digital skills in the total population surveyed. In the annexes, we have highlighted the average values of the indicators calculated at EU level for 28 member countries in the period 2013-2020 and 27 member countries from 2020 respectively.

4. Results

The tables below represent a selection from Appendix 1 and 2 of the minimum and maximum values for each period, and Romania as well where this is necessary. In these tables were selected four values above the average and four below the EU average. In the following tables the EU average is highlighted in yellow, the maximum values are highlighted in red and the minimum values in green. If Romania's population records values between the maximum and minimum levels, then Romania is identified by the blue colour.

- *The percentage of population with digital skills*

In order to study the percentage of population with digital skills, we have extracted information from Eurostat. This information is presented in extenso in Annex 1, from which we have selected only some of the countries presented in Table 1.

The activities analysed in the calculation of digital skills are:

- use of word processing software;
- use of an application/spreadsheet;
- editing photos, video or audio files;
- copying or moving files between folders, devices or to the cloud;
- creating files that include more than one element, such as text, image, table, graphic, animation or sound;
- using advanced software/worksheet functions to organise, analyse, structure or modify data;
- writing code in a programming language.

The baseline level of this indicator is identified by performing maximum two of the activities listed above. The values of this indicator are shown in Table 1.

Table 1. The percentage of population with digital skills

	-%-				
Period	2015	2016	2017	2019	2021
Country					
Sweden	36,35	29,84	30,83	26,38	22,11
Germany	31,42	34,06	31,46	31,32	25,40
Czech Republic	33,97	33,38	35,78	36,30	22,22
Slovakia	27,07	26,14	25,95	26,80	29,04
EU average - 27 countries (from 2020)	27,05	27,03	26,21	25,00	20,93
EU average - 28 countries (2013-2020)	27,09	26,85	26,00	25,01	X
Romania	17,30	19,06	18,90	20,64	18,76
Bulgaria	18,46	16,17	18,44	18,11	21,36
Malta	18,14	17,66	17,90	17,56	22,83
Portugal	19,75	19,31	19,51	19,66	16,43

Source: <https://ec.europa.eu/eurostat>

Based on the data in Table 1 we can see that in the period 2015-2021 countries such as Sweden, Germany, the Czech Republic and Slovakia have the highest percentages of the population with digital skills. These countries exceed the EU average, while Romania, Bulgaria, Malta and Portugal have the lowest percentages of this indicator. This means that we have twice as few people doing two or less of the activities taken into account in the calculation of digital skills than Sweden, Germany, the Czech Republic and Slovakia. Romania's lower than EU average result reflects the lack of involvement of the population in the provision of education and training, the lack of up-to-date information and communication technology skills and the lack of interest in adapting to changing circumstances.

- *The percentage of population with informational skills*

In order to study the percentage of population with informational skills we have extracted the information provided by Eurostat. This information is presented in extenso in Appendix 1, from which we have selected only a few countries shown in Table 2.

Table 2. The percentage of population with informational skills

	-%-					
	PERIOD	2015	2016	2017	2019	2021
Country						
Poland		14,12	11,93	12,64	12,76	11,35
Italy		13,04	14,63	X	14,19	12,99
Romania		12,47	12,77	15,79	20,84	17,31
EU average - 27 countries (from 2020)		9,83	9,80	9,76	10,15	12,12
EU average - 28 countries (2013-2020)		9,94	9,97	9,81	9,81	X
Finland		5,71	5,62	5,23	4,43	3,41
Croatia		6,47	4,28	4,81	5,32	3,48
Netherlands		5,95	4,93	4,03	4,36	3,99

Source: <https://ec.europa.eu/eurostat>

The activities analysed for calculating informational skills are:

- searching for information about goods and services;
- searching for health-related information;
- reading online news and digital newspapers;
- checking online information and its sources.

The baseline level of this indicator is identified by performing at least one of the activities listed above. The values of this indicator are presented in Table 2.

The data presented in Table 2 shows that Romania is at the top of the ranking for the percentage of the population with information skills in 2017-2021. It should be noted that Romania recorded values above the EU average, which means that Romanians have performed at least one activity of searching or checking information online. This reflects a significant degree of adaptability to the circumstances of the digital age. In 2015-2016, the leaders in the ranking were Poland and Italy. The lowest values of this indicator are reported for Finland, Croatia and the Netherlands.

▪ *The percentage of population with digital communication skills*

In order to study the percentage of population with digital communication skills we have extracted information from Eurostat. This information is presented in extenso in Appendix 1, from which we have selected only a few countries shown in Table 3.

Table 3. The percentage of population with digital communication skills

	-%-				
PERIOD	2015	2016	2017	2019	2021
Country					
France	28.67	28.60	27.20	25.64	14.06
EU average - 27 countries (from 2020)	18.86	20.12	18.13	16.79	8.80
EU average - 28 countries (2013-2020)	18.49	19.29	17.56	16.41	X
Romania	10.36	14.50	11.65	15.92	12.12
Bulgaria	7.10	8.71	8.02	10.98	7.48
Malta	12.74	11.00	7.92	10.41	2.71
Hungary	8.34	9.89	8.29	7.37	4.10
Netherlands	18.16	16.69	13.74	11.27	1.58

Source: <https://ec.europa.eu/eurostat>

The activities included in the calculation of communication and collaboration skills are:

- sending and receiving e-mails;
- phone calls and video call on the Internet;
- participation on social networks;
- expressing opinions on civic or political issues on websites or social media;
- participating in online consultations or voting to identify and resolve civic or political issues.

The baseline level of this indicator is identified by performing at least one of the activities listed above. The values of this indicator are presented in Table 3.

The data in Table 3 identifies France at the top of the ranking, with the highest percentage of the population having digital communication and collaboration skills in all years from 2017-2021. Romania, in the period 2015-2019 ranks below the EU average, and in 2021 it advances above the EU average. This advance reflects an adaptability of Romanians to virtual life, digital conversations and active engagement as digital citizens. The countries with the lowest percentage of population with digital communication skills are Bulgaria, Malta, Hungary and the Netherlands.

▪ *The percentage of population with digital problem-solving skills*

In order to study the percentage of people with digital problem-solving skills we have extracted information from Eurostat. This information is presented in extenso in Appendix 2, from which we have selected only a few countries shown in Table 4.

The activities used in the calculation of digital problem-solving skills are:

- downloading or installing software or applications;
- changing the settings of a software or application;
- making online purchases (in the last 12 months);
- selling online;
- using online learning resources;
- internet banking;
- looking for a job or applying for a job online.

The baseline level of this indicator is identified by performing a maximum of two of the activities listed above. The values of this indicator are shown in Table 4.

Table 4. The percentage of population with digital problem-solving skills

PERIOD	2015	2016	2017	2019	2021
Country					
Romania	29,13	36,53	35,43	40,07	32,77
Germany	16,92	16,72	17,42	14,74	38,13
EU average - 27 countries (from 2020)	19,07	19,74	19,62	19,91	26,54
EU average - 28 countries (2013-2020)	19,36	19,88	19,55	19,29	X
Sweden	12,58	14,80	16,39	18,05	18,39
Luxemburg	14,67	12,42	13,21	24,43	24,93
Latvia	18,91	15,44	12,35	26,56	31,85
Netherlands	16,13	13,90	14,36	13,36	10,29

Source: <https://ec.europa.eu/eurostat>

The values reflected in Table 4 identify Romania with the highest percentage of the population with digital problem-solving skills between 2015 and 2019. The positive aspect of this position is given by the fact that the leading position in the ranking has been kept for four years. However, in 2021 this position is occupied by Germany. Below the EU average and with low percentage of the population with digital problem-solving skills are Sweden, Luxembourg, Latvia and the Netherlands.

- *The percentage of population with digital security skills*

In order to study the percentage of population with digital security skills we have extracted information from Eurostat. This information is presented in extenso in Appendix 2, from which we have selected only a few countries shown in Table 5.

Table 5. The percentage of population with digital security skills

PERIOD	2015	2016	2017	2019	2021
Country					
Sweden	31.99	24.28	25.63	22.59	29.61
Czech Republic	26.99	28.42	31.95	34.44	31.35
Luxembourg	17.16	21.07	19.82	21.33	34.01

EU average - 27 countries (from 2020)	19.30	19.08	19.39	19.24	24.36
EU average - 28 countries (2013-2020)	19.36	19.12	19.25	19.21	
Romania	13.86	14.82	15.82	19.84	26.34
Croatia	9.91	15.67	16.80	12.90	23.65
Portugal	12.41	11.75	12.00	13.25	16.35
Malta	12.83	13.99	14.36	12.62	20.77
Netherlands	22.77	25.23	25.89	24.89	15.53

Source: <https://ec.europa.eu/eurostat>

The activities analysed in the calculation of digital security skills are:

- managing access to personal data by verifying that the website where the respondent has provided data is secure;
- managing access to personal data by reading privacy statements before providing personal data;
- managing access to personal data by restricting or denying access to personal data at personal geographical location;
- managing access to personal data by limiting access to your profile or content on social media or storage sites;
- managing access to personal data by refusing to allow the use of personal data for advertising purposes;
- modifying the settings in personal internet browser to limit cookies on any of the respondent's devices.

The baseline level of this indicator is identified by performing maximum two of the activities listed above. The values of this indicator are shown in Table 5.

Based on the data in Table 5, it shows that the highest percentage of the population with digital security skills is in Sweden, the Czech Republic and Luxembourg. Romania is below the EU average, but does not have the lowest values. The lowest values are recorded for Croatia, Portugal, Malta and the Netherlands. Digital security is an important element in the digital economy.

5. Conclusions

In our opinion, Romania, based on the analysed skills, has a lower ranking in the ranking of EU countries. In the period 2015-2021, the percentage of Romania's population with digital skills, digital communication skills and digital security skills was below the EU average. In contrast, the percentage of Romania's population with information and digital problem-solving skills was above the EU average. This highlights the fact that Romanians use digital technologies responsibly, but not competitively. Adaptability is developing among Romanians, but digital technologies are not used to make work and society more efficient.

The results of the research are presented in Figure 2 by validating hypotheses 2 and 5 and not validating research hypotheses 1, 2 and 3.






RESEARCH RESULTS		
Hypothesis 1	<i>The Romanian population has digital skills. Romanians know how to use a spreadsheet or text processing software.</i>	
Hypothesis 2	<i>The Romanian population has information skills. Romanians have adapted to online news and digital newspapers.</i>	
Hypothesis 3	<i>The Romanian population has digital communication skills. Romanians know how to use e-mail and prefer internet conversations over face-to-face meetings.</i>	
Hypothesis 4	<i>The Romanian population doesn't have any skills in digital problem solving. Romanians make purchases online but don't look for a job on digital platforms.</i>	
Hypothesis 5	<i>The Romanian population doesn't have digital security skills. Romanians don't know how to manage access to confidential personal data.</i>	

Figure 2: Research results

Source: processing the results of the study

Research results show that the Romanian population has poorly developed digital skills, as very few Romanians use a spreadsheet and word processing software. The Romanian population does not perform at least one of the activities related to digital skills. At the same time, they have weak digital communication skills. Romanians, even if they use and own an e-mail address, prefer physical meetings with protocol costs instead of internet conversations without travel costs. Romanians are also poorly skilled in digital security. Romanians do not know how to manage access to their own private data, how to change their browser settings to limit cookies or how to refuse geographic location sharing.

Instead, Romanians have digital problem-solving skills. They know how to install apps, have made online transactions, are looking for a job on a digital platform and use internet banking services. In terms of information skills, the Romanian population exceeds the EU average, which means that Romanians use the internet for information purposes and have replaced physical newspapers with digital news.

In our opinion, even though the digital skills analysed on the basis of the following activities: use of word processing software, use of an excel spreadsheet and use to edit photos or video files, are provided in the higher education system and taught in Romanian universities, they do not seem to be the strong point of graduates. The shortcomings of the educational system may be due to the lack of practical classes in which students can apply and determine the usefulness of these applications, the presentation of old-fashioned and irrelevant applications for purely informative purposes, or the lack of involvement of students and teachers in the educational process.

We believe that it is necessary and useful for any educational establishment to be equipped with electronic devices and up-to-date licensed applications to operate text processing or spreadsheet processing software. Digital skills are a determining factor in employment, and this should not be neglected in the education system. Digital skills in the digital economy belong to the category of general knowledge.

The digital skills required for an accounting professional need to exceed the basic level as they interact with advanced digital technologies. Accounting professionals must be proficient and have advanced knowledge and skills in using word processing software, an application/spreadsheet, using advanced functions of a software/worksheet to organise, analyse, structure or modify data, copying or moving files between folders, devices or to the cloud, sending and receiving emails, downloading or installing software or applications, using internet banking and many other services.

The present accounting offers technologies such as digital signature, virtual private space, cloud accounting, software robots, machine learning, SAF-T, e-Invoicing. The range of digital tools directly addressed to accounting professionals is constantly developing. The implementation of these tools is closely linked to the ability of accounting professionals to exploit digital technologies, the ability to continuously learn about the new technologies, testing to determine how to improve the applications and efficient implementation in the economic and financial activities of economic entities.

The limitations of this study are due to the small number of indicators, the short period of time analysed, the missing data from the Eurostat database, the sample selected in the questionnaires.

There is a clear need for further research in terms of determining the level of digital skills of accounting professionals, the causes hindering the development of these skills, addressing the development of digital skills in the educational context for accounting professionals, the relationship between accounting professionals and innovation.

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APPENDIX 1.

TIME	2015	2016	2017	2019	2021	2015	2016	2017	2019	2021	2015	2016	2017	2019	2021
GEO (Labels)	Percentage of population with digital skills					Percentage of population with informational skills					Percentage of population with digital communication skills				
European Union - 27 countries (from 2020)		27.03	26.21	25	20.93	9.83	9.8	9.76	10.15	12.12	18.86	20.12	18.13	16.79	8.8
European Union - 28 countries (2013-2020)	27.09	26.85	26	25.01		9.94	9.97	9.81	9.81		18.49	19.29	17.56	16.41	
Belgium	29.16	29.37	29.57	26.65	19.13	11.46	10.53	10.58	10.98	14.13	14.18	12.98	12.68	10.51	10.34
Bulgaria	18.46	16.17	18.44	18.11	21.36	10.74	12.34	11.53	12.63	14.3	7.1	8.71	8.02	10.98	7.48
Czechia	33.97	33.38	35.78	36.3	22.22	11.06	9.26	7.44	7.6	6.5	25.64	23.1	23.06	17.92	8.94
Denmark	26.45	24.59	23.98	21.46	21.03	5.88	5.57	5.4	4.89	7.58	16.48	13.9	15.19	10.06	4.72
Germany	31.42	34.06	31.46	31.32	25.4	5.85	6.85	6.78	6.52	17.29	20.71	26.65	20.13	18.72	13.63
Estonia	27.07	25.57	25.47	24.55	21.03	6.15	6.81	7.4	5.88	7.05	16.46	16.56	14.77	13.72	8.74
Ireland	19.37	19.39	19.9	19.24	21.01	13.39	13.07	12.62	9.75	8.96	17.3	16.75	15.13	15.33	5.69
Greece	27.91	26.49	24.49	27.2	21.74	6.79	6.19	5.51	5.02	6.27	15.01	12.75	11.63	11.04	5.47
Spain	23.87	22.63	23.16	21.11	21.17	8.97	8.11	9.13	9.43	8.64	17.55	18.09	17.5	16.72	4.5
France	29.93	28.08	27.89	26.38	21.11	12.36	12.66	11.69	12.62	14.8	28.67	28.6	27.2	25.64	14.06
Croatia	20.63	21.33	20.31	18.01	16.83	6.47	4.28	4.81	5.32	3.48	14.46	12.28	10.6	13.58	3.8
Italy	23.98	24.17	:	19.49	16.86	13.04	14.63	:	14.19	12.99	17.52	18.17	18.16	15.55	4.53
Cyprus	27.19	22.48	31.67	19.79	16.96	8.62	8.83	9.09	8.23	3.89	9.5	9.2	9.12	8.71	2.65
Latvia	23.66	23.73	21.27	18.51	24.45	7.33	6.12	6.24	10.39	12.9	11.49	13.14	13.52	12.68	6.84
Lithuania	20.95	22.45	22.85	23.85	18.74	6.83	8.53	7.59	6.71	6.85	11.28	10.94	10.9	10.99	6.14
Luxembourg	30.32	31.99	29.93	28.83	25.33	7.65	5.05	6.16	13.2	15.08	15.55	16.56	13.86	19.83	13.82
Hungary	27.1	27.54	23.84	23.32	20.66	5.91	6.94	6.56	6.39	5.55	8.34	9.89	8.29	7.37	4.1
Malta	18.14	17.66	17.9	17.56	22.83	7.08	7.27	6.43	8.55	4.88	12.74	11	7.92	10.41	2.71
Netherlands	29.91	31.64	31.65	29.81	18.46	5.95	4.93	4.03	4.36	3.99	18.16	16.69	13.74	11.27	1.58
Austria	31.21	30.86	31.23	26.33	19.24	9.34	7.4	9.36	8.53	11.2	22.35	23.63	23	18.34	5.21
Poland	24.98	25.02	25.25	23.16	19.81	14.12	11.93	12.64	12.76	11.35	17.19	17.72	16.32	15.18	9.89
Portugal	19.75	19.31	19.51	19.66	16.43	7.52	6.66	6.7	7.04	6.18	11.61	12.1	11.61	10.74	3.77
Romania	17.3	19.06	18.9	20.64	18.76	12.47	12.77	15.79	20.84	17.31	10.36	14.5	11.65	15.92	12.12
Slovenia	25.28	25.14	24.31	24.06	25.87	7.63	7.46	7.46	9.63	10.68	20.69	20.61	19.67	19.54	9.74
Slovakia	27.07	26.14	25.95	26.8	29.04	9.56	9.53	9.04	9.59	11.47	14.86	14.71	14.1	14.04	9.71
Finland	33.04	29.31	30.32	26.4	19.03	5.71	5.62	5.23	4.43	3.41	22.77	21.03	18.16	12.78	4.93
Sweden	36.35	29.84	30.83	26.38	22.11	8.55	6.67	6.95	6.07	8.77	16.2	15.02	15.16	12.84	8.25
United Kingdom	27.41	25.66	24.53	25.04		10.83	11.13	10.17	7.49		15.71	13.51	13.63	13.79	

Max	36.35	34.06	35.78	36.3	29.04	14.12	14.63	15.79	20.84	17.31	28.67	28.6	27.2	25.64	14.06
Min	17.3	16.17	17.9	17.56	16.43	5.71	4.28	4.03	4.36	3.41	7.1	8.71	7.92	7.37	1.58

APPENDIX 2.

TIME	2015	2016	2017	2019	2021	2015	2016	2017	2019	2021
GEO (Labels)	Percentage of people with digital problem-solving skills					Percentage of people with digital security skills				
European Union - 27 countries (from 2020)	19.07	19.74	19.62	19.91	26.54	19.3	19.08	19.39	19.24	24.36
European Union - 28 countries (2013-2020)	19.36	19.88	19.55	19.29		19.36	19.12	19.25	19.21	
Belgium	20.67	21.42	22.03	21.31	29.56	24.76	25.67	25.11	23.29	25.91
Bulgaria	20.87	21.57	25.78	24.81	28.33	13.3	12.68	13.7	14.32	30.72
Czechia	21.64	22.61	16.76	16.72	33.55	26.99	28.42	31.95	34.44	31.35
Denmark	14.24	16.84	25.2	22.03	16.49	19.48	17.45	17.58	15.59	25.94
Germany	16.92	16.72	17.42	14.74	38.13	22.4	22.92	22.37	23.43	29.25
Estonia	21.82	24.31	21.81	18.82	23.56	19.37	18.37	20.07	20.19	25.92
Ireland	25.62	28.02	24.94	26.99	21.15	14.31	14.44	15.2	13.45	23.58
Greece	23.55	20.77	21.24	20.4	26.74	22.74	23.81	20.53	23.09	24.65
Spain	18.25	17.5	17.13	18.26	21.66	15.38	14.61	16.05	15.59	17.98
France	18.75	21.18	20.44	20.97	23.27	20.22	17.87	18.71	18.49	23.97
Croatia	15.96	16.41	17.38	17.22	20.49	9.91	15.67	16.8	12.9	23.65
Italy	19.81	20.79		20.89	22.35	14.11	14.5		13.17	23.85
Cyprus	25.05	21.68	23.77	21.03	24.7	23.97	18.57	30.52	15.91	28.62
Latvia	18.91	15.44	12.35	26.56	31.85	20.47	20.78	17.26	14.74	23.37
Lithuania	14.08	15.02	15.6	15.65	24.95	17.45	20.32	20.79	22.46	24.51
Luxembourg	14.67	12.42	13.21	24.43	24.93	17.16	21.07	19.82	21.33	34.01
Hungary	19.86	24.17	21.23	23.53	27.55	23.8	22.94	20.31	18.5	30.94
Malta	15.18	14.97	15.56	18.49	18.74	12.83	13.99	14.36	12.62	20.77
Netherlands	16.13	13.9	14.36	13.36	10.29	22.77	25.23	25.89	24.89	15.53
Austria	16.99	15.46	16.46	14.98	22.68	21.43	20.12	21.07	18	25.59
Poland	20.46	19.75	19.47	22.61	27.68	19.76	19.89	20.07	19.57	19.64
Portugal	17	16.61	17.02	18.25	27.06	12.41	11.75	12	13.25	16.35
Romania	29.13	36.53	35.43	40.07	32.77	13.86	14.82	15.82	19.84	26.34
Slovenia	20.01	17.35	17.84	20.17	27.28	14.27	16.56	15.74	15.9	30.24
Slovakia	17.31	17.99	16.81	17.31	28.62	22.53	22.48	22.17	23.32	32.69
Finland	18.04	16.49	15.99	16.58	15.83	23.99	23.76	24.96	21.9	23.35
Sweden	12.58	14.8	16.39	18.05	18.39	31.99	24.28	25.63	22.59	29.61
United Kingdom	21.56	20.85	19.08	15.02		19.89	19.41	18.32	18.99	
Max	29.13	36.53	35.43	40.07	38.13	31.99	28.42	31.95	34.44	34.01
Min	12.58	12.42	12.35	13.36	10.29	9.91	11.75	12	12.62	15.53