Digital Skills of European Citizens: To Be on Time

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Abstract

The paper presents an overview of European Union policy regarding digital inclusion and digital transformation. It describes the impact of the digital skills to rising digital inclusion level. Special attention is required to analyze different types of digital skills within geographical groups of countries – Western Europe, Northern Europe, Southern Europe, and Eastern Europe. The dataset covers 2018-2020, obtained from Eurostat and other sources. The results of the analysis reveal that Nordic countries demonstrate the highest level digital skills, followed by the Western and Southern countries, and Eastern European countries have much lower rates. An exception among these countries is Ukraine, which is developing a digital society, focusing on the Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part (2014). The case study, based on Ukrainian experience, meanwhile, identifies a digital divide among citizens and discovers a set of tools for improving present situation, in particularly from Ministry of Digital Transformation of Ukraine. The paper concludes with the need to provide the targeted government decisions in European Union countries, as well as Ukraine.

Keywords: digital skills, digital inclusion, European countries, Ukraine.

Introduction

Digital inclusion are highly important for citizens` engaging in economic, social, cultural, civic and others areas of state and personal life. And digital skills decidedly are one of determinative indicators for evaluation of digital inclusion in different countries. The importance of this indicator was stressed in a number of official documents and research publications. Thus, Pillar 6 of the Digital Agenda for Europe directly related to digital skills in the context of enhancing digital literacy and inclusion. It denotes that on 2010 150 million Europeans (30%) have never used the Internet and emphasizes on the digital skills necessity for innovation and growth [1].

The new Skills Agenda for Europe adopted by the European Commission in 2016. It indicates that almost half the European Union population lacks basic digital skills; with around 20% of people having none at all. Thereby, digital skills are lacking in Europe at all levels, though the rapid digital transformation of the economy and society in general requires adequate digital skills [2]. So, the European Union made digital literacy and skills a priority of its policies, launched the Digital Skills and Jobs Coalition, and leading to the need for every citizen to have at least basic digital skills in order to live, work, learn and participate in the modern society. Regulations and digital inclusion practice have been spread out across Europe, as well as digital skills have been distributed amongst different socio-demographic groups of citizens within European countries.

According to Helsper (2014), the main definitions of digital inclusion are 'access', 'skills', 'motivation', 'engagement' and 'content'. Moreover, they can be linked to particular social outcomes for particular socio-demographic groups in particular countries. Helsper stressed, that digital skills should be thought of at a basic technical, operational level, as well as in relation to the critical, social and creative literacies [3].

There are different approaches to classify digital skills. For instance, in survey, conducted in the United Kingdom by Helsper and Eynon, they determined technical, social, critical, and creative skill types and divided them for two categories: 1) operational (creative and technical) and 2) strategic (social and critical) [3]. Another arguable question is measuring the level of digital skills. Helsper and Van Deursen (2015) noted, that the Eurostat indicators measure different types of use rather than skills. And regarding the achieving certain digital literacy goals, a number of European countries have digital skills initiatives that focus on schools or libraries or community centers training and assist to increase digital literacy in vulnerable groups [4].

This paper attempts to reveal the present level of digital skills in European countries, compare Ukrainian data, and find out what relevant decisions the governments need to make to increase digital inclusion in their countries.

The paper applied empirical methods, historical methods, relevant legislation and literature analysis, statistical methods (mostly descriptive statistics – tabular, numerical methods, and grouping for summarizing and describing data), comparison, and other research approaches. Data for the international comparisons are obtained from the European Commission, e.g., Key Indicators of the European Information Society [5], Worldometer [6], Hootsuite [7], and Ministry of Digital Transformation of Ukraine [8].

Data gathering and Analysis

The European Commission regularly overviews how digital literacy is distributed across European households and individuals, such comparative data are collected yearly by Eurostat. Table 1 reveals digital skills level in European countries according to statistics 2019. The authors grouped European countries using the regional principle, since the results of many studies indicate that within the group there are similarities and groups are often compared.

Table 1: Digital skills level of European countries citizens in general

	Country	Total population, 2020, thou	Digital skills, 2019, % of population		
			Low	Basic	Above
	European Union – 28 countries (2013-2020)		28	25	33
	Western Europe				
1	Austria	9 006,4	21	26	39
2	Belgium	11 589,6	29	27	34
3	France	65 273,5	32	26	31
4	Germany	83 783,9	22	31	39
5	Liechtenstein	38,1	n/a*	n/a	n/a
6	Luxembourg	624,0	30	29	36
7	Monaco	39,2	n/a	n/a	n/a
8	Netherlands	17 134,9	16	30	50
9	Switzerland	8 654,6	19	27	49
	Northern Europe		n/a	n/a	n/a

10	Denmark	5 792,2	27	21	49
11	Estonia	1 326,5	28	25	37
12	Finland	5 540,7	19	26	50
13	Iceland	341,2	13	24	62
14	Ireland	4 937,8	36	19	34
15	Latvia	1 886,2	42	19	24
16	Lithuania	2 722,3	25	24	32
17	Norway	5 421,2	16	31	51
18	Sweden	10 099,3	24	26	46
19	United Kingdom	67 886,0	20	25	49
	Southern Europe				
20	Albania	2 877,8	n/a	n/a	n/a
21	Andorra	77,3	n/a	n/a	n/a
22	Bosnia and Herzegovina	3 280,8	46	16	8
23	Greece	10 423,1	24	27	23
24	Croatia	4 105,3	26	18	35
25	Holy See	0,8	n/a	n/a	n/a
26	Italy	60 461,8	32	19	22
27	Malta	441,5	29	18	38
28	Montenegro	628,1	n/a	n/a	n/a
29	North Macedonia	2 083,4	50	16	15
30	Portugal	10 196,7	22	20	32
31	San Marino	33,9	n/a	n/a	n/a
32	Serbia	8 737,4	31	26	20
33	Slovenia	2 078,9	28	24	31
34	Spain	46 754,8	31	21	36
	Eastern Europe				
35	Belarus	9 449,3	n/a	n/a	n/a
36	Bulgaria	6 948,4	38	18	11
37	Czech Republic (Czechia)	10 709,0	24	36	26
38	Hungary	9 660,4	31	23	25
39	Moldova	4 034,0	n/a	n/a	n/a
40	Poland	37 846,6	35	23	21
41	Romania	19 237,7	43	21	10
42	Russia	145 934,5	n/a	n/a	n/a
43	Slovakia	5 459,6	29	27	27
44	Ukraine	43 733,8	38	22	25

*not available

Source: Authors – based on the data of Eurostat, 2019, Worldometer, 2020, Ministry of Digital Transformation of Ukraine, 2019

As we find out from Table 1, the Nordic countries demonstrate the highest level digital skills (43% average), followed by the Western (40% average) and Southern (26% average) countries, and Eastern European countries have much lower rates (21% average). The situation in the latter group is explained by the fact that some countries have joined the European Union recently and some ones are not members of the European Union. Therefore, the European Union digital programs and standards are not implemented in these countries. Besides, there are the lack of assessment of digital skills level

of their citizens. An exception among these countries is Ukraine, which is developing a digital society, focusing on the Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part (2014).

Whether a person has digital skills is determined on the basis of his or her performance in four areas. These are: 1) information (e.g. looking up information on the internet, transferring files, and saving photos in the cloud); 2) communication (e.g. sending emails, making internet phone calls, and using social networks); 3) problem solving (computers/online services, e.g. online shopping, installing apps, and taking online courses); 4) software skills (e.g. using software to edit photos, videos, or files).

An official data 2019 Eurostat are presented in Table 2, last update: 15.04.2020. For every country 'Information skills' includes 'Individuals who have basic and above basic information skills'; 'Communication skills' – 'Individuals who have basic and above basic communication skills'; 'Problem solving skills' – 'Individuals who have basic and above basic problem solving skills'; 'Software skills' – 'Individuals who have basic and above basic software skills'. General data calculated for 28 European Union countries.

Table 2: Digital skills level of European countries citizens in competence areas, 2019

	Country	Information skills	Communication skills	Problem solving skills	Software skills
		% of population			
	European Union – 28 countries (2013-2020)	81	83	78	60
	Western Europe				
1	Austria	83	83	80	69
2	Belgium	85	89	83	62
3	France	82	85	83	60
4	Germany	91	91	88	71
5	Liechtenstein	n/a	n/a	n/a	n/a
6	Luxembourg	87	92	87	68
7	Monaco	n/a	n/a	n/a	n/a
8	Netherlands	93	94	94	80
9	Switzerland	92	94	91	80
	Northern Europe				
10	Denmark	95	95	95	71
11	Estonia	86	86	86	62
12	Finland	93	93	95	77
13	Iceland	97	98	97	86
14	Ireland	85	85	82	54
15	Latvia	78	81	79	44
16	Lithuania	79	76	74	58
17	Norway	96	97	98	83
18	Sweden	93	94	93	74
19	United Kingdom	89	93	91	75
	Southern Europe				
20	Albania	n/a	n/a	n/a	n/a
21	Andorra	n/a	n/a	n/a	n/a

22	Bosnia and Herzegovina	65	68	60	25
23	Greece	72	69	61	56
24	Croatia	77	74	69	56
25	Holy See	n/a	n/a	n/a	n/a
26	Italy	61	71	59	45
27	Malta	80	82	74	58
28	Montenegro	73	n/a	69	54
29	North Macedonia	66	80	54	34
30	Portugal	69	73	62	55
31	San Marino	n/a	n/a	n/a	n/a
32	Serbia	73	72	63	50
33	Slovenia	79	78	72	59
34	Spain	83	83	78	60
	Eastern Europe				
35	Belarus	n/a	n/a	n/a	n/a
36	Bulgaria	58	65	50	31
37	Czech Republic (Czechia)	83	84	80	64
38	Hungary	76	78	68	50
39	Moldova	n/a	n/a	n/a	n/a
40	Poland	75	73	70	47
41	Romania	70	71	74	35
42	Russia	n/a	n/a	n/a	n/a
43	Slovakia	80	79	76	55
44	Ukraine	74	75	56	29

Source: Authors – based on the data of Eurostat, 2019, Ministry of Digital Transformation of Ukraine, 2019

Analyzing the digital skills level in order to find out the competence characteristics, we note that most countries in Northern and Western Europe are above the average European Union dimension. The exceptions are Latvia, Lithuania, and Ireland (regarding software skills). Southern Europe countries demonstrate both rather low digital skills level and big difference within group. The lowest digital skills level have Eastern Europe countries. An exception is Czech Republic – its digital skills level corresponds to the level of Northern and Western Europe countries.

Different EU countries conduct special advanced research and share additional information about digital literacy level their citizens. Thus, according to statistics, the Netherlands is one of the countries in Europe with the largest number of citizens with proficient digital skills. In 2019, half of the Dutch population aged 16 to 74 years had 'above basic' overall digital skills, versus an average 33 percent in the European Union. In the area of information, the share of Dutch people with above basic digital skills was 89 percent, while the EU average stood at 71 percent. The Netherlands' citizens were also showed above basic skills in 'communication' and 'problem solving': 83 and 81 percent respectively, and the EU average was 67 percent for 'communication' and 59 percent for 'problem solving' [9].

The OECD Survey of Adult Skills in Austria (2017) defines digital problem-solving skills as the capacity to solve problems using a computer. These skills include writing an e-mail and browsing the web (level 1), implementing more advanced tasks involving multiple steps (level 2), and the capacity to use both generic and specific software applications with inferential reasoning (level 3). It was emphasized that job tasks change due to digitalization – almost all jobs need interaction with

computers and basic or above-average digital skills, or a combination of professional skills and IT skills [10].

Table 3: Digital behavior in Eastern Europe, 2018

	Country	Total population, 2018, million	Internet users, % of population	Active social media users, % of population
1	Belarus	9,46	71	49
2	Bulgaria	7,06	66	52
3	Czech Republic (Czechia)	10,62	88	50
4	Hungary	9,71	79	60
5	Moldova	4,05	71	25
6	Poland	38,14	78	45
7	Romania	19,63	70	51
8	Russia	144,0	76	47
9	Slovakia	5,45	83	50
10	Ukraine	44,12	58	29

Source: Authors – based on the data of Hootsuite, 2018

Table 3 presents survey data Digital in 2018 in Eastern Europe [7]. Six of the 10 analyzed countries are Member States of the European Union, and Ukraine is considered together with three other countries, which are not Member States (Belarus, Moldova, and Russia).

The biggest amount of Internet users is in Czech Republic – 88%, Slovakia – 83%, Hungary – 79%. Ukraine takes the last rank – 58%. The biggest amount of Active social media users is in Hungary – 60%, followed by Bulgaria – 52%, and Romania – 51%. Ukraine takes penultimate rank – 29%, and the last is Moldova – 25%.

In the last years in Ukraine we sight such growing occurrence as a digital divide – widening gap between elderly and young, with high and low income, urban and rural habitants with regard to access to and the using of the Internet, as well as digital technologies. So, digital divide includes basic digital skills and media literacy, access to digital technologies, digital inclusion, and digital participation [11].

As we already mentioned, Ukraine doesn't gather statistic data in accordance with Eurostat indicators. However, the newly established Ministry of Digital Transformation (2019) conducted a comprehensive study the digital literacy in collaboration with partners, including UNDP, the Eastern Europe Foundation, EdEra and others [12]. To determine the level of digital skills was used the methodology of the European Commission – the Digital Economy and Society Index, and all four digital literacy indicators – information, communication, problem solving, and software skills were calculated.

The research shows that: 1) 53 percent of Ukrainians (aged 18 to 70) have a 'below average' level of digital skills; 2) 15.1 percent of Ukrainians do not have any digital skills at all; 3) of digital skills, communication skills and information skill, are the most developed among the population of Ukraine; 4) problem solving and software development skills require the most improvement.

With the aim of bridging this digital divide, the Ministry of Digital Transformation of Ukraine announced their ambition plan to involve 6 million citizens in digital skills development programs in partnership with Ukrainian Library Association and public libraries. Thereby, in January 2020 was

launched the National Digital Literacy Platform 'Diia: Digital Education' [8]. Nowadays it presents a number of educational videos (series), which are accessible to everyone, are designed to bridge the digital literacy gap and provide people with more opportunities to develop [11]. Facing the coronavirus COVID-19 pandemic, a new training video about mechanical (artificial) ventilators has been filmed for Ukrainian doctors use.

Conclusion

To be on time in digital era means to go ahead from digitization, through digitalization towards digital transformation. The stage of digital transformation implies doing things differently, and digital skills are first steps on this way. Because as soon as possible we should at least feel free and friendly in interacting with robotics, artificial intelligence, big data etc.

According to Ukrainian experience, to raise the digital skills level and digital literacy level of citizens in general is possible through development the infrastructure, education, and informing component. In our opinion, the biggest challenge will be engaging residents to use the digital learning platform.

There need more effective and efficient government policies, that links different digital skills and indicates how this relates to the needs of particular groups. We should fully understand, that inequalities in digital skills will not automatically disappear, unless clearly targeted government decisions are implemented. It is important to keep in mind that finally it is not the matter of digital skills or digital inclusion, but the facing and overcoming everyday challenges.

Endnotes

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