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Information Awareness of Polish Society with Particular Emphasis on Digital Skills

Ewa Kuzionko-Ochrymiuk

PhD., Faculty of Management, University of Białystok, Poland

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Abstract

The development of the information society, and thus the intensification of the role and use of modern information and communication technologies, causes a number of socio-economic changes. They occur both in the technological, economic and social spheres, becoming the subject of interest of many researchers not only in the field of social, economic and technical sciences. The dynamic development and spread of modern information and communication technologies leads to the acquisition of new and deepening existing skills, especially those related to the use of ICT technologies. Achieving an appropriate level of competence is necessary in the micro dimension - the sphere of work and everyday functioning of society, as well as in the macro dimension - due to the formation of stable and systematic socio-economic development. The aim of the article is therefore to characterize the level of digital competences of Polish society, mainly in terms of problems related to the level of general digital skills and their changes over recent years, as well as to determine Poland's position in this respect compared to other European Union member states. The source material is data from public statistics of the European Statistical Office and the Central Statistical Office in Poland.

Keywords: digital competences, digital skills, information and communication technologies (ICT), information society.

Jel codes: O15, O33

1. Introduction

Increasing the scope of use of information and communication technologies (ICT) in the economy, as well as in the everyday life of citizens, is associated with a new trend of civilization transformation creating an information society. The main goal of the European Union was to create an information society, which is to be a strategic factor of competition in the global world (Report on Europe, 1994). In the EU's socio-economic development strategies, the information society is defined as a civilization in which information processing using ICT technologies constitutes a significant economic, social and cultural value. The concept of ICT, treated as a determinant of the development of the information society and innovativeness of the economy, includes, among others: (Koćwin, 2018, p. 86)

- knowledge potential and resources of innovative technologies, the absorption of which in all sectors of the economy leads to structural changes and creates new potential for socio-economic development;
- all activities related to the production and use of telecommunications and IT devices and accompanying services;
- collecting, processing and sharing information in electronic form, using digital techniques and all electronic communication tools.



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The above determinants are identified with the development and dissemination of ICT technologies, however, they are inherently related to the use of computer technologies, in particular with access to the Internet.

The intensive development of the Internet, which influences the ease of communication and fast data transmission, has led to this method of transmitting information being perceived as a key factor in interpersonal communication. In recent years, there has been a growing use of the Internet, both in the activities of enterprises, the functioning of households (Karpńska et al., 2017, p. 99), and the functioning of public administration bodies. This is due to both quick, easier and cheaper access to new inventions and technologies, as well as the processes of virtualization and technicalization of everyday life. Based on European statistics, a dynamic increase in the number of households with Internet access can be observed in EU countries as well as in Poland. The average rate of internet use among people aged 16-74 in EU countries in 2023 was 93,1%. Compared to 2015, this is an increase of over 11 percentage points. In 2023, Poland reached a high level of this indicator, slightly exceeding the European average (93,3%). Detailed data is presented in Figure 1.

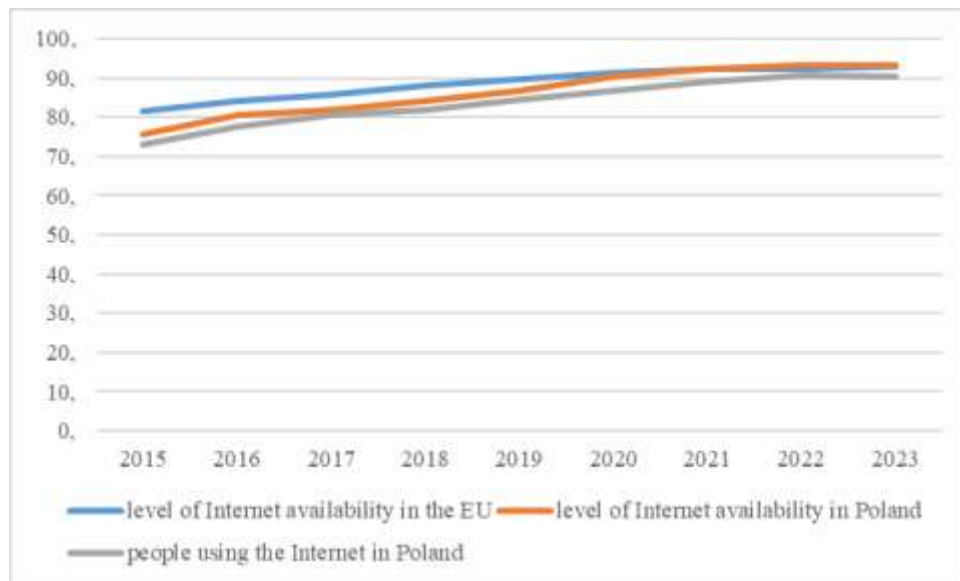
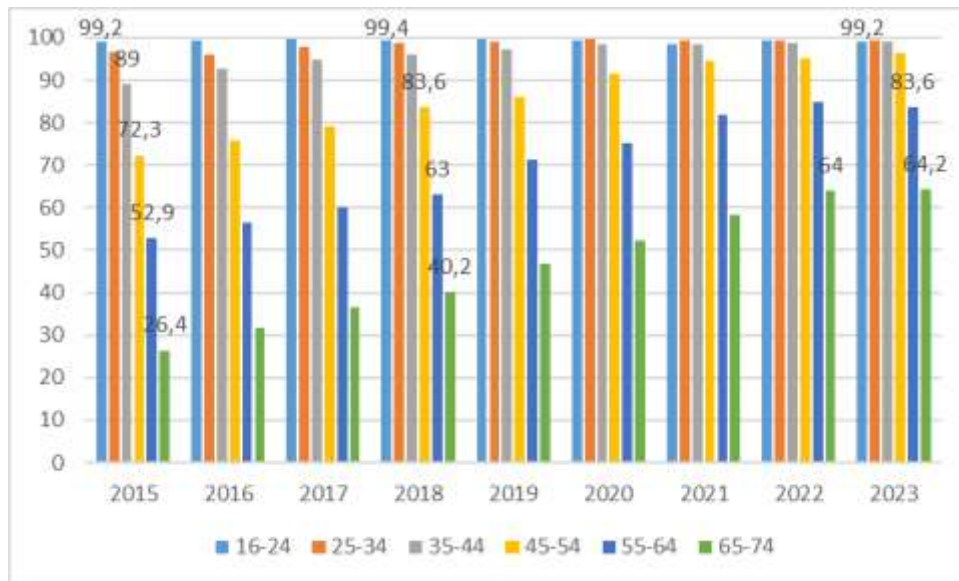


Figure 1. Level of Internet access in households (%) in Poland and the EU in 2015-2023

Source: Own study based on: Główny Urząd Statystyczny, The use of information and (tele)communication technologies in public administration units, enterprises and households in the years 2015 - 2023. [access: November 14, 2023]

Taking into account the above data, it can be noted that both a high percentage of households with access to the Internet in Poland – 93,3% (GUS, 2023) and a significant percentage of people aged 16-74 use it regularly – 90,2% (Central Statistical Office, 2023). Compared to 2015, this is an increase of over 17 percentage points.

Over the years 2015–2023, the percentage of people using the Internet increases. Information society research shows that the use of the Internet is largely differentiated by age. The youngest use the Internet the most. Age also determines the ways of using the Internet, forms of activity, and the selection of functions. Between 2015 and 2023, the share of regular internet users increased annually across all age groups. The exception was the population of people from the youngest age group, in which these percentages have been at the highest level for several years and no significant increases were observed on an annual basis. Detailed results are presented in Graph 1.



Graph 1. People using the Internet by age (%) in 2015-2023

Source: Own study based on: Główny Urząd Statystyczny, The use of information and (tele)communication technologies in public administration units, enterprises and households in the years 2015 - 2023. [access: November 14, 2023]

The Internet is becoming a tool for communicating, searching for information, as well as providing access to knowledge, influencing the dissemination of new patterns of consumption of both goods and services (Matel, 2015, p. 23). The effect of these changes is the transformation of the industrial society into an information society, which, according to the Report of the First Congress of Polish Informatics, can be defined as "a society characterized by the preparation and ability to use information systems, computerized and using telecommunications services to transmit and remotely process information" (Report of the First Congress Polish Informatics, 1994). The information society is therefore a society that produces, stores, transmits, downloads and uses information (Mączyński, 2002).

In accordance with the assumptions of the Strategy for the development of the information society in Poland (Strategy for the development of the information society in Poland until 2013, MSWIA, Warsaw, 2008), its development should be accompanied by:

- availability, security and trust - the ability to obtain access to reliable information or a safe service necessary for citizens and entrepreneurs;
- openness and diversity - no discrimination in access to information, in particular public information;
- universality and acceptability - striving to make participation in the goods of the information society obvious and as wide as possible, as well as to ensure that the offer of products and services of the information society is as wide as possible;
- communicativeness and interoperability - ensuring access to the desired information in a safe, fast, simple and independent manner, regardless of the technology used.

An important area of building the information society is the dissemination of technology as a tool enabling the achievement of intended goals. This means that the condition for its construction is an active citizen with knowledge and technology, therefore, in addition to access to ICT, the use of this type of technology also plays an important role, which is inextricably linked to having and improving appropriate competences called digital.

The spread of the digitization process has resulted in the issue of digital competences systematically gaining importance. Achieving an appropriate level of competence in the area of using ICT technology is currently considered a condition for stable and systematic development of society and a determinant of the level of civilization development (Rozkrut, 2018, p. 347–348). Moreover, it is indicated that digital skills are increasingly desired in the labor market, becoming even necessary in everyday life (Ćwiek, 2018, p. 217; Jedlińska, 2018, p. 225–226; European Court of Auditors, 2021, p. 13). Their lack or inappropriate level may constitute a significant obstacle in the professional and personal sphere, as well as in everyday functioning, which is why they have become the subject of many important discussions regarding the type of competences that the information society and its members should have (Golka, 2005, p. 254; Kęsy, 2011, p. 74; Rozkrut,

2018, p. 348–350), and the full use of the potential of digital technologies has been established as one of Poland's development priorities.

The aim of the article is to characterize the level of digital competences of Polish society and, above all, to try to answer the questions:

- 1) what is the level of general digital skills of Polish society in the light of the latest data,
- 2) how has this level changed over the last few years,
- 3) what type of digital skills pose the greatest difficulties to Polish society.

In the study, the author will also compare the level of general digital skills of the Polish society compared to other European Union member states. The key point of reference here are the implications of the published document Digital Compass for 2030 (Communication from the Commission to the European Parliament, 2021), which presents a vision of digital transformation in the European Union by 2030. The document assumes that the European Union will pursue a digital policy that will enable citizens and businesses to seize the opportunities of a human-centric, sustainable and more prosperous digital future (Communication from the Commission to the European Parliament, 2021).

The Digital Compass assumes that digital development in Europe will be focused on the following areas (Communication from the Commission to the European Parliament, 2021):

- a digitally skilled society and highly skilled digital professionals,
- secure, efficient and sustainable digital infrastructure,
- digital transformation of enterprises,
- digitization of public services.

For each of the above-mentioned points, a set of specific detailed objectives was formulated. Due to the subject of the article, specific objectives in the areas of: Secure, efficient and sustainable digital infrastructure, Digital transformation of enterprises, Digitization of public services were omitted.

For a Digitally Skilled Society and Highly Skilled Digital Professionals (Digital Decade for Europe), the specific objectives are:

- ICT specialists: 20 million + greater gender balance in the profession,
- Basic digital skills: min. 80% of the population.

Due to the breadth of the analyzed issue, this study focused on only one area describing the advancement in the implementation of digital economy solutions, namely the area related to society's digital skills. The assessment was made in relation to the assumptions of the Digital Compass 2030 document adopted by the European Union, based on public statistics of the European Statistical Office and the Central Statistical Office in Poland.

2. Literature Review - Digital competences and statistical data

The traditional understanding of digital competences is limited to defining them as technical IT competences, necessary for the conscious use of the Internet and service applications and for operating digital devices, and in the case of higher-level skills - programming, i.e. creating the code of IT programs (Głomb, 2020, p. 15). However, in a modern approach, digital competences are approached much more broadly. For example, according to J. Adamek and M. Solarz, digital competences should be combined with the broadly understood ability to use modern information and communication technologies, i.e. the ability to use them in a process aimed at both efficient and effective achievement of the goals set for the individual in every sphere and at every level. stage of life (Adamek, Solarz, 2020, p. 8).

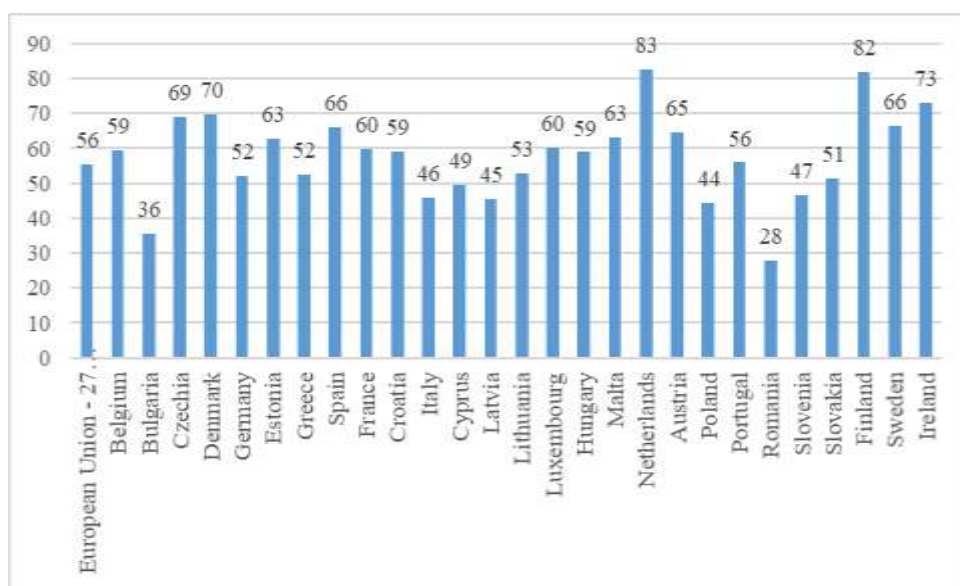
In turn, Y. Punie defines it as the competent, conscious and creative use of information and communication technologies. At the same time, it recognizes that they are of a special nature because they directly contribute to and influence the process of acquiring other key competences (DigComp: European Digital Competence Framework).

Organizations dealing with the digitization of society are also trying to define the essence of digital competences. According to the Council of Europe, digital competences “include the confident, critical and responsible use and interest in digital technologies for learning, work and participation in society. These include information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), security (including digital comfort and cybersecurity competences), intellectual property issues, problem solving

and critical thinking” (Council Recommendation). A similar definition was adopted by the Department of the Labor Market, which states that it is the free and critical use of information and communication technologies to achieve goals related to work, employment, study, recreation and participation in social life (Work for young people). In turn, Digitization of the Chancellery of the Prime Minister recognizes that digital competences are a harmonious composition of knowledge, skills and attitudes enabling living, learning and working in a society using digital technologies (Digital competences - Ministry of Digitization).

Regardless of the approach, it should be recognized that digital skills are currently one of the most important groups of competences of every person, affecting the ability to properly participate in social and economic life.

The level of digital skills in EU countries in 2023 is presented in Graph 2. In Poland, this level is much lower than the average level of skills for the EU.



Graph 2. Level of general digital skills (%) in EU countries in 2023

Source: Own study based on: <https://ec.europa.eu/eurostat> [access: 15.11.2024]

In the presented classification, taking into account EU member states, Poland was in 24th position, i.e. 3rd from the bottom. Taking into account the mentioned digital aspirations and goals of the EU (Digital Decade of Europe), according to which at least 80% of citizens should have basic digital skills by the end of 2030, it should be noted that Poland, with a result of 44.3%, fares very poorly.

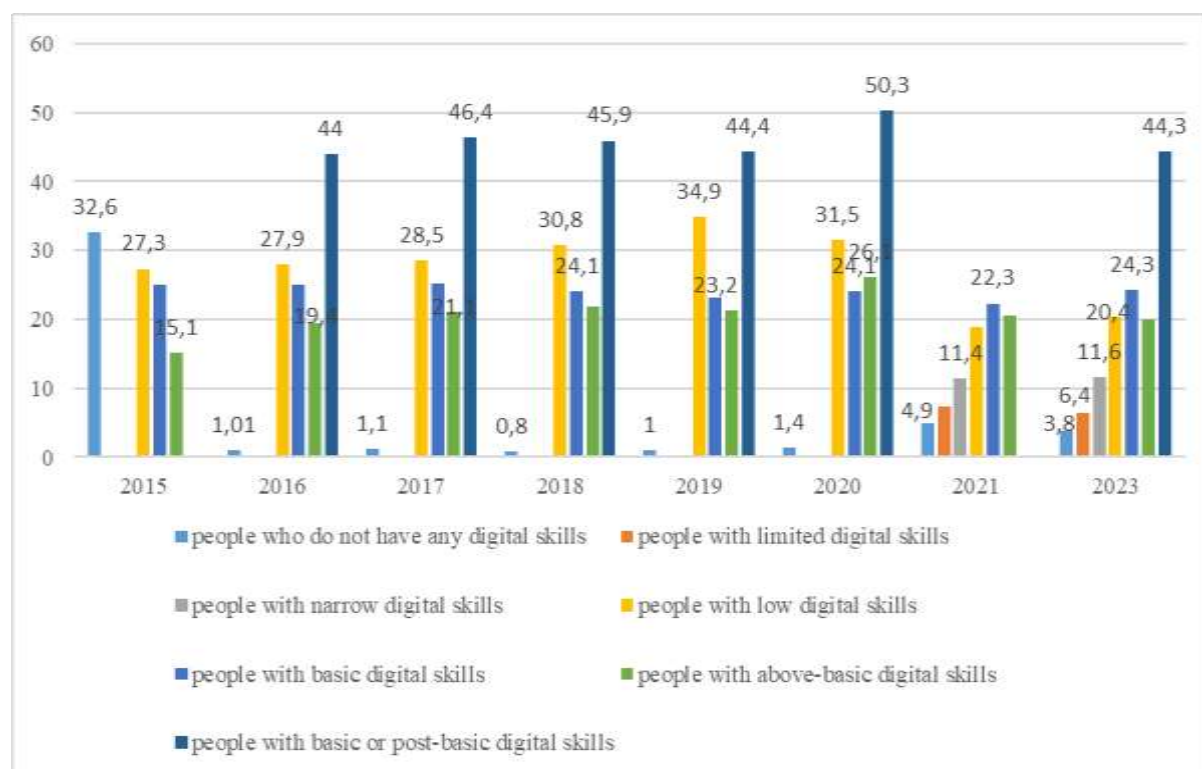
The conclusions about the relatively poor result of Polish society in terms of at least the basic level of digital skills are also confirmed by the data contained in the DESI digital progress report, which is presented in Table 1.

Table 1. Digital skills in Poland and the EU in 2018-2023 according to DESI

	DESI index value											
	2018 PL	2018 UE	2019 PL	2019 UE	2020 PL	2020 UE	2021 PL	2021 UE	2022 PL	2022 UE	2023 PL	2023 UE
At least basic digital skills (% of people)	46	57	46	57	44	58	44	56	43	54	43	54

Source: Own study based on: [Digital Economy and Society Index, 2018, p. 6; *European Commission*, 2019, p. 8; *European Commission*, 2020, p. 9; Digital Economy and Society Index, 2021, p. 5, *European Commission*, 2021, p. 9; Digital Economy and Society Index, 2022 p. 6, *European Commission*, 2022, p. 9; Digital Economy and Society Index, 2023, p. 2].

As the data in Table 1 show, the level of digital skills of Poles is low compared to the EU average. It should be noted that this indicator applies to people aged 16-74. In 2023, only 43% of people in this age group had at least basic digital skills (in the EU - 54%). Later in the study, the author will verify whether the level of access to the Internet and its use translates significantly into the level of digital skills of Poles. It is worth emphasizing that the analysis does not include the year 2022 due to the lack of data published by the Central Statistical Office in Poland. Detailed data on the level of general digital skills of Poles is illustrated in Graph 3.



Graph 3. People with digital information skills by their level (%) in 2015-2023

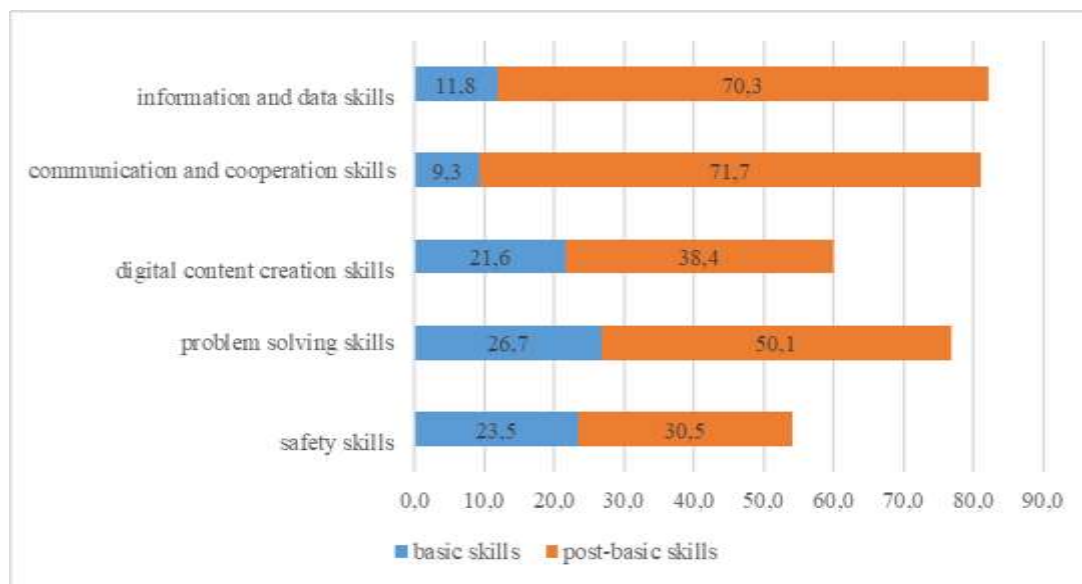
Source: Own study based on: Główny Urząd Statystyczny, The use of information and (tele)communication technologies in public administration units, enterprises and households in the years 2015 - 2023. [access: November 14, 2023]

The percentage of people with at least a basic level of general digital skills in 2023 was almost 44,3%. This figure consisted of the percentage of people demonstrating basic (24,3%) and post-basic digital skills (20%). The share of low general digital skills covered nearly 1/5 of the surveyed population. The least numerous

category, i.e. almost 4%, was represented by people without any digital skills. Due to the systematically growing role and importance of digital skills in the modern world, it also seems important to track the changes in the level of general digital skills of Poles that have taken place over the last few years.

The greatest development of general digital skills was recorded at the post-primary level, especially in the period 2015–2018 (an increase of 6,7 percentage points), compared to the period 2019–2023 (an increase of 1,1 percentage points). This can most likely be linked to the outbreak of the CO-VID-19 pandemic, which has made all areas of life: study and work, social relations, consumption, ways of spending free time, as well as health and family life, inextricably linked to the use of services. digital. This, in turn, forced individuals to quickly master new competencies or deepen their existing ones. However, it should be noted that the percentage of people without any digital skills also decreased during the period under study. In 2015 it was 32,6% and in 2023 3,8%, which is an increase of 28,8 percentage points.

Another important issue from the perspective of the analyzed issue is the diversity of Poles' digital skills, taking into account not only their level but also their type. The latest data in this regard is illustrated in Graph 4.



Graph 4. People with digital skills by type and level (%) in 2023

Source: Own study based on: Główny Urząd Statystyczny, The use of information and (tele)communication technologies in public administration units, enterprises and households in the years 2015 - 2023. [access: November 14, 2023]

The highest level of digital skills among Poles concerned communication and cooperation. Almost 72% of people had a post-basic level, which means that they were able to perform several of the following activities: send and receive e-mail; use social networking sites; make voice or video calls over the Internet; use instant messaging; express opinions on social or political issues on websites or social networking sites; participate online in public consultations; vote on civic or political issues. It is worth emphasizing that people with above-basic skills in communication and cooperation as well as the use of information and data are people who have performed several of the above activities; people with basic skills - only 1, and people with none - none (GUS, 2023, p. 144-146).

In second place were the skills of using information and data. Almost 70% of the respondents had it at an above-primary level, which means that they performed several of the following activities: searching the Internet for information about goods or services, searching for health-related information, reading online news, newspapers or magazines, and checking the accuracy of the content found on the Internet (Information society in Poland, 2023). Third place was taken by problem-solving skills (50%), which at the post-primary level involve performing at least three of the following tasks: downloading or installing applications or software; changing the settings of any application software or devices; purchasing goods or services online for private use in the last 12 months; selling goods or services through the website or application; attending an online course or using online training materials other than the full online course; using online banking via a website or application; job search; applying for a job; sending CV. It is worth emphasizing that people with post-basic digital content creation skills, as well as security-related skills and problem-solving skills are those who have performed at least 3 of the

above-mentioned activities; people with basic skills - only 1 or 2 of them, and people with none - none of them (GUS, 2023, p. 147-149)

In fourth place were the skills of creating digital content consisting of: using word processors; using spreadsheets; editing photos, video or audio files; copying or moving files; creating files (documents, photos, videos) combining several elements, such as: text, pictures, tables, charts, animations or sound; using advanced tools to organize, analyze or manage data; coding/programming in a programming language. Over 38% of people achieved post-primary level.

The biggest challenge for Poles is digital security skills. Only every third respondent was able to complete at least three of the following commands: check whether the website requiring personal information is secure; read the privacy policy before sharing/providing personal information; deny access to your geographic location; limit access to your profile, your own content on a social networking site or a shared space on the Internet; refuse the use of personal information for advertising purposes; change the settings in your web browser to prevent or limit the number of cookies being installed on any device.

In an attempt to explain the presented results, it can be assumed that the highest level of digital skills in the use of information is the result of the experience of the pandemic period, during which ICT tools were the most effective way of obtaining necessary information from various fields and thematic areas, both in the sphere of work, education and life. private as well as handling official matters. The available statistical data from the Central Statistical Office show that the largest percentage of people using the websites of public administration units to search for information, download official forms and submit applications online are people aged 35-44, which means that not only people in the youngest age group have digital skills. In turn, a low level of security skills may result from the lack of adequate substantive preparation and, consequently, from a low level of awareness of the consequences of activities undertaken online.

4. Conclusion

The dynamic digitalization process in recent years has led to an increased demand for digital skills, both in the professional and private spheres. Due to the above, there is a need to acquire new skills and deepen existing ones, especially those related to the use of ICT technologies. The intuitive nature of activities and the intensity of AI's expansion into increasingly broader spheres of life mean that modern digital competences cannot be limited to generally understood access to a computer and the Internet.

The analyzes conducted show that the accelerating technological development is not accompanied by the expected increase in the level of digital skills of Polish society, especially in relation to the digital goals established by the European Commission. In the light of data for 2023, the percentage of people with at least a basic level of general digital skills was over 44%, while at least 80% of citizens (aged 16-74) should have them by the end of 2030, and according to the assumptions of the Strategy Digitization of Poland by 2035, 85% of citizens will have at least basic digital competences (Poland's Digitization Strategy until 2035). As a result, in the ranking reflecting the level of general digital skills in EU countries, Poland was placed 3rd from the bottom. It is therefore necessary to take thoughtful actions that will improve the position of our country and create opportunities to achieve the goals indicated in the Digital Compass 2030. Certainly, the most important action is investing in digital education for the entire society. It is necessary to involve typical educational units (schools, universities), other entities (e.g. research centers) and public authorities in activities in this field. It is necessary for the state to support teachers who are to provide such knowledge (substantively and financially). It seems very important to involve society in the process of improving digital skills, including enterprises that can and should train their employees in this area. It is also necessary to disseminate information about EU funds that can be used for this purpose.

Training activities must be addressed to groups with different levels of digital skills. However, special emphasis should be placed on reaching older people with these activities. The young generation already has a high level of digital skills. Therefore, it can be stated in passing that the following generational changes, regardless of the training activities undertaken, will be a phenomenon that will also have a positive impact on increasing the level of digital skills of the entire society.

The development of the digital economy forces all members of society to improve their digital skills. They are necessary not only in professional work, but also in everyday life. The lack of competences in this area may soon contribute to digital exclusion, which manifests itself in limiting the ability to use modern forms of participation in culture or preventing the use of the expanding offer of digital public services.

Therefore, it is necessary to systematically assess society's digital skills, which may also be achieved through initiatives such as CRKC, which is responsible for conducting research and analyzes in the area of the information society, taking into account the issue of digital competences.

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