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EUROPE IS GOING DIGITAL – A GLANCE AT THE DIGITAL COMPETENCES OF THE ROMANIAN CITIZENS

The technological ascension represents one of the main phenomena encountered by today's society, influencing almost every field of activity of the modern world. In fact, technology has become part of our daily life, whether we refer to active participation in society, learning, work, or other activities.

In order to gain a favorable position compared to other states considered as global powers, the European Union is constantly striving to advance in various fields, placing special importance on the digitalization of the Member States. In addition to the technological side, the process of digitalization takes place with and through the human factor. Thus, we are concerned with the human capital and its digital competences, as their deficiency or absence can have negative effects both on the general life chances of citizens and on the digital progress of EU Member States.

Romania is striving to make the most of the digital revolution, the possibilities and benefits offered by it, trying to contribute to the digital progress of the European Union and to consolidate its position among the other Member States. However, given the aforementioned issues, it is natural to wonder if citizens' skills support the digitalization process or represent a shortcoming in this regard. Thus, the fundamental purpose of this article is to provide an overview of the digital competences of Romanian citizens, dealing with aspects such as the evolution of the last years and the current status related to the analyzed phenomenon.

Keywords: Digital Skills, Digitalization, European Union, Romania.

1. Introduction

The current economic environment, considered the key factor in terms of the stability and development of any country, is characterized by intense change and competition, under the influence of the globalization of the production of goods and services. According to van Laar et al. [1], the field of Information and Communication Technologies (ICTs) underlies the rapidly changing economy. Thus, in the current context of modern society, the digital transformation has gone from the trend stage to the necessity stage.

Each country undertakes considerable efforts in order to strengthen its position, support and drive economic development. The need to implement technological tools has been understood worldwide, as these are already present in almost any industry, field of work or activity. However, not all countries in the world are digitally progressing at the same pace, which may be reflected in their performance and economic well-being.

At European Union level, the policies implemented aim, inter alia, at streamlining and supporting the implementation of digital tools by all Member States, to gain a competitive advantage over other global powers. In terms of digital performance in recent years, it has been found that all EU Member States progressed [2]. However, the recorded progress was not similar among the countries under analysis. Countries such as Finland, Sweden, the Netherlands and Denmark have proven to be leaders in digitalisation at EU level, while other Member States still face difficulties in doing so. Despite all the undertaken efforts, Romania was placed at the end of the digitalization ranking for the entire period of the last half decade.

As the human being represents the *entrepreneur* of any activity, its importance in terms of digitalization is obvious. In addition to the technological side, the progress of which cannot be disputed, we consider human capital as being a key factor to consider when analysing a country's digital evolution. Regardless of the field over which the technology exerts its influence, it is extremely important that people have the necessary skills to efficiently manage and operate it. Therefore, we refer to human capital as summing up the digital skills of individuals and their ability to use technology, generating a maximum level of efficiency.

Among the policies implemented at EU level the *New Skills Agenda for Europe* could be mentioned, adopted by the European Commission in 2016, which aims, among others, to improve the digital skills of the population on a large scale, not just IT professionals. The document in question characterizes the digital skills of citizens as a necessity both in the labour market and in participation in society [3]. In a more recent view, digital skills are considered to be part of the category of basic skills of individuals, along with literacy and numbering, while mentioning that many citizens have limited or outdated digital skills [4].

Given the previously discussed aspects, the main objective of this paper is to provide an overview on the digital skills of Romanian citizens, in the context in which the EU is struggling to ensure the transition to digital. In order to achieve the stated objective, the following research questions are addressed:

- Which are the key digital competencies needed for human capital in the 21st century?
- Does Romania's digital progress in recent years highlights a favourable situation for the country compared to the rest of the EU?
- The digital competences of Romanian citizens support or represent a deficiency in terms of the country's digital development compared to other EU Member States?
- Which are the weaknesses and strengths related to the digital skills of Romanian citizens?
- Which are the potential factors influencing the development of digital skills among Romanian citizens?

The research methodology is based on the predominant analysis of secondary sources. Therefore, the main aspects considered in the research result from official statistics or from direct observation of reality. The authors' contribution is identified both in terms of reviewing the current status of the analysed subject, as well as the

analysis of the influencing factors regarding the development of digital skills in Romania.

2. Key Digital Skills for Human Capital in the 21st Century – The European Framework

The increased technologicalization and almost ubiquity of such tools in all fields is changing the paradigm in terms of key skills needed by individuals in the 21st century, both in terms of labour market integration and in terms of participation in society and the contribution to the welfare of the economy as a whole. The extremely diverse ways in which ICT tools can be used and especially the projected trends related to the development of this field (technologies such as augmented reality, virtual reality, IoT, etc. could be mentioned) determine the need for new skills to be acquired by citizens, in addition to capabilities related to technology use at the basic level.

In an attempt to provide a comprehensive definition with respect to the digital skills concept, the literature has presented vast views over time. Therefore, we are already familiar with concepts such as *information literacy*, *technological skills*, *ICT skills* and so on. However, the concept of digital competence is an evolving one, adapted to the progress of ICT and the needs of today's society. Hence, in order to understand the approached concept, we will refer to one of the best-known works in this regard, namely *DigComp – Digital Competence Framework for Citizens*. Developed for the European Union, Dig*Comp* was first published in 2013 and gradually updated, now reaching the DigComp 2.0 version. Within DigComp 2.0 [5], 21 key digital competencies for citizens in the 21st century were identified, targeting five main areas as can be seen in the table below:

***Table* 1. The European Competence Framework for Digital Citizenship – DigComp 2.0**

Area of competence	Digital competence	Implications
I. Information and data literacy	I. *1. Browsing, searching and filtering data, information and digital content*	• Searching for data, information and digital content, accessing and navigating among them; • Creating and using custom search strategies.
	I. *2. Evaluating data, information and digital content*	• Analysis, comparison and evaluation of digital content in terms of its reliability and credibility.
	I. *3. Managing data, information and digital content*	• Organizing data, information and digital content in a structured environment.
II. Communication and collaboration	II. *1. Interacting through digital technologies*	• Interaction with multiple digital technologies and understanding their purpose in certain contexts.
	II. *2. Sharing through digital technologies*	• Sharing digital content through appropriate technologies; • Existence of knowledge regarding assignment and reference practices.
	II. *3. Engaging in citizenship through digital technologies*	• Use of private and public digital services for the purpose of participation in society.
	II.*4. Collaborating through digital technologies*	• Co-construction and co-creation of resources and knowledge through the use of collaborative digital technologies.
	II. *5. Netiquette*	• Awareness of issues related to behavioral norms and know-how in the context of the use of digital technologies and interaction in digital environments. • Awareness of the generational and cultural differences of the audience and adaptation of communication strategies to them.
	II. *6. Managing digital identity*	• Creating and managing one or more digital identities and protecting them.
III. Digital content creation	III. *1. Developing digital content*	• Creating and editing digital content in various formats.
	III. *2. Integrating and re-elaborating digital content*	• Creating digital content and knowledge by modifying existing digital content for improvement.
	III. *3. Copyright and licences*	• Understanding how to license and copyright digital content regardless of its format.
	III. *4. Programming*	• Development of sequences of instructions that can be understood by computer systems, following which an actions can be performed or problems can be solved.
IV. Safety	IV. *1. Protecting devices*	• Understanding issues related to threats and risks in digital environments. • Understanding security and safety measures; • Understanding reliability and confidentiality aspects.
	IV. *2. Protecting personal data and privacy*	• Awareness of the use and sharing of personal information for the purpose of protecting oneself and others; • Understanding that digital services use privacy policies in order to inform users about how their personal data is used.
	IV. *3. Protecting health and well-being*	• Avoiding health risks and threats to physical and psychological well-being in the context of the use of digital technologies; • Protecting oneself and others against possible dangers in digital environments; • Awareness of the effects of digital technology on social welfare and social inclusion.
	IV. *4 Protecting the environment*	• Awareness of the impact of the use of digital technologies on the environment.
V. Problem solving	V. *1. Solving technical problems*	• Identifying the technical problems related to the digital devices used and the ability to solve them.
	V. *2. Identifying needs and technological responses*	• Adjusting and customizing digital media according to identified personal needs (e.g., accessibility).
	V. *3. Creatively using digital technologies*	• Production of innovative knowledge and services using digital technologies.
	V. *4. Identifying digital competence gaps*	• Identifying areas where digital literacy needs to be improved or updated; • Supporting other people in order to develop their digital competence; • Searching for self-development opportunities in line with digital evolution.

Source: Based on data provided by Vuorikari et al. [5].

Although acquiring digital skills may seem like a simple task, looking at the table above, we easily notice that being digitally competent in the 21st century has many implications, as the basic use of computing systems is not enough.

3. Human Capital Digital Skills Influencing Romania's Digital Progress

As a Member State of the European Union, Romania acts in accordance with the policy developed by it, aiming the development and alignment of the country with the other Member States from several perspectives, including digitalization. In addition to many other issues considered important in the digitalization process, human capital is receiving increased attention. The importance of human capital skills is obvious in any context, as they represent the engine that underpins any action. Thus, in the following parts of this research we intend to present some notable information regarding the digital progress of Romania as a whole, highlighting, at the same time, the main aspects considering the digital competences of the Romanian citizens.

3.1. Romania's Overall Digital Progress compared to the EU

As an instrument of measuring Romania's digital progress, we can refer to the *Digital Economy and Society Index*, well known as the *DESI Index*. The DESI Index was implemented by the European Union in order to monitor the degree of digitalization of Member States, analysing five main dimensions: *Connectivity*, *Human Capital*, *Use of Internet*, *Integration of Digital Technology* and *Digital Public Services*. In fact, the DESI Index is based on four areas of competence related to DigComp: *Information*, *Communication*, *Content creation* and *Problem solving* [5].

The efforts undertaken in recent years by Romania to digitalize the public and private environment, but also in terms of the society transition to the use of ICT tools, have materialized in a slight evolution of the country from this perspective. However, the results provided by the DESI Index highlight the fact that, although Romania progressed, in the last five years it has ranked among the last or even last place compared to the rest of the EU Member States in terms of digitalization.

At the end of 2020, Romania ranks 26th out of 28 (Fig. 1) in terms of digitalization according to the DESI Index [6], based on which the main findings are summarized below. Although the position does not rank the country as a leader in digitalization at EU level, the recorded data determined the transition from the 27th place (registered in 2018 and 2019) to the 26th.

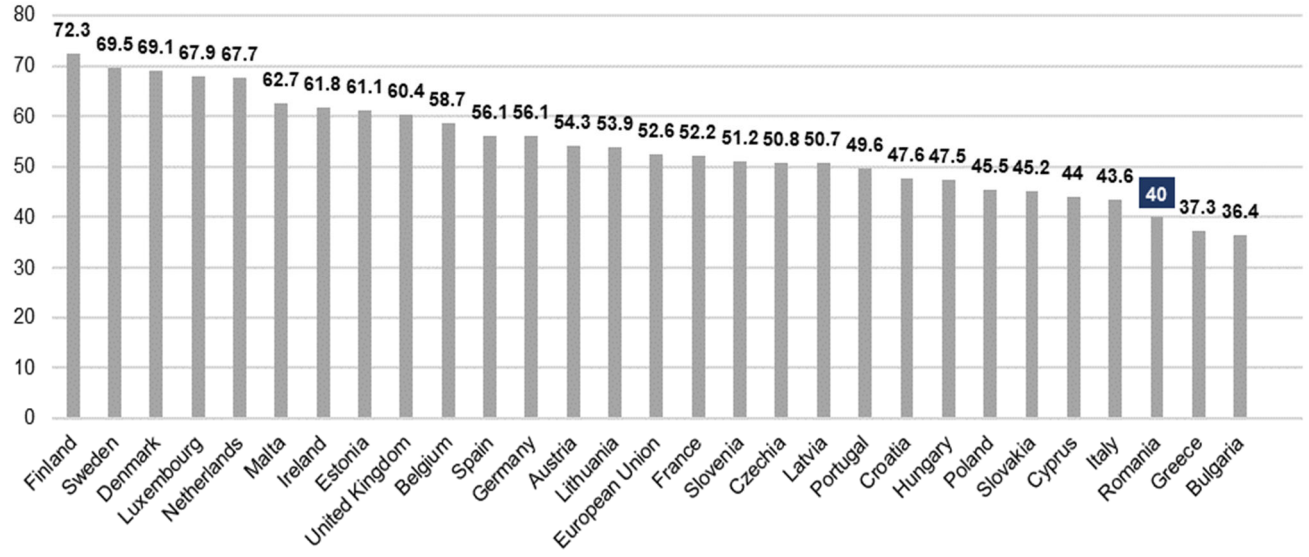

Fig. 1. European Union Member States' performances in digitisation-2020

Source: Data provided by the European Commission [7] – Authors' own representation.

The widespread availability of high-speed and high-bandwidth fixed networks, predominantly in urban areas, determined Romania to record, at the end of 2020, the best results for the Connectivity dimension within the DESI index. Having the increased connectivity as a strong point in terms of digitalization, Romania has the foundations of an infrastructure that will favour the transition process to a digital economy and society. Compared to the other Member States, Romania was above the EU average (50.1) in terms of Connectivity, with a score of 56.2, occupying the 11th place in the ranking.

However, for the other dimensions, Romania recorded lower performances. The weakest digital progress registered in 2020 was in terms of Digital Public Services. The increased share of e-Government users registered for Romania ranks the country 8th in the European Union. However, this progress is not enough to compensate the deficiency in other indicators within the Digital Public Services dimension, such as services performed entirely online or digital public services for enterprises, for which our country ranked 28th.

Another digital shortcoming encountered refers to Internet Use, Romania registering the weakest progress in this regard, compared to other EU Member States. It is important to mention the preference of Romanian citizens to use online Social Media services. Although, overall, the use of the Internet is low in our country, Romania ranks 6th in the EU in terms of the Social Networks indicator within the analysed dimension. Specifically, 81.7 % of internet users use social networks, compared to the EU average of 64.9 %.

The digital evolution recorded in 2020 by Romania is also well below the EU average in terms of the Digital Technology Integration dimension, for which Romania ranks 27th. 23 % of Romanian companies manage to share information electronically, while 11 % benefit from opportunities offered by the analysis of large volumes of

data. However, only 8 % of Romanian companies use Social Media tools, the EU's average standing at 25 %.

With regards to the Human Capital dimension, the results reveal a stagnation compared to 2019, Romania occupying the 27th position both in 2020 and in the previous year. In terms of both basic digital skills and basic software skills held by the country's citizens, Romania ranks second to last compared to EU Member States. Findings on this dimension show that less than a third of people aged 16 to 74 have at least basic digital skills, compared to the EU average of 58 %. In addition, only 10 % of Romania's population has digital skills above the basic ones, which ranks the country last in the EU in this regard.

The five dimensions analysed in the DESI Index and briefly presented above highlight the digital progress of Romania, stressing both indicators for which there has been an increased performance and indicators whose results show a weak digital evolution. Overall, for the country considered for analysis, the poor digital performance is much higher compared to those that favour a leading position in terms of digitalization within the European Union.

The potential causes of the overall digitalization of EU Member States have been extensively studied over time. For example, referring to the DESI index, recent research [8] refers to the consumption index, whose 1.% increase could result in an increase of about 0.2 in terms of digitalization, while the increase in unemployment by 1 % could cause a decrease of about 0.2 in the digital progress. These aspects, along with many others, can also be considered in terms of Romania's digital evolution. However, since understanding the digitalization phenomenon involves considering an extensive number of influencing factors, consistent with the purpose of this research, we will focus on the Human Capital dimension within the DESI index.

3.2. Human Capital Digital Skills in the Last Five Years – Overview for Romania

In order to understand whether the development of digital skills by citizens is a constant problem for Romania or the sharp evolution of other EU Member States has made Romania lag behind, we will focus on the progress of the Human Capital dimension. The period of analysis considered refers to the last five years, i.e. 2016–2020, the metrics being compared both internally and externally, at EU level.

Referring further to Romania's digital progress measured through the DESI Index, we must keep in mind that the considered dimensions are weighted differently. Overall, the five dimensions contribute to the digitalisation of the country according to the effects considered on the economy and society.

Being a composite index, DESI suggests that the dimensions considered for analysis do not represent areas that individually contribute to digital development but form a whole that acts as such. However, we easily notice the importance given to the human factor and the digital skills it holds in digitalizing a country. Along with Connectivity (25 %), the Human Capital dimension (25 %) contributes 50 % to the overall results of the digitalization of an EU Member State, with the other dimensions being ranked lower.

At internal level, comparatively analysing the five key dimensions based on the percentual growth recorded from 2016 to 2020, we notice that the Human Capital dimension recorded the slowest progress (Table 2). First of all, this aspect suggests increased difficulties in terms of the development of digital skills among Romanian citizens, compared to the slightly increased ease of digitalization for the other directions. Also, the association between the increased share of the Human Capital dimension in the DESI Index and its low progress for Romania may have a less favourable impact on overall result of the Index, affecting the progress of the other dimensions in question.

Table 2. **DESI Index Dimensions' Percentual Growth for Romania**

Year	*Human Capital*	*Connectivity*	*Use of Internet*	*Integration of Digital Technology*	*Digital Public Services*
2016	27.50	40.26	26.06	18.77	34.20
2017	30.20	43.64	26.29	19.86	37.10
2018	31.10	48.80	31.50	20.80	41.10
2019	31.50	50.00	35.00	21.30	45.00
2020	33.20	56.20	35.90	24.90	48.40
Growth 2016–2020	**21 %**	**40 %**	**38 %**	**33 %**	**42 %**

Source: Based on data provided by the European Commission for 2016–2020.

Although Romania's progress over the last five years reveals constant improvements in the digital skills held by its Human Capital, it is important to note the evolution of this dimension at EU level. In this sense, the results of the Index considered in the current research, i.e. DESI reveals that, for the entire period 2016–2020, Romania registered values well below the EU average (Fig. 2).

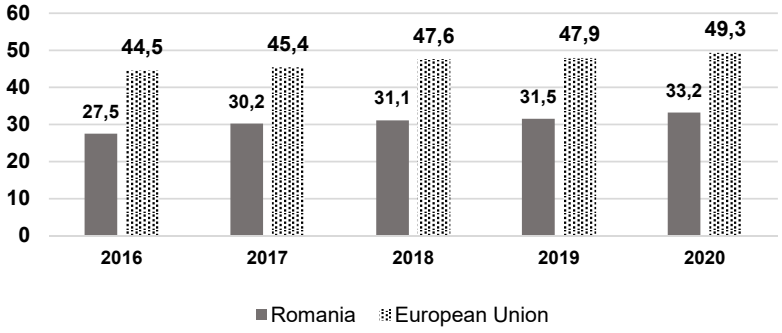

Fig. 2. Comparative Evolution of Human Capital Dimension Related to the European Average

Source: Data provided by the European Commission [7] – Data extraction and visualization made by the authors.

Given the aspects briefly discussed above, we are aware that the poor development of digital skills related to the human factor is rather a major internal problem for Romania, and not just a unfavourable position compared to the European average determined by the evolution of other Member States. It is obvious that, from a competitive point of view, Romania has to undertake considerable efforts in order to obtain a favourable position compared to other EU countries, but it seems that even internally it fails to follow the sharp upward trend compared to the other dimensions analysed.

3.3. Breaking Down the Digital Evolution of Human Capital for Romania

Within the DESI Index, the dimension considered for analysis in the present research, i.e. Human Capital, is calculated as a weighted average of normalized indicators, corresponding to the two main sub-dimensions: *Internet User Skills* (50 %) and *Advanced Skills and Development* (50 %). In terms of individual indicators, each of them represents 33 % and is distributed within the sub-dimensions as follows:

1. *Internet User Skills*: 1a. At least Basic Digital Skills, 1b. Above basic digital skills and 1c. At least basic software skills;
2. *Advanced Skills and Development*: 2a. ICT Specialists, 2b. Female ICT specialists and 2c. ICT graduates.

Considering the way of calculating the Human Capital dimension as a whole, it becomes necessary the detailed individual analysis regarding the mentioned subcomponents becomes imperative in order to identify the weaknesses and strengths related to the digital abilities of the Romanian citizens.

Regarding Internet User Skills, Romania faces major problems compared to the European Union average (Fig. 3). Although the percentage of individuals with at least basic digital skills and at least basic software skills has steadily increased in recent years, the major shortcoming is represented by the number of people with digital skills above basic skills. In particular, this indicator has stagnated in recent years, with only 10 % of individuals in this group.

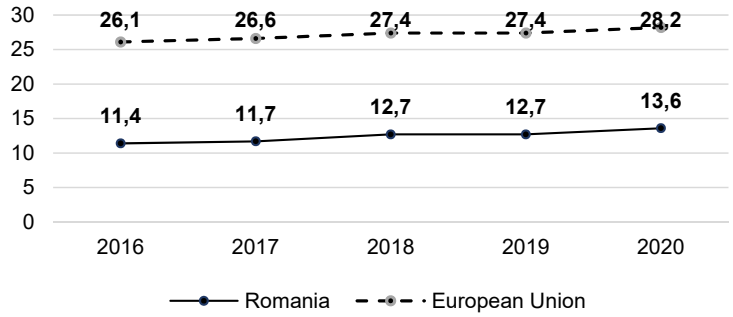

Fig. 3. Internet User Skills – Romania vs EU

Source: Data provided by the European Commission [9] – Authors' own representation.

Advanced Skills and Development subdimension represents a challenge for most EU Member States. The overall scores obtained for Romania in this respect are far less from the European average (Fig. 4) compared to those related to the Internet User Skills indicator. However, we can see some indisputable shortcomings. Although Romania has been well positioned over time in terms of ICT graduates, surpassing the EU average of 3.6 % in 2020, by 5.6 % of all graduates, the problems arise compared to ICT Specialists. The existence of slight increases from year to year did not determine Romania's recovery in terms of ICT specialists, who currently represent a much smaller proportion of the workforce (2.2 %) compared to the European average (3.9 %). Related to Female ICT specialists, the indicator registered values close to the European average annually, but always below this.

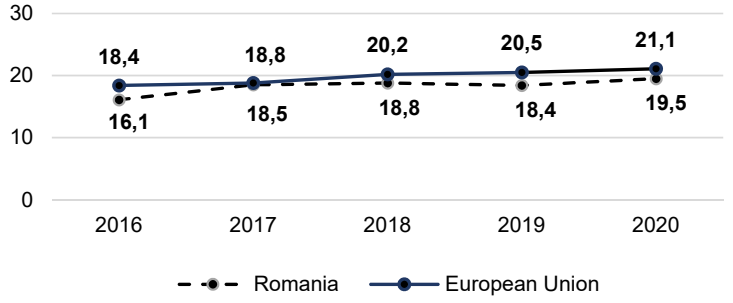

Fig. 4. Advanced Skills and Development – Romania vs EU

Source: Data provided by the European Commission [9] – Authors' own representation.

The aspects presented above indicate improvements in the Human Capital dimension for all the indicators included in it. Looking back, the results of the DESI indicator reveal that Romania encounter difficulties with ICT specialists, 80 % of companies that have either recruited or tried to recruit ICT specialists reporting such deficiencies [10]. The problems are even more pronounced compared to the cluster of basic digital skills (1a. At least Basic Digital Skills, 1b. Above basic digital skills and 1c. At least basic software skills), Romania being far behind the

other EU Member States. A better visual representation of % of individuals for each indicator within the sub-dimensions related to Human Capital is offered through Fig. 5, considering the results obtained in 2020 for Romania, compared to the European Union average.

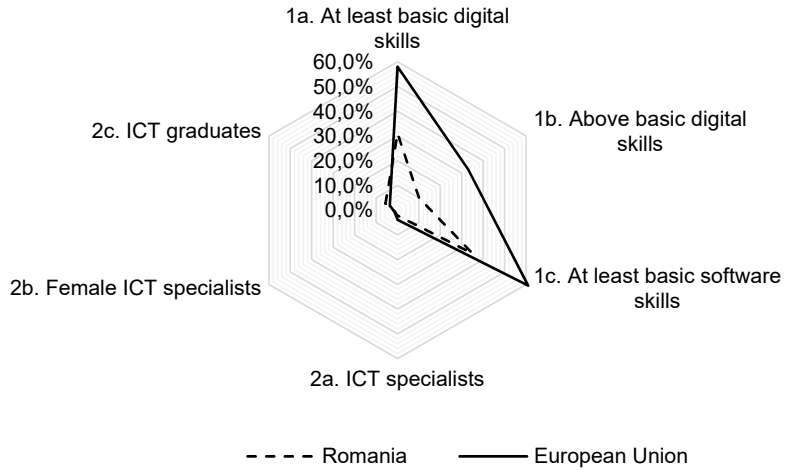

Fig. 5. Human Capital Dimension Indicators – Romania vs EU

Source: Data provided by the European Commission [9] – Authors' own representation.

The obtained findings after breaking down the digital evolution of Human Capital for Romania characterize, in fact, the digital competencies of individuals as representing a weak point in the digitalization of the country. The problems derive mainly from the "base", as Romanian citizens have insufficient levels of essential digital skills.

4. PESTLE Analysis of Education System in Romania from the Perspective of Facilitating Digital Skills Development

Given the current situation and the evolution in recent years with respect to the development of digital skills among individuals in Romania, an increased interest should be attributed to the identification of potential factors influencing this progress. Therefore, the following assumptions and aspects reflect the results of the authors' analysis regarding various circumstances, situations and facts that may or even affect, favourable or unfavourable, the development of digital skills in Romania. In order to obtain a comprehensive overview of the current situation, the PESTLE approach was chosen, analysing the six main categories of factors: Political, Economic, Socio-Cultural, Technological, Legal and Environmental.

According to the results of a recent study developed by Statista [11] on the main barriers to the development of digital skills, almost a third of Romanian respondents reported lack of time as the main impediment. At the same time, 22 % of the people included in the analysis reported a lack of adequate training opportunities for such skills.

Given the lack of training opportunities reported by Romanian citizens and starting from the premise that education represents the starting point in the development of a society as a whole and any skills of its members, we will focus on factors that influence the capabilities of the Romanian educational environment to support the empowerment of individuals with digital skills. It is obvious that the development of digital knowledge and skills is not limited to learning in a formal educational environment, but we consider that this represents the basis of the process. Thus, we will refer to some main aspects, directly related to the educational environment and intensely debated over time.

- **Political and Legal Factors**

Despite all efforts, Romania is facing a turbulent political and legal environment, dominated by corruption and very increasingly unstable. This situation is also felt in the evolution of the educational environment and its alignment with the European Framework on Digital Competences. The change of more than 20 ministers of the Ministry of Education and Research since 1989 has led to difficulties in achieving consistency in the development of education policies. Although there are many government-led projects that aim to improve the levels of digital skills of Romanian citizens, inconsistency in their implementation leads to limited results.

The legislative uncertainty specific to Romania, directly correlated with the political environment, also affects education, continuing to represent a major obstacle for the development of modern educational institutions. The main problems affecting the educational environment by disfavouring the implementation of measures to support the development of education refer to difficult administrative procedures, high level of bureaucracy and frequent changes in the rules and policies applied in the educational environment.

On the other hand, we refer to the educational curricula as it is established at a centralized governmental level in Romania, by the competent bodies, through various legal and political decisions. The development of digital skills as a point of interest in education in Romania is materialized by the existence of Technology of Information as an optional separate subject in primary education (ISCED 1) and Informatics and Technology of Information and Communication in lower secondary education (ISCED 2) and in upper secondary education (ISCED 3). The European Commission report on Digital Education at School in Europe [12] highlights that Romania seems to have the longest training time for ICT (digital skills) as a separate compulsory subject in upper secondary compulsory education (168 hours) compared to other EU countries. Moreover, regarding the development of digital competences in non-university tertiary education (ISCED 4) and higher education (ISCED 5–8), in addition to the

existence of specialized study programs in the field of ICT, often the program followed includes disciplines specific to the development of digital skills in a common trunk.

However, given Romania's poor results on digital skills, we consider that the existence of disciplines designed to determine the development of digital skills is not enough. However, the school curricula is a major problem. We are not referring only to the methods used, but to the content of the curriculum itself, which is often challenged by public opinion. The strict deepening of some basic digital elements does not determine the alignment of the Romanian educational curricula to the European Framework on Digital Competences. On the other hand, the inclusion of separate disciplines related to ICT does not seem to be the best option. Digital skills should also have a cross-cutting component, with applicability in all other disciplines, not just in a stand-alone course, so as to prepare the human resource for the labour market.

- **Economic Factors**

The economic evolution of a country has a major impact on education, especially in terms of investments. According to Eurostat [13], the index of GDP per capita in purchasing power standards (PPS) for Romania, expressed in relation to the European Union average set at 100, is 69. This result ranks the country on the 4th position at the end of the ranking compared to other EU Member States. Therefore, we observe a poor economic performance of Romania as a whole.

Currently, the Romanian education system is certainly underfunded (2.8 % of GDP) compared to the EU average (4.6 %), also recording the lowest percentage within the EU [14]. The major consequence consists in the inability to modernize, which is also negatively reflected in the access to technology in training institutions.

In addition to the major investments needed to facilitate access to technology in educational institutions in Romania, investments in institutional development and staff training in the IT field are also needed. According to the Education and Training Monitor [14], Romania is facing major shortcomings in terms of qualified teachers in primary education and in teachers in lower secondary education in the field of ICT, especially affecting disadvantaged communities (rural areas, poor communities and Roma).

- **Socio-Cultural Factors**

Romania is facing a demographic decline, a situation that has led to the closure of approximately 42 % of educational institutions between 2010 and 2016 [14]. Unfortunately, the downward trend still exists, consequently affecting the access to education, especially in rural areas. The rural-urban gap is quite large, but there are also some urban areas that face such problems. Thus, it is obvious that the impossibility of accessing education also affects the development of digital skills by the human factor.

On the other hand, in order to explore the Romanian culture over time, numerous studies have been carried out, the evaluations being developed both at regional level and compared to other states. In order to obtain an overview of the main factors specific to Romanian culture in relation to other cultures, we can refer to the method proposed by Geert Hofstede. Although this involves evaluating six key dimensions, we will refer to two of them, namely Uncertainty Avoidance Index (UAI) and Long-Term Orientation (versus Short-Term).

The development of digital skills as an objective in training institutions has emerged as a need determined by the evolution of ICT and digitalization as a whole, a phenomenon characteristic of today's world. Not being part of the core curricula from the outset of learning, the creation of digital skills among learners has involved and continues to involve the change of traditional learning and its transition to digital.

Based on the Hofstede model, avoiding uncertainty refers to the degree to which members of a society feel uncomfortable with uncertain and ambiguous situations [15]. A society with a high degree of UAI experiences, as a consequence, a major resistance to change. Specific to human nature, individuals naturally try to keep their methods and habits constant, but these behaviours differ from culture to culture.

The Long-Term Orientation dimension refers to how each society maintains connections with the past while addressing the challenges of the present and the future [15]. As in the case of UAI, societies prioritize these fundamental objectives differently by either focusing on the traditional (with a low score for the Long-Term Orientation dimension) or being attracted by new (with an increased score for Long-Term Orientation size).

Obtaining a score of 90 in terms of the degree of Uncertainty Avoidance Index and a score of 52 for the Long-Term Orientation dimension [16], Romania is characterized by a culture in which members have an extremely high preference for avoiding uncertainty and relatively increased for maintaining traditional activities. This has a negative effect on the educational environment, not supporting the savings and efforts in modern education as a way to prepare for the future. Consequently, the working methods, teaching techniques and all the mechanisms involved in Romanian education may be obsolete. Thus, the transition to the new, to digitalization and the formation of skills needed in this regard can be profoundly affected.

- **Technological Factors**

Romania's digital infrastructure supports the use of online instruments by providing means that increase connectivity and Internet access. However, with respect to the main technological factors affecting the development of digital competence, referring to the existence of ICT-specific tools in educational institutions, we identify major problems. According to the information provided by Statista, in Romania, the number of high school students per computer in 2017/18 was 12 [17]. Although there are favourable situations in this regard, they are still low and the general infrastructure of the Romanian education system needs consistent improvements in order to digitalize, ensuring proper conditions for developing human capital digital skills. Actually, in developing countries, such as Romania, the high cost of digital devices can be prohibitive. Fortunately, the costs of ICT devices are following a sure downward trend.

- **Environmental Factors**

As mentioned above, the development of digital skills represents a process that can only be supported by ensuring access to specific devices. Although these devices serve as a replacement for many traditional tools, for example by providing benefits in terms of paper consumption, there are also arguments against this.

High-performance digital devices involve increased energy consumption. Given the limited resources existing in educational institutions in Romania, we can consider this aspect as a less favourable one, which does not necessarily support the start of processes aimed at developing digital skills, mainly due to the financial constraints.

5. Conclusions and Future Research Directions

Providing an overview, the phenomenon under analysis in this paper was examined from the perspective of a competitive context, given the current situation in which the country is trying to progress towards obtaining the best possible digital position at EU level. Thus, the present research, although having as a starting point data extracted mostly from external sources, highlights some notable aspects regarding the development of digital skills of Romanian citizens and potential influences on the phenomenon:

- Compared to the European Union average, the evolution of the digital competences of the human capital represents one of the weakest points for Romania, the results obtained over time ranking the country on the last positions in this respect.
- Although the progress on the development of citizens' digital skills is steady, the growth over the last five years is much smaller compared to other dimensions of digitalization. Given that the importance given to Human Capital in measuring the degree of digitalization of the country, the low results may adversely impact the final scores related.
- Romania faces major problems regarding the basic digital competencies of individuals and the group of basic competencies. In the absence of basic digital skills, it becomes impossible to develop modern social and economic systems based on digital instruments.
- In the absence of substantial investments in education, Romania will not be able to cover the gap concerning the development of digital skills. It is mandatory to implement projects to ensure the alignment of Romanian education with the European Framework on Digital Competences.

Regarding the future directions of the research, it is intended to carry out quantitative research on the phenomenon analysed, the aim being on the one hand to confirm or refute the assumptions of this paper, and on the other hand to provide results of greater relevance.

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ЄВРОПА ПЕРЕХОДИТЬ НА ЦИФРОВІ ТЕХНОЛОГІЇ – ПОГЛЯД НА ЦИФРОВІ КОМПЕТЕНЦІЇ ГРОМАДЯН РУМУНІЇ

Технологічний підйом є одним з основних явищ, з яким стикається сьогоднішнє суспільство, впливаючи практично на всі сфери діяльності сучасного світу. Фактично, технологія стала частиною нашого повсякденного життя, будь то активна участь у житті суспільства, навчання, робота або інші види діяльності.

Щоб зайняти вигідне становище порівняно з іншими державами, які вважаються світовими державами, Європейський Союз постійно прагне до прогресу в різних сферах, надаючи особливого значення цифровізації держав-членів. Крім технологічного аспекта, процес цифровізації відбувається за участю людського фактора і через нього. Таким чином, нас цікавить людський капітал і його цифрові компетенції, оскільки їхній недолік або відсутність може негативно позначитися як на загальних життєвих шансах громадян, так і на цифровому прогресі держав-членів ЄС.

Румунія прагне максимально використовувати цифрову революцію, пропоновані нею можливості й переваги, намагаючись зробити свій внесок у цифровий прогрес Європейського Союзу і зміцнити свої позиції серед інших держав-членів. Однак, з огляду на згадані проблеми, природно задатися питанням, чи сприяють навички громадян процесу цифровізації, або є недоліком у цьому відношенні. Таким чином, основна мета даної статті – представити огляд цифрових компетенцій громадян Румунії, розглянувши такі аспекти, як еволюція за останні роки і поточний стан, пов'язані з аналізованим явищем.

Ключові слова: цифрові навички, цифровізація, Європейський Союз, Румунія.

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ЕВРОПА ПЕРЕХОДИТ НА ЦИФРОВЫЕ ТЕХНОЛОГИИ – ВЗГЛЯД НА ЦИФРОВЫЕ КОМПЕТЕНЦИИ ГРАЖДАН РУМЫНИИ

Технологический подъем представляет собой одно из основных явлений, с которым сталкивается сегодняшнее общество, оказывая влияние практически на все сферы деятельности современного мира. Фактически технология стала частью нашей повседневной жизни, будь то активное участие в жизни общества, обучение, работа или другие виды деятельности.

Чтобы занять выгодное положение по сравнению с другими государствами, считающимися глобальными державами, Европейский Союз постоянно стремится к прогрессу в различных областях, придавая особое значение цифровизации государств-членов. Помимо технологического аспекта, процесс цифровизации происходит с участием человеческого фактора и через него. Таким образом, нас интересует человеческий капитал и его цифровые компетенции, поскольку их недостаток или отсутствие может негативно сказаться как на общих жизненных шансах граждан, так и на цифровом прогрессе государств-членов ЕС.

Румыния стремится максимально использовать цифровую революцию, предлагаемые ею возможности и преимущества, пытаясь внести свой вклад в цифровой прогресс Европейского Союза и укрепить свои позиции среди других государств-членов. Однако, учитывая упомянутые проблемы, естественно задаться вопросом, способствуют ли навыки граждан процессу цифровизации или являются недостатком в этом отношении. Таким образом, основная цель данной статьи – представить обзор цифровых компетенций граждан Румынии, рассмотрев такие аспекты, как эволюция за последние годы и текущее состояние, связанное с анализируемым явлением.

Ключевые слова: цифровые навыки, цифровизация, Европейский Союз, Румыния.

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AGILITÄT ÜBER UNTERNEHMENSGRENZEN HINAUS

Unternehmen verlassen sich bei der Entwicklung von Software und Lösungen häufig auf das Know-How externer Dienstleister. Moderne Arbeits- und Kollaborationsformen verändern gleichzeitig die Entwicklung von Produkten und Dienstleistungen. Wie beeinflüssen diese Trends die Zusammenarbeit und Zusammenarbeit zwischen Unternehmen und ihren externen agilen Dienstleistern?

Ziel dieser wissenschaftlichen Arbeit ist es herauszufinden, welche Schritte unternehmen müssen, um agiles Arbeiten und die Zusammenarbeit mit externen Dienstleistern umzusetzen.

Daher wurde anhand einer Fallstudie inklusive einer qualitativen Befragung herausgefunden und aufgezeigt, welche Maßnahmen und Maßnahmen Unternehmen ergreifen müssen, um das Ziel einer effektiven Umsetzung einer agilen Zusammenarbeit und Zusammenarbeit zu erreichen. Drei Kernthemen wurden identifiziert, auf deren Grundlage die Forschungsfragen zu den Maßnahmen beantwortet werden: Erstens, welche Möglichkeiten Unternehmen haben, ein internes agiles Setup zu implementieren, um mit agilen Dienstleistern auf Augenhöhe zusammenzuarbeiten. Zweitens, welche Vertragsvarianten die agile Zusammenarbeit unterstützen und verbessern können und drittens, welche agilen Techniken und Methoden in der agilen Zusammenarbeit eingesetzt werden sollten.

Die Ergebnisse der Fallstudien bestätigen die Annahme, dass die drei identifizierten Kernthemen für eine effektive Zusammenarbeit im agilen Umfeld essenziell sind. Während einerseits nachgewiesen wurde, dass sich die Vertragsanforderungen hinsichtlich ihrer Flexibilität und Anpassungsfähigkeit veränderten, wurde andererseits auch nachgewiesen, dass das interne Setup agile Treiber, Techniken und Methoden erfordert, um eine effektive Zusammenarbeit mit agilen Dienstleistern zu ermöglichen. Dieser Artikel gibt einen Überblick über die wichtigsten Inhalte innerhalb der drei genannten Kernthemen und gibt Unternehmen zudem Hinweise, wie sie eine Basis für eine effektive Zusammenarbeit schaffen können.

Schlagworte: Agilität, agile Vertragsvarianten, Kooperation externer Dienstleister, neue Rahmenbedingungen.

1. Introduction

Der Trendbegriff Agilität, bzw. agiles Arbeiten im Unternehmenskontext, genießt derzeit einen großen Hype. Gerade in der modernen Managementliteratur finden sich unzählige Werke, die sich damit beschäftigen wie, wann und warum agiles Arbeiten in Unternehmen eingeführt werden muss. Der Agilitätsbegriff lässt sich jedoch schon bis zurück in die 1950er Jahre verfolgen, in der Talcott Parsons die wesentlichen Bestandteile einer agilen Organisation herausarbeitete. Der Grundstein für die wichtigsten agilen Werte, Prinzipien, Techniken und Methoden, die heutzutage in agilen Organisationen verwendet werden, wurde 2001 durch das agile Manifest geschaffen, welches heutzutage als das maßgebliche Werk in diesem Bereich angesehen wird [1]. Doch was bedeutet Agilität im Unternehmenskontext eigentlich? Häusling und Fischer beschreiben Agilität als Fähigkeit, sich dauerhaft an die turbulente und vor allem unsichere und komplexe Zukunft anpassen zu können [2]. In Zeiten sich rasch verändernder Märkte und kontinuierlich steigendem Kostendruck fällt es Unternehmen mit klassischen Strukturen aus den verschiedensten Branchen schwer, sich auf verändernde Bedingungen einzustellen. Stark verkürzte Durchlaufzeiten für Produktentwicklungen und die schnelle Anpassung an sich verändernde Rahmenbedingungen machen Agilität häufig zum Mittel der Wahl für Organisationen, die im VUCA Umfeld um ihr Überleben kämpfen müssen. Einer Studie der Boston Consulting Group zufolge, in welcher mehr als 1.100 Führungskräfte und Mitarbeiter aus mehr als 40 Ländern und zehn verschiedenen Branchen befragt wurden, konnten agile Organisationen bis zu fünf Mal höhere Margen und stärkeres Wachstum als die starre Konkurrenz erzielen [3]. Längst hat der Trend zur agilen Ausrichtung in allen Unternehmensgrößen Einzug gehalten. Sowohl kleine Unternehmen als auch globale und transnationale Konzerne wie General Electric, Adidas und Accenture haben ihre gesamte Wertschöpfungskette in agile Strukturen transformiert [4, 5]. Gleichzeitig ist Agilität kein Heilmittel für jede Organisation, jedes Projekt oder jede