

COMPUTER LITERACY OF CITIZENS OF THE SLOVAK REPUBLIC IN THE CONTEXT OF INDUSTRY 4.0

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Abstract

Thanks to digital solutions, more flexible production, higher productivity and the development of new business models are possible today. However, the future of the industry offers even greater potential. Cutting-edge technologies will create new opportunities for both the discrete and manufacturing industries to meet individual customer requirements. Over the last decade, companies in various industries have digitized their operations and processes. Businesses are already using artificial intelligence to streamline workflows and supply chains. As a result, today's job seekers require specialized skills to help them stand out from the crowd. While some colleges, universities and training providers have adapted or expanded their curricula to meet this growing demand for digital know-how, many educators are trying to provide the basic skills that students need. Labor market responsive and lifelong learning remain key to success. In digital production, the demand for digital skills has been growing since 2015. It is important that Slovak education focuses on soft skills, especially social and technological ones, not on content. However, the ability to learn new skills "on the go" is and will remain the most sought-after skill of the people.

Keywords: computer literacy, industry 4.0, Slovak republic

1 Introduction

The world is constantly changing, and with it the increasing emphasis on the development of new technologies that should facilitate and at the same time optimize not only production but also everyday life. The beginning of the 21st century is associated with the expansion of the Internet, technology and their penetration into all areas of human activities. Constant innovation, optimization and efficiency itself are the key to gaining a competitive advantage in today's labor market. Industry 4.0 is considered to be a societal change affecting industry, technical standardization, research, education, the legal field, security, interconnection, and social systems. Digital skills thus represent an important competence for life and work, which has been multiplied mainly by the increase in digitization in everyday and working life. It is therefore natural to adapt to the change that is coming with Industry 4.0, because it is this that is causing the change in the employment system as we know it today. What is the level of these skills in the conditions of the Slovak Republic and what possibilities and challenges this issue brings will be the task of researching the following article.

2 Description of the approach, work methodology, materials for research, assumptions, experiments, etc.

Digital skills can be considered the complete foundation of almost all aspects of work and life as such. From filling in the official form to communication between people. It is therefore difficult to find a job or a life task that does not require at least a basic level of digital skills. Digital skills are the gateway to opportunity in the 21st century. According to Rose (2016), digital technologies are a major driver of growth, productivity, competitiveness and innovative capacity for the economy. However, for the labor market, they are a challenge for existing jobs, especially for those that involve routine tasks and opportunities to create new ones, which are mainly related to digital skills. According to Ghobakhloo (2020), the fourth industrial revolution, also known as Industry 4.0, is just considered to be the basis of digital transformation. It is transforming the way individuals basically live and work, which has a strong bearing on digital skills. Industry 4.0 enables the digitization of the manufacturing sector using built-in scanners in virtually all manufacturing components, products and devices. This analysis of related data in the ubiquitous system of combining digital data and physical objects has the ability to transform every industry in the world so that it develops much faster, more efficiently and with greater impact (Mrugalka, Wyrwicka, 2017). At the same time, Qin et al. (2016) add that Industry 4.0 supports production efficiency precisely through intelligent data collection, correct decision-making and decision-making without any doubt. Using the most advanced technologies, data collection and interpretation procedures will be simpler. This overall consistency represents Industry 4.0 as the most important aspect of artificial intelligent functions. Based on previous opinions, it can be stated that the development itself does not arise only in business, but it also has implications in the institutional, educational, training and social spheres. Therefore, the importance and essence of digital skills is taking on a much larger dimension than in previous

times. According to Karacay (2017), in today's global environment, the sustainability and competitive advantages of a company depend primarily on their ability to adapt to changing business requirements and thus also the requirements that are placed on people's abilities. Creating a future workforce involves not only attracting and developing new talent, but also retraining current employees. However, it is necessary to realize the difference between digital skills and digital navigation skills. Digital skills are the technical skills needed to use digital technologies, while digital navigation skills represent a wider set of skills needed to succeed in the digital world. This includes finding information, prioritizing information and evaluating the quality and reliability of the information system itself. These skills in digital navigation are not fundamentally different from the non-digital skills that were needed in the past and are still needed today. Digital navigation capabilities have also been referred to as "eternal skills" (Grand-Clement, 2017). Marsh (2018) says a recent European Commission study on digital skills in the workplace found that 88% of organizations take no action to address their employees' digital skills shortages. According to her, this finding is particularly worrying, as more than a third of respondents say that a lack of digital skills in their workforce affects performance, with the main negative effects being lost productivity and reduced customer numbers. The research found that the development of digital transformations in organizations around the world is hampered mainly by a lack of appropriate digital skills and insufficient staff training. According to Vosloo (2018), these are mainly shortcomings in the following spectra, which include digital skills and competences, which are further defined by UNESCO and the International Telecommunication Union - ITU:

- Basic functional digital skills that allow users to access and perform basic operations.
- General digital skills that involve using digital technologies in a meaningful and beneficial way, such as content creation and online collaboration.
- Higher-level skills that mean using digital technologies in an empowering and transformative way, for example for software development (Broadland Commission for Sustainable Development, 2017).

Another view of the issue is provided by Price and James (2018), who in their research approached 60 organizations around the world to find out how they structure and use their digital activity. They have revealed a number of challenges, many of which are related to digital skills and, in particular, their lack. Respondents were asked which digital skills they considered most valuable. Their answers were as follows:

- Technical leadership - the ability to lead an organization to make sound decisions about the implementation of digital technologies and the development of a stable scalable digital infrastructure.
- Content Management and Editing - This skill set reflects the content focus of most digital teams that have researched, and points out that digital teams have editorial ownership and manage content delivery to the platforms they support.
- Data Management and Analysis - These skills enable the digital team to understand user behavior, which can guide the design and development of digital experiences and inform decision-making and digital investment.

In contrast, 60% - data management and analysis, 56% - develop web applications / applications and 51% consider technical equipment to be under-represented in a number of digital skills. There are several solutions to this situation and issue, for example, the Finnish government has worked with industry and academia to create a six-week massive open online course (Mooc) called "Elements of AI", which it introduced in 2018. The second EU-funded initiative is the Sector Skills Alliance. These alliances consist of a consortium of public and private sector organizations from at least three EU countries. Their role is to identify labor market needs and to support the design and delivery of transnational VET content, as well as teaching and training methodologies at the local level (Everett, 2020). If countries, including Slovakia, want to succeed in the development of small and medium-sized enterprises in the context of the smart industry in the coming years, several changes will be needed. The small and medium-sized enterprises in Slovakia themselves will have to consistently approach the analysis of the current situation in their company, analyze in detail all the procedures and processes that should be subject to automation. So it is about digitization and the digital skills associated with it. Our goal is to find out what are the digital skills of the citizens of the Slovak Republic on the basis of available information and statistical data. Where we can see the biggest shortcomings and what steps are being taken by companies, the state to improve this situation. Our findings will allow us to shape the direction of the paper and its problems.

3 Description of achieved results

The Commission has presented its Digital Learning Action Plan for the next seven years. It outlined a bilateral strategic approach to promoting digital learning in the EU. It includes ensuring the highest quality infrastructure, connectivity and digital equipment for students, as well as supporting the acquisition of basic digital skills from an early age. The plan will include a wide range of initiatives, including recommendations for distance education in primary and secondary schools, the creation of guidelines for the use of artificial intelligence in teaching, and the introduction of the so-called European Certificate in Digital Skills. Education and training have had enormous difficulties due to COVID-19 and the rapid transition to distance and online education. The mass use of technology

thus revealed its gaps and weaknesses. As many as 95 percent of respondents to the public consultation on the Digital Learning Action Plan see the crisis as a turning point in the way technologies are used in education and training. In Slovakia alone, according to the Institute of Educational Policy at the Ministry of Education, up to 52,000 children did not learn at all during the closure of schools in the first wave of the pandemic and 128,000 learned only through worksheets and occasional phone calls, ie without the Internet, which represents almost a quarter of all primary and secondary school students. According to a public consultation, up to 60 percent of Europeans have never used distance and online education before the coronary crisis. Roughly the same number of respondents say that their digital skills have improved during the pandemic, but about half of the respondents say they would like to work even more on these skills. As school curricula are the sole responsibility of EU Member States, the European Commission can only recommend specific measures for the time being. As many as 40 percent of young Europeans think that topics such as critical thinking, the media and democracy are "not taught enough" in schools. Combating misinformation and harm on the Internet through education and training is crucial for the effective functioning of individuals in society. The executive therefore wants to develop common guidelines for teachers and educators to guide them in how to teach, but also to practice the fight against misinformation. The plan also emphasizes gender balance in various aspects of digital skills.

The European Executive has set out its vision for the creation of a European Learning Area by 2025. It would consist of a series of benchmarks within the EU education area, which would, inter alia, offer more opportunities to study abroad, ensure the recognition of official qualifications throughout Europe, promote the acquisition of foreign language teaching and provide every European with access to high-quality education. At the beginning of July, the Digital Skills Agenda set the EU's executive branch new and ambitious targets for skills upgrading and retraining by 2025. At the same time, it seeks to ensure that up to 70 percent of European adults have basic digital skills. This announcement follows the recent publication of the Digital Economy and Society Index by the Commission. The index found that a large part of the population still "lacks basic digital skills, although most of them want to have these skills." In addition, the recently published Innovation Scoreboard, also presented by the European Commission, found that it was the countries that co-created the right environment for innovation in terms of human resources that were also committed to supporting educational initiatives in universities (Euractiv, 2020). A dramatic transformation of the workforce is taking place right before our eyes. The Covid-19 pandemic has developed from a health crisis to an economic and social crisis. Some types of work have literally disappeared from the face of the earth, and entire industries have been severely damaged in a way we have never experienced before. The demand for labor is also changing. There is a growing hunger for cybersecurity experts, data analysts, and software and application developers. New jobs such as "contact tracers" (workers monitoring the network of contacts infected with Covid), "distance monitors" (workers monitoring health at a distance) and "temperature controllers" (workers who monitor body temperature) are rapidly emerging. Demand for other jobs, such as air transport, hospitality and the entertainment industry, will disappear at the same rate. A new categorization of work activities into "necessary" and "non-necessary" is emerging. Necessary positions (first-line workers), such as employees in grocery stores, drugstores and general merchandise, couriers, or medical staff, ie employees who did not stop working even during the crisis, became heroes.

Since March 2020, we have seen the largest change and regrouping of the workforce, as well as the most marked changes in the demand for labor skills, since the Second World War. Some of the skills that were in the course in 2019 are out of date today. These changes come really suddenly: even the skills that were most in demand at the beginning of the crisis are different from those that are in demand now and that will be of interest in the future. The crisis strengthens the interest in technical and personal skills that we have identified some time ago and predicted their need. The acute shortage of skilled workers mainly concerns technology. Demand for cybersecurity experts, software developers and data analysts is growing. The demand for general and personal skills (human or power skills) is also increasing. In a time of rapid change and general uncertainty, these, the so-called The soft skills of employees and leaders are more important than ever, such as communication, priority setting, adaptability, initiative, integrity, analytical thinking, relationship development, empathy, coaching and resilience.

What is the impact of the crisis on women and men? From a health point of view, the crisis is having a more serious impact on men, and the economic and social crisis will have a longer-term impact on women. Women are more likely to have a temporary break from work (12% vs. 10%) and are more concerned about returning to work. On the other hand, they value office work more because it is a way of separating work from privacy. Men want to return to work to succeed and advance their careers. In connection with returning to work, they feel more relief, satisfaction and security. Working from home is not always a win for women. One could easily get the impression that flexible working will be an effective and universal tool for balancing inequalities between men and women. This is not always the case. Men use work in the office more for networking, women for cooperation and to do the work. Working from home could reinforce fundamental inequalities by further reducing opportunities for personal networking. There is also a threat of a new form of "presentation". In most cases, some workers will be present at the workplace, some will work remotely. What happens when some team members work in the office or on a business trip and others work from home? Instead of unsubstantiated assumptions about productivity and performance, data needs to be collected and analyzed. Look at the impact of teleworking on different levels of workers. Do they bring the same career benefits to members, mid-career employees, or leaders? Actively combat any entrenched prejudices related to the maternal roles of mothers and fathers, so that these norms are not a major factor influencing the way

managers and colleagues perceive teleworking for men and women and do not affect their expectations. Above all, learn to evaluate productivity and reward people for their true contribution, not for how they present themselves externally (Manpower, 2020).

The EU Executive has developed a Digital Single Market Strategy, as well as a regulatory framework in line with the emerging digital era. Investments in the Digital Europe program are aimed at increasing the EU's competitiveness and developing and strengthening Europe's strategic digital capacities. Key digital capabilities include high-performance computing, artificial intelligence, cyber security and advanced digital skills. The Commission proposal focuses on five areas. The first is supercomputers, where the Commission has set aside € 2.7 billion to build and strengthen high-performance computing and data processing in Europe. The second is artificial intelligence. The sum of EUR 2.5 billion is intended to extend artificial intelligence to all European economic and social spheres. Cyber security and trust are the third areas on which the European Commission will focus. The fourth area of interest is therefore digital skills. The last fifth area is the widespread use of digital technologies. The Commission wants technology to be used in all economic and social spheres, for which it has set aside € 1.3 billion. This is to ensure the digital transformation of public administration and public services and their interoperability across the EU. The aim is to facilitate access to technology and know-how for all businesses, especially small and medium-sized enterprises. To this end, Digital Innovation Centers will be set up to serve as single points of contact for SMEs and public administrations, providing access to technological knowledge and experimental facilities, as well as providing advice on better assessing the digital transformation of projects (TASR, 2018).

4 Conclusion

Progressive digitalisation, together with the increasing flexibility of production processes, provides industrial companies around the world with new opportunities and opportunities - enabling them to meet increasingly differentiated customer needs and reduce time to market. Digitization also optimizes the use of resources such as energy, water and wastewater, while increasing environmental efficiency. The digital transformation paves the way for further innovation, new services and even completely new data-based business models. Digital business enables industrial companies of all sizes to implement current and future automation and digitization technologies. In this way, they can use the full potential of Industry 4.0 and prepare for the next level of their digital transformation journey. The digital enterprise enables companies from every industry to integrate and digitize their business processes. Companies can start digitizing at any step of their value chain for green and brown industrial plants and based on standardized and open interfaces. As many as 60 percent of Europeans have never used distance and online education, but digital skills have proven to be irreplaceable. The European Commission is presenting plans to support educating citizens in this area for the next seven years. The Commission has presented its Digital Learning Action Plan for the next seven years. It outlined a bilateral strategic approach to promoting digital learning in the EU. It includes ensuring the highest quality infrastructure, connectivity and digital equipment for students, and supporting the acquisition of basic digital skills from an early age. The plan includes a wide range of initiatives, including recommendations for distance education in primary and secondary schools, the development of guidelines for the use of artificial intelligence in teaching, and the introduction of a European Certificate in Digital Skills.

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