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DEVELOPMENT OF 21ST CENTURY SKILLS AS A RESPONSE TO YOUTH UNEMPLOYMENT

Abstract: The intense development of technology and socio-economic implications of the Covid-19 pandemic caused a transfer of work activities from physical to virtual environment. Thus, the need for digital competencies development, especially among young people entering the labor market, has become particularly important. The Covid-19 pandemic resulted in a reduction in supply and demand on the labor market in numerous areas of the Serbian economy, which is not the case of the IT sector, which expanded in 2020 and achieved an export surplus. This sector also records a deficit in the number of available professionals, both in Serbia and in the EU. Employers point out the difficulties in finding suitable candidates, while young people feel that they are not sufficiently informed about the needs of the labor market. The problem of high rates of youth unemployment is directly related to economic migration, which further reduces the supply of qualified professionals in Serbian labor market. Therefore, this paper focuses on a review of previous research in the field of digital competencies needed for a competitive position in the labor market of the 21st century. The paper also examines the competencies of young people in Serbia in terms of ICT skills as well as successful practices at the EU level that are focused on reducing the deficit of digitally competent individuals. By linking the development of digital competencies of young people and reducing the unemployment rate, this paper provides a basis for further scientific research regarding the stated issue.

Keywords: 21st century skills, digital competences, labor market, youth unemployment, Serbia.

1. INTRODUCTION

Rapid development of technology has influenced the way people live, work and communicate in the highly digitalized Information Society. The omnipresence of information and digital devices has imposed the need to master their use and take an active role in contemporary communication flows. This need has become self-evident during the Covid-19 crisis, when technology has been used at an unprecedented scale not just for communication, but for work and education purposes, with many products and services gaining their digital form. According to McKinsey & Company, the Covid-19 crisis has accelerated the digitization of business operation by three to four years, while the share of digital or digitally enabled products has accelerated by seven years (mckinsey.com). Consequently, in order to participate in contemporary economic flows, information management, creativity and problem solving are becoming some of the critical skills for those who are active in today's labor market.

These information shed light on the need for developing 21st century digital competences among all population groups, but especially among youth as they are facing more complex labor market demands than previous generations. In order to meet those demands, younger generations need to be provided with adequate education which will enable them to develop adequate skills and competences (Domazet, Zubović, & Lazić, 2018). Anyhow, according to the EU Digital Education Plan (2021-2027), more than one in five young people across the EU do not possess basic level of digital skills (ec.europa.eu).

Likewise, digital natives in Serbia fail to reach digital skills that they are considered having, as their upbringing was accompanied by rapid technological development (Kuzmanović, 2017). Moreover, Eurostat research indicates that the digital competences of student population in Serbia are on a lower level when compared to their peers in the EU. Falling behind in the possession of advanced digital skills, such as the use of software or problem solving, particularly stands out among Serbian youth (Bradić-Martinović, Pavlović, & Zdravković, 2019). Therefore, it can be concluded that the approach to digital technology and life in the digital environment itself cannot be equated with individual's digital competences.

The lack of digital competences among Serbian youth can be related to a significant socio-economic issue, which is the high unemployment rate of this demographic segment (Domazet & Lazić, 2017). According to the Statistical Office of the Republic of Serbia, in the fourth quarter of 2020 youth unemployment rate (15-24) amounted to 32.4% (stat.gov.rs). Since high rates of youth unemployment can cause other social issues, such as the emigration of youth, it is of utmost importance to find a set of modalities which could help tackle stated issues. Therefore, this study aims to investigate current trends regarding skills needed in today's labor market in Serbia and the rest of the world, with reference to the changes provoked by the Covid-19 crisis as well. Moreover, this paper aims to investigate which initiatives are currently active in Serbia in order to enable the development of required skills and present good practices of other countries which managed to achieve higher levels of youth digital competences.

In order to provide answers to the stated issues, secondary data analysis has been conducted. Active policies, projects and studies have been analyzed in order to gain the insight into the current state of youth digital competences and possibilities for their improvement with the aim of ameliorating their position in the labor market.

2. THE LACK OF ADVANCED DIGITAL COMPETENCES AMONG YOUTH IN SERBIA

Arguing on the contemporary market flows, Brkljač & Sudarević (2018) state that Industry 4.0 and sharing economy represent natural business environment of young generations both on a global level and in Serbia. The authors state that Industry 4.0 and sharing economy are the results of intense technological development which was the characteristic of the previous few decades during which today's youth was growing up. Given that contemporary products and services are increasingly gaining the prefix "smart", it is expected that an active engagement of young and creative individuals, who are familiar with the concept of lifelong learning and skills development, will be the key in creating future socio-economic trends (Simović & Domazet, 2021).

In order to achieve an active participation in digital economy flows, young people must be digitally competent. According to the DigComp 2.1: The Digital Competence Framework for Citizens, digital competence encompasses a complex set of skills grouped into five categories (publications.jrc.ec.europa.eu). Those categories are:

- Information and data literacy - the competence of browsing the Internet in search of information and managing data with constant evaluation and critical analysis of the quality of collected information;
- Communication and collaboration - the competence of using the Internet for engagement in civil society activities, interacting, sharing and collaborating through digital technologies;
- Digital content creation - the competence of creating and editing multimedia content with the application of intellectual property rights and licenses;
- Safety - the knowledge of personal and data protection in digital environment, i.e., safe and sustainable use of digital technologies;
- Problem-solving - the competence of employing digital technology for solving conceptual problems, creative use of technology and solving technical problems.

In order to examine the correlation between ICT literacy level and employability of the working age population in Serbia, Bradić-Martinović & Banović (2017) conducted a research based on the methodology proposed by Digital Competences Framework - Individuals' level of digital skills. The composite indicator applied was used to assess competence level of the working age population in terms of information, communication, problem solving and software skills. Observing the results obtained for the overall indicator of digital skills, it can be concluded that 13% of surveyed individuals has no skills or their skills cannot be assessed, 50% possess low and basic skills, while 37% possess competences which are above the basic level.

According to the Global Competitiveness Index of 2019, Serbia ranks 55th out of 141 countries in terms of population skills, which, among other, reflect the competencies of the working population, graduates and the general population regarding digital content use. Strategies adopted at the national level, emphasize the need to develop professional knowledge and skills in the field of ICT among young people, especially in terms of their innovative application. However, the challenges in this process are the insufficient number of staff that could educate young people in Serbia, as well as the insufficient number of investments in startup companies and technological ventures (srbija.gov.rs).

The situation regarding the advanced use of ICT technologies among youth in Serbia is not encouraging. According to the study on the use of ICT in Serbia in 2020, conducted by The Statistical Office of the Republic of Serbia, young people aged 25-34 use Internet daily in 99,3% of cases. When asked about the purpose of Internet use, the observed part of the population mostly stated social media use (95,8%) and messaging apps use (92,7%). On the other hand, when asked about the use of cloud computing services, which might be observed as an advanced use of digital technology, 28,6% of respondents stated their use in the last three months. Moreover, the use of Internet for attending online courses was recorded among 10,9% of respondents while 19,9% of respondents stated using Internet for browsing educational content. More detailed information on the use of ICT technologies among youth in Serbia are presented in Table 1, 2 and 3.

Table 1. Frequency of Internet use among younger population in Serbia (aged 16-24 and 25-34)

Response	Age	
	16-24	25-34
What was the last time that you used Internet?		
In the last three months	100%	99,1%
More than three months ago (less than a year)	0,0%	0,9%
More than a year ago	0,0%	0,0%
I have never used the Internet	0,0%	0,0%
How often do you use Internet?		
Everyday or almost everyday	99,1%	99,3%
At least once a week	0,9%	0,2%
At least once a month	0,0%	0,6%
Less than once a month	0,0%	0,0%

Source: SORS, 2020.

Table 2. Activities performed on Internet by younger population in Serbia (aged 16-24 and 25-34)

Response	Age	
	16-24	25-34
Which activities have you performed on the Internet?		
Sending/receiving e-mails	53,6%	64,7%
Video calls/internet telephony	92,5%	90,5%
Social media use (Facebook, Twitter)	86,1%	95,8%
Messaging apps use (WhatsApp, Viber, Skype...)	92,6%	92,7%
Reading news and magazines online	54,0%	78,2%
Browsing health related information	39,8%	57,8%
Browsing merchandise and service information	53,8%	79,9%
Watching video content (YouTube)	74,1%	79,2%
Watching TV programme via Internet	40,9%	30,6%
Gaming	46,6%	34,1%
Uploading/posting personal content online	48,2%	41,6%
Listening to music (Internet radio, streaming)	73,1%	52,4%
Selling merchandise or services (Ebay)	9,4%	20,2%
Internet banking	12,3%	30,4%

Source: SORS, 2020.

Table 3. The use of Internet for cloud computing and education among younger population in Serbia (aged 16-24 and 25-34)

Response	Age	
	16-24	25-34
Have you used cloud computing services (Google Drive, Dropbox...) for private purposes in the last three months?		
Yes	21,7%	28,6%
No	78,3%	71,4%
Which educational activities have you performed on the Internet in the last three months?		
Pursuing online courses	13,5%	10,9%
Browsing Internet for educational content	29,0%	19,9%
Communication with tutors or students via websites/portals	12,3%	2,3%
I have not performed any kind of activities	67,6%	76,3%

Source: SORS, 2020.

Based on the above presented data, it can be concluded that the encouragement of more advanced application of ICT among younger generations in Serbia is needed. In order to be competitive in the labor market, young professionals need to adopt more advanced skills regarding the ICT use. Therefore, in the next section of this paper, skills and competences represented in the literature and required by the employers of the 21st century labor market are presented.

3. SKILLS NEEDED FOR THE 21ST CENTURY LABOR MARKET

As it has already been emphasized in the literature as well as in practice, personal and professional skills present a decisive factor in one's chances of employability. Panagiotopoulos & Karanikola (2017) state that "skills refer to a set of achievements, understandings, knowledge and personal attributes that make individuals more likely to get employed and to be successful in their chosen occupations" (p. 93). Possessing the adequate skills demanded by the market, enhances one's perspective of being successful in the workplace.

According to the OECD Skills Outlook - Youth, Skills and Employability publication, as most "low-skill tasks are becoming automated the need for information-processing skills and other high-level cognitive and interpersonal skills is growing" (oecd-ilibrary.org). The emphasis should be put on acquiring information-processing and problem-solving skills with the appropriate use of the existing skills. Therefore, in order to respond to the demands of the contemporary labor market which is in shortage of professionals trained for technologically advanced jobs, young generations need to develop specific competences. In order to be competitive in the 21st century labor market, employees need to possess a complex set of digital skills which are presented and briefly described in Table 4 (Van Laar, Van Deursen, Van Dijk, & De Haan, 2017).

Table 4. 21st century digital skills needed in work environment

Dimensions of 21 st century digital skills	Conceptual definition	Operational components
Technical	Mobile devices and applications usage for realizing practical tasks and recognizing specific online environments to navigate and maintain orientation.	ICT knowledge, ICT usage, navigation.
Information management	ICT usage for searching, selecting and organizing information to make informed decisions about the most appropriate sources of information for a task.	Define, access, evaluate, manage.
Communication	ICT usage for transferring information, making sure that the meaning is expressed effectively.	Transmitting information.
Collaboration	ICT usage for developing social network and teamwork practices to exchange information, negotiate agreements, and making decisions with mutual respect to achieve a common goal.	Interactive communication, participation in discussions.
Creativity	ICT for generating new or unknown ideas or treating familiar ideas differently and transforming them into products, services or processes considered as novel.	Content creation.
Critical thinking	ICT usage for making informed judgments and choices on acquired information and communication using reflective reasoning and sufficient evidence to support the claims.	Clarification, assessment, justification, linking ideas, novelty.
Problem solving	ICT usage to cognitively process and understand a problem situation, alongside with the active use of knowledge for problem solving.	Knowledge acquisition, knowledge application.

Source: Adapted according to Van Laar et al. (2017).

Most of the above-mentioned skills were recognized by Serbian employers as well, according to the study conducted by Belgrade Open School and funded by the Erasmus Plus Programme of the European Union (bos.rs). When recruiting, domestic employers expect from candidates to possess a complex set of skills and competences, among which the following stand out:

- Communication skills;
- Teamwork and collaboration;
- Foreign languages knowledge;
- Willingness to learn, active learning;
- Computer skills;
- Problem solving skills;
- Critical thinking;
- Analytical skills;

- Entrepreneurial skills and decision making.

The importance of the development of digital business skills for the modern labor market is evidenced by the report of the IAB Europe association on human capital in the digital environment (iabeurope.eu). The report suggests that when it comes to employee competencies, the focus of employers is on information and analytical skills, as well as competencies in the field of cross-media and social media. Specifically, 59% of employers are interested in programmatic trading skills in online advertising space, while 51% of employers evaluate the analytical skills of candidates.

Other competences that employers expect from the employees are:

- Social media advertising skills (44%);
- Knowledge in the field of cross-media, i.e., distribution of content via different types of media (43%);
- Skills related to campaign planning and video advertising (39%);
- Skills related to display advertising (37%) and content marketing (36);
- Knowledge related with emerging technologies - voice, blockchain etc. (35%);
- Skills related to mobile advertising (31%) and search engine advertising (30%);
- Artificial Intelligence (22%) and e-mail marketing skills (20%).

The research has also emphasized the differences in employers' interest in new technology skills. Employers from Western and Northern Europe expressed interest in these competencies in 42% of cases, while the interest of employers from Central, Eastern and Southern Europe in this regard lags by 10%. These data can be interpreted in the context information society development level, the development of the ICT industry, but also the availability of educated and competent staff of a country. It is the lack of staff trained to work in the digital environment that has been defined as the biggest barrier to employment by 75% of respondents who participated in the IAB Europe survey. According to the European Commission survey, more than 40% of European businesses searching for ICT specialists claim that they have difficulties recruiting adequate candidates (ec.europa.eu). Research on the state and prospects of youth employment policies in the Republic of Serbia points out to the same issue. In 2018, when the research was published, the lack of 15 thousand professionals in the field of information technologies was estimated. For the next short-term period, a shortage of 50,000 professionals was estimated (poslodavci.rs).

4. MEASURES AND INCENTIVES FOR IMPROVING DIGITAL COMPETENCES AND EMPLOYMENT CHANCES AMONG YOUTH IN THE EU AND SERBIA

Arguing on the possibilities of improving youth employability, OECD emphasizes the need for adopting a comprehensive approach which would provide harmonization of educational, social, and labor market policies. Thereby, coordination between public policies and the private sector is observed as critical in tackling the issue of youth skills development and labor market prospects improvement (oecd-ilibrary.org).

In accordance with stated recommendations, numerous initiatives have been started to solve the issue of digital skills gap in Europe. Among them, The Digital Skills and Jobs Coalition stands out, as it brings together the EU Member States, IT companies, education providers and non-profit organizations as well as social partners with the aim of upgrading digital skills in Europe. The idea of the initiative is that all members of the Coalition can contribute in a specific manner. Members can provide digital skills training for the unemployed or advanced training for ICT specialists. Moreover, the initiative encourages members to provide coding classes for youth as well as open online courses for teachers and educators (ec.europa.eu).

Another initiative for developing digital competences and increasing the employment chances of youth in the EU is Digital Opportunity traineeship. This program is intended to provide students and recent graduates with practical experience in different ICT fields which are in accordance with current demands in the market. Program participants are provided with the opportunity to develop specific ICT skills and gain knowledge related to machine learning, quantum technology, big data and cybersecurity. Participants can also develop digital skills for practical application which are needed for running a successful business. Those skills include digital marketing competences, web design and software development, which is in accordance with previously stated needs of the employers' survey in the IAB research. By connecting young professionals with ICT companies, this program helps develop competent human resources needed in the market and therefore upgrade their chances for finding suitable employment. At the same time, program helps in overcoming the issue of ICT specialists' shortage (ec.europa.eu).

In order to bridge the gap between educational practices and labor market needs, the Initiative digital Serbia has started an educational program Master 4.0. This initiative aims to ensure the transfer of knowledge in the field of information

technology through master studies held at STEM and business faculties at the universities in Serbia. The educational program is realized in partnership with more than 75 IT companies which are engaged in tutoring and providing internship programs. By pursuing this educational program, students can gain practical knowledge needed in the work environment, such as marketing and sales in the digital environment, internet marketing and social media, desktop application development, game development, virtual reality and multimedia data analysis. The companies participating in the project emphasize the importance of formal education, which should educate and train students to realize their innovative idea in companies they work for or even turn it into an entrepreneurial endeavor (dsi.rs).

The concept of attracting foreign investment in the field of high-tech activities should be applied by transitional societies such as Serbia, which currently has 250 thousand active students, of which more than 39 thousand study Mathematics, IT and Computing, and as many as 86% speak English (ras.gov.rs). However, the fact that 51.5% of young people in Serbia aged 25-30 who have completed their education believe that they do not have enough information about the labor market needs (mos.gov.rs), while 22.6% of the unemployed in Serbia are highly educated, indicates that it is necessary to achieve fine tuning between the educational profiles and labor market needs. This is especially important if we take into consideration the needs of foreign investors interested in investing in technologically advanced activities in Serbia. They believe that human capital is one of the most significant advantages of the Serbian market. Successful practices of economically prosperous societies such as Singapore, which have oriented their educational system towards technological and industrial educational profiles, can help in this endeavour. Singapore has taken into account that fact that technological sophistication, innovation and creativity are among the three most important features of their youth (manpowergroup.com.sg).

5. CONCLUSION

Based on the fact that today's young generations were born in the digital era, they are considered to be tech-savvy, which means that they can easily manage digital technologies and apply educational, business and everyday activities. Modern technology has helped in overcoming cultural and territorial barriers, making an individual's personal skills a priority for employers. However, regardless of the contributions of modern technology, opportunities for networking and finding employment through digital communication channels, Serbian society is facing high rates of economic migration among young generations. The average age of people who emigrate is 28.5, while every fifth emigrant is highly educated. This is evidenced by the data of a survey conducted by the Cabinet of Ministers without a portfolio in charge of demography and population policy in the Government of the Republic of Serbia, on a sample of 11 thousand students (mdpp.gov.rs). Such data have a negative effect on the work efficiency and overall prosperity of the society, considering that the state invests significant funds in higher education of young people, who generate employment and profit for other countries that have not invested in them.

The problem of high youth unemployment rate, which is tightly related to the problem of economic migration, should be addressed with a series of harmonized measures and policies. As it was already mentioned in this paper, it is necessary to take into account the needs of employers regarding the competencies that young candidates are expected to possess when entering the labor market. Young people should develop these competencies primarily through formal education system. According to a study conducted by Belgrade Open School, introducing non-formal education as a manner of acquiring the skills needed in the labor market is equally important. By developing the skills necessary for the labor market of the 21st century, young people are also empowered for self-employment, as they can use acquired skills to start their own business or work for domestic and foreign companies that outsource. In order to solve the problem of unemployment in the long run, it is necessary to harmonize educational policies, provide incentives for domestic companies from the IT sector, but also pursue an active policy of attracting foreign direct investment in the IT sector in Serbia.

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