

Improving Digital Competences of Persons with Disabilities as a Precondition for an Inclusive Digital Economy: Evidence from Serbia

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Abstract—In a digitally-driven world with a constant need for digital workers, policymakers and organizations are focusing on digital labor as an employment strategy. Digital labor is characterized by the production of value which results from the interaction with ICTs, such as digital entrepreneurship and digital platforms. Entrepreneurship in digital platforms offers flexible work arrangements in terms of timetable and workplace. This employment opportunity is especially beneficial for persons who face physical barriers in the workplace or have to adapt the pace of work to their needs, such as persons with disabilities (PWDs). In Serbia, PWDs face high and tenacious unemployment rates. They result from workplace discrimination, unperformed assessment of work-related functional abilities, unfavorable socioeconomic background, and lack of professional skills. Despite the fact that creators of labor market policies in Serbia have introduced initiatives which should help in developing digital professional skills among PWDs, they are still very few. Besides, these initiatives mostly offer basic digital competences trainings for PWDs, which are not sufficient for gaining employment in the digital labor market. This paper shows that there is a need to understand whether PWDs perceive digital self-employment through digital entrepreneurship and digital platforms as a viable solution for the unemployment issue they face. This information can help create new training initiatives that would put the knowledge acquired to practical use.

Keywords – persons with disabilities, inclusive digital economy, digital competences, digital entrepreneurship, digital labor platforms

I. INTRODUCTION

With approximately 15% of the global population, PWDs represent the world's largest minority [1]. It is estimated that the total number of PWDs living in the EU amounts to 87 million [2]. On average, the share of PWDs in the total population across the EU countries accounts for 24%. Most PWDs in the EU are over 65 (48.5%), while only 17.9% belong to the working-age population group. Of the total number of working-aged PWDs, only 50% are employed (compared to 75% of persons without disabilities – PWDs). According to [3], in 2019, 68% of the EU population with disabilities would have been directly exposed to the risk of poverty without social benefits, allowances and/or pensions.

The number of PWDs in Serbia is estimated to be more than 700,000, of which only 13% are employed [4]. According to the latest available official statistics [5], economic activity is the highest among PWDs with vision (14.4%) and hearing impairment (11.2%) and the lowest among those unable to perform daily living activities/personal self-care (2.3%), and those facing problems in communication/understanding (4.7%). The largest proportion of employed PWDs are qualified workers at the third level (level 3) of the NQFS (46.3%), followed by PWDs at the fourth level (level 4) of the NQFS (20.4%) and semi-skilled workers at the second level (level 2) of NQFS (12.6%). PWDs with completed primary education have the lowest share in the total number of employed PWDs in Serbia (12.2%) [6]. Moreover, PWDs

in Serbia are paid less compared to their non-disabled counterparts, i.e. only 18% of PWDs, in opposite to 64% of PWDs, have monthly incomes larger than 330 EUR [7]. The brief overview of the key labor market indicators implies that PWDs in Serbia face high rates of inactivity and unemployment, which inevitably contributes to their social exclusion, discrimination and poverty (material deprivation).

In contrast to the traditional working arrangements, the internet-based business models provide almost equal opportunities for PWDs and PWDs to engage in the labor market, contributing in that way to their inclusive employment [8]. Moreover, some authors [9] indicated that PWDs tend to be more self-employed than PWDs. However, to be able to successfully perform their digital venture activities or respond to their distant employer requirements, PWDs must possess an adequate level of digital competences, skills and knowledge [10]. In that regard, digital competences, skills and knowledge have long been considered a basis for innovation, competitiveness, boosting jobs and economic growth [11]. Recent studies [12] also revealed the linkage between adopting advanced ICT solutions and risk mitigation. Moreover, advancing digital skills and competences was recognized as a precondition for European growth and development in the Digital Agenda for Europe [13].

The subject of this paper is the evaluation of interest in starting a digital entrepreneurial venture and the assessment of the current level of knowledge of freelance platforms of PWDs in Serbia. The paper aims to identify the room for further improvement of the digital competences of PWDs in Serbia as a precondition towards more inclusive employment through digital labor platforms. The paper's main contribution reflects the fact that the potential of digital entrepreneurship and platform work is insufficiently recognized as a means of reducing the long-term unemployment of PWDs in Serbia.

The paper consists of six parts. After the introductory remarks, the potential of digital platform work has been introduced. In the third, fourth and fifth parts research methodology, sample and research results have been presented, respectively. The last, sixth part, concludes the paper and provides recommendations for policymakers in Serbia.

II. THE POTENTIAL OF DIGITAL PLATFORM WORK

Platform work is defined as matching the demand and supply of paid work through an online platform using the algorithm [14]. In this process, the client offers work, the individual provides it, while the platform manages the process. Work on online platforms is realized as mass work (crowdwork), which is paid work from remote locations, whereby the employer does not have to be registered in the country of the workers he hires [15]. Crowdwork is the work engagement of many people (crowd), mainly divided into microwork and online freelancing or macrowork [16]. The term microwork is used to describe the practice of mass work that involves breaking larger projects into smaller work tasks, i.e. microtasks, which are advertised on online labor platforms for which individuals apply and perform them for monetary compensation. Microtasks usually do not require advanced digital competencies, can be realized in a shorter period of time and can thereby be repetitive. On the contrary, macrotasks require more advanced digital competences and are usually assigned to individuals and possibly their collaborator(s). Microtasks are typically monitored by algorithms, while workers are mostly anonymous. Platforms such as Clickworker and Mechanical Turk are examples of micro labor platforms. Macrotasks are substantially more complex and take more time to be completed. Clients monitor the quality of macrowork tasks, and workers must make their profile pictures and names visible on their profiles [17].

According to the International Labor Organization, since 2010, the number of digital labor platforms has increased fivefold [18]. Accordingly, the number of digital workers is rising exponentially. In 2018, Serbia was ranked among the leading countries in Europe and the world by the ratio of digital workforce relative to the country's population versus the total workforce [16]. Also, based on the annual income growth of online freelancers, Serbia ranked in the top 10 countries in the world in 2019 [17]. Based on these data, it can be considered that engagement on digital labor platforms represents an accepted work practice in Serbia.

In order to perform tasks on digital labor platforms, individuals do not have to possess work experience. This is of particular importance

for the long-term unemployed. PWDs represent one of the categories among the less likely individuals to obtain employment. The low employment rates among PWDs are the result of workplace bias and discrimination, unperformed assessment of work-related functional abilities, unfavorable socioeconomic background, and low educational and skill levels. As PWDs do not have to reveal their disability status to online employers, it can be assumed that digital technology advances can offer fairer work opportunities for this traditionally excluded group in the labor market. Therefore, the authors of this paper aimed to investigate the attitude of persons with disabilities towards work on digital labor platforms and assess their knowledge about the principles and requirements of online platform work.

III. METHODOLOGY

The research is a part of the project *Digital competences of persons with disabilities in Serbia and their involvement in online platform work – DigCompOSI*, financed by the Institute of Economic Sciences, Belgrade. In this paper, only selected sections will be presented using descriptive analysis. More information on the issue may be found in [8] and [19].

The sample consists of 245 Serbian residents, members of one of the twelve member organizations of the National organization of persons with disabilities of Serbia (NOOIS) and/or the Sports association of persons with disabilities Belgrade. The data were collected during March and April 2022 via a questionnaire in which the respondents assessed various statements on a four-point Likert scale: (1) I have no skills at all; (2) My skills are very poor; (3) I have some skills, but not sufficient to operate on my own; (4) I have sufficient skills to operate on my own.

The questionnaire consists of four parts. The first part includes the standard set of socioeconomic questions. The second part was designed to evaluate the general digital competences of the respondents. It was developed based on the methodology used in the Digital Competences Development System – Contents of the Self-Assessment Tool (2018), which is essentially grounded on DigComp 2.1 framework. Even though the DigComp 2.1 framework contains both questions for self-assessment and a practical task (real-life scenario), due to the specificity of the population observed, the questionnaire used in this research

contains only questions for self-assessment. The third part was designed to evaluate the digital entrepreneurial competences of the respondents, while the fourth part was designed to evaluate the respondents' knowledge of freelance platforms. The questions in the third and fourth parts were also based on DigComp 2.1 framework.

For the purpose of this paper, only selected questions included in the third and fourth parts of the questionnaire will be analyzed.

IV. SAMPLE DISTRIBUTION

The gender distribution of the sample indicates an almost equal proportion of women (46.9%) and men (53.1%). More than 75.0% of the respondents are aged between 30 and 60. The largest share of the respondents is located in Vojvodina (38.4%) and Belgrade (29.0%). Distribution of the sample by education level reflects a higher proportion of PWDs graduated from high school (67.3%) and the faculty (20.0%). The dominant part of the respondents have difficulties with walking or climbing (71.4%).

V. RESEARCH RESULTS

The research results indicate that 71.4% of the respondents had never started a digital entrepreneurial venture (Fig.1), while 68.6% declared they did not intend to engage in digital entrepreneurship (Fig.2).

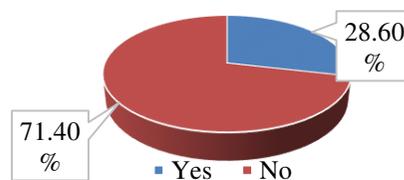


Figure 1. Distribution of respondents according to whether they have ever started a digital entrepreneurial venture.

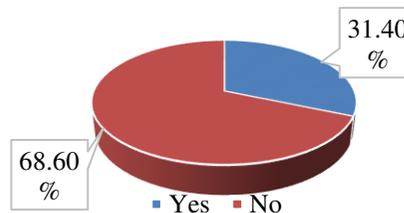


Figure 2. Distribution of respondents according to their intentions to engage in digital entrepreneurship.

Concerning the freelance platforms, only 38.8% of the respondents stated that they are familiar with what these platforms are and how they work (Fig.3).

Out of the total number of respondents familiar with the functioning of freelance platforms, 52.7% are able to recognize the various jobs available on these platforms. The remaining 47.3% possess certain or very modest abilities that are insufficient to independently perform the activity (Fig.4).

Concerning the ability to find a job on the freelance platform, 36.8% of the respondents perceive that they can independently find a job advertisement available on the freelance platform. Nevertheless, 63.2% of the respondents believe that they do not possess enough skills that would allow them to recognize an adequate opportunity for employment on freelance platforms (Fig.5).

Regarding the ability to apply for a job on the freelance platform, almost half of the respondents (47.1%) would not be able to independently apply for employment through freelance work platforms (Fig.6).

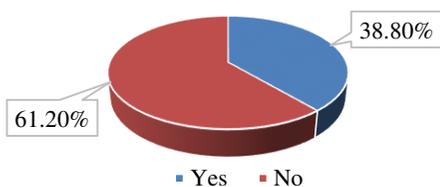


Figure 3. Distribution of respondents according to their knowledge of freelance platforms and their functionalities.

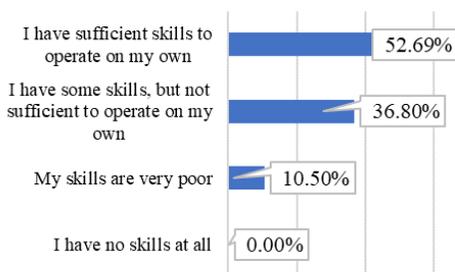


Figure 4. Distribution of respondents according to their ability to recognize the type of jobs they can apply for through freelance platforms.

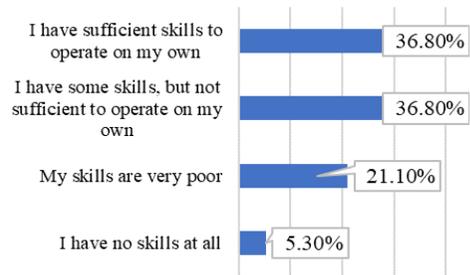


Figure 5. Distribution of respondents according to the possibility of finding a job on the freelance platform.

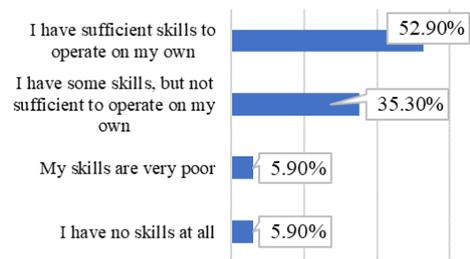


Figure 6. Distribution of respondents according to their ability to apply for a job on the freelance platform.

Concerning the ability to successfully implement the job found through the freelance work platform, more than half of the respondents believe that they do not possess an adequate level of ability to independently perform the task (Fig. 7).

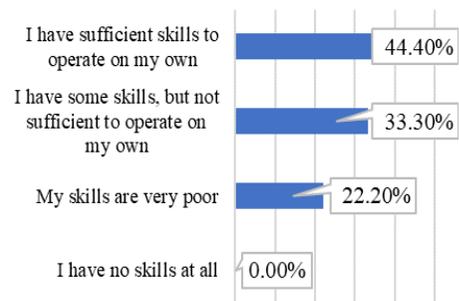


Figure 7. Distribution of respondents according to their ability to successfully implement the job they found on the freelance platform

VI. CONCLUSION AND POLICY RECOMMENDATIONS

Although unfavorable, the respondents' low level of interest in engaging in digital entrepreneurship through online labor platforms could indicate that digital entrepreneurship is an insufficiently promoted and utilized strategy for improving the employment chances and economic position of PWDs in Serbia.

The results of this research lead to the conclusion that most respondents are not familiar with the functionalities and employment potential of freelance platforms - slightly less than 40.0% of respondents are aware of the freelance platform concept and their work mechanisms. Of that number, only about 50.0% of respondents are familiar with different types of jobs they can apply for on freelance platforms. The lower levels of competences are also noticeable in terms of the possibilities of searching and applying for a job on a freelance platform, as well as the ability to successfully perform work tasks obtained on a freelance platform.

The results of this research point to the need for introducing tailor-made retraining programs in advanced digital skills for work and digital entrepreneurial competencies, which could provide persons with disabilities with practical knowledge and empower them for self-employment through digital entrepreneurship on digital labor platforms. The existing programs are mostly created to provide training in the basic digital competences, and very few of them prepare the training participants for specific work positions offered in the labor market, such as web designer, IT administrator, or e-business specialist. Therefore, the skills provided in the retraining programs created by the labor institutions in Serbia should be aligned with the digital labor market needs. Accordingly, these programs should empower participants to search for employment on online labor platforms by introducing them to the platforms' work mechanisms and work terms and conditions. Additionally, the programs should provide trainings in soft skills, such as professional communication and negotiation, portfolio creation, and setting an adequate price for one's work.

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