THE IMPACT OF THE DIGITAL ECONOMY ON THE LABOR MARKET IN THE CZECH REPUBLIC

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ABSTRACT
Many developed countries have been engaged in the Fourth Industrial Revolution for a number of years, fundamentally changing the nature of industry, energy, commerce, logistics and other parts of the economy and society as a whole. The digitization of the economy takes place in a wide range of sectors. In the context of digitization and robotization, human capital requirements will change. Business competitiveness, public performance and state power are conditioned by a number of factors, including the quality of human capital. Vision of Industry 4.0 reflects the overall trend towards a society that is increasingly encouraged by the computerization and cybernetization of most processes in the area of manufacturing, service and state functioning. These changes will have a major impact on the required qualifications and the labor market in general, taking into account also the social aspects of these impacts. New principles of work organization will be promoted, changes in the role of staff, changes in the structure and occupations of most professions, new skills will be required, impact on employment and unemployment will be reflected. The aim of this paper is to map opportunities and threats and changes in the requirements for the knowledge and skills of Y generation workers brought by Industry 4.0. The research methodology is based on the comparison of the researches conducted in the Czech Republic and the questionnaire survey focused on Y generation. This paper explores the latest technological trends and innovations. This paper brings a new insights into employment with the focus of current generations on the labor market, and recommendations for managers.

Keywords: *Digital Economy, Industry 4.0, Labour Market, Human Management Resources, Generation Y*

1 INTRODUCTION

Vision of Industry 4.0 reflects the overall trend towards a society that is increasingly encouraged by the computerization and cybernetization of most processes in the area of manufacturing, service and state functioning. Many developed countries have been engaged in the Fourth Industrial Revolution for a number of years, fundamentally changing the nature of industry, energy, commerce, logistics and other parts of the economy and society as a whole. Digital economy is associated with information technologies. Data processing work should be easy and quick. Systems management should be enable a manager to work more efficiently because of easy availability of information in different aspects of business. This brings with it the necessity to own employees who can work with information technologies, it will be a key factor for the competitiveness of the business for managers.

Czech companies are currently facing a major challenge, Industry 4.0. It basically changes the enterprise's business within Industry 4.0 and Work 4.0. They are Y generation people who are a great opportunity for business with their habits in using the Internet, social networks and modern technologies. If generation Y and the upcoming generation of Z executives allow the business to work as expected, these workers can help not only in innovative workflow solutions. Another key factor for different generational preferences is the process of rapid IT development that influences the world of business and management. An enterprise that demands prosperity in today's turbulent and globalizing environment should pay extraordinary attention to information technology in human resources management (Pitra, 2007). Therefore, many businesses reorganize their core business processes by investing in key technologies, such as cloud computing; business intelligence and social media (Oprescu & Eleodor, 2014). These changes and digital economy will have a major impact on the required qualifications and the labor market. The digitization of the economy takes place in a wide range of sectors. In the context of digitization and robotization, human capital requirements will change. Business competitiveness, public performance and state power are conditioned by a number of factors, including the quality of human capital.

1.1. Labor demand in ICT-intensive occupations in Czech Republic

The demand for ICT generic skills increased in a large majority of countries between 2011 and 2014. Technical report of OECD "New Skills for the Digital Economy" (2016) states that increasing use of Information and Communication Technologies at work is raising the demand for new skills along three lines: ICT specialist skills to programme, develop applications and manage networks; ICT generic skills to use such technologies for professional purposes; ICT complementary skills to perform new tasks associated to the use of ICTs at work, e.g. communicate on social networks, brand products on e-commerce platforms or analyse big data. On average, the proportion of workers using communication and information search (CIS) or office productivity software (OPS) daily increased by 0.9 and 0.6 percentage points. The growth trend continued in 2017 and growth is expected to continue in the years to come. Nevertheless, a significant number of workers using ICTs every day do not seem to have sufficient ICTs skills to use these technologies effectively, based on the results of the PIAAC assessment.

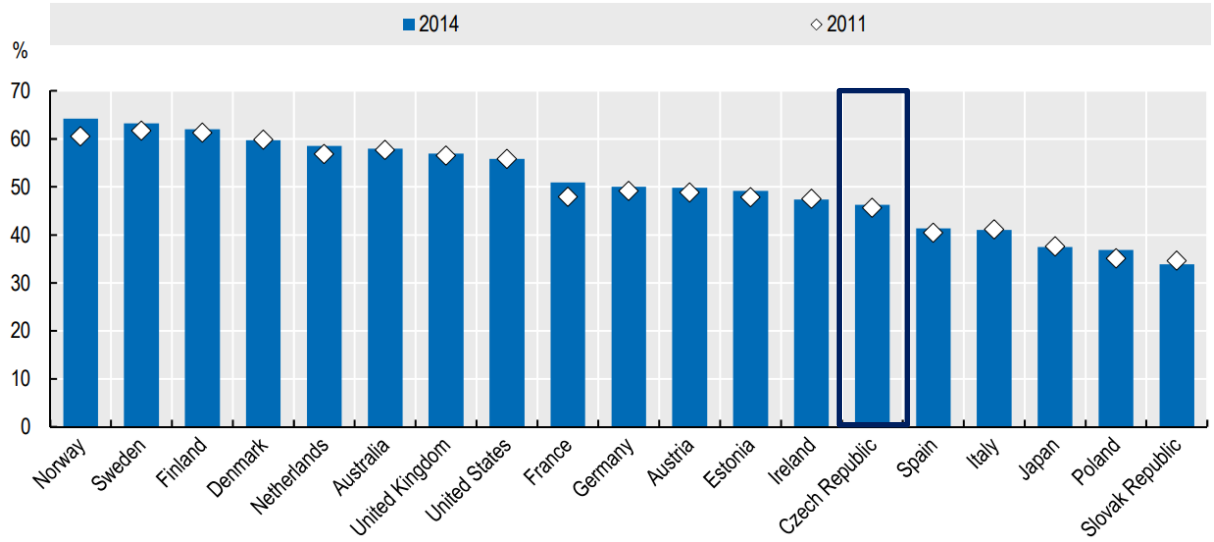

Figure 1: Demand for ICT generic skills (CIS) by country, 2011 and 2014, Share of employed individuals using CIS daily at work (OECD "New Skills for the Digital Economy", 2016)

Fig. 1 shows that the economy-wide CIS intensity at work varies significantly across countries. In Czech Republic between 2011 and 2014, the share of employment in CIS-intensive occupations was slightly increased. In Denmark, Ireland, Italy, Japan and the Slovak Republic, where there was a slight decrease. The increase was the most significant in Norway, followed by France and Poland.

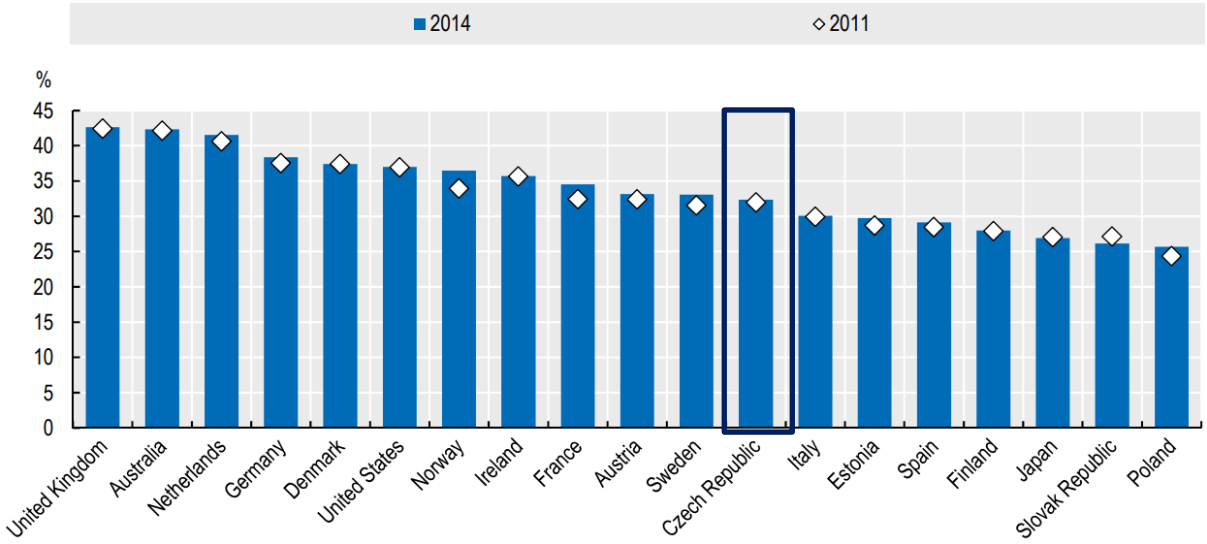

Figure 2: Demand for ICT generic skills (OPS) by country, 2011 and 2014, Share of employed individuals using OPS daily at work (OECD "New Skills for the Digital Economy", 2016)

Fig.2 shows the economy-wide OPS intensity at work in 2011 and 2014. In Czech Republic between 2011 and 2014, the share of employment in OPS-intensive occupations was slightly increased also. The most significant increase was observed in Norway, France followed by Sweden. The most decrease was observed in Slovak Republic and Japan.

Technical report of OECD "New Skills for the Digital Economy" (2016) shows the top 20 ICT-intensive occupations for CIS and OPS skills by country. In Czech Republic are 6 CIS and OPS skills as follows:

- Legislators and senior officials
- Business services and administration managers
- Information and communications technology service managers
- Professional services managers
- Mathematicians, actuaries and statisticians
- Electrotechnology engineers

The digital economy brings higher demands on employees to work demand, especially knowledge of information technology (Kejhová, 2016). Changes in the tasks set associated to increasing use of ICTs tend to be larger for people in low-skilled occupations than for those in middle and high-skilled ones. On average, intensive use of ICT at work is associated with tasks that require more interaction with co-workers and clients, more problem solving as well as less physical work.

2.1. Workers of different generations on the labor market in the Czech Republic

Differences between generations are deepening, so the world is now sharing a number of fundamentally different generations, and it has never been more interesting and more

important to address the issue of generations. The cultural influences during the formative years then give shape to life-long decision-making, values, goals and inclusion in society. There are a number of generations in the labor market in the Czech Republic, e.g. Silent Generation (born 1928-1945), Baby Boomers (born 1946-1965), Gneration X (born 1966-1979), Generation Y (born 1980-1994), Generation Z(born 1995-2014). Fig.3 shows representation of generations in the Czech Republic. This paper is dedicated to Y generation. Generation Y represents 20% of the Czech labor market.

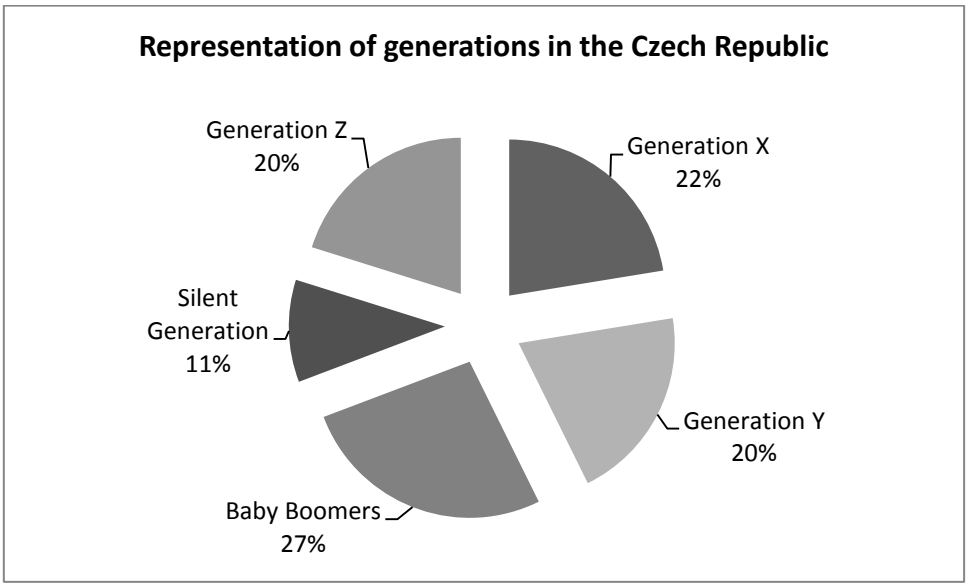

Figure 3: Representation of generations in the Czech Republic (Own calculation, Czech Statistical Office. Structure of the population as at 31 December 2016)

Generation Y needs to be addressed, to know their requirements and preferences (Tulgan, 2011). According to the research by ManpowerGroup and Reputation Leaders, "Vision 2020", generation Y follows when deciding where and how to work three basic priorities: money, security at work and leisure time (Dlasková, Kramer, 2017).

2 RESEARCH METHODOLOGY

The aim of this paper is to map opportunities and threats and changes in the demands for knowledge and skills of the workforce brought by Industry 4.0. Research is focused on generation Y, which currently account for 20% of the labor market.

Research has been divided into three research areas. The first research area focuses on the properties required at the time of Industry 4.0. The second research area addresses the threats of robotization on the labor market. A third research area focuses on the expectations associated with digitization.

The methodology of this paper is based on comparative qualitative research on the basis of a the questionnaire survey focused on Y generation in Czech Republic. The following criteria were established for selecting a sample of respondents:

- gneration Y (born 1980-1994);
- students in the Czech Republic;
- working citizens in the Czech Republic;
- unemployed citizens in the Czech Republic.

The return on the questionnaire survey was 54 %, and the survey was attended by 487 residents belonging to Generation Y. The determined hypotheses are set out below.

3 RESULTS OF THE RESEARCH

The first research area focuses on the properties required at the time of Industry 4.0. What skills will generation Y need for future employer in the digital economy? Respondents belonging to the generation Y believe that they will most need to be able to actively seek information, use information technology and effectively communicate online, see Fig. 4. Furthermore, the young generation Y realizes that at the time of Industry 4.0 they will have to have knowledge of digital technologies. In last place in the chart is the social intelligence, Generation Y does not see as significant in comparison to others.

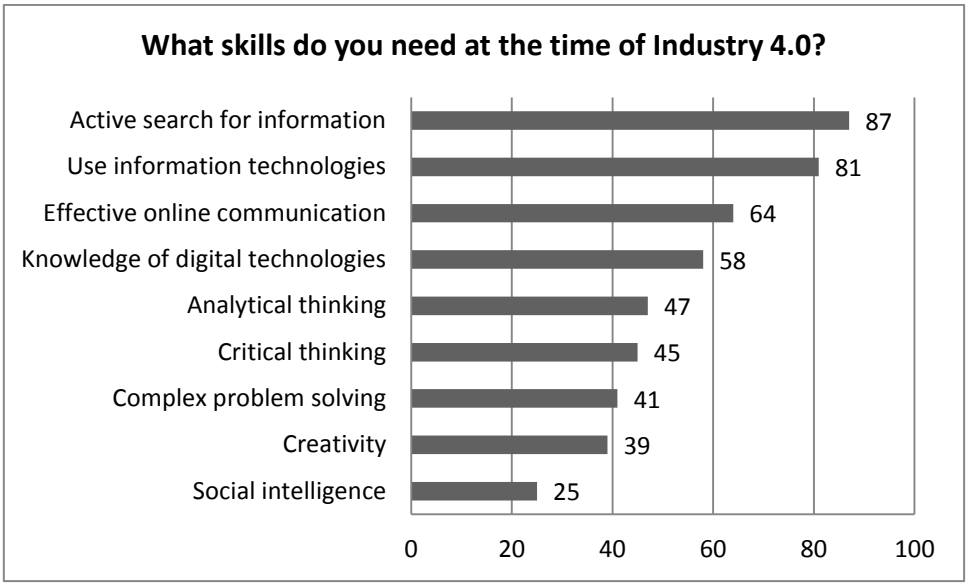

Figure 4: The necessary skills of generation Y in the digital economy (Own calculation)

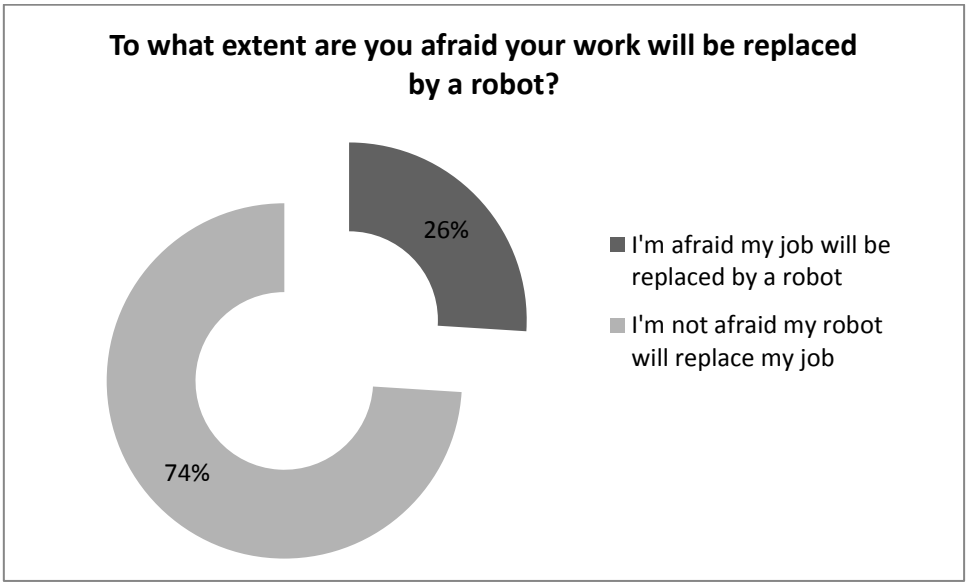

Figure 5: Fear of generation Y from robotization (Own calculation)

The second research area addresses the threats of robotization on the labor market. Fears gnerace Y that their job will be replaced by robots? Fig. 5 presents that, respondents of the

Y generation express the view that they are not afraid of robotics, 74% of respondents (especially university educated respondents). However, 25% of respondents are afraid that their work will replace robots in the future (especially secondary-educated respondents).

A third research area focuses on the expectations associated with digitization. What opportunities does the generation Y expect from the digital economy and Industry 4.0 in the future? Generation Y sees the opportunity in technologies that will enable smart home, smart city, and other. According to respondents everything will be "smart". Respondents expect virtual data to be displayed effectively. Generation Y also sees the opportunity of a digital economy for IT employees. Another opportunity of digital economy is shown in Fig. 6.

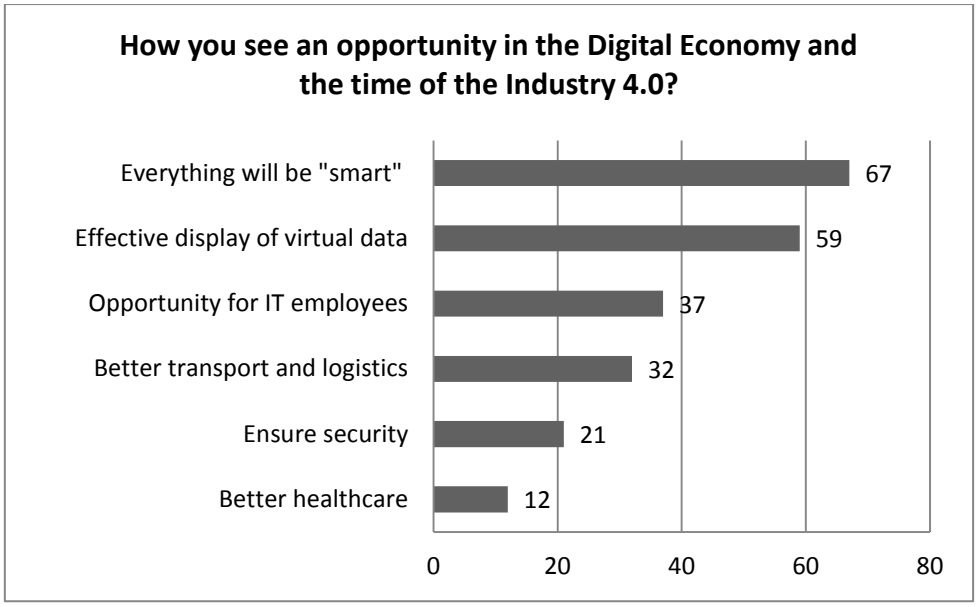

Figure 6: Opportunities of the Digital Economy and Industry 4.0 (Own calculation)

4 CONSLUSION AND DISCUSSION

The Fourth Industrial Revolution entails a number of opportunities, threats and issues. How will technical and manufacturing processes change, but how do they work in the labor market? Managers expect to change the composition of their jobs as well as their skills and knowledge requirements (Púllová, 2016). The Randstad Sourceright "2016 Talent Trends Report" was developed with the feedback and outlooks of nearly 400 HR, talent and business leaders from around the world. Through an online survey of respondents spanning more than 60 countries, Randstad Sourceright uncovered that the single most challenging talent management issue of today is a lack of critical talent and the resulting impact on the business, as well as a company's leadership and succession pipeline. (Randstad Talnets Trends Report, 2016). The survey results presented in the report also provide following key findings:

- 85 percent of respondents believe an integrated talent management approach in which workforce planning encompasses all types of talent, permanent and contingent alike, will enhance the resources their businesses need to drive growth.
- The use of talent and workforce analytics continues to increase, with 73 percent using this data to create more efficient workforce planning, 63 percent for more accurate mapping and addressing of skills gaps and 56 percent to clearly identify high-potential employees for development.
- When asked about the biggest trends impacting the future of work in the next 5 to 10 years, the top responses were the need to create greater flexible working options to

attract mobile talent (85 percent), the ability to analyze internal and external employee data to source and retain talent (78 percent) and the challenge of keeping pace with evolving technology to enhance workforce productivity and performance (74 percent).

The results of the report show that 74 % of managers are aware of the need for information technology. Next, the study sought to find answers to the question: what skills and competences will be most valued for workers in 2020? The results of the survey are as follows:

- complex problem solving;
- critical thinking;
- creativity;
- people management;
- synergy with others;
- the emotional intelligence;
- judgment and decision-making;
- service focus;
- negotiation skills.

Compared to the results of the questionnaire survey, the skills that the generation Y will need in the digital economy and during Industry 4.0 have been identified. Respondents belonging to the generation Y believe that they will most need to be able to actively seek information, use information technology and effectively communicate online, see Fig. 4. Furthermore, the young generation Y realizes that at the time of Industry 4.0 they will have to have knowledge of digital technologies. The previous research coincides with critical thinking a creativity.

According to the author of this paper, this result is crucial for further development. Employers will have to write these requirements in their job advertisements. And potential employees will have to prove these requirements. Moreover, managers have to take into account different generations, as described above. Digital economy also brings the need for IT knowledge. The demand for ICT specialists has been growing fast over the last years but the available evidence on.wage premia, vacancy rates and vacancy duration suggests that the potential shortage in ICT skills is not very large and limited to a small number of countries. However, available statistics are not fit to fully address these questions and the development of better measures is an important step for future work.

The aim of this paper was to map opportunities and threats and changes in the demands for knowledge and skills of the workforce brought by Industry 4.0. Research was focused on generation Y, which currently account for 20% of the labor market. The results of the questionnaire survey show the significant skills that Generation Y expects in the digital economy and Industry 4.0, discussed above and can be seen in Fig. 4. Next research area was about fear of generation Y from robotization. Fig. 5 presents that, respondents (74 %) of the Y generation express the view that they are not afraid of robotics. The last research area is focused on the opportunities of the digital economy and Industry 4.0. According to respondents everything will be "smart". Respondents expect virtual data to be displayed effectively. Generation Y also sees the opportunity of a digital economy for IT employees. Another opportunity of digital economy is shown in Fig. 6.

In the European context, author of this paper see the situation in the Czech Republic quite positive (SAP Study - Leaders 2020, 2017). We were one of the first countries to adopt this

new situation conceptually, where there was an institutionalized structure of communication between industry and government. Our weakness is, however, in the implementation of strategies. However, the author of the paper hopes that this will be one of the first strategies that will be truly fulfilled in our country. If not, it may happen that what has been dragging us up (industry) can very quickly change in burden.

It will be interesting to follow other trends and researches conducted in the area of Digital Economy and Industry 4.0. Other similar research could be done in other countries of the European Union and compare the results.

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