DIGITAL WORLD WITHOUT WORK - MAN AS AN ENDANGERED SPECIES?

Pavel Sirůček – Zuzana Džbánková

Abstract

The contribution is an interdisciplinary critical reflection of the scenes of a digital world without work where robots do almost everything and controlled by artificial intelligence. The technological progress of the "Fourth Industrial Revolution" should, according to many, lead to uncontrollable prosperity. But it also brings with it considerable risks to the stability of society in the form of job losses and the growth of inequalities. Just the introductions of 4.0 technologies raise concerns that the mass robotics could cut jobs for millions of people in both the advanced and the developing world. These problems are also very topical for the Czech Republic. Some predictions warn that the Czech Republic could be the most vulnerable to robotisation in all EU countries. So many different "good" solutions are sought and discussed, which should be done by the state (including, for example, the consideration of basic unconditional earnings, or education reforms) and how individuals should adapt themselves. The paper raises the question of the realistic basis for these considerations and the falsity of the proposed solutions and the vision of the world without work. This is primarily of the viewpoint of broadly understood economic theory, respectively, the economics of the 21st century.

Key words: Industry 4.0, Digital economy, Labour 4.0

JEL Code: O 30, L 86, J 20

Introduction

Introduction

Automation, computerisation and robotisation should humankind freed from the curse of biblical work. Is it a good idea that fulfils man's eternal desire and the vision of an optimistic future? Or does one become an endangered and virtually useless animal species? Estimates regarding job losses due to automation, robots, AI and, on the other hand, the creation of new jobs are different. Presented studies are in a range of from jubilantly optimistic, pessimistic to apocalyptic. We can only speculate about specific impacts (Winicková, 2018), (Sirůček,

2019). Most forecasts coincide that labour market changes will be both radical and rapid. Many see the expected changes as unprecedented and recall that the life cycle of skills is also shortening[1]. The high cost of new technologies and the lack of people to operate them hinder revolutionary changes so far. In a few years, however, robots will be cheaper, and people adequately trained to manage them. If a person wants in the new conditions in the labour markets to succeed, it must primarily work on their creativity and empathy. At the same time, he/she needs to improve mentally be able to (i.e. manage communication, customer/client relationships and ability to resolve conflicts and problems with others). However, first of all, it must be for life and permanently flexible. He has to demonstrate the ability and willingness to learn new things and to educate and retrain himself continually. Education should also be necessary due to changes in the nature of work. Classical employment contracts of indefinite duration (or even work for one company for a lifetime) are to become an irreversible past. People should be hired only for a short time or directly to a specific project. It is closely related to the growing uncertainty. This is reinforced by the fact that the so-called freelancers[2] (freelance workers working in alternative forms of work) will not have the appropriate retraining paid by the firm. But they will have to secure everything and pay themselves. The predicted capitalism of the digital platforms through which work is mediated thus breaks down hard-won labour standards and destroys certainty. However, the techno-optimistic visions of the world depict the automated world as a jobless world with much more free time. Is it possible to assume that the unemployed will use their free time creatively? They will work for a family, community and charity, etc.? In the capitalist limits, more free time means less money. (Sirůček, 2019), (Sirůček & Džbánková, 2018).

The text critically examines possible scenarios of the world without human labour, where robots are controlled by artificial intelligence. It also considers which groups are most at risk of losing their jobs in our conditions (including threats to women's jobs in the context of the predicted three waves of application of technology 4.0). The methods of description, comparison and qualitative analysis have been employed, making use of secondary data from specialist literature sources and the results of available research on the topic.

[1]E.g. the ManpowerGroup study (http://www.manpowergroup.co.uk/the-word-on-work/skills-revolution/) speaks directly of the *"skills revolution"*.

[2] Every freelancer must always look for new and new orders. People no longer work in traditional jobs, but feed on one-off tasks where digital platforms, including networks, play a crucial role in their implementation of mediation.

1 The automated world of work

As already mentioned, the forecasts of the possible consequences of automation and robotics on the labour markets vary. Robotisation alone can rather reduce the number of jobs in net terms. In case if the number of lost jobs by robots is higher than the number of which will be created. The share of disappearing and newly created jobs will depend on the particular industry and its leaders, but also governments and other institutions. A prerequisite for the smooth replacement of the jobs being lost by new ones is a functioning competitive environment and sufficient mobility of the workforce. Compliance with the rules of competition, flexibility and quality of the education and retraining system, as well as improvement of transport and communication infrastructure, are primarily in the hands of the state. The workforce needs to be transformed because the world of work is changing. It is determined by increasing life expectancy, the advent of new technologies that affect new employment patterns and financial dynamics (Nedelkoska &. Quintini, 2018). *„For people, employability — the ability to gain and maintain a desired job — no longer depends on what you already know, but on what you are likely to learn. Those organisations that can blend the right combination of people, skills and technology are those that will win."* (ManpowerGroup, 2016).

1.1 What will the automated world of work look like?

Renee McGowan, Chief Executive Officer, Asia, Mercer (MMC) presented three possible scenarios for the future of the computerized world of work. **Scenario one: automation as the optimizer.** Ideally, robotics, artificial intelligence, machine learning, and conversational and service automation should serve two purposes: to expand the enterprise and serve the workforce. If companies use automation and advanced data for these ends, Industry 4.0 will optimise the future of work. *"Automation and AI, in particular, should benefit companies, their customers and their workforce"*, Khanna[3] says. **Scenario two: cooperation replaces automation as a priority for Industry 4.0.** In this scenario, the workforce is engaged. It is not drowned by technology or a lack of opportunity; it is integral to new versions of both. It uses the best practices from the technology companies actually producing some of the tools that could disrupt the workforce. It engages labour organizations

[3] This scenario is supported by Parag Khanna, global futurist and author of The Future Is Asian. In Khanna's vision, automation must meet the following four standards to be effectively integrated: 1. Improve rather than replace employment conditions and opportunities; 2. Improve how a company goes to market; 3. Add value for customers; 4. Enhance data capabilities without violating privacy.

and governments to develop new workforce strategies together. It is necessary to determine what is to be expected from labour, technology and government and deal with everything together.[4] **Scenario three: digital transformation leads workforce transformation.** Industry 4.0 is not limited to the G20. Emerging markets are becoming a lens through which the future of work can be viewed. *"We need to change the way in which we are moving from an old 'digital divide' model of inequality of access to a new model, whereby use of digital is creating new opportunities"*, says Richard Heeks, director of the Centre for Development Informatics and Senior Research Fellow at the Sustainable Consumption Institute, University of Manchester. At the same time, we need to set rules and to defend and advance basic employment standards in the digital economy to prevent deepening and widening social inequalities. Automation will find its level of expertise. This level may, in many cases exceed human capabilities, but human capabilities may not be impaired. There is a strong argument that social skills will be even more important in the 4.0 industry (McGowan, R., 2019).

The future of the automated world of work was also one of the strategic topics addressed by the World Economic Forum in Davos in January this year. The most exciting insights of experts can be summarised as follows: to seek out and hire the smartest talents; adapt, respectively develop a new education system and create a new career model to fill the skills gap; recruiting women into technical roles will make machines learn more efficiently; invest in training the youth and the unemployed and support people to be active creating and transforming their careers. Also, the mental health of work powers and its support was on the agenda in Davos (Mphuthing, 2019).

1.2 Jobs and skills

With the advent of new technologies, a revolution of skills is in effect. Those, with the right skills, will be in demand, creating new opportunities and choosing when and where they will work. In this context, helping people improve their skills and adapt to a rapidly changing world of work is becoming a defining challenge of our time. It is crucial leaders were responsive and accountable. Although the technological advances associated with the Fourth Industrial Revolution or globalisation processes cannot be slowed down, it is possible to invest in employee skills to increase their employability and resilience to rapid change.

[4] The advancing use of industry 4.0 technologies will not lead to complete automation and a resulting competitive struggle between humans and machines. It leads to the question of what is the best possible cooperation between humans and machines (Trompisch, 2017).

Individuals also need to develop their aspiration and ability to learn new skills (Shehadeh, Schroeder & Richert, et al., 2017), (Acemoglu & Restrepo, 2018), (Kube & Rinn, 2014).

What jobs are designed to extinction and which, on the contrary, arise? What skills should have people employable in the new automated world? Most authors refer that people with low skills, education, less ability to learning and small creativity are already most at risk. Women are also severely threatened, as automation strongly affects the administration, sales; trade, etc., where women dominate. New jobs should also to be created here, but to a lesser extent, and these positions also require technical knowledge and skills. New positions are related to the need to care for robots and their operation. The basis for their cast has to be technical skills combined with progressive thinking, omnipresent flexibility and a willingness to learn new things. Although, In addition to the increase in demand for technically educated professionals who understand computers and robots (to which education should respond, including its planned management and development, as well as appropriate investments), at the same time the increased interest in social interaction workers. There are occupations where the participation of a living person does not replace the machine.

The environment is changing rapidly, that is why every four years people effectively lose up to 30 per cent of their technical skills. According to the most cited study by consultancy McKinsey & Co, up to 375 million employees globally may need to change their work category by 2030 (Winicková, 2018). The Forum's Future of Jobs report (2016) identified the skills required to keep pace with rapid advances in technology. It also indicates how the skills required are evolving, with creativity leapfrogging to become the third most important skill by 2020. See Fig. 1.

Fig. 1: Top ten skills

Source: World Economic Forum (2016)

Just today, the work world is facing a lack of digital skills. By 2020, it is anticipated that 900 000 unfilled vacancies due to a lack of digital skills[5]. Companies and workers must improve training to fill these gaps. Employers could either lay off existing workers and recruit new staff or retrain them. On the one hand, probably cutting a job can cost much more than their retraining. On the other hand, the era of life-long employment will soon be over. Society needs a new social contract. Who should pay a requalification and a life-long education? Should invest companies in the retraining, the state or other institutions invest? How should employees themselves be involved? One of the suggested ways (by Adecco Group) to simplify career-long training could be called portable "life-long learning accounts". Employees and companies would pay into the accounts, and when they change jobs, employees could take the accumulated capital with them. If they need further training, they could activate the account to pay for it. Individual training will be particularly crucial as freelancers are a growing part of the workforce in the so-called "Gig economy"[6] (Revill, 2018), (Winicková, 2018).

2 Which professions are at risk of automation? And how is it in the Czech Republic?

As already mentioned, the advent of new technologies, including automation is an inevitable process that is taking place worldwide. The point is to respond correctly and transforming the workforce and mitigating the impact of automation and taking advantage of the opportunities offered. In the Czech Republic, there are concerns that "digitisation will be responsible for roughly one-third of the lost and one-eighth of new jobs" (5: 2). More impoverished regions (e.g. the Karlovy Vary Region) are at risk. A more positive impact is expected in economically developed areas (Prague, Central Bohemia, Vysočina and South Moravia). The government study "Impacts of digitisation on the labour market in the Czech Republic and the EU" (2016) also confirmed that the demand for knowledge of information technologies and computers would increase. So far, the biggest obstacle to automation is the lack of skilled labour. A barrier could be the considerable burden of the already tense social system of the Czech state. The study assumes that almost 700,000 jobs will be lost due to digitisation, but nearly 300,000 jobs will be created (OSTEU, 2016).

[5] European Commission study

[6] "Gig economy" or "gig workforce." - the phrase often closely associated with the term "sharing economy" or "access economy". It refers to an economy in which people work on a series of short-term jobs and provide services via online or mobile such as Uber or Airbnb.

The most vulnerable occupational groups include those that are prone to be replaced by increasingly available digital technologies or simple automation associated with the phenomenon of applying IC technology to manufacturing or services. The occupations with the most significant threat by digitisation include, for example, officials, general administration, drivers, cashiers and ticket vendors, skilled forestry workers, blacksmiths, toolmakers, secretaries, operating various equipment, animal breeders for the market, etc. Among the least vulnerable occupations the study states: managers in multiple fields; physicians (except dental); general nurses and midwives with specialisation; teachers at universities and colleges; specialists in various fields (healthcare; electrical engineering, electronics, electronic communications, databases and computer networks, human resources, etc.); journalists and language scientists, etc. Obviously, due to automation, nobody will avoid the need for lifelong learning in line with the requirements of the labour market. (OSTEU, 2016).

2.1 Automation will take place in waves

According to a PricewaterhouseCoopers study on 29 developed countries, by 2035, automated systems can replace up to 30 per cent of the human workforce. In the case of people with low education, it can be up to 44 per cent. Automation should take place in three waves, of which the first two waves are already underway. The first, Algorithmic wave (to the early 2020s), is characterised automation of simple computational tasks and analysis of structured data, affecting data-driven sectors such as financial services. Within the second, Augmentation wave (to the late 2020s) Dynamic interaction with technology for clerical support and decision making is realised. Also includes robotic tasks in semi-controlled environments such as moving objects in warehouses. The last wave of "autonomy" only will seriously reshape the labour market (after 2030), and it deploys machines to solve dynamic real-life problems or require responsive actions, such as in transport and construction. The degree of threat to automation and the impact of individual waves varies by country, different industry sectors; occupations within industries; and workers of different genders, ages and education levels.

PwC analysts believe that only three per cent of current jobs will switch to automatic operation in the first wave. The share is relatively higher only in the financial and insurance sectors, information and communication and science and technology. The impact at the end of the next decade and the first half of the 2030s should be more dramatic. Up to 30 per cent of existing jobs could gradually disappear. Overall, the threat to the labour force in the Czech Republic is the fourth-highest (automation accounts for 40 per cent of current jobs) due to

automation in all the countries under review.[7] The second wave of automation with the advent of the next decade should be the most prominent. Female workers could be more affected by automation over the next decade, but male jobs could be more at risk in the longer term (PwC, 2018).

Conclusion

Technological changes cannot be prevented, but they must be controlled and regulated. The human being alone - the human factor and human work - must always remain at the forefront. The ability to anticipate and prepare for future skills requirements, job content and the overall effect on employment becomes essential. To take full advantage of the opportunities these trends offer - and mitigate unwanted results, business, government and individual cooperation is critical. The labour market is becoming increasingly volatile. Automation will gradually penetrate most fields and professions. However, a living person will always be in demand where creativity, empathy, ability to communicate and solve problems are needed. Flexibility, ability and willingness to educate and retrain lifelong learning will be crucial for employability. The adaptation of production, the labour market and society as a whole to the advent of new technologies is now a priority. The authors of this text put forward the thesis *"Man without work can easily become an endangered species."* Will it happen? The issue is currently of interest to experts and many studies. However, the results achieved are not clear-cut and raise the next questions that remain open. Such as the problem of taxing robots or introducing an unconditional basic income. All consideration should critically be placed in the context of reflections on anti-work. While supporters of this direction argue by labour market research, pointing to labour unprofitability (which often does not ensure survival today), various discrimination, other injustices or the creation of nonsensical jobs. But a world and a jobless life is a dangerous and horrific anti-utopia.

Acknowledgment

This article is provided as one of the outputs of the research project of the Faculty of Business Administration IP 300040 „Competitiveness“.

References

[7] Slovakia has the highest threat (44 per cent of jobs). South Korea, Finland, Greece and Russia ended up at the opposite end of the spectrum, with a high risk of slightly above 20 per cent.

1. Acemoglu, D., Restrepo, P. (2018 JUN). The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment. *American Economic Review*, 108(6), pp. 1488-1542.
2. ManpowerGroup (2016). *Skills Revolution 2.0. Robots Need Not Apply: Human Solutions for the Skills Revolution.* [vid 2019-03-17]. Dostupné na: http://www.manpowergroup.co.uk/the-word-on-work/skills-revolution/)
3. McGowan, R. (2019). *Here are 3 alternative visions for the future of work.* Mercer. [vid 2019-03-17]. Dostupné na: https://www.mercer.com/our-thinking/career/voice-on-talent/here-are-three- alternative-visions-for-the-future-of-work.html
4. Mphuthing, P. (2019). *Future of work: 5 top insights from Davos experts*. [vid 2019-03-17]. Dostupné na: https://www.weforum.org/agenda/2019/01/future-of-work-tk-top-trends-from-davos/
5. Kotýnková, M. (2016, SEP 14-16). Industry 4.0: Will the Concept Affect the World of Work? In Majerova, I; Kotlanova, E (ed): *Proceedings of 14th International Scientific Conference Economic Policy in the European Union Memeber Countries, PTS 1 and 2*, pp. 330 – 337.
6. Kube, G., Rinn, T. (2014). Industry 4.0 - The next revolution in the industrial sector. *ZKG International*, 67(11), pp. 30–32.
7. Nedelkoska, L. and G. Quintini (2018). Automation, skills use and training. *OECD Social, Employment and Migration Working Papers*, No. 202, OECD Publishing, Paris, https://doi.org/10.1787/2e2f4eea-en
8. OSTEU. Úřad vlády České republiky (2016). *Dopady digitalizace na trh práce v ČR a EU.* [vid 2019-03-17]. Dostupné na: https://www.vlada.cz/assets/evropske-zalezitosti/analyzy-EU/Dopady-digitalizace-na-trh-prace-CR-a-EU.pdf
9. . PwC (2018). *Will robots really steal our jobs?* Report [vid 2019-03-17]. Dostupné na: //www.pwc.co.uk/economic-services/assets/international-impact-of-automation-feb-2018.pdf.
10. Revill, R. (2018, NOV 28). How learning new skills can save your job from the robots. *Reuters.* In the WEF. [vid 2019-03-17]. Dostupné na: https://www.weforum.org/agenda/2018/11/adecco-chief-calls-for-life-long-learning-to-dodge-jobs-time-bomb.

11. Shehadeh, M. A.; Schroeder, S; Richert, A; et al. (2017, OCT 05-08). Hybrid Teams of Industry 4.0 A Work Place considering Robots as Key Players. In. *IEEE International Conference on Systems Man and Cybernetics Conference Proceedings*, pp. 1208-1213.
12. Sirůček, P. (2019) Levici chybí kompas i kotva: Tady je – normálním lidem a práci čest! *Marathon* [online]. 23(1), pp. 3–24. Dostupné z: http://valencik.cz/marathon/doc/Mar1901.pdf.
13. Trompisch, P. (2017 NOV). The implications of Industry 4.0 on the future of work. *Elektrotechnik und Informationstechnik*, 134(7), pp. 370-373.
14. WEF (2016). *The Future of Jobs.* Report. [vid 2019-03-17]. Dostupné na: http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf
15. Winicková, E. (2018 JAN 25). Every study we could find on what automation will do to jobs, in one chart. *MIT Technology Review*. [vid 2018-04-17]. Dostupné na: https://www.technologyreview.com/s/610005/every-study-we-could-find-on-what-automation-will-do-to-jobs-in-one-chart/
16. Sirůček, P., Džbánková, Z. (2018). Quo Vadis, Education 4.0? In: LÖSTER, T., PAVELKA, T. (ed.). *The 12th International Days of Statistics and Economics Conference Proceedings* [online]. Praha, 06.09.2018 – 08.09.2018. Slaný: Melandrium. pp. 1635–1645. Dostupné z: https://msed.vse.cz/msed_2018/sbornik/toc.html.

Contact

Pavel Sirůček
University of Economics, Prague, Faculty of Business Administration, Department of Managerial Economics
Sq. W. Churchill 1938/4, 130 67 Prague 3
Czech Republic
sirucek@vse.cz

Zuzana Džbánková
University of Economics, Prague, Faculty of Business Administration, Department of Managerial Economics
Sq. W. Churchill 1938/4, 130 67 Prague 3
Czech Republic
dzbank@vse.cz