THE IMPACT OF DIGITIZATION ON THE LABOR MARKET

Dina Maria LUŢ

Abstract: *The specialists agreed that pretty much everything we know and assume about work, jobs, training and education, today, is being challenged by exponential scientific and technological progress.*
Digitization has long brought many opportunities and benefits for both employers and employees: from process optimizations, increased productivity, cost reductions, to higher wages and a more efficient work environment.
However, digitalization in various forms has become more and more present in companies. In the short term, it may seem to bring advantages and disadvantages in close proportions.
Everybody see that automation and artificial intelligence (AI) are changing the nature of work.
While work as we know it today will end, humans will be more useful than ever before. Even if human intelligence encounters artificial intelligence, humans stay useful or even more useful.
This paper highlights some positive and negative effects of digitization, changes regarding the work skills induced by it and also identifies the new roles and jobs appeared recently.
Keywords: *digitization, artificial intelligence, work skills, pandemic crisis, labour market.*

INTRODUCTION

The specialists agreed that pretty much everything we know and assume about work, jobs, training and education, today, is being challenged by exponential scientific and technological progress.

As the futurologist Gerd Leonhard observed, the future of work and jobs is becoming a hot topic as so-called Megashifts, such as automation, knowledge, robotics and virtualization, are multiplying. Currently, these trends are seriously accelerated by the Covid-19 crisis. This is especially true in the manufacturing and other industries with manual labour, where

robots are rapidly outpacing and replacing human workers who used to perform routine tasks.[1]

Automation is dramatically reducing the need for humans to handle routine tasks. This trend is called by Leonhard *'the end of routine'*.

Consequently, the same futurologist raises several questions:

What will be the impact on employment, and what do we need to do to get ready?

What skills will we need, and what character traits will need to be boosted?

How does secondary education need to change as a result?

Will the 'End of Routine' really mean the end of human jobs, or will it be just the end of some of our tasks?

Will new "human-only" jobs emerge following the increased efficiency and productivity afforded by automation?

These questions will concern mankind for a long time to come.

POSITIVE AND NEGATIVE EFFECTS OF DIGITIZATION

Digitization has long brought many opportunities and benefits for both employers and employees: from process optimizations, increased productivity, cost reductions, to higher wages and a more efficient work environment.

With the pandemic, companies and employees were forced to adopt more and more digital solutions to continue their activity, combining them with remote working methods.

Some industries, such as IT and online businesses, started this trend before the pandemic. For employees in these fields, remote work was not new now and practically, this period did not mean a major change in the way of working.

But things are not the same in other areas, especially since the share of industries where it is not possible to work remotely is high in Romania. We are talking about manufacturing, trade, retail, construction, transport and HoReCa.

Then, the low level of digital skills among Romanian employees is added. And the results, unfortunately, are not in our favour: Romania is the only country in the EU with a percentage of telework of about 20% of total employees, according to the first data on the EU labour market during the

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1 Leonhard, Gerd, (2016). Technology vs. Humanity: The coming clash between man and machine, the Futures Agency, Zurich, 2016.

COVID-19 pandemic.[2] That is happened, although our country figures prominently in world rankings speed Internet. Unfortunately, we do not use this advantage in a productive way, but mainly for access to social networks.

However, digitalization in various forms has become more and more present in companies. In the short term, it may seem to **bring advantages and disadvantages in close proportions.**

Digitization gives us the opportunity to work remotely, **but it robs us of physical socialization, meetings, breaks between colleagues and work-related friendships.** It offers us instant communication in any corner of the world, saving us from expenses, traffic, flight hours, adapting to new time zones, but it makes us give up certain jobs, human chemistry, body language, contact directly, knowledge of other cultures and customs.

But in the long run, the benefits are significantly more because it brings transformations that help us achieve, among other things, efficiency, speed, productivity and a reduction in errors and costs. And all this is reflected not only in the company's performance indicators, but also increase the quality of life of employees.

The desire of employees to return to the office or to stay at home differs for the time being from industry to industry, but also from the position they hold. A sales employee, accustomed to traveling a lot, having meetings with many customers, will find it harder to get used to working from home. Instead, for those in the financial or IT field, things are different and the way to work from home or remote is preferred.

The change induced by digitalization will be final and will bring with it less pleasant things, especially on emotionally level, which we must learn to compensate or solve. Depression, anxiety and the impression of lack of adaptation will be very common symptoms among employees. Therefore, employers should alternate work from home with office work, organize team building, extra professional activities and use as many methods of motivation as possible. The big companies have already anticipated what will come next and are trying to find solutions also through digitalization: interactive games, relaxation activities and online coffee breaks, brainstorming, etc.

At the same time, digitization is a continuous learning process for managers as well. If they fail to coordinate subordinates in the new conditions, remotely, the company's productivity will suffer. On boarding for new employees will also be a challenge. In spite of social distancing,

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2 Eurofound (2021), COVID-19: Implications for employment and working life, COVID-19 series, Publications Office of the European Union, Luxembourg.

this will be reorganized or reinvented for new employees integrate into the organizational culture.

In addition to scalability issues, companies and employees challenges and turn re working systems to adapt to work remotely, privacy and confidentiality. But once this step is taken, remote work will become more frequent. Especially since companies will make significant savings by exempting from costs such as rent, consumables, maintenance.

In the long run, we will notice a change and related to traditional office spaces and a development of hubs and the concept of co-working, which will grow, being an important part of the solution to change.

Employees who adopt digitization as a norm and are flexible will have a competitive advantage in the job market and will be better paid than those who are reluctant.

At the same time, employers will realize that they have access to a workforce and talents that are not within their current range without additional expansion costs. It is an important and very valuable new benefit, and the companies that are digitizing will offer more remote jobs than on-site.

CHANGES REGARDING THE WORK SKILLS INDUCED BY DIGITIZATION

The specialists agreed that automation and artificial intelligence (AI) are changing the nature of work. The same showed the McKinsey Global Institute Report - *Skill Shift: Automation And The Future Of The Workforce (2018),* which synthetized the following skill changes:

- Automation will accelerate the shift in required workforce skills we have seen over the past 15 years. The strongest growth in demand will be for technological skills, the smallest category today, which will rise by 55 percent and by 2030 will represent 17 percent of hours worked, up from 11 percent in 2016. This surge will affect demand for basic digital skills as well as advanced technological skills such as programming. Demand for social and emotional skills such as leadership and managing others will rise by 24 percent, to 22 percent of hours worked. Demand for higher cognitive skills will grow moderately overall, but will rise sharply for some of these skills, especially creativity (fig. 1);
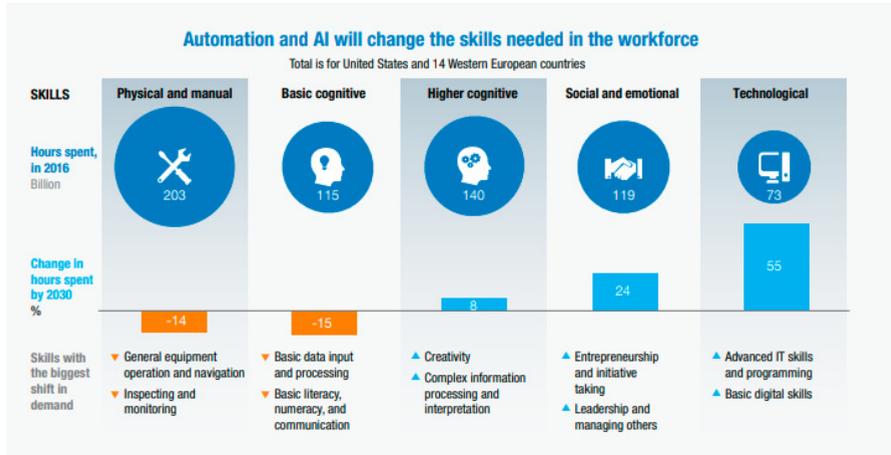
Fig. 1. The skills needed in the workforce
(Source: McKinsey Global Institute (2018). Skill Shift: Automation And The Future Of The Workforce, p. 5)

- Some skill categories will be less in demand. Basic cognitive skills, which include basic data input and processing, will decline by 15 percent, falling to 14 percent of hours worked from 18 percent. Demand for physical and manual skills, which include general equipment operation, will also drop, by 14 percent, but will remain the largest category of workforce skills in 2030 in many countries, accounting for 25 percent of the total hours worked. Skill shifts will play out differently across sectors. Healthcare, for example, will see a rising need for physical skills, even as demand for them declines in manufacturing and other sectors (fig. 2). *f*
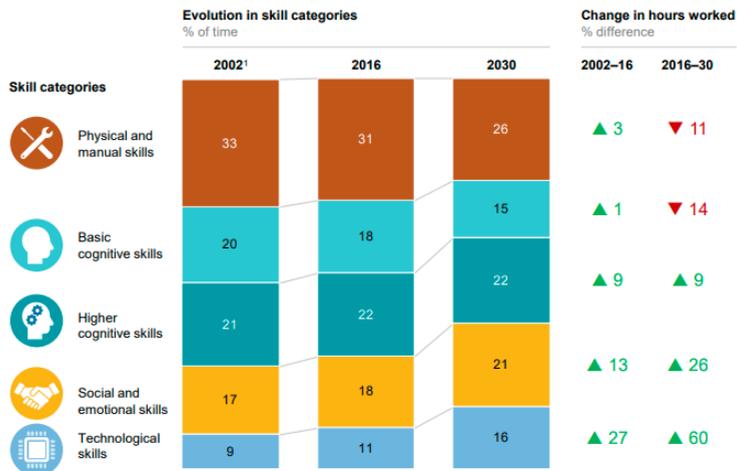

Fig. 2. Skills shifts
(Source: McKinsey Global Institute (2018). Skill Shift: Automation And The Future Of The Workforce, p. 13)

207

- Companies will need to make significant organizational changes at the same time as addressing these skill shifts to stay competitive. Skill shifts will vary across sectors as automation and AI are adopted.
- Competition for high-skill workers will increase, while displacement will be concentrated mainly on low-skill workers, continuing a trend that has exacerbated income inequality and reduced middle-wage jobs. Companies say that high-skill workers are most likely to be hired and retrained, and to see rising wages. Firms in the forefront of automation adoption expect to attract the talent they need, but slower adopters fear their options will be more limited. *f*
- Employers expect to need more of the social and emotional, higher cognitive, and technology skills in the future, and less of the basic cognitive and physical and manual skills. Four specific groups of skills stand out. Those in the upper-right quadrant are perceived as very important today and needed even more in the future. They include leadership, advanced communication, advanced IT and programming, and critical-thinking skills. In the lower-right quadrant are skills that are ranked as less important today but growing strongly in the future: advanced data analysis, complex information processing, adaptability - as well as teaching and training; technological, social and emotional skills will become even more important. (fig. 3).
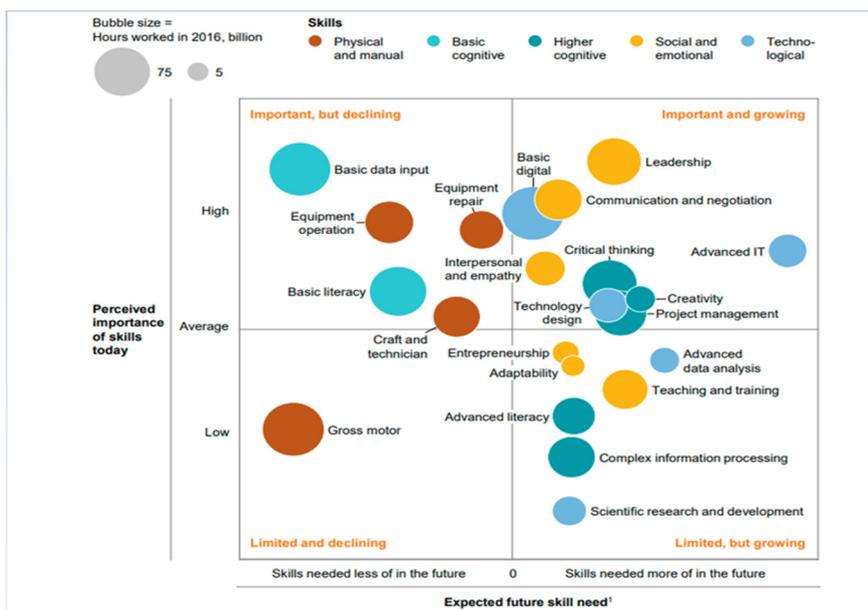

Fig. 3. Skills of today vs skills of tomorrow
(Source: McKinsey Global Institute (2018). Skill Shift: Automation And The Future Of The Workforce, p. 19)

The Manpower Group survey - *The Skills Revolution: Digitization And Why People And Talent Matter, 2016*[3] reached similar conclusions:

- Skills and talent matter even more in a Skills Revolution.
- Skills cycles are shorter than ever and 65% of the jobs Gen Z will perform do not even exist yet. In the Skills Revolution, the value we place on different skills will change.
- Digitization and growth in skilled work will bring opportunities, as long as organizations and individuals are ready.
- Technology will replace both cognitive and manual routine tasks so people can take on non-routine tasks and more fulfilling roles.
- Creativity, emotional intelligence and cognitive flexibility are skills that will tap human potential and allow people to augment robots, rather than be replaced by them. People will increasingly find they need to upskill and diversify into new areas. Skills adjacency, agility and learnability will be crucial.

As we see from the above, while work as we know it today will end, ***humans will be more useful than ever before.*** Even if human intelligence encounters artificial intelligence, humans stay useful or even more useful.

THE NEW ROLES AND JOBS INDUCED BY DIGITIZATION

Information technology, robotics, machine learning and artificial intelligence are and will be the most dynamic and innovative industries. They will create the most new roles and responsibilities in the future. If few years 3D printers, robots and system software on assistantship, cars without drivers or new communication technologies seems to be on or scenarios SF, now all of them are or become increasingly part of our day by day.

With their development, new jobs appear that will be in high demand, especially in areas such as IT, automation, space research, energy and environment, medicine or social media.

Digitization brings new roles that did not exist until now, but at the same time abolishes other jobs. Most will be replaced by robots, machinery, machinery and software. However, more value-added and new specializations will emerge along the way to reduce inequality and the risk of exclusion.

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3 https://www.manpowergroup.com/wcm/connect

Among the industries that are already being digitized more and more are: automotive, production, retail, pharma, banking, etc. New jobs and job opportunities that did not exist a few years ago are found today in research and development, on the assembly lines of a factory, in a callcenter, reading consumer meters (the concept of Internet of Things) or at the baggage check-in at the airport. Routine tasks can be reduced to well defined algorithms have been digitized and computerized and in some cases were externalised through the Internet, markets with cheaper labour force.

A few years ago, no one knew exactly what a *chief innovation officer* meant, because there was no such role in the organizational chart. Meanwhile, it has become an important role in the development of a company because the original ideas bring greater efficiency, revolutionize various processes and areas and thus bring profit to the company. The same can be said about the *chief transformation officer*, a role that has become quite sought after, especially in the context of the negative impact on companies caused by the pandemic crisis.

Only if we look at the evolution of communication technology and the social media field can we see how much our lives have changed in recent years and how much will change in the near future. For example, if Google initially only allowed search engine advertising, there are now many more types of campaigns and ad formats. With multiple technical variants, it is up to creativity to complete them in order to achieve the desired objectives and audiences. That's why we're meeting more and more roles that combine creativity with technology and that companies need more and more. **Creative manager, analytics manager or cybersecurity manager** are roles that will be increasingly sought after in the next period.

Automation and software programs, artificial intelligence, robots can eliminate certain jobs or replace manual processes in some trades, mainly low-paid ones today. The greatest impact will be felt in areas such as production, transport, logistics or customer service. But, on the other hand, with the help of additional training courses or specializations, those jobs will be replaced by lighter and better paid ones. Although new technologies will make certain existing trades useless today, they will lead to the **emergence of new roles and specializations that, in turn, will create new jobs. The jobs of the digital age are and will be very well paid.**

Other new roles we will meet more and more in the future are: gamification marketing director, chief automation officer, digital removalist, maritime virtual security officer, space tour guide, nanotech manager, genetic manager, cybersecurity analysts, robotic avatar designers, biomedical engineers etc.

Those who want to re-profile would be indicated to focus on these areas and specialization courses in robotics, artificial intelligence, programming and digital literacy courses new media, security or cybernetics. An employer considers motivation, flexibility, open-mindedness, adaptability and willingness to learn new things. All this requires extra effort and compromise, but can be exactly what you need both professionally and salary.

But the desire to keep up with technology is not enough, especially for young people. For them, it is essential that the education system be reformed and prepare the new generations for the challenges they will face in their careers.

THE NOMENCLATURE OF OCCUPATIONS IN ROMANIA

There are now over 4,300 occupations in Occupation Classification in Romania (COR).[4] A few hundred more are likely to be added, while others will disappear.

Cybersecurity specialists, virtual identities or patient browsers, there are new jobs on the labour market, but they are missing from the Occupation Classification in Romania.

Therefore, the labour contracts of these employees are often far from reality. Officials have begun updating this list to keep up with reality.

Other nominees already found in private companies are missing from the nomenclature: social media specialist, patient nurse, who guides patients in private hospitals, growth hacker, who conducts promotion campaigns or visual identity specialist, of whom there will be more and more need and in state institutions.

Authorities also sought the support of job posting platforms to identify the most common occupations missing from the nomenclature. An example would be the jobs related to social networks: *Facebook campaign specialist, PPC specialist, SEO specialist, which deals with the organic growth of certain sites.* This is why in general these people's contracts are very far from their real work.

CONCLUSIONS

Even if we are in the age of digitalization, we should not underestimate the value of human connection. The transformation of the

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4 https://mmuncii.ro/j33/index.php/ro/2014-domenii/munca/c-o-r

work we are witnessing now, in the age of machines, does not have to be a struggle between man and robot.

Therefore, digitalisation has a direct impact on the employee and the workplace. A first conclusion is that digitalization will primarily change the way employees think and will capitalize on new skills and resources. These will overlap with a wide range of social and technological developments that will influence many aspects of our daily lives, from the way we work, pay our bills, do our shopping, to learn or socialize.

It is certain that digitization has been accelerated by the pandemic and the need for adaptation, and many changes and solutions adopted now will remain final. With a good plan and well-developed strategies, companies will keep up with new changes, employees will adapt, and those who fail will re-profile themselves.

That is why improving digital skills is essential. Preparing the workforce for the future requires large investments on both sides, but the cost of inaction will be even higher.

As the futurologist Leonhard said: "Technology and humanity must both be on the curriculum; indeed science and philosophy belong in the same classroom. A balanced society will require expertise in both domains; otherwise, we will continue to tilt the playing field towards machine thinking. In addition, an increasing amount of scientific work will eventually be done by AI and smart machines; therefore, we must place the development of human-only skills and capabilities center-stage. Creativity, understanding, negotiation, questioning, emotions, intuition, and imagination will be more important than ever before - whatever cannot be digitized, automated, or virtualized will become extremely valuable. "[5]

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5 Leonhard, Gerd, (2016). Technology vs. Humanity: The coming clash between man and machine, the Futures Agency, Zurich, 2016.

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NOTES ON THE AUTHORS

DINA MARIA LUŢ – PhD Associate Professor, "Dimitrie Cantemir" Christian University Bucharest, Faculty of Touristic and Commercial Management Timişoara, 93, 1 December Str., Romania. E-mail:dinalut@yahoo.com