

# **HUMAN RESOURCE WITH REFERENCE TO DIGITALIZATION IN HUMAN RESOURCES MANAGEMENT**

**Dominika Miklášová – Ľubica Bajžíková**

---

## **Abstract**

The research paper is to discuss the evolution of digital skills of EU citizens and impact on the future of work. The digitalization will transform the way of employees and business work. For this reason, EU and companies have to adopt a new attitude to prepare digital future and use innovative methods and tools like artificial intelligence. Based on overview of digital skills of citizens, EU is able to adjust the existing models and way of work, automatize platforms and propose digital future for all EU countries. This would be the correct platform for companies which are due to speed of the business forced to be competitive in business environment. Companies, also due to COVID 19 worldwide pandemic, started to boost digitalization of internal HRM processes. Human is the main drivers of the digital transformation process. The objectives of the paper are to understand the EU vision in digitalization and how it will impact on HRM activities and how effective is the digitalization in HRM. The research methods are based on secondary data analysis, desk research of publications, statistic data analysis.

**Key words:** digitalization, digital transformation, human resources, HRM, EU

**JEL Code:** M12, O10

---

## **Introduction**

Digital transformation is defined as the changes associated with digital technology applications and integration to all aspects of human life (Sartal, Carou, Davim, 2020). Human intelligence and knowledge are to be transferred to the machines. Knowledge is considered as the energy of the system and human is the main driver of the digital transformation process which influence the work. The requirements to change the content of job is based on transformation of leadership and strategy of the organization. People of the organizations should believe in the need for the digital transformation. According to the literature, digitalization, or digital transformation, refers to the changes associated with the application of digital technology in all aspects of human society (Stolterman and Fors, 2004). Digitalization is also known as the ability to turn

existing products or services into digital variants, and thus offer advantages over tangible product (Gassmann, Frankenberger and Csik, 2014). Digital transformation is emerging by technological improvements and transforming the systems to those digitally operates. Before starting any transformation process, the people of the organizations should believe the need for and possible benefits of digital transformation and they should also own the process. Managers and stakeholders should understand the power of change and basic drivers. Digital transformation requires new skills and cannot be successful in utilizing only the existing competencies. The people are expected to utilize their intellectual capacity rather than physical power. New professions will emerge and some of them will disappear. The skills as agility, adjustment and adaptation to the new opportunities will be more important than technology skills.

Digital transformation process should not be considered as usual progress in society. There are some driving forces:

- Innovation: New ideas in product generation and process designs.
- Customer expectations: New system and functionalities generate new expectations of the customers.
- Rapid response: The digital operations improve and increase the speed of operations.
- Digital marketing and consumption: Digital transformation provides various opportunities for products and services to be marketed.
- New business models: The digital world offers new business models such as Netflix, Apple Music, LinkedIn, Dropbox, E-bay, Appstore, etc.
- Global competitiveness: The world is getting smaller with digital operations.
- Digital assistance: Attracts the attention of entrepreneurs due to their multi-use capability.
- Expensive labor costs: Performing operations with minimum human intervention reduce labor costs.

## **1 Methodology and the aim of the paper**

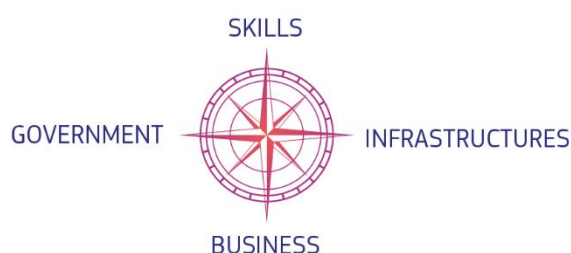
The aim of the paper is to provide an analysis of the context of how and why the digitization and digitalization of human resources management (HRM) is a key topic of the EU. The vision of EU is in digitalization, how it was changed during pandemic situation, what impacts and future trends we can expect in near future in digitization.

For developing the article, standard methodology of text processing has been applied, i.e. data collection, text analysis and description methodology. The gathered information has been analyzed and subjected to critical assessment from quantitative, absolute and relative cross-sectional perspectives. Methodological tools implemented in the research include desk research with the emphasis on statistical data analysis, accompanying documents and results of a number of reports.

## 2 European Union Commitment

On 9 March 2021, the European Commission presented a vision and avenues for Europe's digital transformation by 2030. The Commission proposes a Digital Compass for the EU's digital decade that evolves around four cardinal points.

**Fig. 1: Digital Compass for the EU's digital decade**



Source: [EUDigitalCompass](#)

### **Skills:**

ICT Specialists: 20 million specialists and gender convergence

Basic Digital Skills: min. 80% of EU population

### **Digital transformation of businesses:**

Technical expertise up-take: 75% of EU companies using Cloud/AI/Big Data

Innovators: grow scale-ups and finance to double EU unicorns

Late adopters: more than 90% of SMEs reach at least a basic level of digital intensity

### **Digitalization of public services:**

Key Public Services: 100% online

e-Health: 100% of citizens having access to medical records

**Digital Identity:**

Digital ID 80% of EU citizens

Secure and sustainable digital infrastructures

Connectivity: Gigabit for everyone, 5G everywhere

Cutting edge Semiconductors: double EU share in global production

Data - Edge and Cloud: 10,000 climate-neutral highly secure edge nodes

Computing: first computer with quantum acceleration

(Europe’s Digital Decade: digital targets for 2030 | European Commission (europa.eu), 2021)

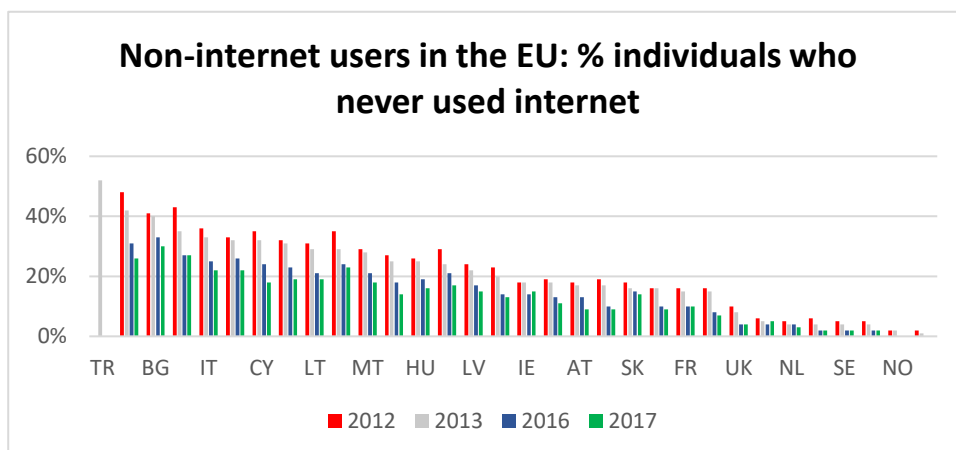
### 3 Research results

To follow digital compass priorities and adapt EU to the trends there is necessary to have proper data.

We can believe that a digital compass with priorities is a new goal, but collecting data since 2012 leads us to conclude that regular monitoring of digital skills is not accidental. The gradual comparison and focus on deeper detail and target groups shows that the EU is fully aware of the importance of the digital skills of its inhabitants and the need to empower IT specialists and students. Conducted surveys are only the basis, but for the right direction and digital strategy, it is necessary to know the current state of digital skills. We assume that the individual priorities of the digital compass are based on data from conducted surveys.

Provided data are proper base also for employers as illustrates preparation of the human capitoll to future jobs or flexibility to react to job needs. In HRM there is still more and more required digital skills of candidates and adaptability to new technologies.

**Fig. 2: Non-internet users in the EU: % individuals who never used internet**



Source: made by authors according to EU statistics

In last 2 years we can see the different way of reporting where EU has started to focus on general data and digital skills.

**Fig. 3: Human Capital Indicators in DESI**

	EU	
	DESI 2019	DESI 2021
<b>1a1 At least basic digital skills</b> % individuals	<b>55%</b> 2017	<b>56%</b> 2019
<b>1a2 Above basic digital skills</b> % individuals	<b>29%</b> 2017	<b>31%</b> 2019
<b>1a3 At least basic software skills</b> % individuals	<b>58%</b> 2017	<b>58%</b> 2019
<b>1b1 ICT specialists</b> % individuals in employment aged 15-74	<b>3.8%</b> 2018	<b>4.3%</b> 2020
<b>1b2 Female ICT specialists</b> % ICT specialists	<b>17%</b> 2018	<b>19%</b> 2020
<b>1b3 Enterprises providing ICT training</b> % enterprises	<b>22%</b> 2018	<b>20%</b> 2020
<b>1b4 ICT graduates</b> % graduates	<b>NA</b> 2016	<b>3.8%</b> 2018

Source: DESI 2021, European Commission

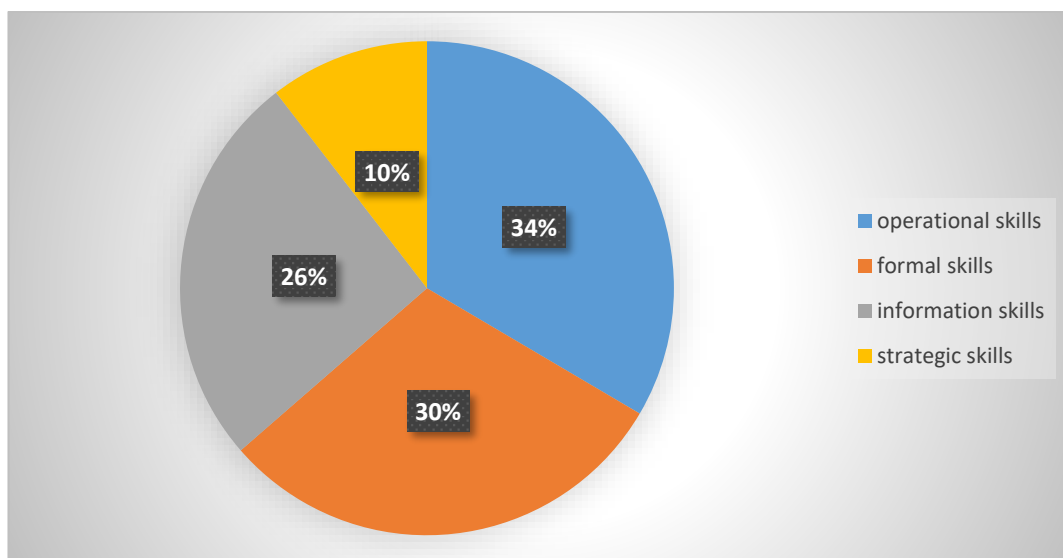
Already 84% of all adults used the internet daily or almost every day in 2019. Nevertheless, only 56% possesses at least basic digital skills and only about one third of Europeans possesses above basic digital skills (31%), (see Fig. 3., DESI, 2021). Therefore, having an internet connection and using the internet is not sufficient; it must be paired with the appropriate skills to take advantage of the digital society. Digital skills range from basic usage skills that enable individuals to take part in the digital society and consume digital products and services, to advanced skills that empower to acquire new specialised digital skills, develop new digital products and services.

To compare EU data with representative survey, authors refer to experimental test run in Dutch, in 2009 by van Deursen and van Dijck at University of Twente. This sampling result was released based on estimation by general public opinion in the Netherlands, that 80% of Dutch citizens have access to the Internet and can easily consult online government information (van Deursen, van Dijck, 2009). During their analyses of digital skills they considered two important aspects: online information and online services. To measure digital skills they focus on following four types:

1. operational skills: the skills to operate digital media; e. g. opening websites, entering keywords, submitting forms;
2. formal skills: the skills to handle special structures such as menus, hyperlinks; e. g. recognizing and using hyperlinks, not getting disoriented when surfing within/between websites;
3. information skills: the skills to search, select and evaluate information in digital media; e. g. defining search queries that focus on information problem, selecting and evaluating information and sources;
4. strategic skills: the skills to employ the information contained in digital media as a means to reach a particular personal or professional goal; e. g. an orientation towards a particular goal, taking right action to reach this goal, making right decision and take the benefits belonging to this goal (van Deursen, van Dijck, 2009).

They started their study by random contact of participants from telephone list from different cities and villages, as digital skills could be different between city and countryside, as they estimated. Subsequently the sample includes diversity of gender (male and female), age (18 – 80 years) and level of education (low, medium and high) (see Fig. 4).

**Fig. 4: Experimental test of digital skills in Dutch, 2009**



Source: made by authors according to van Deursen, van Dijck 2009

It is important to emphasise EU survey or experiment did not include some specific groups such as immigrants (refugees, asylum seekers), disabled people, job seekers who have been long-term unemployed, those in-contract without working hours, homeless people etc.

## 4 Gen Z

The digital world became much more important in 2020. Billions of people went online to work, study, and merely to stay in touch online during the COVID-19. Having knowledge about digital acceleration from past trends, they needed to adopt digital transformation strategies, the pandemic has forced organisations to not only accelerate those plans but put them into immediate action.

It is natural for Gen Z to be in digital environment. They have never drawn a distinction between the physical and the digital world. For them, whether online or offline, the critical element is that you can seamlessly move between each environment.

Today's study shows that Gen Z has become the most Internet-dependent generation: 60% of Gen Z cannot stay more than 4 hours without Internet access before they feel uncomfortable. In 2022 7% of them are more dependent on the Internet to access with other people and social contacts, compared to 2018. But they are also more likely than other generations to believe in the positive impact of technology on the world: 64% believe the Internet will bring us closer together (Gen Z study, 2022).

Western Europeans believe that biometric authentication is among the top website functionalities of the future. With biometrics (e.g. fingerprint and face recognition, voice and speech recognition) authentication with the Internet will be done without a keyboard. Meanwhile, Gen Z is most likely to believe that in the next 5 years the Internet will impact our view of the world through AR (augmented reality) and VR (virtual reality) compared to previous generations.

What does Gen Z expect from digital experiences?

- **Get to know me.** 68% believe that all websites will "talk" to each other, so every site/app/appliance will present a personalised experience
- **Press ahead.** 67% of Gen Z has personally used, worked with someone else, or hired someone to use WordPress for a website (Gen Z study, 2022).

### Conclusion

All above mentioned information bring the authors to conclusion there is quite sensitive

monitoring of digital skills of EU citizens. As the monitoring is released through different target groups (e. g. standard internet users, workforce, IT experts and young population – students), more or less whole population is covered. Monitoring of target groups over 10 years demonstrates increase of digital skills and shows possible gaps and space for improvement. But due to the speed of digitalisation of standard services (mobile devices usage, standard shopping and changes in digital habits of customers/users due to pandemic situation), EU priorities are also accelerating.

EU Digital compass is built in line with the data base and prioritises main pillars to keep sustainability of countries. Example of health data digitalisation bring the authors to the conclusion that EU would like to have clear understanding of health conditions of EU citizens. EU can re-prioritise, propose solutions, possible founding of health industry.

Another part of EU digital compass is focusing on ICT specialists. Data are future. Without knowing of EU citizens' habits and behaviour, EU is not able to prepare future of the community. To be able to work on predictions and forecasts, EU needs to focus on specialists. EU is aware of the importance of the data, acceleration in IT industry and increasing demand on experts. Based on authors' experience, companies which operate customer electronical data are trendsetters and they are able to direct their business and marketing activities.

Based on the above-mentioned examples, authors came to the conclusion there is no need to be afraid of increasing unemployment. There is high importance of people's flexibility to adapt to digital changes and changes at all. As the standard public services are going to be digitized, it will require a minimum of digital skills from each citizen. Program until 2030 is the near future and examples, such as electronical voting, demonstrate there is no more paper future.

## **Acknowledgment**

This paper was developed at Comenius University Bratislava, Faculty of Management within the project VEGA No. 1/0441/21 (1,0 share).

## **References**

Arntz et al. (2016). The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis. *Research Gate*. [\(PDF\) The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis \(researchgate.net\)](#)



- Berber N., Dordevič B., Milanović S. (2018). Electronic Human Resource Management (e-HRM): A new concept for Digital Age. *Strategic Management*. Vol. 23 (2018), No. 2, pp. 022-032.
- Bondarouk T. V., Ruel H. J. M. (2009). Electronic Human Resource Management: Challenges in the Digital Era. *Research Gate*. 505 -514.  
[\(PDF\) Electronic Human Resource Management: Challenges in the Digital Era \(researchgate.net\)](#)
- Bowles, J. (2014). The computerisation of European jobs. *Bruegel*.  
[The computerisation of European jobs | Bruegel](#)
- Brennen S., Kreiss D., (2014). Digitalization and Digitization. *Culture Digitally*.  
[Scott Brennen – Culture Digitally](#)
- Ebert Ch., Duokidis G., Spinellis D. (2018). Digital Transformation – A Primer for Practitioners. [Digital Transformation \(aueb.gr\)](#)
- Europe's Digital Decade: digital targets for 2030. (2021).  
[Europe's Digital Decade: digital targets for 2030 | European Commission \(europa.eu\)](#)
- Frey C. B., Osborn M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Science Direct*, 254 – 280, [The future of employment: How susceptible are jobs to computerisation? - ScienceDirect](#)
- Gen Z study reveals a new digital reality. (2022).  
[Digitalisation World](#)
- Grimshaw D., Rubery J., Cooke F. L., Hebson G. (2022). Fragmenting work: Theoretical contributions and insights for a future of work research and policy agenda. *Human Resource Management Journal*. 1–14. <https://doi.org/10.1111/1748-8583.12463>
- Pajarinem M., Rouvinen P., (2014). Computerization Threatens One Third of Finnish Employment. *Research Gate*. [\(PDF\) Computerization Threatens One Third of Finnish Employment \(researchgate.net\)](#)
- Sartal A., Carou D., Davim J.P. (2020). Enabling Technologies for the Successful deployment of Industry 4.0
- Shaping Europe's digital future. (2021).  
[Europe's Digital Decade: digital targets for 2030 | European Commission \(europa.eu\)](#)
- Stolterman E., Fors A., (2004). Information Technology and the Good Life. *Semantic Scholar*.  
[\[PDF\] Information Technology and the Good Life | Semantic Scholar](#)

Tabrizi B., Lam E., Girard K., Irvin V. (2019). Digital Transformation is not about technology. *Hbr org.* <https://hbr.org/2019/03/digital-transformation-is-not-about-technology>

van Deursen A.J.A.M., van Dijck J. A. G. M. (2009). Improving digital skill for the use of online public information and services. *Government Information Quarterly*. Vol. 26(2), pp. 333 – 340. [Improving digital skills for the use of online public information and services - ScienceDirect](#)

Zavyalova E., Sokolov D., Kucherov D., Lisovskaya A. (2022). The Digitlatization of Human Resource Management: Present and Future. *Foresight and STI Governance*. Vol.16(2), pp. 42 -5. [4-Zavyalova et al - 42-51.pdf \(hse.ru\)](#)

### **Contact**

Dominika Miklášová  
Univerzita Komenského, Fakulta managementu  
Odbojárov 10  
P. O. BOX 95  
820 05 Bratislava 25  
miklasova39@uniba.sk

Ľubica Bajžíková  
Univerzita Komenského, Fakulta managementu  
Odbojárov 10  
P. O. BOX 95  
820 05 Bratislava 25  
bajzikova1@uniba.sk