European Social Observatory

deliverable

The impact of digitalisation on job quality and social dialogue in the public services: the case of Hungary

Ose
DELIVERABLE

Mirjam Dura, Tünde Molnár V, Szilvia Borbély and György Lajtai
ÉTOSZ Kft.

The impact of digitalisation on job quality and social dialogue in the public services: the case of Hungary

DIGIQU@LPUB Deliverable D2.8

Mirjam Dura, Tünde Molnár V, Szilvia Borbély and György Lajtai
ÉTOSZ Kft.

Table of contents

EXECUTIVE SUMMARY

According to the latest DESI 2021 report, Hungary's digital development ranking is among the weakest in the EU-27 (23rd position). While the wider use of digitalisation has considerably increased the efficiency of tax collection, progress in other fields has remained moderate. Hungary's score on public trust in governance is among the lowest, mainly due to its poor performance in public education and public health.

In response to Hungary's low digital performance ranking compared to other countries, the government has prepared the National Digitalisation Strategy 2021-2030, taking into account the DESI evaluation criteria. A key focus of the programme is to ensure an abundant supply of digitally skilled labour for the digital transformation of key sectors of the economy (automotive industry, engineering, services, etc.).

The Hungarian Recovery and Resilience Plan has also made digitalisation a top priority, planning to allocate 23.1% of the total budget to digitalisation.

The web survey (DGQS) carried out among employees and trade union officials in the selected sectors collected both positive and negative observations about the impact of digitalisation on workers. On the positive side, digitalisation has reduced much of the scope for human error, which is an extraordinary advantage for jobs in the hospital sector. Digitalisation in healthcare institutions became particularly important during the COVID-19 pandemic, e.g. telemedicine, teleconsultation, etc. Another positive impact of digitalisation on work organisation in hospitals is reduced demand for staff, a reduction in the typically high number of overtime hours and substitutions, and a more favourable distribution of existing workloads among the workforce.

Workers in the electricity production and distribution sector also mention that digitalisation has brought positive changes by reducing the likelihood of human error, thus reducing the extra time, work and costs of repairs. Smartphones and laptops are increasingly used by blue collar workers too, which enhances their digital literacy and helps them adapt to the rapidly evolving world. Most respondents in the public sector believe that digitalisation has a positive impact on working conditions, public services, employment, reduction of discrimination, personal well-being, job security, productivity and quality of work. This confirms the findings of both the focus group and the interviews that the causes of problems are seen as being other factors, and not digitalisation.

In addition, as artificial intelligence can take the burden of repetitive, monotonous tasks from workers, it can also lead to a reduction in workplace stress. Digitalisation, and the new skills and knowledge it brings, is widely seen as having a positive impact on career prospects and job security.

However, one negative and frustrating effect is that workers' every move can be monitored (such as where they are, what problem they are trying to solve, what materials they are using). Supervision extended by digital tools, or mandatory data reporting on performance, is used to speed up the pace of work. Workers in customer service jobs are often in a race against time as they are expected to solve a customer's problem within a given time limit, for example in five minutes. Team spirit and teamwork are being pushed into the background, while management control over employees is becoming increasingly strong. Stressful jobs are associated with premature burnout, frustration, other health hazards and high turnover rates.

Interviewees saw digitalisation as not affecting working time per se. Working time is regulated by law, as are overtime hours and time frames. Nobody at home can be asked to work overtime, so no remuneration is payable for work done outside working hours at home. According to the interviewees, digitalisation is most likely to affect the work-life balance of managers and senior executives. It has become clear that this group is required to be available outside working hours.

The impact of digitalisation on working time is seen in the fact that it allows cases to be dealt with more quickly so that the time available to the employees for dealing with cases has been reduced. At the same time, office mobile phones, take-home laptops, call forwarding, and access to office emails outside the workplace increase the exposure of all workers. Interviewees mentioned managers who expect their staff to be available outside working hours. The right to disconnect outside working hours is not guaranteed by law or workplace rules. Nor is there an 'obligation to disconnect'.

Working from home makes it more difficult for employees to separate their work from their private life. All interviewees mentioned that working from home has increased the number of hours they spent working. The interviews showed that teleworkers typically do not finish their work immediately after the end of the working day (either because they think 'I would spend this time travelling anyway' or because they are absorbed in a larger task). It becomes particularly difficult to separate work and private life when only one spouse works from home. Similarly, different work schedules in the same households could also be challenging.

Respondents in the public administration sector complained especially about increased working time in front of screens. This has a significant negative impact on physical health (including vision deterioration, bad posture accompanied by neck and/or back pain or sore joints). There was a general complaint that from the occupational safety and health (OSH) perspective digitalisation is interpreted restrictively, only as work in front of a screen. The twenty-three-years-old – and therefore quite outdated – health and safety decree covers only issues such as the screen, keyboard, desk, work surface, work chair, environment, and human-machine interface. There are no provisions in the regulation on protecting workers' psychological and mental health, except for

the employer's obligation to assess psychological risks. Compliance and enforcement of health and safety rules is also an issue of concern as labour inspection and control has been gradually dismantled. Employees' knowledge of the rules does not seem to be sufficiently detailed either, although OSH training is mandatory in all public service jobs. The present survey supports the recommendation that employers should have to carry out an OSH risk assessment procedure concerning the psychosocial/mental burden associated with the introduction of digital solutions, before the introduction of digital tools and methods.

With the expansion of the online space, almost all training in digital literacy is available online, without the need to travel or be present in person. This gives the opportunity for anyone to acquire knowledge and different skills. In most cases, however, employees perceive this as a rather negative change, as the personal touch of the instructor is missing, or mostly missing, from online platforms and the lack of a sense of community means that the appeal of the traditional training courses of the past has been lost. The instructor is also less likely to notice if an issue needs more explanation. Online courses often provide asynchronous, non-tutorial instruction. The downloadable online course materials are worked through independently by the employees, who then take an online test at the end to assess their knowledge. Rather than training, it would be more appropriate to call these courses 'self-education'. Moreover, not all workplaces offer time off to complete the courses, with respondents doing some of the training in their spare time and some during working hours when there is less work to do.

Those who cannot keep up with the pace of change, especially the older generation, find it difficult to adapt and settle in, and can also find it frustrating and mentally demanding to work in a highly digitalised world. According to most of the respondents in the hospital sector, young people are at an advantage as they are already well established in the digital world. It can be clearly seen that where more digital tools are used, such as in the enhanced care units (ECU) and intensive care units (ICU), the age of the nurses is much lower.

Age was clearly felt by interviewees to be a determining factor in adapting to the requirements of digitalisation. Managers must therefore explicitly address the issue of intergenerational cooperation, as differences between generations can create friction in everyday life, which needs to be managed carefully. It is therefore particularly important that employers invest significant tangible and intangible resources in the development and training of older employees. In digitalised workplaces, the need for development and the ability to fit into a team are important criteria, which, combined with a higher salary requirement, are less likely to be met by older candidates. It is becoming increasingly common for employers to prefer to employ older people mainly as subcontractors, precisely because of the problems of intergenerational integration.

Interviewees did not see a positive link between rights enforcement and digitalisation. Currently, trade unions are not involved upstream in the decision-making process about digitalisation. In the best cases, ex-post criticism has led to corrective action. There is no resistance to the introduction of digital technologies as such, but lack of preparation and excessive administration make adaptation difficult. In developing a digitalisation strategy and implementation plan, stakeholders should consider that the process and the tools are an opportunity that can best be exploited if the workforce is prepared to the highest possible standard.

There are very differing levels of digitalisation in the different areas of the public administration. Trade unions demand uniform access to digital tools and uniform provision of high quality training opportunities. This also requires the provision of financial resources to local and regional municipalities, including the replenishment of resources which have been severely cut or withdrawn by the central government on several occasions in the wake of the pandemic.

In terms of the link between the exercise of advocacy rights and digitalisation, digitalisation has facilitated trade unions' activities mainly in the area of organising and activating their members: they publish online newsletters, which do not necessarily reach only their members, they run websites, use social media, organised online voting during the COVID-19 pandemic, meet via video-conferencing, thus saving a lot of travel time and meeting in larger numbers. They have easier and quicker access to information on legislation and amendments to legislation that can be used in advocacy, and they can store materials more easily. The use of digital tools is speeding up the opinion-forming process, involving more people in consultation on legislation.

At European level, important issues and challenges to be addressed include the impact of digitalisation on the labour market and the digitalisation of work processes. Questions to be raised could be for example the following: *'To what extent and in what areas can digitalisation replace existing jobs?'; 'How are digitalisation, new tools and methods received by those working with it/them and by users?'*

One of the common issues to be tackled at European level could be the development and harmonisation of online courses on new digital tools or processes, possibly including the creation of high-level animated online learning materials and courses, study visits, exchanges of experience, and the extension of existing frameworks (e.g. Erasmus).

International cooperation can be particularly effective in the field of digitalisation-related cyber defence. For public services, the protection of digital systems, data, strict control and dedicated data access are essential for both users and service providers. Protection must also cover the supervision and controllability of workers using digital tools. The international aspects of cyber security are particularly relevant in the energy sector, where electricity networks extend across

national borders. Therefore, in the near future, there will be a need for even closer cooperation, sharing of system developments, innovation activities and cross-border projects, in order to make the system as efficient and integrated as possible.

SECTION 1. INTRODUCTION

1.1 Purpose of the research

To assess the impact of digitalisation on job quality from the perspective of trade unions but also of public service workers themselves. The intention is to identify the changes affecting the nature, content and implementation processes of the tasks involved in the jobs of public services workers, as well as the outcomes for the workers themselves. To explore how the challenges and opportunities for job quality generated by the digitalisation of work in public services are included and addressed in the dynamics and practices of social dialogue at national and sectoral levels in three sectors in Hungary.

1.2 Digitalisation: state of play and national strategies

In Hungary the public sector plays a more important role in the national economy than in other countries in the region. The contribution of public services to gross domestic product (GDP) is around 8%, while in the V4 countries (McKinsey 2020) this proportion is between 5.7 and 7%.

Despite this, the productivity of the Hungarian public sector is rather low compared to other European countries. The low productivity is also highlighted by the Worldwide Governance Indicators of the World Bank (2022), on which Hungary scored only 72 out of 100 for 'government efficiency' while for example its neighbouring country Austria achieved 94 points. According to the Global Competitiveness Report 2020 (World Economic Forum 2020) published by the Word Economic Forum, Hungary – in 46th place – was among the lowest ranked countries for public trust in governance. This poor performance was mainly the consequence of the low scores acquired in public education and public health. While the wider use of digitalisation has considerably increased the efficiency of tax and social contribution collection, progress in the quality of public services in other fields has remained rather modest. Although digital access to government services and information has been improving, lack of trust in public bodies may discourage the participation of citizens in e-government programmes.

1.2.1 Latest DESI Index (and main factors explaining the ranking of the country)

According to the European Commission's latest Digital Economy and Society Index (DESI) report (European Commission 2021a), Hungary's digital development ranking is among the weakest in the EU27. In 23rd place, the country is ahead of only Poland, Greece, Bulgaria and Romania. Moreover, this position has been virtually unchanged since 2014 (IVSZ 2021).

Figure 1.   Digital Economy and Society Index (DESI) 2021 ranking

	Hungary		EU
	rank	score	score
DESI 2021	23	41.2	50.7

Digital Economy and Society Index (DESI) 2021 ranking

■ 1 Human capital   ■ 2 Connectivity   ■ 3 Integration of digital technology   ■ 4 Digital public services
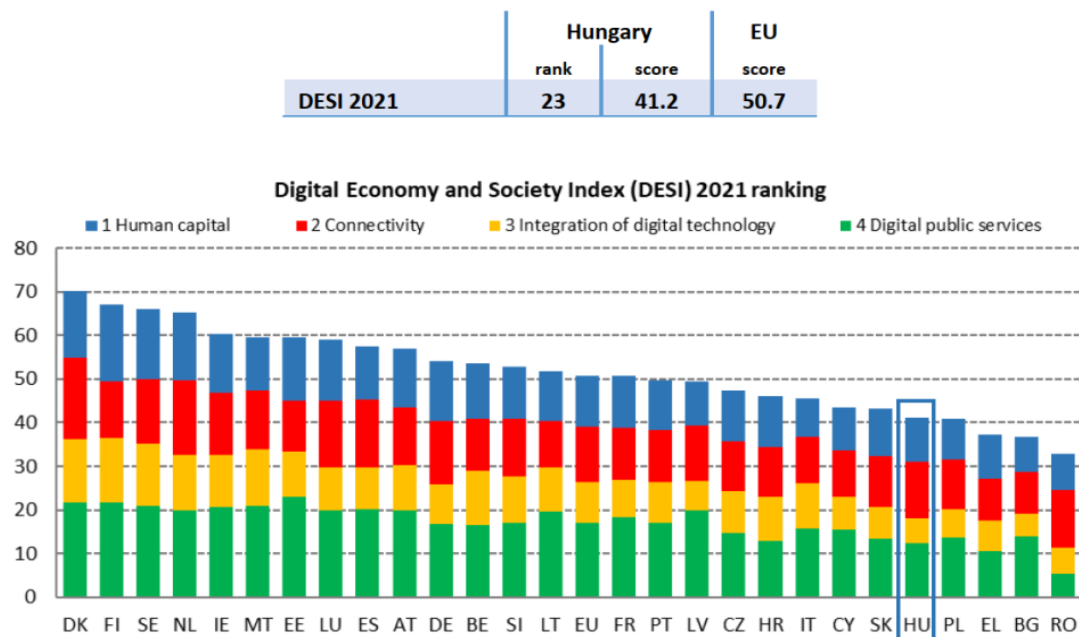
Source: European Commission, 2021a.

According to the opinion of the Association of IT Entrepreneurs on the DESI 2021 Report (IVSZ 2021), the reasons behind the low Hungarian performance in digitalisation are the low average level of digital skills and the slow introduction and low usage rate of effective digital solutions (World Economic Forum 2016) both in the public and the business sector. Hungary's position on the 'Human capital' dimension - which measures the digital and ICT literacy of the population - has dropped three places since 2014 and it is now in 22nd place. On the 'Digital public services' dimension, measuring the availability and use of digital public services, Hungary has dropped one place, while on the dimension 'Integration of digital technologies' the ranking has remained unchanged at the second worst place. Fewer than 50% of the population have basic ICT skills, while the proportion of internet users has reached 80% due to the evolution of mobile devices and smartphones.

The DESI report was accompanied by the 'Women in a Digital World' summary studying the internet use, digital skills, professional qualifications and employment of women in the Member States. Hungary was 24th in this ranking, ahead of only Poland, Bulgaria and Romania.

There are significant inefficiencies in the sharing of the vast amount of data available to the state with businesses and citizens; remedying this would improve both the quality of governance and the state's image in the minds of citizens and businesses. Although a number of studies (European Commission 2017) underline the importance of open data for economic growth, innovation and the

development of products and services, Hungary unfortunately withdrew from the Open Government Co-operation in 2017.

The 'Open Government Partnership' aims to promote good governance, strengthen democracy, and widen the use of digital technologies for social development. The initiative was founded by the government of the United States in collaboration with seven further countries and today the partnership consists of more than 70 countries worldwide. By implementing common initiatives and programmes, countries undertake to increase transparency, citizen participation, civil society dialogue, anti-corruption, accountability and to strengthen technology and innovation.

1.2.2 National digital strategy

The Hungarian government has recently adopted the National Digitalisation Strategy for 2022-2030 (Ministry of Innovation and Technology, Ministry of Interior 2020). This document, also taking into account the DESI evaluation criteria, sets national targets and activities in the field of digitalisation. The strategy is a timely response both to the country's poor performance in the digital environment and to the strategic objectives of the EU ('Smarter Europe' is one of the five priorities ([1]) of the European Union's regional and cohesion policy for the period 2021-2027 – this also highlights the key importance of digitalisation).

In line with the outcomes of the 2021 DESI analysis, Hungary has placed the digital economy, education and digital public services at the heart of its competitiveness and modernisation efforts. A key focus of the programme is to ensure an abundant supply of digitally skilled labour for the digital transformation of key economic sectors (the automotive industry, engineering, services, etc.). The strategy also calls for a significant increase in the proportion of workers with a high level of digital skills in non-IT professions, in the number and output of vocational training courses based on the use of ICT solutions, and for a review and improvement of digital content in vocational, higher and adult education.

Enhancing lifelong learning is essential to create the conditions for the digital economy in the labour market. The emergence of technology-intensive, digitalisation-related professions, training forms and channels in adult education structures should be strengthened by all available means. Priority should be given to retraining and upskilling of inactive and employed people, with a focus on on-the-job training. In the first phase of the Digital Workforce Programme (DWP), the focus should be on short-cycle, non-traditional ICT training programmes.

---

1. According to the EU Multiannual Financial Framework for 2021-2027 (European Commission 2020), the EU should become (1) smarter, through innovation and digitisation; (2) greener; (3) more connected; (4) more social; and (5) closer to citizens.

The Hungarian Recovery and Resilience Plan (Government of Hungary 2021) has not yet been approved at the time of writing. However, its 2021 version makes digitalisation one of its top priorities, with the aim to close the gap with the EU average in this field. The administrative consultation on the National Digitalisation Strategy (NDS) is ongoing. It sets ambitious targets for the next decade, considering RRF resources as a key instrument. In line with the RRF expectations, all components support digitalisation reforms to some extent, and it is planned to allocate 23.1% of the total budget to digitalisation.

This allocation includes:

- The highly skilled and competitive workforce component (digital transformation of education and research, including the creation of conditions for 21st century vocational education and training and the development of digital curricula).

- The energy (green transition) component (digital system management, traditional and smart grid upgrades for distributors, harnessing data through digital technologies to support better forecasting of the supply-demand balance and better regulation of energy production).

- The health component. (Connecting and assessing data generated in the health sector and based on this, to prevent and detect diseases early and develop personalised health services. It will also include eHealth functions for the general public, the development of centralised mobile health applications, etc., and the implementation of a health telecare digitalisation programme for the safety and protection of the lives of people with reduced self-sufficiency).

- The non-policy component, the digital switchover concerns support to the public procurement process, upgrading of the cooperation systems of the Public Prosecution Service, facilitation of data-driven decision making and the legislative process. In the area of public procurement, the main objective is to simplify the bidding process for small and medium enterprises, through a digital platform.

To support a data-driven decision making and legislative process, legislative and strategic decision-making will be digitalised, allowing the interconnection of databases and the visualisation of the results of analyses through infographics, or other data visualisation techniques.

The extension of the automated administrative decision-making system will increase efficiency and transparency and reduce the risk of irregularities. Administrative decision-making is carried out without human intervention, thus reducing the potential for corruption. The selected areas - land registry, motor vehicle administration, simplified naturalisation - are all areas at high risk of corruption.

The National Digitalisation Strategy 2022-2030 is linked to the use of EU funding and therefore identifies monitoring activities and institutions for implementation. However, with regard to monitoring it does not mention employee representation. The NGOs involved in monitoring activities are exclusively business representative organisations, associations and scientific and professional organisations. Organisations representing labour and employees are not included among the stakeholders monitoring the implementation of the strategy, nor were they consulted in tripartite or bipartite forums prior to its adoption.

1.3 Research on the impact of digitalisation on job quality at cross-sectoral level: state of the art

The impact of digitalisation on working conditions

According to a forecast based on international methodologies (McKinsey 2018), automation will have a significant impact on one million jobs in Hungary by 2030. The potential for automation is highest in middle-income jobs characterized by a high proportion of predictable and repetitive tasks. In addition, many low-skilled activities could be automated too - depending on the available technologies and economic returns.

However, it should be borne in mind that - due to the relatively low labour costs in Hungary - some employers have no interest in accelerating automation.

Predicting the impact of digitalisation on workers is even more difficult as it is strongly influenced by the country-specific characteristics of the institutional environment, the functioning of industrial relations at workplace, sectoral and national level, labour market adjustment institutions, the education and training system and labour law provisions protecting workers.

According to a recent study (Hortovanyi et al. 2020), the continuous development of office and ICT tools (including the spread of laptops and tablets) and the digitalisation of work make ICT skills particularly important in education – and not only in higher education but in secondary and vocational training schools too. Moreover, training plays an important role in the development of smart factories and smart jobs while, parallel to this, jobs – beyond vocational skills – increasingly require ICT skills, including the openness and flexibility to use new ICT tools.

Research outcomes of the European Trade Union Institute (ETUI) on the impact of digital technologies on physical and mental health of workers in Hungary (Szalavetz 2021) show that digital technologies are not suitable for reducing the monotony of work. Rather, digital technologies may impact monotony in various ways: a) no change in routine; b) increase in routine; c) transformation of routine; d) reduction of routine.

The research concludes that as a result of the introduction of digital technology, enrichment in the content of work, improved quality of work and reduction in the routine nature of work tasks occur

mainly for better skilled workers. Hence, the positive effects of digital technologies will only be realised if workers are already skilled enough to be further trained and thus participate not only in digitally supported but also in digitally augmented, high value-added activities. Positive changes in the nature of work need reorganisation of work, changes in working conditions and job roles, and upskilling of workers, therefore requiring conscious organisational and human resource management measures. Without these conscious managerial interventions, the introduction of digital technology, rather than adding more content to physical work, will lead to a reduction in working hours and/or technology-related redundancies.

Despite the relatively low labour costs in Hungary, companies still could benefit from the use of digitalisation and robotisation as major boosts to company productivity. The role of retraining in adjusting to new and digital technologies is therefore particularly important. At present, Hungarian labour law does not contain any rules regarding an obligation for the employer to provide training to their employees – not even in cases where retraining could avoid dismissals due either to mismatches of skills or to operational changes in the company. However, proper amendment of the Labour Code and introduction of an obligation for employers to provide (re)training in certain cases could – at least partly – prevent dismissals in two ways. First, if a certain job is to be affected by future digitalisation and automation, the employee should be provided with retraining and given the right to an intra-corporate transfer. If, then, an employee – in spite of the training provided – is unable to use the new technology at their job, the employer should be obliged to offer another job within the company (Horváth and Petrovics 2021).

SECTION 2. IMPACT OF DIGITALISATION ON JOB QUALITY

Section 2.1 Electricity production and distribution sector

2.1.1 Overview of the sector

Only 10% of the electricity produced in Hungary comes from renewable energy sources (mainly solar and wind). The total length of the Hungarian electricity grid is 160,000 kilometres. In many places the electricity is already transmitted by so-called smart grids, which transmit the electricity to consumers as efficiently as possible, minimising energy losses ([2]).

In 2020, the gross electricity generated in Hungary was equivalent to 1.3% of the total production value of the EU27 (Hungary, in this respect was 16th in the ranking.). The economic performance of the sector is not significant (around 1.7%): it produced around 0.5 billion HUF of the total GDP (30,222 billion HUF) in the 1st and 2nd quarter of 2022.

Despite being a strategic industry that is operating continuously (even in extreme and force majeure situations), the number of employees in the sector was cut in 2020. The number of employees in the electricity sector was 23,785 on average in 2021, i.e. approximately 0.75% of the total number of employees in Hungary. Almost all employees (around 98%) work full-time in the sector, which is well above the national average (89.3% in 2022). The proportion of white-collar workers in the sector is slightly higher (55.5% in 2022) than of blue-collar workers.

From the labour market perspective, one of the major problems of the sector is finding and keeping new, younger workers. This challenge is also underlined by the results of the DIGIQUALPUB Web Survey (hereafter DGQS) ([3]): only 14.1% of the respondents were younger than 35.

Despite the low number of respondents (92 in total), the answers to the DGQS illustrate the characteristics of the sector quite clearly. The main findings of the survey are as follows.

- The sector has a significant gender gap - almost two-thirds (64.1%) of the employees are men.

- The average educational level of employees is higher than the national average (53.3% of the respondents had university qualifications while only 1.1% had a primary or lower-level qualification). Around one-third (31%) of the respondents described themselves as highly

---

2.   https://mvm.hu/hu-HU/Rolunk/AzMVMCsoportrol/Tudastar
3.   The survey had a very limited number of respondents from this sector (92 respondents); the results cannot therefore be generalised but provide some information on workers' perceptions in the sector.

skilled professionals and technicians, 28.7% as skilled professionals and 13.8% as skilled technicians.

- Companies in the electricity sector are mainly (64.1%) public-owned, showing the economic priority given to energy supply.

The survey was followed by a focus group discussion ([4]) with ten participants. They all agreed that the workload has increased significantly in the past few weeks due to the consequences of the energy crisis (such as changes in regulations, in user habits, in billing methods and because of the constant monitoring of the market and economic situation). Moreover, six out of the ten focus group participants reported that their working hours have become longer in recent weeks.

2.1.2 History and patterns of digitalisation in the sector

Although digitalisation started 10-15 years ago in the energy sector, this process has accelerated only in the last few years. At the same time, the Hungarian energy sector is far from being at the forefront of this development, and is, according to industry opinions, rather slow to adapt to the changes (Rostás 2020).

In the 2000s, digital solutions were used to collect, store and analyse information within companies (from simple spreadsheets to GPS beacons in cars), focussing on efficiency issues. The optimal calculation of routes saved both time and costs for the company, as less fuel was needed, and employees were able to do more work per unit of time.

In the last three-five years, the flow of information, data collection and analysis have become the most important goals of digitalisation. For this reason, internal corporate management systems and an internal corporate information communication platform (intranet) were created, combining, for example, the most important and up-to-date corporate information of public interest, training materials and technological and work instructions (INT4 and INT8).

In recent years, customer focus and the creation of a user-friendly, informative website and mobile application have, as well as enhancing the customer experience, become increasingly important, representing the third stage in the digitalisation process. Today, almost all websites, including those of energy companies, use a so-called chat-bot to help customers navigate the site and answer their questions (INT7). These developments not only make a positive impression on users but also increase the efficiency of services and save costs by significantly reducing the number of phone calls or emails to the customer service department. By partially replacing the work of customer service officers and reducing the number of face-to-face contacts for telephone

---

4. 70% male and 30% female, 10% under 30 years old, 20% aged 30-40, 30% aged 40-50, and 40% over 50 years old. Due to the tight working schedule and the difficulty in finding members for the focus group, the sample of participants cannot be considered representative.

enquiries, artificial intelligence (AI) can identify the reason for the caller's enquiry, ask questions to be answered and provide the caller with guidance based on the interpretation of the answers to the questions. The energy sales companies' mobile app makes it easy to record meter readings (even by taking a photo), retrieve historical consumption data, view bills and pay the balance online, making it easy to track all the important information related to the service (INT3).

84.9% of the respondents to the DGQS use mobile devices (such as laptops, smartphones or tablets) to plan/schedule work tasks (66.3%), for communication (66.3%), to measure data and collect information (58.7%) and to monitor performance (54.3).

Digital machines are less frequently used (only by 24.4% of the respondents). Those who work with such machines use them mainly for measuring data and collecting/organising/retrieving information (31.0%) or monitoring and controlling parameters of equipment or persons (28.6%). Some of them (21.4%) use digital machines to perform repetitive routine tasks or to lift/move/change the position of heavy loads or persons (16.7%).

Information and communication tools are used by almost everybody. 98.8% agreed that they use internet and other networks regularly, including e-mail (sending and receiving e-mails was the most popular answer – 87.0%). Web-based applications are also used frequently. 59.8% used these applications to exchange information with a partner's network and 53.3% for online training. During the focus group discussion, a new approach emerged: *'Due to the energy crisis and its consequences information is changing day by day - digital tools are essential to keep track of it'* (FG3). Nowadays it is quasi expected to have a smartphone at work (FG8) and some people cannot imagine life without digital devices (FG9).

2.1.3 Work organisation

One of the results of digital evolution is that instructions for daily work are available on the intranet site of the company. Mobile technicians receive a specific itinerary with an optimal combination of tasks. (The system also takes into account where each worker starts from and, based on that, it creates the pairs for the day and the route to be taken). The GPS built into the vehicle and the mandatory data reporting on the work allows very tight control by the shift supervisors and the management, who receive highly accurate reports on work efficiency (INT2 and INT9).

A similarly tight working pace is also typical for customer service jobs, where employees have to answer a set number of customer calls and respond to a set number of email enquiries. Their work performance can be measured, and they can also check at any time how much of their daily requirement has been completed (INT2 and INT5). For some jobs in certain electricity companies, the system sends a warning if no keystrokes or clicks have been received after a few minutes

(INT2). Some work processes have become automated or digitalised, which in some cases means a faster process, but in others a process which is even slower than the previous method. For example, time recording in SAP Software (or in other integrated corporate applications) has become much simpler (INT1), but the work with the contracts is much slower because sometimes 7-8 electronic signatures are needed to authenticate the document - which takes time. However, some of the interviewees found the electronic signature method faster than the non-electronic process (INT4 and INT10).

In summary, team spirit, teamwork and physical contact are becoming less and less important as digitalisation advances, while surveillance of employees is becoming more and more essential (INT9). *'Just because we can do our jobs faster through better work organisation, it does not mean that we work less, we only have less time to do a task'* (FG10).

2.1.4 Working time

In general, digitalisation leads to enhanced work efficiency, i.e. workers are able to perform more work in the same amount of time. Although the conditions for teleworking were already in place before the COVID-19 pandemic, the complete changeover took more than two weeks. Due to the strategic nature of the energy industry and the extremely specialised skills needed in some positions (for example, some key posts require two years of training abroad), it was vital to avoid physical contact as much as possible. For this reason, a significant proportion of employees worked remotely during this period. In addition, the building was strictly closed. Apart from those on duty, no one was allowed to enter the headquarters and soldiers were posted at the entrance (and were not allowed to enter the building either). The most important development from the viewpoint of digitalisation was that IT upgrades planned for the next two-three years were implemented in just a few days and all employees were given laptops and access (electronic tokens) to essential software.

At the same time, radical changes took place in the work (and life) of those working in jobs requiring 24-hour security and supervision. As daily shifts would have increased the risk of infection, two-week shifts were introduced. In practice, this meant that the assigned workers stayed at the workplace for two weeks in a row and were not allowed to leave it for any purpose. During this time the employer provided them with 'living quarters' (with all basic equipment, including recreational facilities - such as television) and meals.

The main challenge of teleworking for employees was to separate their work from their private life and to find the appropriate balance between the two. According to the interviews. employees typically did not finish work by the end of the working day (either because they thought *'I would spend this time travelling anyway'* (INT2) or simply because they wanted to finish a longer task). Some of the respondents worked even in the evening or at night i.e. checked or answered e-mails,

tried to catch up on work, finished their remaining tasks or fulfilled additional short tasks recently received.

The results of the DGQS showed that 50-80% of the respondents did not experience any changes in their working time as a consequence of digitalisation. For example, 80% of the attendees agreed that the number of working hours set in their contract did not change, so digital tools did not have an impact on their working time. However, 12% experienced some increase in the number of working hours while 5.3% felt that their working time increased significantly. The amount of working time in unsocial hours has increased (by 18.4%) but in parallel 19.7% agreed somewhat that the time spent commuting to and from the workplace has decreased, while 26.3% strongly agreed.

Work-related phone calls occasionally occurred after working hours, which also contributed to the increase in working time. Often it was not explicitly the length of time spent on phone calls or answering emails which was disturbing, but rather the fact that it fragmented the time spent with family and friends or the period of mental and physical recharging (INT8).

2.1.5   Health and safety and outcomes for workers

There are a plenty of new (especially digital) technologies in the electricity sector, which help households or employers to live and work more safely than before.

For example, 10 years ago a very important change was made to enhance the security of the grid systems. In order to prevent system overloads (caused by large fluctuations in electricity consumption) in the highly centralised electronic system, decentralisation of the electricity transmission systems began, and the development of smaller networks to relieve the load on the main grid. As a result, the main distribution points have been equipped with smart meters to give a more accurate picture of consumers' habits and to coordinate the different systems to ensure a more balanced and even consumption of electricity, to prevent system overload. (INT5).

On the other hand, electricity companies try to use digital solutions to perform the most dangerous tasks carried out previously by workers. A good example for this is a new type of vehicle, which can assess the condition of these grids without having to climb (the user - instead of climbing up close to the high voltage grid - only needs to attach the vehicle to the grid and it can measure the power surge) (INT1).

Stressful jobs can also lead to premature burnout, frustration, high turnover rates and other health issues. These are not only harmful for the employee, but also have a negative effect on the employer, given the high costs of recruitment and training in addition to the skills lost with the senior employee (INT1).

Some employees (especially from the older generation) feel that they cannot or cannot entirely adjust to the quick changes, which may lead to frustration and mental stress in a highly digitalised world (INT4 and INT5).

Working longer and longer hours in front of screens has a significant negative impact on physical health: vision deterioration, bad posture in the absence of a proper office chair and wrist rest, and/or joint problems. The outcomes of the DGQS confirm this, as respondents reported vision problems (28.4%), back and neck pain (21.6%) and physical fatigue (15.9%). At the same time, the mental health issues suffered were mental fatigue (19.3%), stress (17.1%), lack of motivation or burnout (13.6%), and isolation or distress (9.1%). 80% of the focus group participants agreed that regular use of digital tools made their vision worse while 80% had back pain and 90% felt that their work is stressful.

2.1.6 Skills and learning

Except for some key positions where training cannot be provided in online form, most of the training already takes place online (for example, the annual occupational health and safety and fire security training). Online training is implemented via an intranet interface and is followed by an online test. '*For a visual kind of training program, the online education might be better but it is much harder to ask if we do not understand something*' (FG1).

Another advantage of online training is that employees can easily enter the completed training sessions and their details (completion date and results) via the intranet. Additionally, in the case of courses that are subject to continuous renewal, the online system sends an automatic reminder of the need to update skills.

While most employees enjoy the flexibility of online training (they can choose the date and the starting time according to their preference), those who are less familiar with the digital world miss personal training. Older people find it harder to complete or pass online tests, especially if they contain effects that are obvious to the younger generation who grew up in a digital world (INT6).

In order to avoid personal contact during the COVID-19 pandemic, training courses were held online. While the switch to online training was favourable to the majority of employees, some of them found this change rather negative. For example, due to the lack of personal interaction and non-verbal signs, instructors did not know when further explanation was needed (unless students told them explicitly). Besides this, some participants mentioned the lack of community feeling and that they missed being inspired by the personal commitment and excitement of the teacher. This is particularly the case when lectures provided by a teacher are replaced by self-study solutions. A common example is that students have to read a text – whenever best fits in with their own

schedule – which is followed by a test to check the knowledge acquired. These online teaching materials usually contain pictures, moving elements, attention-grabbing and playful activities in order to keep the employee's attention (INT5).

According to the DGQS, respondents do not feel that their work is now better than before (60%) nor that they provide a better service (64%). 43.2% disagreed with the statement that they were more confident about their future prospects than previously and only 4.6% agreed strongly.

2.1.7   Reconciling work and personal life

One of the positive outcomes of digitalisation is the freedom related to the fact that work (at least some kinds of work) is no longer connected to a 'fixed location'. Teleworking, for example, could be a realistic option for white-collar workers while blue-collar workers could benefit from the use of smart meters.

These employment patterns were strengthened during the COVID-19 pandemic. In the light of the positive experiences with telework, energy companies decided to follow this path and worked out different hybrid work solutions. 19.3% of the respondents to the DGQS could do teleworking only because of the COVID-19 pandemic. At the same time 31.8% reported that they could do all and 28.4% that they could do part of their work remotely regardless of the pandemic. The proportion of those whose work cannot be done remotely was 9.1%. (for example, maintenance workers and technicians who need to be physically present).

Half (50%) of the employees are allowed to work remotely one day a week, 17.1% two days per week while only 5.7% can do teleworking the whole time.

Before the COVID-19 pandemic, telework was rather a privileged option (for people, for example, in some key positions for whom the place of work was irrelevant and who were not required to commute long distances on a daily basis). Most energy companies, then, introduced teleworking during the pandemic. In addition, some employers introduced A and B weeks, dividing employees into two groups. The two groups worked alternately remotely and at the workplace, in order to reduce personal contact and prevent infection. Another option was to introduce a 'telework bank' (maximising the number of hours of teleworking) and employees could request to take up this option ([5]). (INT2)

---

5.   E.g. a child falls ill, or he or she wants to take care of an official matter - no need to take leave, which gives the employee more flexibility and can improve his or her attitude and loyalty to the employer.

Despite its flexibility, teleworking also has its risks. Since the employer has less control, strong self-control is needed - for example to prevent employees arranging private matters during their working time, resulting in them catching up by doing overtime or working unsocial hours.

> 'Some people cannot sleep if they are not exhausted, so it is a ritual to watch TV or keep looking at their smartphones in the late night. In this case it is inevitable to look at your emails for example' (FG4).
>
> In a home environment, it is much harder to separate home and work and tell how much time a worker is spending on home tasks and how much on work. Women in particular tend to do household work during the day and therefore work after the official working hours, even at night in order to finish their daily work (INT6). It becomes particularly difficult to separate work and private life when only one spouse works from home. As reported in the interviews, some households found it challenging to accept different working patterns within the family (teleworking after official working hours while the other has already finished their work, or different work schedules) (INT4).
>
> These situations have led to conflicts in many cases in the balance of work and family life. Employees therefore had to find different solutions (for example insisting that they would only work in official working hours, not working/answering the phone/checking emails after a certain time (for example after 6 pm) (INT6).
>
> It is clear that a high level of awareness is required to find the right balance. These questions are expected to become even more important in the future and it's not excluded that the number of training courses and coaching sessions on this issue will increase in the near future (INT3).

The results of the DGQS are similar: 53.4% of the respondents said that digitalisation did not affect their work-life balance or that they experienced only minor changes in the number of working hours, and that working time did not influence the time spent with their family.

2.1.8 Career prospects and employment security

With the expansion of the virtual space, almost all kinds of training are available online, without the need to travel or to be present in person, which gives everyone the opportunity to acquire knowledge and different skills. Workers with advanced digital skills (or at least with a willingness to develop in this field) are more and more valuable in the labour market (FG7). Larger companies are making increasing efforts to fund education and training in order to develop employees' skills - although mostly this is limited to management level. From the employer's point of view, mandatory training (such as occupational health and safety training, fire safety training, or driver training for

employees) is no longer an additional cost; it is a one-off cost and once prepared digitally it is available for all employees (INT3).

Strong emphasis is placed on keeping the training material up-to-date every year, especially for recurrent training (to avoid boredom) and when, for example, a change in legislation needs to be followed up.

However, the disadvantage of digital training is that the employees cannot ask questions and receive answers immediately. All employees are provided with the same information and employees who are more interested in the subject do not have the opportunity to gain a deeper knowledge on it (unless another version of the training is available, and it is paid for by the employer (which is very rare) (INT8).

An interesting outcome of the interviews is that, in energy companies, there is no on-the-job training at all (when a recently hired employee is tutored by a senior colleague in order to gain practical knowledge of the tasks and work processes). This also leads to the flattening of knowledge levels. In addition, test-type examinations do not provide accurate feedback on the candidate's real knowledge (INT9).

2.1.9   Workers' rights

Trade union activity was hampered by the previous restriction on personal presence due to the COVID-19 pandemic and the increased rate of teleworking since then; four out of five respondents said that they felt these factors affected membership in a negative way, as the sense of community was missing, team spirit was eroded and individual instead of union interests came to the fore.

2.1.10   Conclusions on the sector

Digitalisation – as an inevitable factor of development – has led to several positive changes. It eliminates the scope for human error, thus reducing the extra time, work and costs of repair (for example, when reading electricity consumption, AI monitors data from the past few months and indicates if the current consumption is different from the usual reading, while at the same time it can automatically enter the electricity meter reading from a photo, recognising the digits). Many jobs have been made easier and faster (for example, AI calculates the shortest route for technicians arriving on site and filters out callers who have a pre-loaded answer to a question or request).

Increasingly, blue collar workers also have smartphones and laptops, which enhances their digital literacy and helps them adapt to the rapidly evolving world. Energy-efficient solutions (such as

smart grids) not only protect against the possibility of a major power outage, but also seek to minimise the environmental impact.

On the negative, frustrating side, for example, the system monitors every step of the mobile technicians (where they are, what problem they are trying to solve, what materials they are using), and in most cases, the customer service staff are also in a race against time (often they have to solve the customer's problem within a given time limit, for example in five minutes, and the call cannot take longer). Social interaction is also increasingly taking a back seat; whether because of physical distance or simply because it is quicker, many people prefer to have online meetings or telephone conversations rather than face-to-face consultations. Due to the outbreak of the COVID-19 pandemic, when an employee worked from a home office, the employer is unable to check that working conditions are suitable for less strenuous work (INT1 and INT5).

Section 2.2 Public administration sector

2.2.1   Overview of the sector

The Hungarian public administration sector (NACE 084.1.1.) employed 111,623 people in the last quarter of 2021, representing 2.4% of the total domestic workforce. Only 4.8% of the employees work part-time (less than 60 hours per month). There is a very high proportion of white-collar workers within the sector (94.9%) while blue-collar workers make up only 5.1% of the total number of employees. In 2022 the average net salary of full-time employees in the public administration sector (NACE 084.11) was HUF 357,184, i.e. 106.9% of the national average ([6]) 21. According to the data on gender breakdown (which is only available for NACE 084 level), 58% of the public sector employees are women and 42% men. Union coverage cannot be assessed accurately due to the lack of official or verifiable data on trade union membership. However, based on membership data provided by the head of the sectoral union ([7]) 22 , union coverage is estimated at around 17% in local and 5.8% in central government. Strikes in local public administrations in recent years have increased unionisation.

The Hungarian public administration is a dual system, with a central and a territorial level.

Central government agencies have jurisdiction over the whole country and perform a national regulatory-executive function. The central level of government includes ministries, central government agencies, and the government itself. The territorial level of public administration consists of county level government offices, district level government offices and district level customer service offices (the so-called 'government windows'). These bodies now deal with a wide

---

6. Data source: Hungarian Central Statistical Office (15/03/2022).
7. Data source: The president of the Trade Union of Hungarian Civil Servants and Public Employees (15/03/2022).

range of state administration tasks, since the reorganization of the public administration in 2013 ([8]).

Alongside the central and regional administrations, there is also a system of self-government, made up of county and local level municipalities and their institutions. These organisations are responsible for the autonomous and democratic management of local public affairs and the exercise of local public authority in the population's interests. According to the Act on municipalities ([9]), their tasks include the provision of public services and the operation of local institutions (Hajas et al. 2022). The right to local self-government is vested in the community of voters concerned.

The DGQS was completed by 146 respondents (of which 57% were women). The survey was preceded by interviews. Interviewees represented different levels of the public administration. Four of them work in the central public administration (two of them in ministries and two in central offices); one of them in the territorial state administration (in a district-level government office); four of them at municipalities (at local level, in mayors' offices); while one of the participants is a full-time head of a sectoral trade union federation. In terms of educational attainment, 83% had a university qualification and 14% secondary qualification (9% upper-secondary+ 5% lower secondary). Slightly more than one-quarter (26%) of the respondents categorised themselves as highly skilled professionals, 59% as skilled professionals and only 11% belonged to the 'lower skilled technician' category. While 94% of the respondents were civil servants, only 4% worked with a standard employment contract. Almost everyone (98%) worked full-time and 94% had a permanent contract. The age distribution of the participants was as follows: 34% were between 45-54 years old, 26% between 35-44 years old, 22% between 55-64, while 13% were under 34 and 4% over 64 years old.

The survey was followed by a focus group discussion conducted in the municipal office of a city of 20,000 inhabitants in Western Hungary, with ten people working in the office and its institutions. A representative sample was not possible.

2.2.2 History of patterns of digitalisation in the sector

ince January 2018 - based on the e-Administration Act - online administration has become obligatory for businesses and an option for citizens ([10]). Practically, this means that all relevant public services are available online and the most important ones have their own structured online forms, online applications or applets. All other services are available via the e-paper online form service, which allows users to submit authenticated electronic documents. The development of

---

8. Before 2013, a significant proportion of these tasks were carried out by the notary, the mayor or the mayor's office (i.e. the municipal administration).
9. Act 189 of 2011 on Local Municipalities in Hungary.
10. Act No CCXXII. of 2015 on the General Rules for Electronic Administration and Trust Services.

dedicated and structured online forms is ongoing as well as the replacement of old electronic forms with more user-friendly ones. In 2021, 57% of the population (approximately 5.4 million persons) owned an e-ID card ([11]).

According to the 2021 DESI Index, Hungary is characterised by a medium level of penetration and a medium-low level of digitalisation. The country is part of the 'unexploited eGov scenario', i.e. countries that may still be in an ongoing phase of digitalisation but with a high number of citizens already using eGovernment services. The index shows that the openness of data and information is significantly below the European average. The eGovernment Benchmark Report (2020) is not much more encouraging than the DESI Index. Among other aspects, the transparency score is ten percent below the EU average.

Hungarian e-government strategies ([12]) do not include concrete action plans. Implementation is driven mainly by institutional strategies, interests or even individual ideas. The situation is further

---

11. Source: Digital Public Administration Factsheet Hungary, 2021, data of 31 March 2021.
12. eGovernment strategies: the eGovernment Strategy for the Public Administration and Public Service Development Strategy, which is the backbone strategy of the Operational Programme for Public Administration and Public Service alongside the National Infocommunications Strategy.
   Public Administration and Public Services Development Strategy 2014-2020
   A programme for the development of eGovernment published in 2015 for the development of database harmonisation, improving the interoperability of IT systems, modernisation of records, elimination of data and process redundancies, IT support for internal processes, development of internal systems, ensuring secure operating conditions; and IT support for customer-oriented public administration
   Public Administration and Civil Service Development OP (KÖFOP) 2014-2023
   Under this programme, Hungary is to invest over 935 million euros, including nearly €795 million from EU funding (75.7 % from the European Social Fund and 24.3 % from the Cohesion Fund), to reinforce the services provided by the public authorities.
   The programme aims to increase the efficiency of Hungary's public administration in line with the Europe 2020 Strategy.
   The programme seeks to streamline the structure and performance of the public administration, and to lower administrative burdens, thus helping contributing to create a business-frmic environment.
   To achieve this goal, the programme includes different interventions, such as reducing red-tape, strengthening e-governance, increasing transparency and reinforcing human resources. It also includes plans to develop a comprehensive information database for decision makers in local authorities.
   Among others, the following results are expected from the programme: for 400 procedures, the administration lead timeis to be reduced; 250 e-governance procedures to be developed; 63,800 public servants to participate in competence development programmes; 1000 local municipalities to be connected to the integrated public administration information system.
   The National Digitalization Strategy 2021-2030 was approved in 2021. The strategy is based on the four pillars -: digital infrastructure, digital ss, digital econmy and digital state - and sets targets to be achieved by 2030: 95% of households covered by gigabit networks, less than 2% share of people without digital skills in the 16-71 aup, more than 30% of processes in the enterprises to beare digitalised, 90 % of inhabitants to use e-governmeservices. .One of the four main pillars of the new NDS focuses further digitalisation of the public administration, with the following main priorities: (1) coordinated, user-centric digital development of central and regional administrations and professional systems on all platforms; this will be done by creating barrier-free, customer-centric services, with a greater emphasis on proactivity and automation, and by introducing emerging technologies, such as AI, where their use is appropriate and offers real added value; (2) establishing a data-driven administration by further enhancing interoperable data links between public registries and relevant back-end systems, as well as e-government services; (3) developing smart settlements and smart areas; (4) increasing the

complicated by the fact that the topic of e-administration at policy level falls under several stakeholders at the same time, including the Prime Minister's Office and the Ministry of the Interior, while there is no professional management of the operation. In addition, the launch of e-governance projects has also been hampered by the reorganization of the public administration and the disappearance and restructuring of potential or previously designated project hosts. Overall, these factors have considerably reduced the effectiveness of project implementation in this field.

The digitalisation of the public administration in Hungary is predominantly supported by EU funds. The Public Administration and Civil Service Development Programme (KÖFOP, 2013-2020) – in line with the EU2020 strategy – allocated more than €935 million ([13]) to increase the efficiency of the Hungarian public administration, including the development of services provided by public authorities ([14]). At the time of writing, the Hungarian Recovery and Resilience Plan has not yet been approved by the EU Commission and the content of the future developments for the 2021-2028 period is still unknown.

The following pattern of digitalization emerges from empirical research. One-third (66%) of the DGQS respondents reported that they use mobile devices at work regularly, mainly for in-company communication (28%), for planning or scheduling the performance of tasks (23%), for data measurement (20%) and for monitoring the performance of tasks (16%). Nevertheless, only 11% use mobile devices for interacting with service users. The tools are used in equal proportions (44%) for data measurement or to retrieve information and perform routine tasks. In total 99% of the respondents use ICT tools regularly, mostly for sending e-mails (34%), using web-based applications to exchange with partners' networks (22%) and to connect with public service users (20%).

Both the outcomes of the FG and the interviews suggest that the use of mobile devices is strictly linked to the position of the employee (e.g. working in the field, middle manager and above) and that fewer workers use them than do not use them. Only four out of ten people in the focus group used a mobile device of some kind, although they used more than one. Focus group members unanimously attributed this to the financial difficulties of local authorities. According to the results

---

information security of government electronic services; and (5) digital development of public services (e.g. in healthcare, transport, energy, education and culture). To improve the quality and acceptance of digital public services, it is important to make them more user-friendly. This is a key challenge for the NDS and more generally for the digital transformation of the country.

13. Including nearly €795 million from EU funding (75.7 % from the European Social Fund and 24.3 % from the Cohesion Fund).

14. Among others, the following results are expected from the programme: for 400 procedures, the administration lead time is to be reduced; 250 e-governance procedures to be developed;63,800 public servants to participate in competence development programmes;1000 local municipalities to be connected to the integrated public administration information system.

of the personal interviews, there have been significant digital developments in the last few years through web-based programs in central administration offices (Tax Authority, Statistical Office), (INT18, 19). In the municipalities, the government has made several web-based programs mandatory e.g., tax registration, filing, and the recording of civil status (INT16, 17). In ministries and local state offices, on the other hand, there have been very few similar developments.

2.2.3 Work organisation

None of the interviewees felt that digitalisation had reduced work intensity. *'The amount of work has not changed, but the process has been accelerated'* (INT14). However, in their opinion the increased workload is not the consequence of digitalisation but of the fact that in most cases offline administration (scanning and printing documents and sending them by post) and processing the online versions have to be done simultaneously. Although some efforts are already made to eliminate paper-based administration, legal amendments would be needed in order to make the administration fully electronic ([15]).

Six interviewees and all FG participants agreed that digitalisation has increased the quantity of routine tasks, which is not considered a favourable change. '*Routine reinforced, copy – paste can work up to nosebleeds'* (INT15), Tasks requiring face-to-face contact with clients were considered as less routine tasks by the interviewees.

Work autonomy is influenced more by legislation than by digitalisation. '*It is mainly compliance with the law that determines the autonomy of workers'* (FG15). Although digital devices are never the primary tool for exercising control over workers, in one case (INT20) a worker was dismissed on the basis of IT data. The centralisation of the public administration is seen as another important reason for the loss of autonomy. Local government interviewees and focus group members have all experienced the negative consequences of centralisation. '*In public administration, a lot has been centralised, reducing autonomy'* (INT20).

According to the outcomes of the research, digitalisation has not threatened (in fact did not even affect) the rules protecting the jobs of civil servants. '*The administration is moving in the direction of replacing anyone at any time, but this is not related to digitalisation'* (INT15). This underlines that - as a result of the legislative changes in recent years – the employment protection of government officials has been significantly weakened.

---

15. The municipal office, where the FG was conducted, is very poorly equipped with digital tools such as laptops and mobile phones. This obstacle to remote working became apparent during the pandemic, but new equipment could not be purchased due to a lack of financial resources. Due to the 18-fold increase in the price of community heating in October 2022, the management of the office has considered closing the office for the winter, but this is hampered by the lack of digital tools for remote working and the parallel running of paper cases. The notary does not know at this stage how they can manage to keep the office running in the winter.

While the outcomes of the interviews showed that age is a major factor in how employees evaluate the impact of digitalisation on their work, FG participants did not share this opinion. There was a common understanding among participants that neither gender nor educational attainment is relevant in this regard. (Nevertheless, it is worth bearing in mind that all public administration employees have completed secondary or higher education) As for origin, the only thing mentioned was that it affects all aspects, not particularly digitalisation.

DGQS respondents perceived the various impacts of digitalisation on work as rather positive– the only exception concerned wages. Most respondents have a favourable view of the impact of digitalisation on working conditions, public services, employment, reduction of discrimination, personal well-being, job security, productivity and quality of work. This confirms the findings of both the FG (FG11, 14, 16, 17,19) and the interviews (INT12,13,15,16) that the problems are seen as caused by factors other than digitalisation ([16]).

While digitalisation was considered positive by participants younger than 64, respondents over 64 had the opposite view. However, due to the low number of respondents over 64 (2), it is not appropriate to draw a general conclusion.

2.2.4   Working time

According to the interviewees, digitalisation does not affect working time per se. Working time as well as extraordinary working hours and time frames are regulated by law.

Several offices reported an increase in the volume of tasks in recent years. The interviewees agreed unanimously that the actual length of working time mainly depends on the amount of work and the number of staff available. Seasonality of work was also mentioned as a factor: in certain periods, such as the enrolment period for higher education, the extraordinary personal income tax refund from the tax authorities, and the distribution of social assistance at municipalities or council meetings, the workload is temporarily higher than usual, which leads to longer working hours. In some cases, civil servants have to stay after office hours and do overtime. There is no paid overtime in the public administration, so extra work can be only compensated by time off.

---

16. Regarding their own personal situation, men were significantly more enthusiastic about the extent to which digitalisation has improved their job quality($P<0,05$) (Q23/3) and their productivity($P<0,03$) (Q23/6).
    Age correlations were found for the answers to the following questions:
    Q24/2 ($P<0,05$) – digitalisation improved quality of their interaction with public service users,
    Q24/3 ($P<0,03$) - decreased the time needed for routine, repetitive tasks,
    Q24/4 ($P<0,03$) - increased their pace of work,
    Q24/7 ($P<0,05$) – has given them more autonomy to organise their work tasks,
    Q24/8 ($P<0,03$) - improved the coordination of tasks with their colleagues.

Digitalisation has reduced the time taken to deal with certain cases – submitted by clients - so deadlines in the legislation were amended accordingly.

However, the reduced time frames and the faster processing of cases has had no impact on the number of cases and did not influence the need for overtime.

The FG also agreed and emphasised that working hours are strictly observed, while there is no paid overtime.

According to the results of the DGQS, teleworking has not become a frequent practice in the public sector. Nevertheless, as a direct result of the COVID-19 pandemic, 80% of the respondents spend one and 5% two days per week working from home. Those who telework one day a week are most likely skilled professionals (56.3%), followed by highly skilled professionals (33.8%). Regarding age, 36.6% are aged 45-54 and 28.2% are aged 35-44. There are no significant gender differences in this regard.

2.2.5 Health and safety and outcomes for workers

From the occupational health and safety perspective, digitalisation in the public administration means working usually the whole day in front of a screen. A decree adopted in 2000 by the Ministry of Health sets the minimum health and safety requirements for working in front of a screen ([17]). The regulation applies to workers who regularly use a screen-based device for at least four hours of their daily working time. Employers have to assess regularly the risk of visual impairment, psychological (mental) strain, and physical impairment.

The regulation sets minimum standards for jobs involving the use of computers, including the requirements for the screen, keyboard, desk, work surface, work chair, environment and the human-machine interface. The obsolescence of the legislation is illustrated by the fact that in connection with the human-machine interface it only mentions 'software' and 'systems', without any further specification. The provisions in the annex focus almost exclusively on workers' physical health (body, physical stress and the reduction of certain physical risks) while for psychological and mental health it only requires the employer to assess psychological risks.

Compliance with and enforcement of health and safety rules is an issue of concern. According to the interviewees, the government has gradually weakened labour inspection and control. Furthermore, workers do not know the rules in sufficient depth, despite mandatory health and safety training in all public administration jobs.

---

17. Decree 50/1999 (XI.3.) of the Ministry of Health and Economy on the minimum health and safety requirements for work in front of a screen.

Although the law limits screen time to a maximum of 6 hours per day and requires a 10-minute break every hour, in practice this is not enforced or monitored. Six out of the ten interviewees did not even know these rules precisely.

Concerning the mental health risks linked to digitalisation, several people mentioned the psychological and mental impact of teleworking due to the COVID-19 pandemic: *'Teleworking extends the working day, allows for continuous working and increases the risk of burnout. I had colleagues who were very stressed by forced teleworking during the COVID-19 pandemic' (INT19). Many found video conferences very tiring and exhausting.*

Missing or inadequate support for new and modified IT programmes increases mental health risks. Without proper preparation for change or learning of new systems and programmes it can lead to increased stress: *'If you make changes to systems without giving notice and information, it stresses everyone. What has become routine, how things are done, changes' (INT16).*

Several interviewees see mental workload as a complex issue, of which digitalisation is only one factor. They also blame tighter deadlines. *'We are more table-bound with digitalisation. There's less and less time to go out for coffee and chat with colleagues. A five-minute break after two hours is not something everyone is likely to take. Tight deadlines cause a stressful situation, and in the long run, you'll definitely end up with high blood pressure and obesity'* (INT16).

In order to reduce physical and mental risks and prevent health deterioration, several of the employers offered free well-being services to their employees, for example massage, physiotherapy, back exercises, yoga or a swimming pool. Unfortunately, these services have been mainly suspended due to the COVID-19 pandemic and the lack of financial resources, as well as organisational difficulties in some cases.

The occupational safety and health legislation on digitalisation is outdated. It covers only a few components and enforcement is problematic too. The mental and psychological protection of workers is not covered at all and the weakening of labour inspections in recent years has led to infrequent inspections. In addition, the rights of trade unions in this field have also been abolished. Overall, interviewees were less aware of the mental and psychosocial effects and risks.

The primary sources of stress mentioned by FG participants were the difficulty of introducing new programmes, the frequent changes of the existing ones, and their unreliability (lack of preparation and support and freezing of programmes). Employers did not offer programmes to mitigate the physical and mental risks.

The results of the DGQS were consistent with the results of the interviews and the FG, i.e. that workers perceive the impact of stress on physical health more than on mental health (mental health impacts were not perceived by 70% of the respondents.). According to the results of the DGQS, the most common physical symptoms were vision problems (23%), neck pain (18%) and back pain (17%) while mental fatigue (25%), stress (22%) burn-out (18%) and anxiety (12%) were the most frequently cited mental health issues.

2.2.6 Skills and learning

The obligation for public administration employees to undergo further training is laid down in government regulations. Although training obligations vary from one legal status to another they can be divided into three categories:

1. training programmes providing general public administration skills,

2. leadership training programmes,

3. professional training programmes.

The so-called professional training programmes include the development of digital and ICT skills (Fási 2020). The training is provided by the National University of Public Service (NKE). Subject to certain conditions and within certain limits, public administration employees can also participate in internal training courses organised by other organisations. Currently, 21 different training courses on digital skills are offered by the Pro Bono System ([18]) run by NKE e.g., on public administration portals, platforms, cybersecurity, information security, data protection, and closed and open-source software. Regardless of the field or level of the public administration, all government and civil servants are obliged to obtain the credits required by law by completing the training offered by the NKE. Although the variety and accessibility of the NKE courses are acknowledged, no interviewee or FG participant was satisfied with the quality of the training. Since the outbreak of the COVID-19 pandemic, only online courses have been launched, offering asynchronous training without tutoring. Online learning materials - with downloadable documents - are processed independently by the workers with an online self-test at the end of the course. For this reason, these courses are in fact self-education courses rather than training.

There is no allowance for taking the courses, and workers take them partly in their free time and partly during less busy working hours.

---

18. https://probono.uni-nke.hu/katalogus/kereses?szures=XQAAgABwAAAAAAAAAAA0EsdHrvfFTSftRfJqXyREQlDeeNkkfc9MNV4%2FoxGDT2m3bZWdQFD4dtpiGSBYNqyUYZgoNEoblCJ99LRC8x8DibFLBYsj0zurYpzBYm%2FoXZK%2FruvcvosNfG0YQGHzQbQU9hgu0%2F%2F%2F7AAIAA%3D%3D

A local government leader reported that the compulsory payments for training courses at NKE absorbed a large part of the municipality's resources available for training. The autonomy of municipalities to choose the most appropriate training courses available from market providers according to their needs is significantly reduced.

> *'It would be much more useful if the employer could choose what training to spend the money on. There are some good subjects in the NKE courses, but colleagues write the tests together; they may not even read the text, so what's the point? The employer could better spend this money' (INT16).*

However, interviewees agreed that training is undoubtedly needed in the public administration but with much more useful curricula and in a more effective way than at present ([19]).

New entrants are typically trained by their colleagues. In a central public administration office (INT18), ICT training courses are organised for newcomers every six months and senior colleagues train newcomers too - but without dedicated working time or formal mentoring.

Local government employees reported that previous professional training and training on monitoring legislative changes and the application of law have been discontinued. Instead of this training, informal consultations between administrators and local government offices take place. As highlighted by one interviewee, *'there used to be free professional training courses at the national level, but now we have to pay for them. There are big differences between the fields of public administration, both in terms of the use of databases and programmes and the training they provide. Today you have to consider whether you can send a colleague to a professional training course because of the cost. Today, it's more common to send one person to training and then she passes on the knowledge to other colleagues'* (INT14).

Interviewees from the ministries reported that they use only basic programs (Word and Excel) and that the functions of internet sites are restricted at work. In addition, they are not allowed to download external programs and applications on their computers. They do not receive any training on digitalisation over and above the compulsory NKE training.

The situation differs somewhat in the territorial administration where – besides the compulsory NKE training – various other types of training courses are available too.

---

19. Such as: training new entrants, monitoring changes in legislation, professional-methodological training, obtaining a (new) higher education degree, learning to use new databases and programs.

An interviewee from a district office reported that colleagues informally help each other to overcome challenges. In case of new software, they are only given a description instead of an appropriate training course.

> *'I was trained with the help of a colleague. When a new task came up within the application, we received a very detailed description. I think it takes me a lot more time to go through a 30-page description than to go through it with someone for half an hour and ask back. In a private, informal way, it's how colleagues show each other how to use the programme'* (INT17).

The FG results confirmed the statements above and added that even when there is centrally organised training for a new programme, it may be that the trainers themselves do not know the programme well enough or the training is done at a stage when the programme is not fully completed.

48% of the respondents to the DGQS considered that everyday work did not require them to develop new skills while 30% answered that they only had to learn specific digital skills and 16% felt that they had to learn general literacy methods. 48% had received formal training provided by their employer and 24% had received training exclusively through on-the-job learning. Overall, 86% thought that the training provided more or less matched their needs. This last figure completely contradicts the outcomes of the interviews and the FG on the quality of formal training. It is unclear from the responses whether respondents were referring to formal or on-the-job learning.

2.2.7 Reconciling work and personal life

In Hungary the right to disconnect outside working hours is not guaranteed by law or workplace rules and there is no 'obligation to disconnect'. A person working from home cannot be asked to work overtime, so no remuneration is payable for work done outside working hours at home.

According to the interviewees, digitalisation is most likely to affect the work-life balance of managers and senior executives due to the emerging requirement for availability outside working hours (INT 12, 14, 15, 16, 20).

At the same time, office mobile phones, take-home laptops, call forwarding, and access to office emails outside the workplace increase the exposure of all workers. Interviewees (INT 12, 15, 16) mentioned certain cases when managers expect availability outside working hours or reported that they simply could not finish their tasks at work due to workplace circumstances, so they had to finish their work at home. These cases however are not necessarily related to digitalisation as workers also take work home in paper form.

One interviewee reported that she takes her work home in order to reduce the stress of not getting it done: *'I'd rather do it at home than stress about it'* (INT20).

Only one FG participant reported that he was expected to answer his mobile phone outside working hours, but he would not be sanctioned even if he did not do so. As there is no paid overtime in the sector, working hours are strictly observed. DGQS results show that half of the respondents (49%) thought that digitalisation has more likely a positive impact while nearly one-third (31%) thought it had a negative impact on the work – private/family life balance ([20]).

Most respondents support the right to disconnect in all its aspects. However, responses on remote logging in and checking work progress contradict the FG results, as only 24% of respondents report not doing so.

2.2.8   Career prospects and employment security

The main job security concern of a majority of interviewees working in ministries and central offices is not digitalisation, but the fact that the guaranteed rights of public administration workers have been systematically abolished since 2010. Although the rule allowing dismissal of public servants without justification was eventually repealed, a government official who has lost their manager's confidence can still be dismissed without further justification. This vulnerable situation is further complicated by the fact that the legislation does not define what is meant by loss of confidence (Kun 2019).

Except in the local government administration, the merit-based system of promotion and wages (in addition to seniority and proper evaluation) has been abolished.

FG findings show that local municipality office workers do not worry about digitalisation itself and its impact on job security but rather that digitalisation is a tool for centralisation leading to a further reduction in the responsibilities of local authorities. Almost half (47%) of the DGQS respondents neither agreed nor disagreed with the statement that 'I am more confident than before in my future prospects'. While 24% somewhat agreed, 20% strongly disagreed and only 5% saw their future prospects as undoubtedly promising.

2.2.9   Workers' rights

The collective rights of employees in the Hungarian public administration are quite limited (see Section 3.3.1.). The legislation allows staff to set up a trade union, consult, strike - although in a

---

20. An age correlation was found for Q26/2 (P<0.05). Those aged 64 and over were the most likely to agree that digitalisation has not affected the amount of time they spend outside their work. Those aged 35-44 were least likely to agree with this statement.

limited way - participate in workplace, sectoral, and national 'interest conciliation forums', and conclude agreements in these consultative forums. However, there are no rights relating to participation, collective bargaining, and the conclusion of collective agreements.

Interviewees reported that even though it is required by law, employees and trade unions are not involved and consulted on the design and implementation processes of digitalisation at work and in practice, they cannot enforce such consultation. The sectoral and national consultative forums have been stagnating in recent years, with no meaningful consultations or negotiations taking place. However, this is not due to digitalisation but rather to a lack of political will.

According to trade union officials, the number of trade union members has declined significantly in recent years due to institutional reorganisations and partly to the difficulties in organising and their reduced capacity for advocacy. Three interviewees (INT 13, 17, 20) reported workplace intimidation and pressure in the public administration because of trade union membership: *'At my workplace, only two of the twenty of us remained union members. The employer is not supportive. No one told me directly that I should not be a member. And the rest of it, I just sort of didn't hear'* (INT17).

On the other hand, digitalisation has made it easier for trade unions to engage with their members. They operate websites, are present on social media, organise online video conferences, organised online voting during the COVID-19 pandemic and in addition they can reach people apart from their members with newsletters.

> *'Trade union work has benefited from digitalisation. We can meet in larger numbers. We have introduced video conferences, which has saved a lot of travel time. We have also introduced online voting. We have also changed our rules so that we can vote online and hold meetings'* (INT14).

2.2.10   Conclusions on the sector

The levels of digitalisation vary considerably between the different areas of the public administration. While the employees of central public administration agencies work with the most advanced tools and programmes and uniquely provide adequate ICT training in the efficient use of the programmes and databases, there have been hardly any developments at district level offices and ministries in the last five years. Employees in these offices were only given the mandatory ICT training - by the National University of Public Service (NKE) – which achieves a very low level of employee satisfaction. Municipalities carry out ICT system developments in accordance with their financial resources. While previously, they could purchase ICT programmes and the related training from market providers using their own resources, they are now obliged to use the programme and related training provided by the state, with which they are less satisfied. Local

government workers are afraid that government-led digitalisation is a tool for centralisation, which will further reduce their autonomy by reducing the number of cases they deal with.

Teleworking was unknown in the public administration until the COVID-19 pandemic. Municipalities - depending on their financial means - adapted flexibly to the situation and introduced teleworking, setting out the rules governing it in local regulations. There were considerable differences in the use and the scale of teleworking, varying from a total ban to a partial authorisation depending on the services provided.

The primary consideration in the design of the regulations was to comply with the government's will. When the government's position became more accommodating after the initial ban on teleworking, regulations were adopted at the institutional level, and attempts were made to provide telework resources and security conditions. There was a typical return to office work between the waves of the pandemic, excluding central offices. Apart from the central offices, no other departments are considering the introduction of teleworking in the medium or longer term.

The majority of interviewees and FG members did not perceive that digitalisation had an impact on their working time, with availability during out-of-hours' time affecting the work-life balance mostly among managers.

The occupational health and safety legislation regarding digitalisation is outdated and covers only a few components. Mental and psychological protection of workers is not covered at all. Labour inspections have become weakened and less frequent in recent years, and the rights of trade unions in the field of OHS have been eliminated.

The rights of workers and trade unions have been seriously eroded over the past 12 years, but interviewees did not think they had been affected by digitalisation.

The public administration is short of staff, salaries are very low and the seniority-based promotion system in central government has been abolished. Although the government has been promising for a long time to introduce a career model for civil servants, this has not been done.

In summary, respondents mainly identified factors other than digitalisation as the source of their work-related problems.

Section 2.3 Hospital sector

2.3.1   Overview of the sector

Life expectancy in Hungary is among the lowest in the EU while mortality from preventable and treatable diseases is high. The National Health Insurance Fund ensures relatively limited health care services and benefits compared to other European countries, leading to high private expenditure, especially on medicines. Only slightly more than two-thirds of total health expenditure is publicly funded, which means that private expenditure is double the EU average. In addition, the increasing shortage of health professionals makes access to medical care more difficult. Both in absolute terms and as a share of GDP, Hungary spends significantly less on healthcare than the EU average (6.5% of GDP compared to 9.9% on average in the EU). This rate is the second lowest in the EU ([21]). The situation did not improve with the COVID-19 pandemic. The health system remains over-reliant on hospital care while primary care does not have sufficient resources to play a greater role. In terms of expenditure, hospitals - similarly to other EU countries - are the largest providers of health care, accounting for more than a third (37.5%) of total expenditure in the health sector ([22]).

'*The number of patients we had to deal with was three times more than before the pandemic'* (INT23). Thanks to home monitoring systems issued to patients, the frequency of face-to-face visits has decreased. But while digital tools were useful, a far greater number of health personnel would have been needed in order to manage the COVID-19 pandemic more effectively.

According to the latest survey from the Hungarian Central Statistical Office, the number of trade union members in the health and social services sector was 45,691 ([23]) (including 8,545 men and 37,146 women), i.e. 17.7% of the total number of employees in the sector.

2.3.2   History and patterns of digitalisation in the sector

Digitalisation has been spreading slowly but surely in all areas of healthcare. One of the most important digital developments in recent years was the introduction of the Electronic Health Service Space (EESZT) in 2017. Initially, the use of EESZT was only mandatory in the public health sector but since 2022, private actors are also obliged to enter patient data into the single digital health record system. The system has several advantages as it contains all health data of the patient including their life history, past medical examinations, tests and medicines taken. This allows the patient to be treated according to their entire medical history and prevents, for example, double testing. It also saves on the printing of paper prescriptions, which are placed in the electronic space and can be dispensed at any pharmacy by means of a social security number.

---

21. Source: Eurostat, 2019.
22. Source: Eurostat, 2019.
23. Source: Hungarian Central Statistical Office 2015, Q2.

The system allows electronic management of referrals, which not only reduces paper use but also facilitates referral to specialist services and links between different institutions. Data is now being uploaded into the system not only by the large public health care providers, but also by the smaller ones, which are playing an increasing role in the care system, particularly in diagnostics.

In line with the extensive availability of broadband internet, the use of digital networks has become widespread in the healthcare sector. Larger healthcare providers also have an intranet network where internal information and data traffic are managed ([24]).

Although data transmission via e-mail and internet sharing is common, the benefits of internet-based systems are still limited in the health system. Even today, the transmission and processing of large amounts of data in poorly managed Excel spreadsheets is still common. For example, during the COVID-19 pandemic, information on large numbers of patients was also shared in this manner, requiring a lot of unnecessary data copying and also severely compromising the reliability of the data extracted. It is also problematic that even state-run institutions use different IT developments, whose compliance with legislation is often questionable. To sum up, although there are plans to develop a single IT system for public institutions, this process has hardly begun.

Experiences with digital devices vary widely. The most common devices are installed computers and smartphones - eight out of the ten focus group participants use them regularly. (Bedside workers are the least likely to make use of these tools, especially in smaller healthcare institutions, where the lack of tools and the lack of digital literacy among staff are two of the reasons for their less frequent use.) Healthcare workers use these tools in their daily work. These include tasks related to patient care, such as admitting patients, drawing up final reports, prescribing medicines, recording patients' conditions, compiling patient statistics, dispensing medicines, and ordering laboratory tests. These tools are used in all outpatient clinics and somewhat less in inpatient care, especially in smaller rural hospitals, where manual documentation of patients is still common and not secure enough.

Larger hospitals now have more sophisticated digital tools, but these are not yet widespread and ubiquitous. For example, there are hygiene monitoring tools, which draw attention to the appropriateness of hand disinfection or mask use. There are also beds that are now digitally controlled for patient movement; these, however, are not yet widespread, so there is still a high rate of manual patient movement, which often leads to health problems for nurses. Patient wristbands are more common, which also digitally track patient identification, phases of patient

---

24. Semmelweis University of Medicine research summary
https://semmelweis.hu/mediasarok/2022/10/20/a-digitalis-egeszsegugy-mar-nem-a-jovo-hanem-a-jelen-magyarorszagon-is/

care and treatment, thus increasing patient safety and medication administration. These devices have been made available to the institutions that have applied for them with EU funding, but they are not yet widespread enough. A list of the most commonly used tools was drawn up during the face-to-face interviews and referred to in the focus group discussion, but these tools are more commonly available in larger county hospitals or clinics.

Certain digitalisation developments in healthcare institutions became particularly important during the COVID-19 pandemic. The pandemic affected the sector quite severely, partly because of the increased medical tasks, their regional variations, teleworking, and also because of the need to purchase a large number of new digital devices - ventilators, diagnostic support equipment - in a short time. Digital forms of communication have also multiplied due to restrictions on face-to-face contact, so the COVID-19 pandemic has increased the use of traditional - computers, smartphones - and newly acquired digital tools in all areas of the sector.

The DGQS results, unfortunately, are unreliable due to the low response rate. The on-line questionnaire in the Hungarian hospital sector was completed by only 48 persons while 200,000 people work in the health sector ([25]), 40% of them - 80,000 people - in the hospital sector. The conclusions drawn from the combined responses of 48 people cannot be considered reliable/representative. This should be taken into account in the following assessment. The overwhelming majority (87.5%) of the respondents were women. 85.3% of the 48 persons were over 45 years old, including 2% over 64 years old. Half of them had post-secondary and 39.6% university level education; 75.6% of the sample are skilled professionals. 81.2% of them work in public hospitals. 86.7% of the sample have a permanent and only 11.1% a fixed term working contract. Almost all respondents work full time (91.1%). 52.6% of the respondents are trade union members. In sum, our sample character is a middle-aged lady, a trade union member, with a post-secondary diploma, working full-time on a permanent contract in a public hospital.

Regarding the use of digital devices and telework, more than half of the respondents (55.6%) regularly use mobile devices like laptops, smartphones, tablets, etc.; only 26.6% use them mainly to measure data, to collect/organise/retrieve information and 14% to interact with the users. 75% of the respondents use information and communication tools (30.3% email –and 33.9% web-based applications to exchange with partners' networks). However, there is virtually no use of machines operated by digital commands to perform certain operations (like lifting heavy loads/persons - 86.4% answered 'no'). Telework, remote work is not applicable in this case: only 8.8% of the staff could work from home, of whom 66.7% only one day per week.

---

25. Source: Hungarian Central Statistical Office, 2019.

Digitalisation of work – good or not? Uncertain answers – not sure about the positive impact of digitalisation.

Around one third of the sample believe that digitalisation is a good thing, which helps improve working conditions, improve job quality and quality of the service to users, etc. Around one third of the respondents believe strongly in the positive effects of digitalisation on their own well-being, job quality, etc. However, 21.1% strongly disagree with the statement that digitalisation has improved their personal well-being at work and the balance between personal/family time and working time. The reactions to positive statements on digital tools/programmes are also uncertain, and one third of the sample strongly disagree with them. 32% of the sample answered that digital tools/programmes did not give them more time to focus on significant aspects of their job and did not increase their job intensity. 40% do not believe that wages have improved in the sector.

2.3.3 Work organisation

Digitalisation has not been accompanied by greater autonomy and has not had an impact on the evaluation of work performance (focus group). Rather, it has meant closer collaboration between the doctor and assistants in the clinics, which is particularly characteristic of the use of EESZT, but also the result of a poorly regulated situation. In larger hospitals, collaboration at patient handover is also facilitated by the electronic recording of patient interventions, as this facilitates the work of successive shifts. Under current regulations, only doctors have access codes to the electronic digital space, but administration is largely done by assistants and nurses, using the doctors' access codes. It is true that a doctor's signature is subsequently required on the document thus created, but in this way the actual work carried out by the assistant appears as the doctor's work.

From a workflow perspective, the dominant opinion in the focus group discussion is that the benefits of digitalisation are easier management and the retrieval of large amounts of data. The time taken to move patient documents is sometimes reduced as electronically recorded documents are transferred to the examiner or the doctor who issues the documents without anyone having to leave the office. From a therapeutic point of view, the disadvantage of remote diagnosis is that the patient is no longer present at the time of the evaluation of the results, so the doctor evaluating the findings may be less involved with the patient, may only evaluate some of the findings, and may not be able to order additional tests immediately. While the quality of work and patient safety are more likely to benefit, digitalisation solutions may also reduce personal contact with patients, increasing the risks, e.g. for children or unconscious patients, where personal observation is also very important.

According to the focus group report, digitalisation has positive impacts on the work organisation of hospitals with significant staff shortages: reduced demand for staff, a reduction in the typically high number of overtime hours and substitutions, and a more favourable distribution of the

existing workload among the workforce. A good example of this in a hospital setting is pathology, which is still only partially automated, especially on the laboratory side. A significant shortage of specialist staff is being remedied by digital diagnostic tools.

In health care institutions, the information available is scattered between many places, typically in separate systems. For example, there is typically a lack of communication between the facility management and the staff performing the operations, which would be a prerequisite for smooth operation during treatment and hospitalization. Digitalisation offers the opportunity to connect disparate work structures and dispersed information and to fully exploit the potential of information. It emerges from the interviews that digitalisation (also) typically improves working conditions and work organisation, enhancing the coordination of tasks, reducing dual work and increasing efficiency. Digitalisation has also clearly improved the quality of work by leaving less room for error, by monitoring processes in real time. Many alarm parameters are set so that the system sounds a warning if certain critical values are exceeded that people might overlook. The system automatically transfers the measured parameters to the documentation, eliminating typing errors. Much less handwritten information is used that can/may have been misread; - a lot of data is entered online by machines.

Many security features are built in, with persons only being allowed to enter departments after authorisation, and devices only being used after user identification. With these levels of responsibility, everything can be traced back due to well-defined data recording.

At the same time, there is also a view that over-reliance on digital tools makes it easy to overlook the fine detail. According to almost three quarters of the participants in the focus group, digitalisation has typically increased the routine nature of tasks, as digital data processing follows a set protocol, algorithms, and templates: *'in the intensive care unit, the nurses almost don't even have to think about setting up the drug dosage and feeding, they just have to set the desired values and the device does the necessary calculations for them' (FG30).*

However, some argue (FG22, 25, 26) that digitalisation has also reduced routine by replacing some of the routine tasks that were previously required. There was also a view that routine decreased when digitalisation was first introduced because the work had to be checked more often, and increased later because it became routine.

According to the majority of interviewees, digitalisation has typically increased the autonomy of employees in the workplace. Diagnostics can be performed without the need for a central laboratory.

By setting alarm values for certain tests or devices, there is no need for another person to monitor an intervention, and consultation with a doctor is only necessary in problematic cases.

But it may also be the case that some digitalised processes do not allow deviation, thus limiting the autonomy to perform the task.

The 11 interviewees were somewhat divided as to whether the gender of the worker has an influence on the adoption and use of digitalisation. Two-thirds said no, one-third said it has some influence, and in favour of men (e.g. men are more digitally savvy, more men have received digital training). This is also reflected in the fact that more men work in places with a higher proportion of digital use. Examples of such workplaces are enhanced care units and intensive care units.

In Hungary, recruitment of migrants to the health sector is still minimal, so there is no valuable experience in this regard. Three quarters of the interviewees (INT21, 22, 23, 24, 25, 27, 28, 29) believe that a migration background does not play a role in the impact of digitalisation.

2.3.4 Working time

The use of working time is modified by digitalisation in that employees have to do extra work during working hours with digital recording of data; for this more intensive work they are not paid extra, either during working hours or during off-peak working hours.

The storage of information on electronic media also saves space, eliminates the need for filing cabinets and facilitates retrieval of documentation.

The question of digital devices and individual freedoms rightly arises in the focus group, since the majority of employees have a smart phone that is known to the employer in connection with their work. In the sector in particular, the practice of calling in workers for unscheduled work and ensuring that they can be reached by phone while they are not at work is common. Although legislation restricts the tapping of telephones, there are no regulations preventing access to workplace networks.

There is no pressure to log in outside working hours. The exception to this is on-call work - which is quite common in the sector - when one has to be available at all times during on-call time.

Although transformation and digitalisation of work processes can increase workplace stress and workload, it also has the positive effect of reducing the time needed for repetitive, administrative processes. This is certainly a positive development for overburdened healthcare workers.

Experience in the focus group shows that in hospitals, automated clinical workflow management tools not only optimise administrative tasks, but also allow healthcare personnel to spend more time on direct patient care in their free time.

The vast majority of interviewees (almost three quarters) said that digitalisation has fundamentally reduced the time spent on a work process. This has had however no impact on working hours, because of the high demand for health care, especially in the current COVID-19 pandemic period. Today, the average working week in the hospital sector in Hungary is 48 hours, but without digitalisation it might be even longer. Another issue is the reduction in the intensity of the workload during working hours, a positive result of digitalisation.

There was also a view expressed during the interviews (INT22) that the increased administration (e.g. for home monitors) no longer fits into official working hours, slipping into overtime. It can also slow down the workflow when someone starts using a tool that they are not familiar with and use routinely.

There are limited opportunities for teleworking in the medical profession, as personal relationships are often necessary. More recently, teleworking has begun in some administrative jobs in the context of energy saving, but only in a limited number of cases. What is typically widespread is electronic transmission in the field of diagnostics (X-ray, ultrasound, other imaging diagnostics).

The conclusion is that teleworking affects a small group of people, who benefit from reduced travel time. Respondents to the DGQS reported that the introduction of these digital tools and processes has not changed the paid overtime (81.5%), the night work or weekend work (74%) or commuting time to work (81.5%) or to the patients (85.2%). According to 47.8% of the respondents, it has not really affected the amount of time that they spend outside of work and it is not true that it has increased their personal time and the time spent with their family (60.9%).

2.3.5   Health and safety and outcomes for workers

Occupational health and safety in the healthcare sector is supported by tools that eliminate or reduce the physical strain of caring for patients, such as digital beds, or the risk of infection associated with reducing invasive interventions, such as digital intervention-based diagnostics or surgical tools. However, their uptake is not universal, but rather limited to large, high-profile hospitals.

Digital devices, especially in work areas where a lot of work is done in front of computers, often lead to eye and muscular overstrain, and there are fewer solutions available to compensate for this than necessary (massages at work, protective goggles).

Digitalisation also reduces some of the psychological pressure of high levels of medical responsibility: it reduces the potential for error, e.g. in the administration of medicines, safer diagnoses or prescriptions, according to the focus group.

Almost two-thirds of the interviewees for this project said that they had not experienced increased exposure to physical risks (back pain, shoulder and arm pain, etc.) as a result of digitalisation, and that electric desks or beds and internet connection saved workers a lot of physical strain, walking, etc. However, one third of the respondents reported loss of vision, back, head, and neck pain, and increased exposure to 'electro smog' due to the many electronic devices and WIFI.

> *A few reported a reduction in exposure to psychosocial risks ('Stress at work is reduced by being able to see what might be 'wrong' sooner than, for example, a blood gas analysis. You get immediate and safe results, which makes it easier to deduce the condition of the patient, so stress is definitely reduced' (INT21).*
>
> *On the other hand, any stalling of programs or machines causes stress and data processing burnout. The constant sounds and noise emitted by the equipment also increase stress. As one interviewee said, 'Sometimes I wake up at home to the sound of monitors and ventilators alarming me, and I think that is definitely harmful' (INT30).*

The interviewees had different points of view on the impact of digitalisation on mental health. Some say that digitalisation has no such impact and that the elimination of manual copying of data saves nurses a lot of stress. Some people feel more mentally tired when they look at a screen, although some say that, because it makes work more colourful, it also reduces the potential for burnout. Stress is exacerbated by inadequate training in the use of digital tools and methods.

However, almost two-thirds of the interviewees said that digitalisation had typically increased the intensity of work. Work intensity is enhanced by the immediate access to laboratory values and diagnostic imaging results; by being able to monitor more parameters at the same time; by everything which means that more tasks/patients can be treated in a unit of time. In response to the question on the impact of digitalisation on physical and mental health, 53.4% of the DGQS respondents declared either a new physical pain/condition (38.1%) or worsening of an existing physical pain/condition (14.3%). 38.1% of the respondents did not notice anything. Most of the respondents mentioned vision problems (25.6%) and neck and back pains (20.5%+17.9%, 38.4% altogether).

The vast majority of the respondents (71.4%) have not noticed any impact of digitalisation on mental health. However, some reported stress, mental fatigue, depression, burn-out (14.3% + 4.8%, 19.1% altogether).

In order to support digitalisation, improvements have been made to the physical environment (e.g. better chairs, standing desks) (11.1%) and teleworking has been introduced or extended (11.1%). According to 66.7% of the respondents, no action at all has been taken.

2.3.6   Skills and learning

Participants in the FG meeting agreed that long learning processes prior to the introduction of digitalisation tools were not common, although they are essential for their professional use. The training given on changes that affected a larger number of staff, such as the introduction of the Electronic Health Service Space, or the installation of ventilation machines during the COVID-19 pandemic, consisted mainly of short distance-learning sessions, which were mostly felt to be insufficient by those involved. There was a complete lack of information for trade unions, which could have been involved in training and in making older workers more receptive to digitalisation.

There is no IT training in the mandatory credit courses, and no incentives for such training. It is therefore not surprising that there is a large digital divide, which generates anxiety, especially among older people. Younger workers are more attracted by higher levels of digitalisation. The reluctance of older workers to use digital tools is also a source of stress for them. Among workers, digitalisation is more attractive to young people, who are more confident with digital tools and receptive to new solutions.

The uptake of these tools is hampered by a large older generation of employees who have not received adequate training in time and are reluctant to use computers, and employers do not take enough care to provide adequate training for their staff (FG).

In the larger county or metropolitan hospitals, the level of staff training, especially for specialist nurses, graduate nurses and doctors, is higher, but the scarcity of digital equipment limits the use in everyday work.

The effective use of digital tools and methods and the reduction in workplace stress brought about by digitalisation also depend on adequate training and skills development in the workplace on the use of these tools and methods. The FG participants agreed that training of medical staff in digital skills should also include a section on cyber-security. And when using electronic health records, healthcare personnel should be aware and trained in the EU GDPR (General Data Protection Regulation).

According to the interviewees' responses (INT 21, 23, 24, 25, 27, 28, 29), there are no major difficulties in developing the skills and qualifications needed for digitalisation - they were positive (also) on this question. There is no doubt that digitalisation allows easier access to learning

material: in online learning, where teaching theory is easier, one does not need to be physically in the same room as the instructor, the material can be re-watched, even practical knowledge can be partially mastered with special programmes, illustrative video material is provided, and it motivates young people. The introduction of new digital tools initially makes it particularly difficult for older people to work, and workers from less developed regions may have less experience and knowledge of digital tools.

However, the majority of interviewees also mentioned some negative aspects of the digitalisation of training. Digital learning, for instance replaces physical presence at the expense of social interaction. It is also important to note that there are parts of the healthcare sector where personal involvement is absolutely necessary (nursing, practical activities, activities requiring special equipment, e.g. chest compressions on dolls, defibrillation, injections). There are simulation tools for specific direct skill development, which have been awarded EU grants, but are mostly used in the training of physicians, and not yet nurses.

Some of the interviewees consider the training to be adequate, especially in the intensive care unit. There are some who prefer several stages of training, including theoretical and, if necessary, practical training. However, the level of satisfaction depends on the individual. There were also respondents who considered the training they received unsatisfactory, some who found it to be too general, and some who required more training. It is also unfortunate when only the manager in the team is given a broader briefing and later passes the information on to colleagues.

According to most of the respondents, young people are at an advantage, as they are already well established in the digital world. We found that the age of nurses was lower in departments where more digital tools were used, such as the ECU and ICU.

Five out of the eleven respondents said that education does not influence a person's attitude toward digital tools (good support is important), but it is undeniable that those with some IT background find it easier to learn new things, as well as those with higher educational qualifications. What matters here is not necessarily the level of education but rather the field in which someone was trained before working in healthcare.

Half of the respondents to the DGQS answered that the introduction of digital tools and processes in their everyday work required them to develop some new skills – general and specific digital literacy methods and digital skills (22.8% + 27.3%) – but nearly one third (27.3%) answered that no new digital skills are required.

31.2% of the sample received training related to the utilisation of specific digital tools and 43.7% did not receive any training from the employer. The employer provided some kind of training for only

37.4% of the sample. It is no wonder that 18.7% of the respondents learned informally (i.e. on-the-job learning; exchanges with colleague). Half of the respondents were partly satisfied, half were not satisfied with the training ('not enough time and resources were dedicated to training').

2.3.7   Reconciling work and personal life

In the health sector, digitalisation is also vital due to a severe shortage of specialists, frequent overwork, and an increasing number of chronic patients. Theoretically, one of the effects of digitalisation on working conditions in hospitals/healthcare is that it frees up working time by reducing the time required for administrative processes, alleviating the need for overtime and allowing more time for other tasks.

However, the experiences of those interviewed during the project are not clear. Half of the interviewees reported no impact of digitalisation on the work-life balance of employees, while half of the respondents reported a negative impact, mainly due to the fact that people are expected to do much more work from home or outside working hours. '*The expectation of checking and possibly responding to work emails outside of working hours is quite stressful. Or, if you see something on an online group message board at work, you start thinking about it at home. Almost all workplaces use messenger or viber work groups, through which work-related information can come in outside of work hours, taking time away from your personal life*' (INT26).

2.3.8   Career prospects and employment security

Digitalisation, and the new skills and knowledge it brings, is widely seen as having a positive impact on career prospects and job security. A minority opinion is that it is not relevant (especially in the nursing profession). '*In our profession, it is quite difficult to find people, it doesn't really matter how good someone is at digital things.*' (FG25) Where the majority of processes are, or tend to be, digital, older professionals who are not as well versed in digital techniques may start at a disadvantage (FG 24).

2.3.9   Workers' rights

The lack of involvement of workers and their representative organisations in the preparatory phase of digitalisation, followed by their subsequent lack of preparation and information, and the inevitable transformation of work processes, are factors that increase workplace stress. According to the head of the nurses' trade union, workers' rights should be taken into account from the very beginning of the digitalisation strategy and the introduction of digitalisation. The trade union leader also expressed the opinion that employees can only give their clear support to digitalisation, tools, and work processes that are unfamiliar to them, if they are meaningfully involved in the planning phase. This means not only that they have the right to be informed about the planned technological and technical changes, but also that they have the right to know and understand the digital solutions to be implemented in sufficient detail, to see the changes in work processes,

working conditions, and roles accurately, and to be prepared in good time for them. Another important requirement, according to the focus group participants (FG 26, 28, 30), is that training in this area should not be provided outside working hours, but as part of working time. Current legislation provides for a minimum of five and a maximum of ten working days per year for nurses to attend training. Training in digitalisation should also be included in this time-frame, regardless of the amount and quality of information to be acquired.

2.3.10 Conclusions on the sector

The situation in the labour market, financial constraints, and the constantly increasing costs of operation and maintenance due to high inflation in the cost of digital tools are important factors in the digitalisation of the hospital/healthcare sector. All of this poses a serious challenge to the budgets of hospitals (and of course other healthcare institutions). The digitalisation of hospitals, partly by reducing the costs of organisation and operation, can help alleviate these pressures, and the use of modern healthcare tools, such as robotics in healthcare, can help to improve the quality of patient care.

The interviewees reported the following positive and negative trends over the past five years.
Positive trends include:

4. Renewal and replacement of digital equipment; more accurate monitoring and diagnosis.

5. Remote access, e.g. Holter monitors, home monitors.

6. More transparent and controllable workflows.

7. Increased patient safe: more detailed monitoring of patient conditions, reduced need for patients to attend in person.

8. Point of care system, bedside diagnostics - faster results, faster initiation of therapy.

9. Cloud-based data storage.

10. Improved access to patient records by both the doctor and the patient (EESZT).

11. Online communication.

12. Access to grant funding.

Among the negative trends, the following should be mentioned:

13. No significant progress has been made in the building of digital infrastructure and harmonisation of tools.

14. In the event of a failure, the whole system is blocked.

15. Lack of maintenance, many machines are 'worn out' and it is very difficult to replace them.

16. Access to patient records can have negative consequences (data security risk).

17. Personal relationships can be overshadowed – less personal contact.

18. Additional work (preparation of equipment), possible increase in service time.

There are barriers to the shift to digital hospitals: undoubtedly budgetary constraints (one of the biggest), but also the potential resistance of the workforce (which, in the healthcare sector, is typically ageing) and a skills shortage. Trade unions can also play a role in breaking down resistance by helping overcome fear of the unknown and psychosocial barriers. In addition, on-the-job training and retraining can play a crucial role in developing skills and reducing fear of the unknown.

Trade union wage bargaining should also take it into account that staff wages should reflect the specific skills needed to operate the technology.

With the advance of digitalisation in the health sector, including the hospital sector, special attention should be paid not only to the economic side but also to the specific aspects of patient safety, and special cyber protection solutions, which are essential not only for patients but also for staff working in digitalised working environments. A cybersecurity approach must also be included in the digital development strategies of healthcare institutions and the development of staff competences.

Digitalisation is clearly the future for hospitals in the country. However, digitalisation-related developments are costly; this puts underfunded healthcare providers and hospitals in a particularly difficult situation, where even basic infrastructure improvements are difficult. This also means that most of the improvements can be financed by EU funds. When digitalisation is implemented with external ad hoc funding, there is a risk that the process will become fragmented, the elements will not be connected, and long-term sustainability will fail. Therefore, it is advisable for healthcare institutions/hospitals to formulate a complex digital organisational strategy guided by medium- and long-term objectives. The institution / hospital digital strategy should take into account the views of all stakeholders (patients, doctors, professionals). Employees should be involved and informed about possible strategic goals before planning/development ([26]).

Section 2.4 Overall sectoral cross-cutting conclusions

Digitalisation offers the opportunity to connect disparate work organisations, to bring together dispersed information and to fully exploit the potential of information. According to the

---

26. Medical Weekly (2021).

interviewees, digitalisation increases job security and reduces stress at the workplace if the right preconditions are in place, in particular prior information, consultation, training and preparation.

In addition, the fact that artificial intelligence can take the burden of repetitive, monotonous tasks away from workers can also lead to a reduction in workplace stress.

Digitalisation, and the new skills and knowledge it brings, is widely seen as having a positive impact on career prospects and job security.

A fundamental positive aspect of digitalisation is that it reduces the potential for human error, and thus it saves the extra time and cost involved in repair. Work has become easier and faster in many jobs. More and more physical workers have smartphones and laptops too, which increases their digital literacy and helps them to adapt to changes.

However, a negative and frustrating effect is that workers' every move is monitored (where they are, what problem they are trying to solve, what materials they are using). In most cases, workers in customer service are in a race against time, often having to solve a customer's problem within a given time limit, for example 5 minutes, and the call cannot take longer. The team spirit and teamwork are being pushed into the background, while management control over employees is becoming increasingly strong. Supervision extended by digital tools, or mandatory data reporting on performance are mostly used by management to speed up the pace of work. Stressful jobs are associated with premature burnout, frustration, other health hazards and high turnover rates.

With the expansion of the online space, almost all training courses are now available online, without the need to travel or be present in person. This gives the opportunity for anyone to acquire knowledge and different skills. In most cases, however, employees perceive this as a rather negative change, since the personal touch of the instructor is not available, or less so, on the online platform, and the lack of a sense of community means that the appeal of the traditional training courses of the past is lost. The instructor is also less likely to notice if some of the material needs more explanation. Online courses often provide asynchronous, non-tutorial instruction. The downloadable online course materials are worked through independently by the employees, who then take an online test at the end to assess their knowledge. Rather than training, it would be more appropriate to call these courses 'self-education', as they do not develop skills or competences. Not all workplaces offer time off to complete the courses, with respondents doing some of the training in their spare time and some during less busy working hours.

Working from home makes it more difficult for employees to separate their work from their private life. All interviewees mentioned that telework has increased the number of hours spent working. The interviews showed that they typically do not stop work immediately after the end of the

working day (either because they think 'I would spend this time travelling anyway' or because they are absorbed in a larger job); even in the evening or at night, they look at their mail and stay at the computer for a while, answering emails, trying to catch up on what they have left to do, finishing a short task that has just arrived and 'fitting' it in with their bedtime. It becomes particularly difficult to separate work and private life when one spouse works from home and the other does not; it is then difficult for the person who returns home after work to accept that the other is still working, even if the other has spent part of the working day at home.

Increased working time in front of a screen has a significant negative impact on physical health: vision deteriorates, posture becomes stooped and joints are damaged without a proper office chair and wrist rest. Compliance with and enforcement of health and safety rules is a problem. Labour inspection and control has been progressively dismantled by the Hungarian government and knowledge of the rules does not seem to be sufficiently detailed according to the interviewees, although OHS training is mandatory in all workplaces. The legal requirement for less than 6 hours of working time in front of a screen and 10 minutes break per hour is not observed and enforced, according to the interviewees. Many of the interviewees were not even aware of the rules.

Age was clearly felt by interviewees to be a determining factor in adapting to the requirements of digitalisation. Managers must therefore explicitly address the issue of intergenerational cooperation, as generational differences can create regular friction in everyday life that needs to be managed carefully. Criteria for the digitalised workplace typically include continuous (self-)development, teamwork, fitting into the organisational culture, proactivity, desire to learn and realistic salary expectations. However, these factors also reflect age specificities: young people are generally considered to be more open to development and learning new technologies, and young people may also have an advantage integrating into the team for generational reasons (if the majority of the team is young). It is therefore particularly important that employers invest significant tangible and intangible resources in the development and training of older employees. A growing number of employers prefer to employ older people mainly as subcontractors, precisely because of the problems of intergenerational integration.

In terms of the link between the exercise of advocacy rights and digitalisation, digitalisation has facilitated trade unions' activities mainly in the area of organising and activating their members: they publish online newsletters, which do not necessarily reach only their members, they run websites, use social media, organised online voting during the COVID-19 pandemic, and meet via video-conferencing, thus saving a lot of travel time and meeting in larger numbers. They have easier and quicker access to information on legislation and to amendments to legislation that can be used in advocacy, they can store materials more easily. The use of digital tools is speeding up the opinion-forming process, involving more people in consultation on legislation.

SECTION 3. DIGITALISATION AND SOCIAL DIALOGUE

Section 3.1 Introduction: contextualizing the national system of industrial relations

In Hungary, the majority of social dialogue takes place at company level. A trade union is entitled to conclude a collective agreement if 10% of the total number of employees at the company are members of the union. If there is no collective agreement or there is no trade union entitled to conclude a collective agreement in a given workplace, the rights and obligations arising from the employment relationship - except for wage matters - may be regulated in a works agreement concluded between the employer and the works council. In 2020 18.5% of employees ([27]) worked in a workplace which was covered by a valid collective agreement (at sectoral or company level), compared to 20.6% in 2015. According to government records, the number of company-level collective agreements is around 1,100 in the private and 1,800 in the public sector.

Sectoral forums for social dialogue in Hungary are reported in the sectoral chapters of this report. The macro-level (national) forums operate in three areas:

19. the Permanent Consultative Forum of the Competitive Sector and the Government (VKF),

20. the National Civil Service and Interest Conciliation Council (OKÉT) and the

21. the Public Service Enterprises Consultative Forum (KVKF).

The Permanent Consultative Forum of the Competitive Sector (VKF) participates in the preparation of government decisions on economic, wage and employment policy as a consultative body and, in exceptional cases – such as the yearly regulation of the national minimum wage – it also concludes agreements. A serious shortcoming of the VKF is that not all representative trade union confederations and national employers' representatives are members of this forum and the selection of members was an arbitrary decision by the government in 2011. This causes problems in two respects. Firstly, VKF also discusses issues – notably the national minimum wage – that affect public sector workers as well, yet public sector trade union confederations are excluded from this forum. Secondly, its members were selected by the government and do not have to meet any participation or representation criteria, despite the fact that the partners (albeit only occasionally) conclude agreements within the framework of VKF. The meetings of VKF are not open to the public: neither the agendas, nor the material to be discussed, nor the speeches made at the meetings are made public in a regulated way. Within the formal framework of interest conciliation, the government generally takes a back seat and encourages bilateral agreements between employee and employer representatives. However, when such agreements are not concluded but

---

27. Source: Hungarian Central Statistical Office.

there is political interest in the issue – which usually happens before parliamentary elections – the government uses its position to force through politically beneficial decisions by the Forum, including a significant increase in the minimum wage, spectacular tax cuts or even the refund of taxes already paid by employees.

The National Civil Service Interest Reconciliation Council (OKÉT) is a tripartite forum for civil servants, contracted members of the armed forces and law enforcement agencies. The bodies taking part in the Forum are trade unions, government representatives, and the associations of local municipalities. The agenda of OKÉT includes wage policy, labour and employment issues – with the exception of the minimum wage, which (as mentioned before) is discussed by the VKF.

The Public Service–Enterprises Consultative Forum (KVKF) is a tripartite consultative, preparatory and advisory body on economic decisions directly affecting companies providing public services. The forum meets at least two times a year in order to consult, give opinions and adopt recommendations on – among other things – regulatory plans affecting its members in the fields of employment policy, labour market and income trends, draft legislation on labour law, vocational training, health and safety at work and labour inspection, and the system of industrial relations. The level of minimum wages is outside the scope of this forum too.

According to the trade unions, the macro-level forums are characterised by the government's strong state-centred approach. In practice, this means that the goal of the consultations is primarily not to seek a compromise and, accordingly, government representatives often do not enter into negotiations with the intention of reaching an agreement. A good example of this was the government's decision on the new legislation on pensions, replacing early retirement schemes and early payment of pensions. Although this decision affected the fundamental interests of workers represented in all the three forums, none of them could reach a compromise solution on this issue.

Historically considered, interest conciliation above the workplace level has been gradually losing its importance since the mid-1990s, and negotiations aimed at reaching agreements have been replaced by simple consultations (without any obligation to find a compromise).

Only one national social dialogue on the impact of digitalisation on the world of work has so far taken place in Hungary, at the seminar organised by the ETUC on 12 March 2021. The discussion was part of the process of preparing a bilateral European framework agreement between employers' and workers' organisations. The European social partners had already adopted a similar framework agreement on active ageing and intergenerational cooperation in December 2016, which was implemented in 2017-2019. Hungarian social partners agreed that 'digitalisation' is already in progress – instead of something to be expected in the future – as jobs are already being

transformed, new competences and workers with new skills are needed. Digitalisation is present in all segments of the labour market. They also agreed that digitalisation will lead to the creation of new jobs, even if for the time being, it is more likely to eliminate jobs in Hungary. In line with these findings the participants identified and formulated concrete actions in order to implement the objectives of the forthcoming European Framework Agreement on Digitalisation. These objectives should be adapted at national level by setting national and local targets. Besides this, the objectives need to be negotiated at sectoral level too by taking the discussions to the workplace level. Questionnaires and surveys should be carried out, involving all labour market actors, in order to obtain a comprehensive picture of the digitalisation process in the workplace. Besides, sectoral and technical analyses and studies should be conducted to assess the whole situation and set the right challenges.

As a common principle, partners agreed that emphasis should be primarily placed on training. By providing the relevant digital training, the currently active workforce will be able to meet digital challenges and avoid losing their jobs due to digitalisation. The training system must be designed to provide workers with the necessary digital skills, according to labour market needs. The existing interest reconciliation forums should be involved in the discussion on employment policy issues and in the implementation of the Agenda.

Section 3.2 Trade unions' position on digitalisation at national level

Hungarian trade unions have so far only once issued a joint position on digitalisation in national forums ([28]).

According to the resolution adopted by the trade union confederations on digitalisation (Kelemen 2018) for the 2018 meeting of the National Economic and Social Council (), there is currently limited information and factual material available on the direct impact of digitalisation and robotisation on the Hungarian labour market. Although there are some studies available on the working conditions of teleworkers and employees working with ICT, as well as on the ICT skills needed by SMEs, more widespread background information is needed to monitor the processes of digitalisation and to anticipate and manage the related changes. Trade unions expect that workers in the engineering, logistics and administration sectors will be most affected by the digital changes. At the same time – in line with the government's Digital Workforce Programme – the labour shortage of IT specialists and workers with high levels of digital skills is forecast to become more and more acute.

---

28. Trade union background paper for the National Economic and Social Council meeting of 12 October 2018, compiled by Melinda Kelemen, 5-10-2018.

As far as possible, domestic trade unions are following closely the developments related to digitalisation, automation and their potential impact on the labour market. Hungarian trade unions welcome the government's efforts to use the potential of digitalisation and create as many new, high value-added jobs as possible. Given that adaptability in the future labour market will very much depend on the digital skills of workers, the government places strong emphasis on the Digital Education Strategy and the Digital Workforce Programme and their implementation. Trade union confederations therefore consider it essential that these principles are applied in public education and vocational training, as well as in higher education.

In summary, Hungarian trade unions have recognised the importance of supporting and possibly shaping the processes of the digital age and wish to pay particular attention to the human factor and to maintain social security alongside digitalisation and technological progress. The resolution highlights:

- the timely recognition of labour market transition processes and the reduction of their adverse effects, in particular the appropriate management of expected redundancies and the promotion of adjustment opportunities for the ageing population,

- creating labour law protection for new types of employment (e.g. platform workers) in a changing labour market,

- maintaining and supporting the system of domestic labour relations and developing it in the light of new needs and employment structures,

- in addition to the modernisation of public sector activities (e.g. tax returns, company court procedures), the development of other areas, including health, as a particularly important goal,

- more support for research and development, in particular for programmes aimed at innovation,

- addressing the increasing psychosocial risks and ensuring conditions for mental well-being (Kelemen 2018).

Section 3.3 Electricity production and distribution sector

3.3.1   Collective bargaining in the sector

The United Electricity Workers' Federation – (Egyesült Villamosenergia-ipari Dolgozók Szakszervezeti Szövetsége, EVDSZ) was founded in 1990 as an industry federation for the protection and representation of interests of electricity workers. Currently it has 25 member

unions, which carry out their work independently while participating jointly in the work and decision making of the trade union federation ([29]).

The sectoral collective agreement, established with the help of the EVDSZ, is one of the few that offer workers' protection extended nationally by the Minister of Labour. The collective agreement contains the most important employment conditions, with special attention to wages and benefits. In addition, local collective agreements (the collective agreements concluded at individual workplaces) – are also in force. Besides these, a number of further agreements and contracts are concluded with the employers' organisations in order to enhance the employment protection of workers and jobs. The annual wage and social agreements are among the most important of these. The union also has a strike code.

The federation is highly committed to participation in international trade union activities ([30]), including the work of the European Works Council, and the European trade union federations like IndustriAll and EPSU, the European Social Dialogue Committee as a partner of EURELECTRIC, and in several bilateral co-operations.

3.3.2 Role and importance given to digitalisation, including the impacted dimensions of job quality, in the texts of the national industry-wide agreements, in the last couple of bargaining rounds, in the sector

Although the digital evolution has been underway for several years, this topic hardly ever comes up in the social partners' discussions and is raised neither by the employers nor by the trade unions. However, given the expansion of teleworking, e-learning and the increasing use of digital systems it seems inevitable that in the future wide-ranging debate will be conducted on the impact of digitalisation on work and on the physical and mental health of workers.

3.3.3 Trade union approaches and priorities for the collective bargaining agenda on digitalisation

The raison d'être and main task of trade unions has always been to represent the interests of workers. As increasing numbers of workers face digitalisation and its impacts every day, the topic and the connected legal protection is increasingly becoming part of trade union activities.

The content of the collective agreements regarding telework is rather uncertain. In line with the continuous evolution of digitalisation, the scope of these agreements is expected to broaden in the near future.

---

29. https://www.vd.hu/rolunk
30. https://www.vd.hu/rolunk

3.3.4 Conclusions on the sector

In addition to the many positive aspects of the online space, it also has a number of negative effects on working conditions: the number of hours spent in front of screens and monitors has increased leading to new physical and mental risks at work (for example visual deterioration, back and neck problems as well as mental stress and reduced socialization). Non-compulsory health insurance is an increasingly common element in wage negotiations and collective agreements, because it helps to detect and remedy both physical impairments and mental exhaustion and isolation. Some companies already contribute to the mental and physical well-being of their employees, for example by providing them with healthy food (fresh fruit or vegetables once a week), and this trend is expected to continue. In line with this, the traditional company doctor might be joined by an occupational psychologist and an increasing proportion of training courses will focus on stress management and work-life balance.

Section 3.4 Public administration sector

3.4.1 Collective bargaining in the sector

Hungarian public servants used to work in a career-based, closed civil service system. Status laws – outside the scope of mainstream labour law - regulate the rights of public servants, including their collective rights and labour institutions. Between 1992 and 2011, the rights of public servants working in different areas of the public administration were uniformly regulated by a single status law ([31]). Between 2011 and 2019, this single regulation was abolished and in these 8 years, three new status laws redefined workers' rights in this sector. As a result of the legislative changes, the state administration now hires so-called government officials, while the local government administration employs civil servants.

Table 1. Institutions of industrial relations in the public administration, 2022

3. **Industrial relations institution**	4. **government officials**	5. **civil servants**
6. Trade union	7. ⌐	8. ⌐
9. Workplace collective bargaining	10. none	11. none
12. Sectoral collective bargaining	13. none	14. none
15. Collective bargaining at the national level	16. none	17. none
18. Social dialogue at work - agreement	19. ⌐	20. ⌐
21. Sectoral social dialogue - agreement	22. ⌐	23. ⌐
24. National social dialogue - agreement	25. ⌐	26. ⌐
27. Participation - workers' council	28. none	29. none
30. Right to strike	31. limited	32. limited

Source: authors' own elaboration, 2022.

31. Act XXIII of 1992 on the Rights of Civil Servants

3.4.2 Role and importance given to digitalisation, including the impacted dimensions of job quality, in the texts of the national industry-wide agreements, in the last couple of bargaining rounds, in the sector

As presented above, collective bargaining and collective agreements are not allowed in the public sector, but workers have the right to participate in consultative forums at workplace, sectoral and national level. In these forums, the issue of digitalisation has not yet been raised.

In the context of managing the COVID-19 pandemic, trade unions asked to be involved in the consultation on teleworking rules. However, with rare exceptions (such as the case of the municipality of the capital) this did not happen and there is no known agreement on the subject. Formal channels for workers to make their voices heard do not work. *'There was no consultation. From the first day of next month, it will be introduced. Is that OK? Is that not OK? It will be the same. We got information only on what to do'* (FG14). However, there is one consequence, namely that individual lobbying is rife, leading to conflicts of interest between workers ([32]).

3.4.3 Trade union approaches and priorities for the collective bargaining agenda

As indicated in section 3.3.1, government officials and civil servants working in the Hungarian public administration sector do not have the right to conclude collective agreements, so there are no collective agreements at the local, sectoral or national levels.

3.4.4 Conclusions on the sector

The first law on the status of civil servants, adopted in 1992, limited collective rights in the sector, presumably intending to establish a merit-based (closed) civil service system in line with historical traditions. In this system, civil servants' rights, working conditions, and remuneration were guaranteed by employment rules. These guarantee rules have been phased out, step by step. In the absence of collective bargaining, the functioning of the consultative forums should be essential: partners could exchange information, inform each other, consult and negotiate to reach an agreement. The lack of real consultations is the main reason for the highly critical attitude of trade unions toward the government.

Among the points to be discussed in the national and sectoral forums, the issue of digitalisation was raised in relation to the COVID-19 pandemic. The Trade Union of Hungarian Civil Servants and Public Service Workers (MKKSZ) would have liked to see the right of workers to telework (or more precisely, to be granted the opportunity to telework at their request) enshrined in the constitution,

---

32. In the web-survey data, we found a significant correlation between union membership and satisfaction with union negotiation at the workplace (Q41.2). Members significantly (P<0.05) perceive the union as more effective than non-members. However, both members and non-members tend to perceive union bargaining at the local level as ineffective. This is no wonder, since the union has no right to negotiate or even participate. We found a similar result at sectoral level, with no correlation (Q41.1).

following the German example. Trade union leaders, speaking in the interviews, considered the topics of compulsory vaccination, tax and earnings policy for 2021 and 2022 and the fight against COVID-19 pandemic to be more urgent issues for discussion than digitalisation.

To sum up, neither collective bargaining nor consultative forums are functioning effectively today in the Hungarian public administration. The issue of digitalisation came to the attention of public service trade unions in connection with the COVID-19 pandemic, namely through the teleworking regulations. Unfortunately, they have not been able to influence the development of the regulations effectively. At present, challenges, programmes and activities related to digitalisation are not the focus of attention in the sector.

Section 3.5 Hospital sector

3.5.1 Collective bargaining in the sector

In the health sector, the workers' side is represented by several unions and is thus rather fragmented. There are separate unions for professional staff, nurses, and doctors. Other actors are the Hungarian Medical Chamber and the Hungarian Chamber of Health Care Professionals.

The 2020 Health Care Service Act, adopting the concept of the Hungarian Medical Chamber, introduced a new medical wage scale, which has further increased the wage tension between medical professionals and doctors. While both categories of employees (doctors and nurses) have been lagging far behind the European Union average pay levels for years, doctors will receive an average pay increase of 180% over three years from 2021, while nurses will receive a 70% pay increase over four years. However, the new health employment relationship, introduced in addition to the wage measures, harms the interests of doctors and nurses equally. The law bans collective bargaining in public health institutions, prohibits termination by the employee, because of the COVID-19 pandemic, and almost halves the notice period for dismissal by employers. The abolition of collective agreements in health care institutions has essentially reduced social dialogue to a minimum, leaving the employer alone to negotiate at its discretion. Trade unions representing health workers have formed an action group against the above-mentioned health law, which significantly undermines the interests of health workers, and have appealed to the International Labour Organization (ILO) to have the law repealed (MedicalOnline 2021). In December 2021, the ILO confirmed that the 2020 law does not comply with the international conventions signed and promulgated by Hungary (MÉRCE 2021), but the law remains unchanged.

3.5.2 Role and importance given to digitalisation, including the impacted dimensions of job quality, in the texts of the national industry-wide agreements, in the last couple of bargaining rounds, in the sector

There are no sector-wide agreements on digitalisation in the domestic healthcare sector. According to a summary report by the FESZ (2022) (Independent Trade Union for Health), dialogue with workers in the health sector is minimal. It is mostly limited to the allocation of work tasks, and there are no regular national or local forums for health employers to discuss strategic issues such as digitalisation. When a new system – for example a new type of digital equipment - is introduced, short and mostly online training sessions are organised to prepare employees on, for example, how to operate ventilators, how to evaluate data.

3.5.3 Trade union approaches and priorities for the collective bargaining agenda

As social dialogue in the health sector is almost non-existent, there is no consultation on digitalisation in the workplace. At present, therefore, in Hungary - even though there is a need for it - issues relating to digitalisation and affecting employees cannot be regulated by collective agreements or be made the subject of collective bargaining.

FESZ had an opportunity to have a dialogue in September 2022 with the State Secretary for Health and his senior staff. The topics raised by FESZ covered salary increases for professional staff, allowances, salaries of techno-economic staff, recognition of skills and knowledge, reconciliation of interests, the anomalies of the employment of retired people, problems concerning nurses, training and supply. Also during this dialogue, the union had the possibility to raise the issue of the poor IT support.

As shown by the DGQS results, there is room for improvement in terms of trade union effectiveness in negotiating social issues. 53% of respondents think that the trade union is not effective at all at workplace level; 39% said the same for the sectoral level; 6% thought the unions were moderately effective at negotiating at the workplace level and 12% at the sectoral level.

3.5.4 Conclusions on the sector

Currently, trade unions are not involved prior to the digitalisation process in hospitals. Ex-post criticism results in corrective action in the best cases. The introduction of digital technologies does not in itself provoke resistance, but lack of preparation and excessive administration make adaptation difficult. Precisely in the light of the circumstances identified in this research, it is recommended that social partners, local and/or sectoral, professional employee representatives, trade unions, health and safety representatives, etc. be involved in digitalisation processes in order to maximise the results and consequences and minimise the disadvantages for employees. According to the summary by the Independent Health Trade Union, at EU level, participation of the social partners at all levels - preparation, decisions, implementation of digital solutions at national

and local level – should be a precondition for funding. A mechanism for this should also be developed to ensure that the social partners do not fulfil their tasks in form only. For example, in the Hungarian monitoring committees that supervise the use of EU funding, the trade unions whose members are most affected by the objectives of the funding should be represented on the employee side. This is not the case today, which means that there is no meaningful participation or monitoring on behalf of employees. Allocation of EU financial support must also be linked to a change in this practice.

At both local and national levels, the union expects technological changes to be discussed with employee representatives well in advance of their introduction, as employees need to adapt, through, for example, participation in training courses or redeployment in the event of job losses.

The trade union recommended that healthcare institutions develop a long-term digitalisation strategy to guide them in attracting external funding. The digital strategy should be developed with the participation of employee representatives and representative organizations, not least to validate the experiences of employees reported in this research and to identify hidden risks and potential failure associated with digital aspirations. To further improve processes and maximise the benefits of digitalisation, it is also necessary to involve worker representatives in drafting recommendations on how to address the identified risks. The development and maintenance of specific skills and expertise required to operate digital solutions, the development of training and further training, how to do this, and the rights and obligations associated with this should be part of the social dialogue (DGQS). The present survey also supports the need to carry out a risk analysis of the occupational safety and health and psychosocial/mental health burdens associated with digital solutions before digital tools/ methods are introduced; to develop appropriate protocols based on the risks identified, and to train OHS representatives and OHS professionals to recognise and manage these.

Section 3.6 Overall cross-cutting sectoral conclusions

Although there is a need for it, there is currently no national forum in Hungary where the impact of digitalisation on the workplace can be discussed in tripartite negotiations. This is true not only at the national level, but also at the sectoral level.

In the electricity production and distribution industry, the digitalisation process started years ago, but collective bargaining has not really addressed issues specifically related to digitalisation, which have been raised neither by employers nor by trade unions. The reasons given in the interviews were that the long-term effects of digitalisation (health and mental health effects) will be felt later, and that the current effects were mainly accentuated by the measures taken in response to the coronavirus epidemic (working from home, teleworking, distance learning).

Hungarian public administration employees work in a career-based, closed civil service system; their employment is regulated by specific status laws, which means that government officials and civil servants in the public administration do not have the right to engage in collective bargaining, and there are no collective agreements at local, sectoral or national level.

Employee representatives have the right to participate in workplace, sectoral and national interest negotiations. In these forums, however, the issue of digitalisation has not been discussed as a separate topic but has been raised in connection with the COVID-19 pandemic and the teleworking regulations. The trade union leaders interviewed considered compulsory vaccination, tax and earnings policies for 2021 and 2022, as well as the fight against the pandemic, to be more serious issues for discussion.

In the context of health employment, Hungarian legislation prohibits collective bargaining in public health institutions and has introduced a ban on dismissing workers, citing the exceptional situation caused by the epidemic. The abolition of collective agreements in health care institutions essentially reduces social dialogue to a minimum and leaves the reconciliation of interests solely to the discretion of the employer. Overall, the dialogue with workers' trade unions in the Hungarian health sector is minimal. Workplace communication is largely limited to the day-to-week assignment of work tasks, and there are no regular forums at either national or local level for health employers to discuss strategic issues such as digitalisation.

SECTION 4. RECOMMENDATIONS TO NATIONAL AND EU STAKEHOLDERS

Section 4.1 Recommendations to national stakeholders

1. All stakeholders, including employee and employer representatives and professional organisations, should be involved in the development of the national, sectoral and workplace digitalisation strategy, in the collection of proposals and in the discussion of the material to be produced.

2. In developing the strategy and its implementation plan, stakeholders should take it into account that digitalisation and the related tools and methods are an opportunity that can be best exploited if the workforce is as highly skilled as possible.

3. Stakeholders should also address the issue of the financial resources required for the introduction of digitalisation. This is particularly important in the under-financed health sector. The allocation of national and international (EU) funds is essential for this purpose.

4. In the public administration, trade unions call on the government to ensure:
   - substantive consultation and negotiations with their organisations,
   - properly functioning sectoral and national social dialogue institutions,
   - restoration of trade union rights.

5. There are significant gaps in the level of digitalisation in different areas of the public administration. Trade unions demand uniform treatment in access to digital tools and in the provision of high-quality training opportunities. This also requires the provision of financial resources to local and regional municipalities, including the replenishment of resources which have been severely cut or withdrawn by the central government on several occasions in the wake of the pandemic.

6. The mental and psychological protection of workers against negative impacts of digitalisation is not covered at all, either by health and safety rules or by labour inspections. Due to the weakening of labour inspections in recent years, such inspections are rare, and the rights of trade unions in the field of OHS have been abolished. The present survey also supports the recommendation to carry out an OHS risk assessment concerning the psychosocial/mental burden associated with the introduction of digital solutions, before the introduction of digital tools and methods.

7. Keeping up with digitalisation and renewing and maintaining the necessary knowledge is particularly important for older workers, partly because of the ageing workforce. In state-owned enterprises and public institutions, the age of employees is even higher than average. Leaders must therefore pay particular attention to the issue of intergenerational cooperation, as this situation can create regular friction in everyday life that needs to be addressed consciously.

Section 4.2 Recommendations to European stakeholders

1. The impact of digitalisation on the labour market and the digitalisation of work processes are important challenges that should also be addressed at European level. Questions to be discussed could be, for example: '*To what extent and in what areas can digitalisation replace existing jobs?', 'How are digitalisation, new tools and methods received by those working with it/them and by clients?'*

2. One of the common tasks at European level could be the development and harmonisation of online courses on new digital tools or processes, possibly including the creation of high-level animated online learning materials and courses, study visits, exchanges of experience, and the extension of existing frameworks (e.g. Erasmus).

3. International cooperation can be particularly effective in the field of digitalisation-related cyber defence. For public services, the protection of digital systems, data, strict control and purpose limitation of access to data are essential for both users and service providers. Protection should also cover the issue of supervision and controllability of workers using digital tools. The international aspects of cyber security are particularly relevant in the energy sector, where electricity networks extend across national borders. Therefore, in the near future, even closer cooperation is needed, involving the sharing of system developments, innovation activities and implementation of cross-border projects in order to further increase the efficiency and integration of electronic systems.

4. Since the introduction of digitalisation is costly, European decision-makers should pay particular attention to the availability of European resources to facilitate such developments. In this context it would be useful, for example, if hospitals and healthcare institutions facing digitalisation were given the opportunity to apply for EU funds directly in a targeted manner. In other words, a certain decentralisation of EU funds in this area could help hospitals avoid a position where they would be short of resources.

5. In addition, the involvement of the social partners at all levels should be a key condition for EU funding. They should be involved in the preparation, decision-making and implementation of digital solutions at national, sectoral and local level. On the employee side, trade unions whose members are most affected by the objectives of the application should be represented in the national monitoring committees. The allocation of EU financial support should be subject to compliance with this condition.

SECTION 5. REFERENCES

European Commission (2017) The economic benefits of Open Data, data.europa.eu – The official portal for European data, 06.12.2017. https://data.europa.eu/en/publications/datastories/economic-benefits-open-data

European Commission (2020) Multiannual financial framework 2021-2027. https://commission.europa.eu/strategy-and-policy/eu-budget/long-term-eu-budget/2021-2027/documents_en

European Commission (2021a) Digital Economy and Society Index (DESI), 2021 publications, DESI country profile (HU). https://digital-strategy.ec.europa.eu/en/policies/desi-hungary

European Commission (2021b) Digital Public Administration factsheet, Hungary, https://joinup.ec.europa.eu/sites/default/files/inline-files/DPA_Factsheets_2021_Hungary_vFinal.pdf

eGovernment Benchmark Report (2021) European Commission https://op.europa.eu/o/opportal-service/download-handler?identifier=d30dcae1-436f-11ec-89db-

EY (2021) Digitális egészségügy: az átalakulás kapujában [Digital Healthcare at the Gateway of Transformation] IT FEST 2021 conference, Budapest, 24.06.2021 https://www.ey.com/hu_hu/digital/digitalis-egeszsegugy-az-atalakulas-kapujaban

Fási, Csaba (2020) A tisztviselők felkészültségének komplex vizsgálata a versenyképességgel és digitalizációval való összefüggésrendszer tükrében. Phd tézis. Nemzeti Közszolgálati Egyetem. [A complex analysis of civil servants' skills in the context of competitiveness and digitalisation. Phd thesis. National University of Public Service] https://nkerepo.uninke.hu/xmlui/bitstream/handle/123456789/16257/fasi_csaba_tezisfuzet.pdf;jsessionid=0BBBC25D227C41182ECCB80A58D7EC98?sequence=2

FESZ (2022) Memo of the meeting with Dr. Péter Takács, State Secretary [Emlékeztető a Dr. Takács Péter Államtitkár Úrral folytatott egyeztetésről]. https://fesz.eu/hirek/emlekezteto-a-dr-takacs-peter-allamtitkar-urral-folytatott-egyeztetesrol

Government of Hungary (2021) Recovery and Resilience Plan of Hungary (HET or RRP), 02.07.2021. https://www.palyazat.gov.hu/helyreallitasi-es-ellenallokepessegi-eszkoz-rrf

Hajas B., Takács A. and Temesi I. (2022) Közigazgatási szakvizsga. I.modul. Jegyzet. NKE, Budapest [Public Administration Examination. Module I. Coursebook.] https://kti.uni-nke.hu/document/vtkk-uni-nke-hu/szv_tankonyv_1_modul_20220301.pdf

Hortoványi L., Szabó Z.R.n Nagy S.G.and Stukovszky T. (2020) A digitális transzformáció munkahelyekre gyakorolt hatásai – Felkészültek-e a hazai vállalatok a benne rejlő nagy lehetőségekre (vagy veszélyekre)?, Külgazdaság, LXIV / március-április [Digital transformation for jobs and the impact on jobs - Are domestic companies prepared for the great opportunity it represents (or the risks)? Foreign Economy, LXIV /March-April] http://unipub.lib.uni-corvinus.hu/7085/1/08_Hortovanyi_b388f0cda9.pdf

Horváth and Petrovics (2021)

Hungary's Artificial Intelligence Strategy 2020-2030, Ministry for Innovation and Technology https://ai-hungary.com/files/e8/dd/e8dd79bd380a40c9890dd2fb01dd771b.pdfKelemen M. (2018) NGTT előtt. Szakszervezeti háttéranyag. [Trade union background paper for the National Economic and Social Council meeting of 12 October 2018] https://szef.hu/2018/10/11/ngtt-elott-a-munka-atalakulasa-a-digitalizacio-es-a-robotizacio-lehetseges-kovetkezmenyei/

IVSZ (2021) Az IVSZ véleménye a DESI 2021 jelentés adatairól [Opinion of the Association of IT Entrepreneurs on the DESI 2021 Report]. https://ivsz.hu/hirek/ivsz-velemenye-a-desi-2021-jelentes-adatairol/

Kun A. (2019) A közszolgálati életpályát meghatározó tényezők, a közszolgálat egysége és differenciáltsága, In Kiss, György (szerrk.) Közszolgálati életpályák jogi szabályozása. Dialóg Campus Kiadó, Budapest [Kun, Attila: The determinants of civil service careers, the unity and differentiation of the civil service. In, Kiss, György (ed.) Legal regulation of civil service careers.] https://nkerepo.uninke.hu/xmlui/bitstream/handle/123456789/12671/web_PDF_Kozszolgalati_eletpalyak_jogi_szabalyozasa.pdf?sequence=1

McKinsey (2018) Transforming our jobs: automation in Hungary, Report. https://www.mckinsey.com/featured-insights/europe/transforming-our-jobs-automation-in-hungary

McKinsey (2020) Flying start: Powering up Hungary for a decade of growth [Repülőrajt, A magyar gazdaság növekedési pályája 2030], Report. https://www.mckinsey.com/featured-insights/europe/flying-start-powering-up-hungary-for-a-decade-of-growth

MedicalOnline (2021) The Health Service Act will be referred to the Ombudsman [Az ombudsman elé viszik az egészségügyi szolgálati törvény ügyét]. http://medicalonline.hu/eu_gazdasag/cikk/az_ombudsman_ele_viszik_az_egeszsegugyi_szolgalati_torveny_ugyet

MÉRCE (2021) International Labour Organisation: Hungarian government to review the law on the employment of health workers [Nemzetközi Munkaügyi Szervezet: A magyar kormány vizsgálja felül az egészségügyi dolgozók munkaviszonyáról szóló törvényt]. https://merce.hu/2021/12/11/nemzetkozi-munkaugyi-szervezet-a-magyar-kormany-vizsgalja-felul-az-egeszsegugyi-dolgozok-munkaviszonyarol-szolo-torvenyt/

Ministry of Innovation and Technology, Ministry of Interior (2020) National Digitalisation Strategy 2021-2023 [NEMZETI DIGITALIZÁCIÓS STRATÉGIA 2021-2030]. https://2015-2019.kormany.hu/download/f/58/d1000/NDS.pdf

Rostás, Péter (2020) Digitalizáció az energetikában. Az energiaszektor közvetlen digitalizációja [Digitalisation in Energy. Direct Digitalisation of the Energy Sector] https://blogs.dlapiper.com/advocatus/2020/03/digitalizacio-az-energetikaban-az-energiaszektor-kozvetlen-digitalizacioja/

Annex 1: List of interviews

ID	Gender	Age	Institution	Sector	Position	Date	Method
INT1	M	37	Trade Union of Electricity System Managers and Operators	Electricity	Chairman	01.03.2022.	Zoom
INT2	M	52	North Transdanubian Electricity Trade Union	Electricity	Chairman	01.03.2022.	Zoom
INT3	M	53	South Hungarian Electricity Trade Union	Electricity	Chairman	03.03.2022.	Zoom
INT4	M	37	Technical Workers' Interest Group Paks Nuclear Power Plant	Electricity	Chairman	04.03.2022.	Zoom
INT5	M	57	Tiszántúli Electricity Industry Trade Union.	Electricity	Secretary	07.03.2022.	Zoom
INT6	M	58	Budapest Power Plants Trade Union	Electricity	Vice chairman	08.03.2022.	Zoom
INT7	M	63	South Transdanubian Electricity Workers' Union	Electricity	Chairman	09.03.2022.	Zoom
INT8	M	55	Mátra Power Plants Trade Union	Electricity	Chairman	10.03.2022.	Zoom
INT9	M	58	Hungarian Electricity Workers' Union	Electricity	Vice chairman	10.03.2022.	Zoom
INT10	M	54	Paks Nuclear Power Plant Workers' Union	Electricity	Chairman	11.03.2022.	Zoom
INT11	M	67	KSZSZ Public Service Trade Union Federation	Public administration	President	01.03.2022.	Zoom
INT12	F	62	MKKSZ: Trade Union of Hungarian Civil Servants and Public Service Workers	Public administration	Regional secretary	01.03.2022.	Zoom
INT13	F	57	MKKSZ	Public administration	President	02.03.2022.	Zoom
INT14	F	37	trade union at a local government office (MKKSZ affiliate)	Public administration	Secretary	03.03.2022.	Zoom
INT15	M	53	Trade union organisation at a Ministry / (MKKSZ affiliate)	Public administration	Chairman	08.03.2022.	Zoom
INT16	F	42	Trade union organisation at a municipality office (MKKSZ affiliate)	Public administration	Trade union steward	08.03.2022.	Zoom
INT17	M	63	Trade union organisation at a municipality office (KSZSZ affilaiate)	Public administration	Chairman	09.03.2022.	Zoom
INT18	M	38	trade union organisation at a central government office (MKKSZ affiliate)	Public administration	Secretary	10.03.2022.	Zoom

ID	Sex	Age	Institution	Sector	Position	Date	Method
INT19	M	43	trade union organisation at a central government office (MKKSZ affiliate)	Public administration	Secretary	10.03.2022.	Zoom
INT20	F	52	KKSZ	Public administration	Vice-president	11.03.2022.	Zoom
INT21	F	47	Independent health union	Hospital	None	02.03.2022.	Face-to-face
INT22	M	44	Independent health union	Hospital	None	02.03.2022.	Face-to-face
INT23	M	37	Independent health union	Hospital	Secretary	03.03.2022.	Face-to-face
INT24	M	40	Independent health union	Hospital	None	04.03.2022.	Face-to-face
INT25	M	57	Independent health union	Hospital	None	04.03.2022.	Face-to-face
INT26	F	50	Independent health union	Hospital	None	07.03.2022.	Face-to-face
INT27	F	35	Independent health union	Hospital	None	08.03.2022.	Face-to-face
INT28	F	32	Independent health union	Hospital	None	08.03.2022.	Face-to-face
INT29	M	25	Independent health union	Hospital	None	09.03.2022.	Face-to-face
INT30	F	35	Independent health union	Hospital	None	10.03.2022.	Face-to-face
INT31	M	33	Independent health union	Hospital	None	10.03.2022.	Face-to-face

Annex 2: List of focus groups

Public Administration sector

ID	Gender	Age	Trade union affiliation	Sector	Occupation
FG1.1	F	47	MKKSZ: Trade Union of Hungarian Civil Servants and Public Service Workers	Public administration	Notary coordinator
FG1.2	M	50	MKKSZ	Public administration	Public area inspector
FG1.3	M	52	MKKSZ	Public administration	Public area inspector
FG1.4	F	43	MKKSZ	Public administration	Administrator of the body of representatives
FG1.5	F	43	MKKSZ	Public administration	HR administrator
FG1.6	F	52	MKKSZ	Public administration	Notary clerk
FG1.7	F	45	MKKSZ	Public administration	Tax administrator
FG1.8	F	51	MKKSZ	Public administration	Financial administrator
FG1.9	F	48	MKKSZ	Public administration	Archiving administrator
FG1.10	F	49	MKKSZ	Public administration	Social affairs administrator

Hospital sector

ID	Gender	Age	Trade union affiliation	Sector	Occupation
FG2.1	F	50	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.2	F	46	Independent Trade Union of Health Workers	Hospital	Assistant
FG2.3	F	52	Independent Trade Union of Health Workers	Hospital	Administrative
FG2.4	F	60	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.5	F	31	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.6	F	39	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.7	F	44	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.8	F	53	Independent Trade Union of Health Workers	Hospital	Administrative
FG2.9	F	54	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.10	M	38	Independent Trade Union of Health Workers	Hospital	Patient transporter
FG2.11	M	46	Independent Trade Union of Health Workers	Hospital	Patient transporter
FG2.12	F	56	Independent Trade Union of Health Workers	Hospital	Operating theatre assistant
FG2.13	F	52	Independent Trade Union of Health Workers	Hospital	Operating theatre assistant

FG2.14	F	47	Independent Trade Union of Health Workers	Hospital	Operating theatre assistant
FG2.15	F	45	Independent Trade Union of Health Workers	Hospital	Administrative
FG2.16	F	54	Independent Trade Union of Health Workers	Hospital	Administrative
FG2. 17	F	52	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.18	F	46	Independent Trade Union of Health Workers	Hospital	Nurse with high school degree
FG2.19	M	49	Independent Trade Union of Health Workers	Hospital	Patient transporter
FG2.20	F	43	Independent Trade Union of Health Workers	Hospital	Specialist nurse
FG2.21	F	53	Independent Trade Union of Health Workers	Hospital	Administrative
FG2.22	F	48	Independent Trade Union of Health Workers	Hospital	Nurse
FG2.23	F	28	Independent Trade Union of Health Workers	Hospital	Public health controller
FG2.24	F	37	Independent Trade Union of Health Workers	Hospital	Nurse with high school degree
FG2.25	F	52	Independent Trade Union of Health Workers	Hospital	Administrative
FG2.26	F	50	Independent Trade Union of Health Workers	Hospital	Specialist nurse
FG2.27	F	56	Independent Trade Union of Health Workers	Hospital	Assistant
FG2.28	F	52	Independent Trade Union of Health Workers	Hospital	Specialist nurse