
Digitalization, Labour Market and Collective Bargaining

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Abstract

This paper questions the impact of digitalization on the labour market, both regarding supply and demand, aiming to investigate what the role of collective bargaining should be at different levels, in order to exploit the potential and minimize the risks of digitalization.

Keywords: Labour market; Skills; Collective bargaining; Remote work; Digitalization.

1. Preliminary remarks.

Digital revolution has impacted the way companies think, design and produce, requiring a different way of working and organizing work. It has led to an actual paradigm shift, challenging traditional milestones of labour law that seemed immovable.¹

The workplace, as a delimited physical space, has begun to lose its material boundaries, as the time, which has undergone a progressive fragmentation due to technologies allowing people to work not only from anywhere, but also at any time. The flexibility afforded by digital working tools thus leaves more room for self-determination of the employee, who can more freely schedule the time devoted to private and professional life.

These innovations bear risks and criticalities too. Life and work time are increasingly being interweaved, physical distance makes relationships and hierarchical dynamics between team members complicated, and technological innovations require vocational training and constantly updated skills. On the other hand, since the exponential and compulsory growth

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¹ On digital revolution and labour relations, see Gyulavári T., Menegatti M.(eds.), *Decent Work in the Digital Age. European and Comparative Perspectives*, Bloomsbury Publishing, London, 2022; Perulli A., Treu T.(eds), *The Future of Work. Labour Law and Labour Market Regulation in the Digital Era*, Wolters Kluwer, The Netherlands, 2020; Supiot A., *Labour is not a commodity: The content and meaning of work in the twenty-first century*, in *International Labour Review*, 160, 1, 2021; Vallas S.P., Kovalainen A.(eds.), *Work and Labour in the Digital Age*, Emerald Publishing, Bingley, 2019.

due to the pandemic, remote work has become a method of execution of performance increasingly required by workers:² they choose the opportunities that allow them flexible organization of time and place of work, thus pushing companies to employ them.³

With reference to the labour market dynamics, the impact of new technologies initially polarized the debate between those who predicted the end of human labour and those who see in it an enormous opportunity for job and professional creation.⁴ Then, it focused on the number of jobs that will be lost and those that will be needed to ride the digital wave. At present, the question is rather *how* (present and future) workers can be supported in the digital transition, as the main concern is that the skills required by the new technologies will exacerbate certain distortions and gaps already present in the market.

In this paper, we are going to highlight the impact of digitalization on the labour market, in particular by outlining some specific consequences impacting on labour supply (2.1.) and demand (2.2.). Then, the research aims to investigate what the role of collective bargaining could (or rather should) be in managing these consequences, in relation to the new skills required of workers (3.1.) and the new ways of performing work that digital technologies make possible (3.2.).

Promoted and supported by the Unions as a fundamental pillar of the post-pandemic recovery, digital transformation is an unstoppable process that changes production and organizational structures at breakneck speed, often ungovernable by the legislator. These changes are inexorably reflected in the labour market, requiring a careful handling of the transition: collective bargaining offers the tools to take advantage of the potential and stem the risks of digitalization, by balancing the interests at stake.

2. Digitalization and Labour Market.

Technological innovation has had a powerful impact on the labour market at unexpected and uncontrollable times and ways. If platforms have impacted on the space of intermediation between labour supply and demand - very often confusing the figure of the worker with that of the consumer of goods and services -,⁵ the rapid digital transformation entails new needs and adjustments both among those who supply work and those who demand it.

The rapid automation process requires workers to have new and updated skills in order to master algorithms and robots (and not be replaced by them): skills that employers often

² For an overview of the measures adopted by States during pandemic see the Special Issue of this Review: *Covid-19 and Labour Law. A Global Review*, 13, 1S, 2020: <https://illej.unibo.it/issue/view/868>.

³ Countouris N., De Stefano V., Piasna A., Rainone S. (eds.), *The future of remote work*, Etui, 2023; Vayre E. (ed.), *Digitalization of Work: New Spaces and New Working Times*, Wiley, Hoboken, 2022; Ales E., Curzi Y., Fabbri T., Rymkevich O., Senatori I., Solinas G. (eds.), *Working in Digital and Smart Organizations*, Palgrave Macmillan, Cham, 2018; Senatori I., Spinelli C., (Re-)Regulating Remote Work in the Post-pandemic scenario: Lessons from the Italian experience, in *Italian Labour Law e-Journal*, 14, 1, 2021.

⁴ Aloisi A., De Stefano V., *Your boss Is an Algorithm: Artificial Intelligence, Platform Work and Labour*, Bloomsbury Publishing, London, 2022; Levesque C., Fairbrother P., Roby N., *Digitalization and Regulation of Work and Employment*, in *Relations Industrielles*, 75, 4, 2020, 647 ff.

⁵ Vallas S.P., *Platform Capitalism: What's at Stake for Workers?*, in *New Labor Forum*, 28, 1, 2019, 48 ff.

struggle to find in the workforce. At the same time, the introduction of highly digitalized tools in the workplace can result in flexible management of tasks and schedules by employees. However, this requires – upstream – a willingness on the part of the employer to invest in technology and to train its staff in order to maximize the benefits.

The study of the relationship between technological innovation and labour is certainly not a recent subject of investigation, going back to the dawn of the first Industrial Revolution.⁶ Similarly, the impact of machines on employment levels and on the dynamics of the labour market has for decades engaged sociologists and economists,⁷ sometimes driven to endorse nihilistic scenarios picturing the end of human labour.⁸

Moreover, such scholars have repeatedly claimed that innovation, by requiring new professional skills, can only increase the total number of employees.⁹

From the perspective of the labour law, however, the dialogue between the digital revolution and the labour market cannot be limited to a count of jobs lost versus jobs gained, because it is not only affecting the volume of employment, but is transforming the way work is conceived and the way work is perceived and performed.¹⁰

2.1. The impact of digitalization on labour supply.

Digitalization is a very broad concept dealing with production processes and, consequently, very different professional activities. No matter whether we focus on the unstoppable refinement of artificial intelligence, the refinement of robotics or the continuous improvement of virtual reality,¹¹ the recurring criticality¹² is the unpreparedness of the

⁶ Smith A., *The Wealth of Nations*, W. Strahan and T. Cadell, London, 1776; Ricardo D., *On the Principles of Political Economy and Taxation*, John Murray, London, 1817; Marx K., *Das Kapital*, 1867.

See Piva M., Vivarelli M., *Technological Change and Employment: Were Ricardo and Marx Right?*, in IZA Institute, *Discussion Paper Series*, 10471, January 2017.

⁷ Schumpeter J., *Capitalism, socialism and democracy*, Harper, New York, 1976; Brynjolfsson E., McAfee A., *The second machine age: work, progress, and prosperity in a time of brilliant technologies*, WW Norton & Company, New York, 2014.

⁸ Calvino F., Virgillito M.E., *The innovation-employment nexus: a critical survey of theory and empirics*, in *Journal of Economy Surveys*, 32, 2018, 83 ff.

⁹ David H., *Why are there still so many jobs? The history and future of workplace automation*, in *The Journal of Economic Perspectives*, 3, 2015, 3 ff.; see also Servoz M., *The future of work? Work of the future!, On how artificial intelligence, robotics and automation are transforming jobs and the economy in Europe*, European Commission AI Report, Publications Office, 2019, 41.

¹⁰ A research conducted by the World Economic Forum (WEF) revealed that, by 2025, 85 million "human" jobs may disappear by a shift in the division of labour between humans and machines, but 97 million new jobs that are more adapted to the new division of labour between humans, machines and algorithms may emerge. So, the principal effect of digitalization will be felt through changes in the nature and content of work within a transformed work environment. See Schwab K., Zahidi S., *The Future of Jobs Report 2020*, World Economic Forum, Geneva, October 2020, available at https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf.

¹¹ On the meanings of the broad concept of digitalization, see Eurofound, *The digital age: Implications of automation, digitisation and platforms for work and employment*, Publications Office of the European Union, Luxembourg, 2021.

¹² Kolding M., Soundblom M., Alexa J., Stone M., Aravopoulou E., Evans G., *Information management - a skill gap?* in *The Bottom Line*, 31, 3/4, 2018; Jackman J.A., Gentile D.A., Cho N.J. et al., *Addressing the digital skills gap for future education*, in *Nat Hum Behav*, 5, 2021, 542 ff.; Adepoju O. O., Aigbavboa C. O., *Assessing knowledge and skills gap for construction 4.0 in a developing economy*, in *Journal of Public Affairs*, 21, 3, 2021; Berger T., Frey C. B., *Digitalization*,

workforce for the challenges set by technological progress. The gap between jobs that will soon be obsolete and those that will be created is not the only challenge faced by the labour market.¹³

The greatest loss of jobs has so far been concentrated in the manufacturing sector and in some specific areas of services, where the latest digital innovations have replaced mechanical activities.¹⁴ Studies estimate that not only the so-called routine tasks are at risk, but all those, now performed by actual workers, which may soon be performed by robots guided by software.¹⁵ Through the evolution of machine learning and big data, in fact, even those complex activities involving elaborate or creative decision-making processes cannot be considered to be free from the risk of obliteration.¹⁶

Assuming that most jobs and tasks will be concretely affected by technological innovations, the key to ensuring workers' survival in the labour market is to provide them with the adequate skills to cope with and govern the digital challenge. But this has not been fully achieved so far. Studies report that more than 70 per cent of workers in the European Union lack the most basic digital skills to meet the demand for labour and that 30 per cent of them may completely lack the skills sought in today's market.¹⁷ As a matter of fact, the European Commission has also detected that more than 70 per cent of the companies active in the European Union say that not being able to find staff with adequate digital skills is a constraint on business and investment,¹⁸ while a third of the total number of companies recognize that around 10% of their employees are underqualified.¹⁹

Although there are differences in the different sectors²⁰ and according to company size,²¹ the low level of technical expertise on the labour supply is slowing down the digital transition

Jobs, and Convergence in Europe: Strategies for Closing the Skills Gap, Report prepared for EASME, Oxford Martin School, January 2016.

¹³ Ernst E., Merola R, Samaan D., *The Economics of Artificial Intelligence: Implications for the Future of Work*, ILO Future of Work Research Paper No. 5, ILO Publishing, Geneva, 2018; Frey C.B., Osborne M., *Technology at work: The future of innovation and employment. Citi Global Perspectives and Solutions*, University of Oxford and CitiGroup, Oxford and New York, 2015.

¹⁴ ILO, *Changing demand for skills in digital economies and societies. Literature review and case studies from low- and middle-income countries*, ILO Publishing, Geneva, 2021, 23; see also Servoz M., nt. (8).

¹⁵ ILO, *The impact of technology on the quality and quantity of jobs*, Global Commission on the Future of Work Issue Brief No. 6, ILO Publishing, Geneva, 2018; OECD, *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publications, Paris, 2019.

¹⁶ Servoz M., nt. (8), 41 ff.; ILO, nt. (13), 23.

¹⁷ CEDEFOP, *2018 European skills index*, Publications Office of the European Union, Luxembourg, 2019.

¹⁸ European Commission, *Shaping Europe's digital future*, available at <https://digital-strategy.ec.europa.eu/en/policies/digital-skills-and-jobs>.

¹⁹ European Commission, *Better together: managing the crisis and embracing structural change-the role of social dialogue*, Publications Office of the European Union, Luxembourg, 2021, 17.

²⁰ A research conducted by the European Centre for the Development of Vocational Training (CEDEFOP) on the skills demand composition of online job advertisements posted in 2020 has revealed that digital skills are one of the most demanded skills areas with a huge growth compared to 2019, and the pandemic is pushing this trend in many occupations, in particular non-ICT jobs in labour markets of the EU Member States. See CEDEFOP, *Coronavirus and the European Job Market: How the Pandemic is Reshaping Skills Demand*, 2021, available at <https://www.cedefop.europa.eu/en/news/coronavirus-and-european-job-market-how-pandemic-reshaping-skills-demand>.

²¹ European Commission, nt. (19), 17, underlines that “there are marked variations across companies of different sizes. Only 11 % of big companies report no under-skilled workers, with exactly half of them reporting a share between 1 and 10 %, and one third a share between 10 and 30%”.

of economic actors and thus limiting its benefits, including a sustainable shift in production methods and the resulting growth in employment. Technological innovation will encompass – not even so slowly – every sphere of production, and digital skills, traditionally confined to specific professions, are increasingly required as a prerequisite in most job vacancies.

This is about updating and implementing the skills of workers whose tasks will be partially or totally changed. On the other hand, it will be necessary to *ex novo* build up a professional background suitable for the new jobs, intercepting and training not only young people, but also those whose current activities are becoming obsolete and will disappear. They will have to be trained to exercise a new profession too.

In actuality, the current labour market shows forms of *skill mismatch* and *skill gap*. The first phenomenon refers to the discrepancy between the skills required by companies and those related to workers. The second refers to a more general absence, among the workforce, of the skills employers are looking for: in other words, it identifies the lack of potential applicants with the skills required by employers to fill certain positions, which, therefore, remain vacant.²² This leads to an inevitable delay in finding qualified human resources, which often results in a loss of competitiveness for the company. Should this be true, more than 50% of the workforce will necessarily have to do so in order not to risk losing their jobs by 2025.²³ In fact, the lack of digital skills affects not only potential workers, but also those who are already part of a relationship: it turns out, in fact, that only 63% of workers (employees and self-employed) have a minimum smattering of basic digital skills.²⁴

With reference to the so-called *skill mismatch* phenomenon, we need to observe that 40 per cent of European workers feel that their skills are underused in the workplace and one third of graduates feel overqualified for the job they do. At the same time, about 40 per cent of workers would need at least six months of training to adapt their skills to the tasks they are asked to do at work.²⁵

As for the Italian case, a study published in 2022²⁶ found that, in the period 2023-2027, 34.3 per cent of job providers will need to have a tertiary education (degree or Diploma from Higher Technical Institutes). The statistics indicate, however, that there will be a shortage of around 9,000 workers with tertiary education in that five-year period, particularly in the fields of economics-statistics (specialists in digital marketing and e-commerce) and computer and engineering sciences. On the other hand, there could be an oversupply among graduates in the humanities, philosophy, history and art, psychology and linguistics.²⁷

²² CEDEFOP in 2020 estimated that in next years, due to the skill gap, there would be 135,000 vacancies in the ICT sector in Italy, rising to 750,000 across Europe. The Italian National Institute of Statistics (ISTAT) data, collected in 2021, in the same sector, reveals that 2.2 per cent of available positions will remain unoccupied.

²³ Excelsior, Anpal-Unioncamere, Survey conducted in 2023.

²⁴ European Commission, *Digital Economy and Society Index (DESI)*, 2022.

²⁵ A survey found that, worldwide, at least 1.3 billion people are over- or under-qualified. For OECD countries, that is one in three workers, see Hoteit L., Perapechka S., El Hachem M, Stepanenko A., *Alleviating the Heavy Toll of the Global Skills Mismatch*, in *Boston Consulting Group*, 2020, available at <https://www.bcg.com/publications/2020/alleviating-the-heavy-toll-of-the-global-skills-mismatch>.

²⁶ Information System Excelsior, Anpal-Unioncamere, nt. (23).

²⁷ Information System Excelsior, Anpal-Unioncamere, nt. (23), 60.

Indeed, compared to the European average, Italy still has few young graduates in so-called STEM (science, technology, engineering and mathematics)²⁸ subjects, of which only 1.3 per cent choose ICT subjects, which are instead those most sought for by companies. Moreover, scientific disciplines are still led by men, accounting for only 30 per cent of women graduates in 2019 (despite the fact that, out of the total number of graduates, women are the majority).²⁹ This gap, in a labour market oriented towards an increasingly massive search for figures with scientific and technological skills, risks widening exponentially, excluding women from the most stable and well-paid careers.³⁰

In relation to secondary education, on the other hand, the same study estimated that in the five-year period 2023-27, the number of graduates from high schools who will immediately enter the labour market will exceed the number needed to fill the demand for work; in the same period, graduates with a technical-professional secondary education will only be able to meet 60% of the demand for work, leaving in particular the transport and logistics, mechanics, energy and mechatronics sectors uncovered.³¹

Especially in the aftermath of the pandemic, digital skills have become an indispensable pre-requisite, unfortunately difficult to find, among potential applicants. However, the situation is not any brighter if we focus on the so-called *soft skills*, that is to say, those transversal, non-technical skills, which delineate the worker's aptitude rather than his or her degree of specialization.³² Soft skills – such as the ability to work in a team, empathy, problem solving, flexibility – are increasingly sought after when selecting applicants. While technical skills could nowadays be easily replicated by a robot, self-management skills, resilience, critical thinking or active learning are still the exclusive preserve of actual persons. Moreover, while the 'hard' knowledge – i.e. what the individual knows how to do – may soon become obsolete and require frequent updates, the 'soft' knowledge – which instead concerns how the individual does something – demonstrates the ability to adapt to the work environment, to integrate with colleagues, to acquire a 'digital mindset' that, at least so far, the AI is not yet able to master.³³

²⁸ Italy is 21st for graduates in STEM subjects and 17th for digital skills, according to Digital Economy and Society Index (DESI)

²⁹ Openpolis Data, 2021.

³⁰ Cultural and social legacies play a role in this respect, if it is true that, in Italy as in other OECD countries, of female students with excellent results in mathematics, only 12.5% envisage a professional future in STEM disciplines (source: Openpolis - OECD-Pisa, 2019).

³¹ Information System Excelsior, Anpal-Unioncamere, nt. (23), 61. On the Italian mismatch, see Ciucciovino S., *L'intermediazione alla prova dello skill mismatch*, in *Lavoro e Diritto*, 2, 2023, 309 ff.

³² There is also the distinction between digital skills and skills for digital economy, where the former can be seen as a constituent subset of the latter. Skills for the digital economy would cover a huge range of skills, including digital skills specifically, but also those that anticipate the use of digital skills (i.e. the fundamental skills needed to use any technology, such as literacy); and those that complete digital skills and increase their effect, such as certain higher-order skills that are not necessarily technology-specific: analytical thinking, research skills, synthesis and abstraction of the most important information, creativity, communication, problem solving and others. See Ernst E., Merola R., Samaan D., nt. (13), 44.

³³ A recent survey reveals that, compared to the pre-pandemic period, many companies have undertaken employee training in social and emotional skills and advanced cognitive skills. See McKinsey & Company, *McKinsey Global Surveys, 2021: A year in review*, December 2021, available at <https://www.mckinsey.com/~media/mckinsey/featured%20insights/mckinsey%20global%20surveys/mckinsey-global-surveys-2021-a-year-in-review.pdf>.

Although soft skills are a valuable asset for workers, so much so that they are very often considered as more important than hard skills by employers, staff selection processes fail precisely because applicants do not possess the transversal skills necessary to integrate and live in that company context.³⁴ As a result, companies waste time and energy looking for someone who may then turn out not to be suitable for the position they have been hired for.

2.2. The impact of digitalization on labour demand.

Technological innovation has long been changing the way goods and services are produced and work is organized in companies. As a result of the pandemic, however, certain aspects of digitalisation have revealed themselves in all their beneficial potential, so much so that they have become unavoidable demands on the side of applicants and, consequently, necessary investments on the side of employers.

In particular, the restrictions imposed by the two-year pandemic contributed to the massive spread of remote working and, once the emergency passed, the obligatory working from home gave way to more flexible hybrid forms:³⁵ on the one hand, companies rationalize costs for the operating and maintenance of work spaces, with a positive impact on the environment. On the other hand, workers have grown used to a different balance between personal and professional life time, avoiding daily commuting to and from work in rush hours and more easily managing family commitments, without having to give up their job.³⁶

While the value of face-to-face work – with its human relations and immediate professional interaction – remains indisputable, the focus on ecological issues and the promotion of inclusive and sustainable work have shown the full potential of mixed (or hybrid) forms of remote work, which allow the merits of the former (work in presence) and the latter (remote work) to be merged.

Remote working has thus become the 'new norm',³⁷ a ductile tool implemented by companies, but above all required by the workforce, who have prompted even the most reluctant employers to include it as a manner of execution of the working activity. In fact, the 80 per cent of companies plan to digitize their processes to enable at least 44 per cent of their employees to work remotely,³⁸ some 66 per cent of employers worldwide are redesigning their workspaces and workplaces to adapt them to hybrid work modes.

³⁴ The 89% of recruiters state reveal that selections are unsuccessful due to a lack of matching between the applicant's or applicant's soft skills and the corporate culture of the new workplace. *See* McKinsey & Company, nt. (33).

³⁵ In 2019, only 5.4 per cent of European workers between the ages of 15 and 64 worked from home with a clear prevalence among the self-employed among whom smart working has been most widely used. During the pandemic, smart working has spread exponentially, with around 40 per cent of employees working exclusively from home. *See* Charles L., Xia S., Coutts A. P., *Digitalization and Employment. A Review*, ILO Publishing, Geneva, 2022, 20.

³⁶ ILO, *Greening Enterprises. Transforming processes and workplaces*, ILO Publishing, Geneva, 2022, available at https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_861384.pdf.

³⁷ Charles L., Xia S., Coutts A. P., nt. (35).

³⁸ Schwab K., Zahidi S., nt. (10).

The inclination to the functional use of digital tools also emerges from job advertisements, increasing throughout Europe the number of those in which remote work is also included.³⁹ In fact, due to the pandemic, the way companies view technological investment has also changed, i.e. not only as a cost factor, but as a strategic investment to diversify their business and to attract and retain talents, indispensable for long-term success.⁴⁰ Indeed, the research among potential applicants – especially those with medium-high skills, therefore highly sought after by companies – of hybrid job opportunities have forced companies to consider this possibility, so as not to risk losing valuable human resources.⁴¹

Phenomena such as the Great Resignations and the Job hopping have focused on the reasons why workers leave or remain in the workplace, forcing companies to reflect and take countermeasures.⁴² Compared to the pre-pandemic period, both in the US and European labour markets, the number of workers voluntarily have been leaving their jobs has increased significantly.⁴³ Whether the reasons for the two phenomena are to be rooted simply in the dynamism of a thriving labour market or in the legacies of an emergency period that has profoundly marked every sphere of our lives, it is objective that the pandemic has changed the very way work is perceived, conceived and experienced.

The research for work-life balance remains central, as does the flexibility now internalized after the experience of the pandemic remote working: a survey promoted in 2022 among 35,000 workers aged between 18 and 67 in 34 different countries reveals that about two-fifths of the respondents said they would not accept a job if it did not allow flexible working hours (45%) or remote or hybrid working arrangements (40%). More than a quarter of respondents (27%) said they had given up a job precisely because it did not allow such flexibility.⁴⁴ The same survey revealed that workers, especially younger ones, are no longer willing to present themselves at the workplace every day, but are looking for hourly and spatial flexibility, aware that new technologies can grant it.

The implementation of remote working is a strategic choice for attracting and retaining employees for another set of reasons: for more than two-thirds of employees, values and objectives of the company they work for, such as sustainability, respect for diversity and transparency, are decisively important and more than two-fifths would not accept to work for an employer who is not committed to promoting sustainability in his/her organization.⁴⁵

³⁹ Eurofound, *Living, Working and COVID-19*, Publications Office of the European Union, Luxembourg, 2020.

⁴⁰ McKinsey & Company, nt. (33), 42-43.

⁴¹ In the light of the annual reports of the Excelsior Italian Information System, drawn up by Unioncamere in cooperation with Anpal, the number of job vacancies that remain unfilled for a long time due to unsuitable workers or a lack of applicants has risen from 21% in 2017 to 45.6%; The vacancy rate is at an all-time high in the Eurozone: according to Eurostat data, 3.1% of paid jobs were unfilled in the third quarter of 2022, compared to 2.6% in the third quarter of 2021 and 2.2% in the same period of 2019, before the health crisis (European data journalism network, 2022).

⁴² On the Great Resignations phenomenon, see Ng E., Stanton P., *The great resignation: managing people in a post COVID-19 pandemic world*, in *Personnel Review*, 2, 2023, 401 ff.; Serenko A., *The Great Resignation: the great knowledge exodus or the onset of the Great Knowledge Revolution?*, in *Journal of Knowledge Management*, 4, 2022; Causa O., Abendschein M., Luu N., Soldani E., Soriolo C., *The post-COVID-19 rise in labour shortages*, OECD Economics Department Working Papers No. 1721, 2022.

⁴³ In Italy, for example, from January to September 2022, resignations reached 1.6 million.

⁴⁴ Survey Ranstad 2023, 24.

⁴⁵ Survey Ranstad 2023, nt. (44), 47.

In this sense, potential applicants view the structured use of digital tools for remote and hybrid work performance positively because they see in it an environmental and social commitment by the company, in other words, aimed at sustainability.

The digitization of business processes⁴⁶ and the use of technologically advanced tools increase the well-being and productivity of employees, who can live in a more ecological way (less commuting, less cars, less emissions), and at the same time redesign the physical and human profile of the company: not only spaces and energy consumption are more efficient, but fragile and disadvantaged categories of workers, who would otherwise face obstacles to full inclusion in the workforce, can easily be integrated.

After all, the fight against climate change and the promotion of an open and inclusive society are among the values mostly pursued by the Generation Z, and companies will have to promote them if they want to be attractive to young workers.⁴⁷

3. Digitalization and labour market: what role for collective bargaining?

As observed in the preceding paragraphs, digitalization has a significant impact on the labour market, both on the supply and demand sides, requiring employees and applicants to constantly update their skills - hard and soft - in order not to fail in the face of technological progress; it has also been forcing companies to implement flexible and sustainable organizational models in order to attract and retain talent, especially young talent.

These challenges can only require a synergic effort to be effectively addressed, and collective bargaining is the ideal instrument capable of taking into due account the demands of the actors involved, maximizing the potential of digitization and minimizing the critical issues it entails.⁴⁸ The shared commitment of the actors involved, in fact, is at the basis of the Framework Agreement on Digitalization signed by the European Social Partners in June 2020,⁴⁹ at a time when the first phase of the pandemic emergency had made evident, despite its dramatic nature, the enormous potential of technologies, but also the need to regulate them, supporting workers in the digital transition,⁵⁰ both at the national and company level of bargaining.

⁴⁶ The “digitization” is a component of digitalization that refers to “process that transform elements of the physical world into bytes”. See Eurofound, *Digitisation, European Industrial Relations Dictionary*, Dublin, 2019, like Internet of Things (IoT), 3D printers and virtual and augmented reality.

⁴⁷ See the Italian survey conducted by Rosina A., *Il lavoro che cambia e le aspettative della generazione Zeta*, Osservatorio Giovani dell’istituto Toniolo - Valore D - Umana SPA, 2019.

⁴⁸ Voss E., Bertossa D., *Collective Bargaining and Digitalization: A Global Survey of Union Use of Collective Bargaining to Increase Worker Control over Digitalization*, in *New England Journal of Public Policy*, 1, 2022; Voss E., Riede H., *Digitalisation and Workers Participation: what trade unions, company level workers and online platform workers in Europe think*, Report to ETUC, September 2018.

⁴⁹ See Senatori I., *The European Framework Agreement on Digitalisation: a Whiter Shade of Pale*, in *Italian Labour Law e-Journal*, 13, 2, 2020; Battista L., *The European Framework Agreement on Digitalisation: a tough coexistence within the EU mosaic of actions*, in *Italian Labour Law e-Journal*, 14, 1, 2021.

⁵⁰ European Social Partners Framework Agreement on Digitalisation, June 2020, that states that a shared commitment is needed on the part of employers, workers and their representatives to make the most of the opportunities and deal with the challenges in a partnership approach, whilst respecting the different roles of

3.1. Collective bargaining and skills challenge.

The European 2020 Social Partners' agreement, while dealing with the impact of digitalization on work to broad spectrum, devotes huge attention to the issue of digital skills. In fact, a survey conducted in 2019 shows that re-skilling and up-skilling in order to cope with the digital transition and the need to provide Vocational and Educational Training (VET) paths to concretize them are the major concerns of workers and trade unions in facing the ongoing digital challenge.⁵¹

Technological progress will massively reduce the number of low-skilled or unskilled jobs in the short term, at the same time it may simultaneously increase the productivity of companies and the welfare of workers. Therefore, the effort required to collective bargaining is to monitor and forecast the skills that will be needed in the future, to establish instruments to update the workforce, and support the re-skilling and re-training of workers who will presumably have to change the jobs they currently perform.

This approach also seems to be encouraged by the numerous initiatives of the European institutions aimed at skills development which, on the background of the European Skill Agenda launched in July 2020, have chosen 2023 as the European Year of Skills, in order to finance awareness-raising, refreshing and qualification courses with the involvement of the social partners. The Agenda constitutes the frame of reference in which to set up the different actions aimed at providing people with the tools to face professional and personal challenges. Among the different initiatives promoted, the Pact for Skills aims to support public and private organizations in the green and digital transition through skills development and retraining paths. Recognizing that digital innovation will spread across all economic sectors and that skills are the key to decent jobs, social justice and competitiveness, the Pact invites a wide range of stakeholders, in particular social partners and enterprises, to engage in concrete actions.⁵² The document is based on four key principles: the first calls for the promotion of lifelong learning for all, through economic and non-economic incentives, in order to emphasize the value of skills among employers and employees, including those from disadvantaged groups. Second, the Pact focuses on building partnerships between actors cooperating at European, national and local levels, in order to support transitions, share good practices and develop innovative solutions. The third principle relates to monitoring and anticipating skills, in order to prepare workers and their possible transitions in good time. Finally, the Pact looks at skills as a tool to overcome discrimination and promote gender equality and equal opportunities for all, enabling everyone to have access to quality training.

Social dialogue and collective bargaining can play a crucial role in the diffusion of the principles established by the Pact through joint and concrete actions. Bargaining can be a very useful tool to increase – among employers and employees – the awareness of the

those involved". See also IndustriALL, *Digitalisation in the post-COVID world: what role for industrial trade unions?*, May 2021; Degryse C., *Digitalisation of the economy and its impact on labour markets*, ETUI Working Paper, 2016.

⁵¹ According to the survey conducted by IndustriAll Europe and Syndex in 11 countries, the 81% of workers and trade unions are concerned about the need to adapt skills to new technologies, while the 70% are concerned about the need for continuous training and updating (Syndex and Industriall, 2021).

⁵² The Pact tries to put together individual companies or other private or public organizations, regional or local partnerships, industrial ecosystem or cross-sectoral partnerships.

importance of constant updating and the development of not only technical but also soft skills, covering categories of workers who would otherwise not have access to training.⁵³

In Italy, the collective agreement at national level for metalworkers, renewed in 2021,⁵⁴ bears in it an article about VET,⁵⁵ considering it as a strategic investment for the updating and development of professional skills, in particular digital skills, linked to the technological and organizational innovation of production and work processes. The contract seems to have adopted the path promoted by the EU, by offering training courses not only to employees with an open-ended contract but also to those who have a fixed-term contract of not less than nine months. On the other hand, it promotes a subjective right of the employee to training that contributes to the construction of a 'digital identity' of the worker.⁵⁶ Agreed upon by the parties involved to meet the needs of the company and the employees, training becomes a shared value that requires a periodic analysis of needs (i.e. monitoring). Thanks to the skills assessment tool, the training path will take into account the skills already acquired by the worker and those that need to be developed to increase both the company's competitiveness and the employee's professionalism. There is also a focus not only on the so-called hard skills, but also on soft ones, as well as an openness to all forms of learning that can guarantee the worker-citizen basic digital skills.

The Italian collective agreement for the chemical-pharmaceutical sector at national level, renewed in June 2022, also focuses on strengthening the sectoral participatory approach of the National Observatory by adding a section dedicated to Digital Transformation.⁵⁷ In particular, the agreement assigns to the Observatory the verification of skills, new profiles and training needs, also in the light of the labour transformations caused by digital transition. It devotes considerable attention to the issue of skills and training connected to the new professional figures, stressing that digitalization requires profiles with soft skills (basic digital skills, time management, analytical thinking, working by objectives) and social-interpersonal skills that need to be reinforced. The agreement also provides for the activation of a mechanism for the collection of specific skills – appropriately certified – that facilitates the matching of supply and demand with respect to the needs of the sector covered by the agreement, as well as a monitoring of the effectiveness of the training programmes adopted in companies.

The strategic activities of monitoring and verification of needs included in the analyzed collective agreements are linked to a further function that bargaining can exercise, namely

⁵³ According to ILO, *Social Dialogue Report 2022: Collective bargaining for an inclusive, sustainable and resilient recovery*, ILO Publishing, Geneva, 2022 about two-thirds of the collective agreements examined contain provisions for skills development, including yearly some hours dedicated to training, financial support for professional development, reskilling when new technologies are introduced as an integral part of the digital transition (see at the sectoral level, CBA France); other research shows that training to accompany the digital transition is not yet implemented everywhere, especially is lacking at the company bargaining level. *See* IndustriALL, nt. (50), 37-38.

⁵⁴ Italian metalworkers' collective agreement, renewed in 2021.

⁵⁵ Art. 7 of the Italian metalworkers' collective agreement, Section 6, "Absences, leave, protections".

⁵⁶ Training as a right had already been included in the category's collective agreement for metalwork in the renewal of 2018, constituting a real novelty in the Italian collective bargaining landscape.

⁵⁷ National collective agreement for the chemical-pharmaceutical sector, renewed in June 2022 and available at https://www.filctemgil.it/images/download/CONTRATTI/chimico_farmaceutico/220613_CHIMICO-FARMACEUTICO_RINNOVO%20CCNL_%201-7-2022____30-6-2025.pdf.

the construction of solid 'digital' bridges between school and work.⁵⁸ Designing educational paths that take into account the future needs of the labour market means facilitating the access of young people to the labour market, while at the same time focusing on the competitiveness of the production system and avoiding mismatching between supply and demand. The collective agreement for the chemical-pharmaceutical sector promotes the relationship with training institutions, such as universities and ITS, by providing educational paths, including e-learning, that promote career guidance (through alternating school-work and apprenticeships) and the implementation of soft skills.

With the same intent of profitably linking educational paths with the world of work, in addition to supporting internships during school time, the collective agreement for metalworkers devotes attention to regulating the apprenticeship contract, first of all by providing specific soft skills training plans for apprentices.⁵⁹ Employers' associations and trade unions have reached an agreement that, in light of the principles set out in the European Pillar of Social Rights, aims to make the right to training effective for all workers, including apprentices. Training paths may change on the basis of renewed technological needs, ranging from Industry 4.0 to language skills, from conflict negotiation to decision making.

Attributing strategic value to training also means taking into account the current distortions experienced by the labour market and helping to eradicate them: the national collective agreement for the chemical-pharmaceutical sector, for example, aims to seek solutions to overcome professional divisions between jobs which have so far traditionally been carried out by either men or women, also through specific training activities. Training paths are going to promote experience coaching and generational interchange with initiatives aimed at facilitating the transfer of both technical and behavioral know-how and on-the-job mentoring and training. It is interesting to note that the transfer of skills is not unidirectional, but the agreement itself provides that the training in the field of technology of senior employees by younger ones should be encouraged.

3.2. Collective bargaining and flexible work organization.

It could be observed that remote working is a key variable within labour market dynamics. As a result, its structural introduction into the business environment requires that this process be guided and supported. Only with a bargaining process, as a result of confrontation between the parties involved in the change, it could be possible to establish common objectives that foster the process of digital transformation, helping the transition by seizing new opportunities.

Thanks to its adaptability, the hybrid modality of work represents an inclusive working tool for the most fragile categories and for women's employment; it contributes to maintaining high employment levels, guaranteeing a better work-life balance. It increases the level of workers' well-being, as well as retention and productivity in the company. Achieving

⁵⁸ Social partners are involved in the definition of education systems in many legal systems, for an overview *see* European Commission, nt. (19), 21.

⁵⁹ Art. 7 of the Italian metalworkers' collective agreement, Section 6, "Absences, leave, protections".

these objectives implies on the one hand the broad commitment to go through the digital transition with responsibility and vision, and on the other hand the effort to take into account the different interests at stake and to prepare concrete and shared measures. In fact, the European Social Partners' Framework Agreement on Digitalization encourages the social partners at different levels to introduce, in a partnership approach, strategies for the digital transformation of companies that lead to job creation, where employers are required to commit to introducing technology in a way that benefits productivity while ensuring better working conditions for workers.

Workers, even after the pandemic period, are looking for jobs that allow them hourly and organizational flexibility. Consequently, companies are taking actions in order to introduce or boost this possibility, which requires considerable effort in organizational terms: for companies, implementing hybrid working modes does not only mean investing in advanced hardware and software, but disseminating a digital organizational culture among staff at all levels.

Collective bargaining can play a decisive role in the dissemination of a digital organizational approach in the workplace,⁶⁰ with the definition of clear rules on hybrid and remote work and with a constant support for its proper implementation. We are not going to delve into the risks arising from the pervasive control of the worker through new technologies, but the studies conducted during the pandemic period reveal a certain ambiguity concerning the wellbeing of remote workers, who very often found themselves having to work in inadequate spaces, beyond their usual hours and without paid overtime, with a growing state of stress due to the overlapping of work and family time. However, the data has shown that where remote working is regulated by clear rules, then the positive effects prevail.⁶¹

The European social partners' framework agreement on digitalization, in fact, emphasizes that, in order to define working time, collective bargaining must achieve as much clarity as possible in relation to the legitimate expectations placed on employees working remotely.⁶² Without precise limits, the risk is that dysfunctions will have negative effects on the health and safety of employees and the general functioning of the enterprise. It is therefore necessary for employers and employees to build a participative system of rights and responsibilities on a level playing field. Employees at all levels must be aware of and trained in the use of technological tools, their software, and how to use them. However, as the Framework Agreement itself points out, in addition to training and awareness-raising, an 'organization of work and workload' is necessary to avoid hyper-connection, providing alert and support procedures and periodic exchanges between managers and workers (or their representatives) on workload and work processes. Digital training must be combined with training to improve transversal skills, which for senior figures must go along with specific managerial training to manage hybrid or remote resources and teams. The greatest challenge, after all, is to update the way of working, that is to grant and manage greater autonomy – and therefore responsibility – in work groups in which a flat and not distinctly hierarchical

⁶⁰ European Commission, nt. (19), 20.

⁶¹ European Commission, nt. (19), 24.

⁶² European Social Partners Framework Agreement on Digitalisation.

organization should prevail. This implies careful training of staff, but above all of those who coordinate work teams.

The national collective agreement for the chemical-pharmaceutical sector renewed in 2022, setting out the guidelines on the impact of the digital transformation, points out that the parties, at company level, are committed to supporting innovation through a managerial and work culture oriented towards involvement, active participation and competitiveness, while respecting the roles and responsibilities of the company and employees. The guidelines adopted with the agreement aim to facilitate company awareness, discussion and development of the digital culture through joint training sessions with the involvement of managers and trade union representatives, promoting continuous dialogue and the sharing of actions to support change. With specific reference to work organization, the guidelines promote flexible space-time arrangements taking into account the company's and workers' production needs and, in introducing innovative organizational methods, facilitate tools to support result-oriented performance and the enhancement of professional contribution, defining objectives and assessing results.

This collective agreement is an example of a virtuous implementation of the guidelines drafted by the European social partners, as it aims to accompany employers and employees through the cultural change that digitalization is bringing about in companies. If the new hybrid organizational modes represent a fundamental strategic lever for retaining and attracting valuable human resources, then collective bargaining – especially at company level – becomes a necessary tool for limiting their risks and amplifying their benefits. As a matter of fact, collective bargaining is called for defining clear rules for the effective exercise of remote work, guaranteeing workers' wellbeing and company productivity, in a forward-looking and sustainable perspective.

4. Final remarks.

Digitalization has had an impact on work, on working time and workplaces, on the way the meaning and the value of work are perceived. These changes will not stop, but rather lead to the need for adjustments, constantly influencing the dynamics of the labour market. On the one hand, the market distortions are the result of latent criticalities, such as the difficulty of establishing a dialogue between the education system and the entrepreneurial system, but also of enhancing the presence of women in scientific and computer science disciplines; on the other hand, the distortions derive from difficulties that digitalization itself has exacerbated, such as the difficulty of providing workers not only with technical skills, but also with transversal skills, today essential.

The pandemic, which has helped to highlight the pros and cons of digitalization, has in some ways disrupted traditional work dynamics, changing the priorities of workers who aspire to greater flexibility and work-life balance. The aspirations and needs of workers, influenced by cultural and social as well as economic issues, must be taken into account by companies who want to attract and retain talent. In this sense, the implementation of a digital culture in the workplace also responds to the ecological and inclusive sensitivity of workers.

Collective bargaining, in the light of European initiatives and guidelines, is both useful and necessary for successfully influencing labour market dynamics and planning shared and long-sighted options, mediating between the different interests and forecasting the future needs of employees and enterprises. The recent examples coming from collective bargaining are therefore to be welcomed. They highlight a focus both on a positive dialogue between educational pathways and need of enterprises and on the dissemination of a digital working method within companies, which requires vocational training at all levels to acquire not only new technical but also managerial and organizational skills.

Finally, bargaining can (and must) promote a new digital work culture in order to put forward a synergetic and non-conflictual approach to overcoming the challenges that this transition involves.

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