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

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

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Table of contents

EXECUTIVE SUMMARY

Over the last decade, the debate in Spain on the effects of digitalisation on employment has again become important following the outbreak of the COVID-19 pandemic in 2020. The increase in interest is basically due to the impact of the crisis, which has contributed to boosting some pre-existing trends related to this phenomenon. Digital transformation has become one of the central pillars of the EU reconstruction funds programme (NextGenerationEU), which in Spain is being implemented through the National Recovery and Resilience Plan. Thus, digital transformation is the backbone of many of the national plans in Spain and constitutes a central priority of the recovery strategy to take Spain out of the crisis derived from the pandemic.

The recent digital strategy in Spain has been mainly deployed through two instruments, coordinated by the Ministry of Economic Affairs and Digital Transformation: the Digital Spain 2025 agenda and the Recovery, Transformation and Resilience Plan (RTRP), which incorporates the various actions included in the agenda. Social dialogue has played a leading role in the laws promoted by the Ministry of Labour: both the law on remote work and the law on the labour rights of workers on digital platforms were agreed with the main trade unions (CCOO and UGT) and the main employers' organisations (CEOE and CEPYME).

In the 2021 edition of the Digital Economy and Society Index (DESI), the European Commission's mechanism for monitoring progress in digitalisation in member countries, Spain was in the ninth place, obtaining a score of 57.4. This position is due, to a large extent, to the important progress made in digital public services, a strategy that has been promoted throughout the central state administration.

The Economic and Social Council of Spain (CES) has pointed out that in Spain, the digital transformation is changing the very nature of work and the structure of the labour market, as some jobs are being replaced, others are being created and many are being transformed. The Council stresses the importance of addressing the existing weaknesses in this transformation, concretely those related to digital skills and the digital and employment gaps, as they will also determine the success of the digital transition, given the increased vulnerability of some jobs (CES, 2021).

Job insecurity is a structural feature of employment in Spain, with a high level of temporary employment. This is why the debate on the repercussions of digitalisation on the quality of employment is of particular relevance in the Spanish context. The current lines of research focus on the digitalisation and quality of employment, from different perspectives. These include: the study of occupational health – ergonomic studies and psychosocial risks; the study of working conditions for those working on digital platforms; and, more recently, teleworking and the extension of these conditions to other sectors in the process of 'platformisation' due to the

increasing use of artificial intelligence. Much of the analysis refers to gaps related to gender, age or educational attainment.

The Spanish report follows the common structure of the project 'The impact of digitalisation on job quality and social dialogue in the public services - DIGIQU@LPUB ([1]) '. The project aims at assessing the impact of digitalisation on job quality from the perspective of trade unions and workers themselves, identifying the changes and challenges, and analysing social dialogue practices at the national and sectoral levels in the selected EU Member States (Denmark, France, Finland, Germany, Hungary, Italy, Poland and Spain). From the methodological point of view, the following tools have been used: a) desk analysis; b) twelve semi-structured interviews with key informants; c) a survey of workers in the selected sectors (energy, hospitals and public administration); and d) three focus groups with workers and trade union representatives in the selected sectors. Taken together, this information (qualitative and quantitative) has provided first-hand insights into the reality of digital change in public services.

The Electricity sector in Spain has undergone a privatisation process of such magnitude that currently only 0.3% of the employees are public employees. For this research, we selected the company which was previously the public electric company.

The incorporation of new technologies into the company has gone hand in hand with privatisation of the sector, with a change in business strategy and work organisation. Very many new technologies have been introduced, both in personnel management and in the development of work processes.

Although the intensification of work seems to be a common finding of the survey, the interviews and the focus group, there is no clear view on other impacts of new digital technologies. While the employee survey shows a somewhat positive perception of the resulting autonomy and the benefits of teleworking, the delegates interviewed and the FG participants also highlight the negative impacts associated with increased individual responsibility, monitoring and increased competition between colleagues.

The public administration has undergone a very intense process of digital transformation in the last decade, boosted as a result of the pandemic: the implementation of digital public services has advanced rapidly and today public workers use a multitude of digital resources in their work processes and in the services provided to citizens.

The analysis shows that the impact on working conditions is uneven, particularly in relation to teleworking, which is perceived as the major incorporation of digital tools by public employees in

1. https://www.ose.be/digiqualpub/

recent years. The public sector workforce seems to see teleworking as an opportunity to improve certain working conditions, but trade unions are very reluctant to consider these benefits without weighing up the significant risks they perceive teleworking to pose. There is, however, a shared view of the impact on processes and tasks, linked to the reduction of repetitive tasks and increased work intensity. This implies longer working hours, with difficulties in reconciling work and family life as well as occupational risks, especially psychosocial risks. Besides, training seems to be one of the weaknesses to be addressed.

In the Hospital sector, there is a generally positive perception of the benefits of digitalisation in improving care and quality of work, but it seems that the workload has intensified and the working day has become longer. It cannot be overlooked that part of this perception is probably due to the profound impact of the COVID-19 pandemic on the healthcare system, which was seriously overstretched and whose shortcomings were highlighted.

The impact of digital change and the facilities provided to implement it depend, to a large extent, on the management of the hospitals and services themselves, on the professional category and age of the workers in the sector. Special emphasis is placed on the difficulties caused by the lack of resources for training during working hours, particularly for technical staff, which results in longer working hours and stress in the learning process.

In general terms, the social partners have not been very involved in the digital transformation in Spain: discussion takes place ex-post, addressing changes in work organization and working conditions.

Collective bargaining regulates specific matters affected by the digital change, which means that there are no global 'digitalisation agreements'. The social partners instead negotiate on specific aspects of the work situation. In this respect, the main issues addressed relate to teleworking (public administration, hospitals, electricity), training (public administration, hospitals, electricity), time management and flexibility (electricity).

The results of the present study highlight the importance of addressing the changes brought about by digitalisation in a comprehensive and proactive manner. Trade unions are critical of the conditions under which digital change is taking place (mainly lack of staff and training for workers), as well as their lack of participation in the process. This process of change must be approached from a holistic perspective, in order to guarantee, on the one hand, the quality of public services for all citizens, and on the other hand, the quality of employment and working conditions of civil servants and public employees.

SECTION 1. INTRODUCTION

The debate on the effects of digitalisation on employment in Spain, which has developed over the last decade in academia and among institutions, social partners and the media, became newly relevant following the outbreak of the COVID-19 pandemic in 2020. The renewed interest was basically due to the impact of the crisis, which helped to intensify certain pre-existing trends related to this phenomenon, such as: the use of digital technologies by companies, institutions and citizens in general; teleworking, which in Spain experienced an unprecedented increase during the pandemic; or the demand for professional services provided through digital platforms (Eurofound, 2021; European Commission, 2021a; OECD, 2020). Added to this was the approval in July 2020 of the new EU reconstruction funds programme (NextGenerationEU), which has digital transformation as one of its central pillars, and which in Spain is being implemented through the National Recovery and Resilience Plan. Thus, digital transformation is the backbone of many of the national plans in Spain and constitutes a central plank of the recovery strategy to take Spain out of the crisis derived from the pandemic.

Digitalisation is a diffuse concept, applied indistinctly to very heterogeneous realities - from technological innovations such as big data or 5G, to the use of virtual services and employment modalities such as platform work - and which is not clearly defined, either at the academic or institutional level (Álvarez-Hernandez and Pérez-Zapata, 2021). Focusing our analysis on the labour dimension of this phenomenon, we can highlight three vectors of change, each of which involves the combined application of digital technologies in economic processes (Fernández-Macías, 2018): (a) the automation of work; (b) the digitalisation of processes; and (c) the algorithmic coordination of work by digital platforms.

The scientific literature on the organisational and social effects of the fourth industrial revolution has mostly focused on the debate between techno-pessimistic and techno-optimistic positions on the ability of robotisation to replace human labour: this is in contrast to the scientific literature on the risk of human factor substitution, especially in certain occupations, which takes the perspective that certain tasks will be affected and will change the organisation of work, possibly leading to a shift in human activity from one occupation to another. The 'integration of digitalisation' view is even more optimistic, as it suggests that digitalisation could be understood (and designed) with the aim not to replace human labour (or not only...) but also to complement human skills in order to increase the efficient use of technology itself (Lahera, 2019).

The Economic and Social Council of Spain (CES) pointed out in 2017 that the digital transformation is changing the very nature of work and the structure of the labour market. For example, some jobs are being replaced, others are being created and many are being transformed (CES, 2017). In 2021, the Council stressed the importance of addressing the weaknesses that have become evident during the pandemic years regarding digital skills and the digital and employment gaps, as

these will also determine the success or otherwise of the digital transition, given the increased exposure of some jobs. The risks are not only linked to their possible disappearance, but also to the need for adaptation of people performing digitalised tasks (CES, 2021).

The outcome of all these changes is not predetermined but depends on the strategy adopted and the proactivity of all the actors involved. In recent years, as a result of social dialogue and tripartite agreements, laws have been passed with the aim of managing the imbalances between corporate power and workers caused by digital change (see below).
The implications of digitalisation for working conditions are becoming increasingly relevant in Spain, where job insecurity and temporary employment are structural problems, given the rise of work on digital platforms, the increase in teleworking and the incipient use of artificial intelligence in the organisation of work. Technology offers the possibility to transform workspaces and times and in particular to increase spatial and temporal flexibility, which has a potential benefit not only for employers but also for employees. This is a framework with major contradictions and ambivalences: social dialogue has a crucial role to play in managing these impacts.

1.1 Purpose of the research

This chapter aims to analyse the specific impact of digitalisation on public service work in Spain, by investigating workers' perceptions of change. In addition, it examines the role of social dialogue and the social partners, and in particular collective bargaining, with respect to the occupational risks and opportunities generated by digital change in this sector.

The Spanish report follows the common structure of the project 'The impact of digitalisation on job quality and social dialogue in the public services - DIGIQU@LPUB ([2])'. This project aims to assess the impact of digitalisation on job quality from the perspective of trade unions and workers themselves, identifying the changes and challenges, and analysing social dialogue practices at the national and sectoral levels in the selected EU Member States (Denmark, France, Finland, Germany, Hungary, Italy, Poland and Spain). From the methodological point of view, the following tools have been used: a) desk analysis; b) twelve semi-structured interviews with key informants; c) a survey of workers in the selected sectors (energy, hospitals and public administration); and d) three focus groups with workers and trade union representatives in the selected sectors. Taken together, all this information (qualitative and quantitative) has provided first-hand insights into the reality of digital change in the public services.

1.2 Digitalisation: state of play and national strategies

In Spain, most companies have extensively adopted basic digital tools, such as email or web applications for online meetings, the use of which has soared in the wake of the pandemic.

2. https://www.ose.be/digiqualpub/

However, there is much less use of advanced technologies such as those enabling the application of big data, tools based on artificial intelligence or e-commerce. In any case, there are important differences between sectors and companies (above all, depending on the size of the company).

The data from the Survey on the Use of Information and Communication Technologies and ICT and e-commerce in Companies in the years 2020-2021 ([3]), shows differences between companies with 10 or more workers and those with fewer than 10. Thus, among small companies, 85.4% have computers, 71.36% of workers work with computers connected to the internet and 74.87% have contracted an email service. However, only 8.42% have interconnected devices that can be monitored remotely, 3.47% use artificial intelligence technologies, 3.19% have analysed large datasets and only 1.42% have an ICT specialist on staff.

Among companies with 10 or more employees, 99.26% have computers, a similar percentage also has an internet connection and 81.5% have contracted an email service. 26.9% of these companies make online sales, 27.7% have interconnected devices that can be monitored remotely, 8.32% use artificial intelligence technologies, 11.5% analyse large datasets and 16.39% have ICT specialists among their employees.

The incorporation of new technologies has allowed companies to adapt and modernise, increasing their competitiveness vis-a-vis more global or other competitors. In the case of the public administration, this process has enabled the implementation of digital administration, facilitating citizens' access to management and connectivity between administrations. The impact of the crisis resulting from the pandemic has generated a significant boost to preexisting trends, as mentioned in the introduction.

The Economic and Social Council of Spain recognises in its report the role played by new digital technologies during the pandemic and the role they should play in the recovery (CES, 2021). This progress in the digitalisation process in Spain raises a series of questions and challenges. The main question concerns the scale of the impact on employment, given that it seems that robotisation and automation will affect tasks more than specific occupations, while models of cooperation between workers and robots are being planned. In recent years, some job displacements can be identified, but so far the volume of jobs affected is considered to be rather limited. The main trends observed relate to changes in training requirements and the impact on working conditions.

Another major challenge is to contain and overcome the digital gap, which has been exacerbated by the pandemic. As mentioned by the Economic and Social Council of Spain, age, economic and

3. https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176743&menu=ultiDatos&idp=1254735576692

educational resources, gender and territory are key factors determining access to services and the labour market. Examples of this are the elderly and their difficulties in communicating with public administrations or financial services, or access to the minimum living income for people without economic resources who do not have the technical resources and skills to be able to manage the necessary process digitally.

In the employment context, the consequence of such gaps is that some people may be excluded from the labour market - at least formally - or face greater difficulties in being promoted or accessing jobs related to digital change, which will be the most in-demand in the future. For the time being, it is worth noting that digitalisation is impacting people in lower-skilled jobs and, going forward, the new job opportunities that are generated will depend heavily on the digital skills that are available. This is because digitalisation is changing occupations, threatening the permanence of some occupations through automation, requiring the transformation of many occupations to make work more productive and creating opportunities for workers whose educational profiles and skills enable them to take better advantage of new technologies (CEDEFOP 2021; ETUC et al, 2021; Hernández et al, 2020; OECD 2021).

Ensuring quality infrastructure to avoid insufficient bandwidth in rural areas is a key element in equal educational and employment opportunities. Equally, it is essential to address the access gap to digital resources caused by economic and social inequalities and differences, whether gender, educational or age-related.

The pandemic also shed light on the importance of the digitalisation of small and medium-sized enterprises in Spain, which faced this situation from a disadvantaged position in terms of digital equipment and training. Everything suggests that companies and sectors with more digitalisation were able to react quickly to the new situation, boosting even more their telematic relations with suppliers, customers or the administration; especially, by enabling their workers to telework, mitigating, to a certain extent, the impact on their activity and on employment (CES 2021). In short, the recent situation highlighted a series of limitations and weaknesses in the field of digitalisation on which Spain should concentrate investment efforts during the economic recovery process, investment that should also be geared towards new digital progress.

Looking ahead, in the coming years, the main impact is expected to be linked to artificial intelligence and its various developments. In the near future, '*although still speculative, a greater impact on job destruction can be expected, given that artificial intelligence has the capacity to replace not only routine tasks but also more elaborate ones, and could also have a major impact on working conditions due to algorithmic management of work*' (INT1).

The low profile of tripartite social dialogue has been a weak point in the governance of digitalisation in Spain over the last decade. This situation can be explained by two factors. First, public policies in this field have been developed for several years in an institutional context generally characterised by unilateral governance, as a consequence of which social dialogue in general in Spain was virtually paralysed between 2012 and 2018. Second, the design of major policy initiatives related to digitalisation included an option for 'public consultations'. This is a method of 'soft governance' widely promoted by European institutions, which has been strongly criticised by the social partners - especially the trade unions - as implying a replacement of social dialogue (Cruz, 2021; Rocha and de la Fuente, 2018).

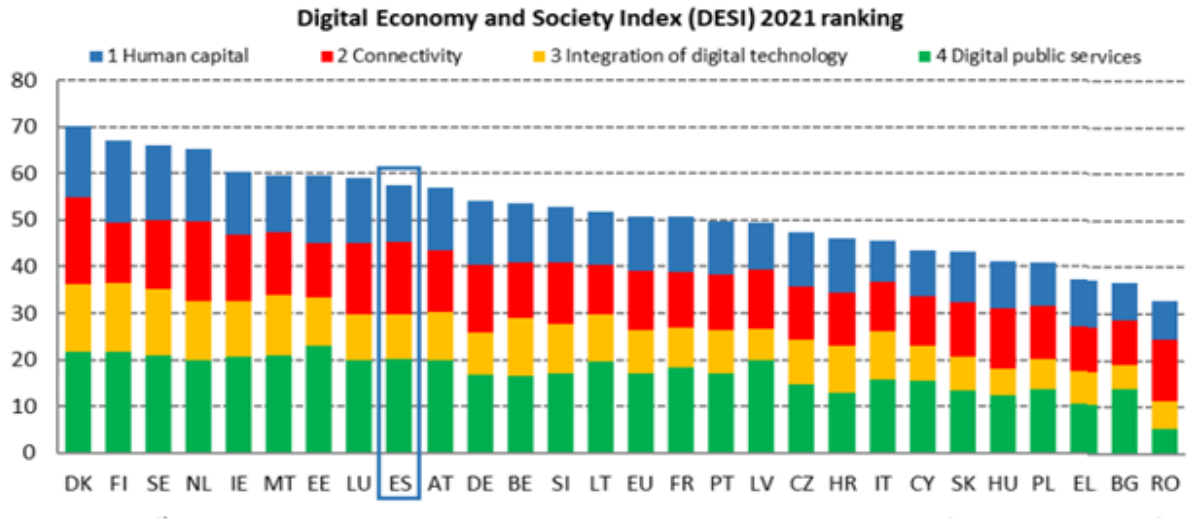
The change of government in 2018 led to the revitalisation of tripartite social dialogue, which gained intense momentum following the outbreak of the COVID-19 pandemic in 2020. This crisis was managed in a very different way from the previous crisis (Vicente and Bravo, 2020).

Progress has also been made in digitalisation in recent years, albeit unevenly and in a fragmented way. Thus, the initiatives promoted by the Ministry of Economic Affairs and Digital Transformation have been submitted to a public consultation process in which the role of the social partners has been limited to expressing their opinion together with other civil society actors, even when they have had an impact on labour issues. On the other hand, the Ministry of Labour and Social Economy has instead promoted a process of social consultation on various labour issues related to digitalisation (see below).

1.2.1 Latest DESI Index

In the 2021 edition of the Digital Economy and Society Index (DESI), the European Commission's mechanism for monitoring progress in digitalisation in member countries, Spain obtained a score of 57.4. This score places Spain in ninth place, above the European average.

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



Source: European Commission 2021b.

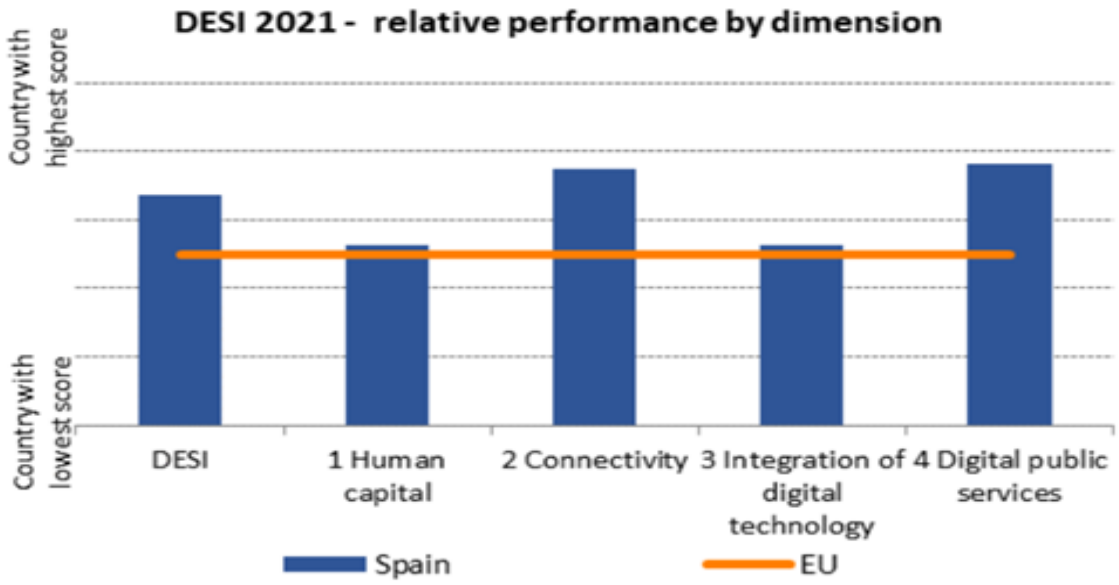
Spain's good results are due, in particular, to the enormous progress in digital public services, a strategy that has been promoted throughout the central state administration and which has meant that in 2021 the country is well above the European average in this aspect. Much of this score is due to the impressive digital development of the Tax Agency (CES, 2021). All the indicators analysed show a high level of interaction between public authorities, businesses and citizens through online services, with scores above the European average: 67% of Spanish internet users actively participate in e-government services; a score of 78 points out of 100 was obtained for completed forms for the reuse of citizen information between administrations; Spain scored 82 points for digital public services for citizens and 94 points for digital services for businesses; and finally, it also obtained very good results in open data. In addition, Spain has very good connectivity data, ranking third thanks to the wide availability of fast and ultra-fast fixed and mobile broadband networks, which have also been deployed more widely and used intensively since the beginning of the pandemic. However, significant territorial differences remain, with low levels of deployment in rural areas.

Although Spain scored around the European average, there is clear room for improvement in the dimensions of human capital and the integration of digital technology. On human capital, taking 2019 data as a reference, Spain obtains a score similar to the European average, but only 57% of the Spanish population are found to have basic digital skills and 36% of the working population in Spain do not have these skills. One of the weakest elements is the share of staff specialised in elements such as big data analysis, artificial intelligence, etc.: the percentage of the employed population specialised in ICT (3.6%) is below the European average.

In terms of the integration of digital technology in companies, Spain ranks 16th among the EU countries. It is above the European average in the percentage of small and medium-sized

enterprises that exchange information electronically, the percentage of SMEs that use social networks, use ICT for environmental sustainability or make online sales. On the other hand, the percentage of SMEs accessing big data analysis, using cloud services or using artificial intelligence is below the EU average.

Chart 2. Spain's score on the main elements of the DESI index, 2021



Source: European Commission, 2021b.

1.2.2 National digital strategy

In recent years, the digital strategy in Spain has been mainly implemented through two instruments, coordinated by the Ministry of Economic Affairs and Digital Transformation: the Digital Spain 2025 agenda and the Recovery, Transformation and Resilience Plan (RTRP), which incorporates the different actions included in the agenda.

Digital Spain 2025 includes a set of measures, reforms and investments, structured in ten strategic priorities, aligned with the digital policies set out by the European Commission. Its objective is to promote the country's digital transformation as one of the fundamental levers for relaunching economic growth, reducing inequality, increasing productivity and taking advantage of all the opportunities offered by new technologies, while respecting constitutional and European values and protecting individual and collective rights.

The RTRP is Spain's strategy for channelling the funds earmarked by Europe to repair the damage caused by the COVID-19 crisis and, through reforms and investments, to promote a large part of the programmes and measures contained in the Digital Spain 2025 agenda. These include the

National Digital Skills Plan, Educa en Digital, the Plan for Connectivity and Digital Infrastructures *and the Strategy to Boost 5G Technology, or the SMEs Digitalisation Plan 2021-2025*

At the beginning of 2021, the *National Digital Skills Plan* ([4]) was launched. This includes seven lines of action: 1) Digital empowerment of citizens; 2) Gender digital gap; 3) Digitalisation of education and development of digital skills for learning in education; 4) Training in digital skills throughout the working life (unemployed and employed people in the private sector) 5) Training in digital skills for people working for the public administrations; 6) Development of digital skills for SMEs; 7) Promotion of ICT specialists (in both vocational and university training).

In addition to this Plan, there are other programmes such as *Educa en Digital* ([5]), with measures to promote greater digitalisation of the Spanish education system or to promote digital skills for employment, through: 1) strengthening of active labour market policies aimed at the acquisition of skills and retraining, targeted at unemployed and employed people; 2) a digital training programme for public administrations; and 3) a programme for the digital transformation of SMEs and to provide them with training in digital skills.

In December 2020, Spain published a new *Plan for Connectivity and Digital Infrastructures and the Strategy to Boost 5G Technology* ([6]), which aims to provide the entire population with a connection above 100 Mbps by 2025, in line with EU targets, especially in rural areas.

In relation to improving the integration of digital technology, in January 2021 Spain published the *SMEs Digitalisation Plan 2021-2025* ([7]), which aims to boost disruptive innovation and entrepreneurship in the digital sphere. This plan has five main lines of action: 1) basic digitalisation for SMEs; 2) support for digital change management; 3) fostering disruptive innovation and digital entrepreneurship; 4) support for sectoral digitalisation, with special emphasis on industry, tourism and trade; and 5) coordination and efficiency. In addition, the Spain Entrepreneurial Nation Strategy aims to boost the Spanish entrepreneurial ecosystem in all sectors. Besides, the National Strategy for Artificial Intelligence ([8]) was launched in December 2020.

4. Plan Nacional de Competencias Digitales. Gobierno de España. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf
5. Educa en Digital. Gobierno de España. https://www.red.es/es/iniciativas/educa-en-digital#objetivos
6. Agreement reached on 10 March 2021 between the Government, CCOO, UGT, CEOE and CEPYME, following the work carried out by the Dialogue Committee set up for this purpose on 28 October 2020.
7. https://www.ccoo.es/597bd6acb53ea9b746c8d3a7ecf1309d000001.pdf
8. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/201202_ENIA_V1_0.pdf

One of the main measures in the Recovery, Transformation and Resilience Plan is the creation of a new instrument: the *Strategic Economic Recovery Projects, PERTES*[9]. Through public-private collaboration and the cross-cutting involvement of the administrations, these plans finance strategic projects with great potential for dragging along the entire value chain and transformational capacity. They must be approved by the Council of Ministers. The criteria for declaring a PERTE are: a significant contribution to economic growth and employment, combining knowledge, experience, resources and actors to remedy market failures and/or social challenges that could not be addressed otherwise, innovative character and added value in research, development and innovation, quantitative or qualitative importance, involving high technological or financial risk, integration and growth of SMEs, projects with disruptive and ambitious research and innovation phases, beyond the state of the art in the sector, followed by a first industrial deployment[10].

Finally, the digitalisation of public administrations ranks third in the Digital Spain 2025 strategy. In 2020, the Public Administrations Digitalisation Plan was launched with the aim of improving the 'accessibility of public services to citizens and businesses with all the guarantees for the protection of personal and business data, overcoming social and territorial digital divides and boosting the efficiency of public administrations through the digitalisation of important areas such as health, justice, employment policies, consular services or territorial administration in terms of inclusion' (Gobierno de España, 2020).

The Spanish social partners are committed to social dialogue as a tool to ensure that the digital transformation is shaped in a sustainable way, a position that resulted in an agreement[11] signed by the majority trade unions (CCOO and UGT) and the employers' organisation representing the digital industry sector, AMETIC (Asociación Multisectorial de Empresas de Tecnologías de la Información, Comunicaciones y Electrónica). The agreement aims to boost digital transformation by promoting a balance between increasing the competitiveness and efficiency of companies and respecting the fundamental rights of the workforce.

On the labour side, the Ministry of Labour has promoted two laws to regulate the impact of digitalisation on working conditions. The first is Royal Decree-Law 28/2020, of 22 September, on remote work (BOE, 13/10/2020). It emphasises the important role to be played by collective bargaining in regulating this matter at company level, a boost to the historically low level of development of remote work in Spain (Gallego, 2022; Tascón, 2020). The second is Royal Decree-

9. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf
10. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/201202_Plan_para_la_Conectividad.pdf
11. https://www.ccoo.es/597bd6acb53ea9b746c8d3a7ecf1309d000001.pdf

Law 9/2021, which guarantees the labour rights of delivery workers working through digital platforms (BOE, 12/05/2021). This pioneering regulation is undoubtedly important, although the labour literature has highlighted the need to deepen its contents in order to ensure the effective exercise of collective rights in the new digital working environments (Garrido, 2021).

In sum, social dialogue has played a leading role in the laws promoted by the Ministry of Labour: both the law on remote work and the law on the labour rights of workers on digital platforms were agreed with the main trade unions (CCOO and UGT) and the main employers' organisations (CEOE and CEPYME).

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

Job insecurity is a structural feature of employment in Spain, together with a high level of temporary employment. This is why the debate on the repercussions of digitalisation on the quality of employment is of particular relevance in the Spanish context. It is an open debate based on the premise that the impacts of digitalisation are conditioned by technological, social and institutional factors, as well as by the specific strategies adopted by the different actors involved in its development (Rocha, 2020).

The current lines of research focus on the quality of employment and digitalisation from different perspectives. These include: the study of occupational health - ergonomic studies and psychosocial risks; the study of working conditions on digital platforms; and, more recently, teleworking and the extension of these conditions to other sectors in the process of 'platformisation' due to the increasing use of artificial intelligence. Much of the analysis refers to gaps based on gender, age or educational attainment.

Occupational health

From the occupational health perspective, there are many arguments for considering that digitalisation has a positive impact on workers' health, but also that the risks are varied, both in terms of physical and psychosocial health. Despite these clear benefits, increased automation, immersive technologies, the 'Internet of things' or new ways of organising work can entail significant physical and psychosocial risks linked to 'technostress' (Rimbau-Gilabert., 2019).

In contrast to the classic theories of psychosocial risks, which suggest that worker autonomy, participation and self-management protect workers' health, new positions have emerged that speak of 'the paradox of autonomy'. This perspective is reflected in the various studies that seem to associate greater autonomy with an intensification of work and, paradoxically, greater capacity for the company to monitor the performance and results of workers. (Pérez, Hernández and

Revilla, 2019). Flexible work implies diverse individual formulas for organising work, in such a way that responsibility towards clients becomes a key element, thus deepening employees' involvement with the company and generating paradoxical tensions (Cañibano, 2019, in Álvarez-Hernández, Pérez-Zapata, 2020).

In terms of occupational health and hygiene, both positive and negative impacts can be identified, and again they depend very much on the sector. The use of digital technology can help to control exposure to certain physical or chemical risks, but on the other hand it opens the door to other risks of a psychosocial nature. Anxiety or work intensification are risks that are becoming increasingly palpable.

Remote working

In recent years, a multitude of articles of various kinds have been written about the benefits and risks of telework, in the wake of the COVID-19 pandemic. Llorens et al (2021) point out that the impacts are not intrinsic to telework itself, but to how it is organised and negotiated. The authors identify a number of risks associated with its performance: work overload, isolation and individualisation or devaluation.

Inequality in access to telework as well as an assessment of the type of work and its risks are reflected in the results of the latest edition of the ICT Equipment and Use in Households survey (2021), with data collected in the first quarter of 2021, i.e. from one year after the start of the pandemic.

In 2021, 35% of the employed population in Spain claimed to perform jobs that could be fully or partially performed remotely. However, only 17.6% of the employed population were actually able to telework. In the case of women, the percentage is slightly higher. There were quite a high percentage of people who did not telework although their job would allow them to (17%). Nearly 59% of them declared they prefer to do their jobs at the workplace, while 36% said that their companies were not willing to implement it. The percentage of people who effectively teleworked at least partially was 33.4% among people who have completed university education, while among people who have only completed compulsory secondary education, the percentage of teleworkers was 12.4%. By age, it is people between 35 and 44 years old who teleworked the most (20%), while only 9.4% of young people under 24 years old teleworked. Teleworking was most prevalent in cities with more than 100,000 inhabitants, where around 24% of the working population teleworked.

Workers rate telework very highly, above 8 out of 10, and the advantages of partial or full telework are widely recognised. It is therefore important to pay attention to the gaps in teleworking possibilities.

The quality of employment largely determines access to telework: those who teleworked the most are employees on permanent contracts (19.8%) - compared to 10.2% of those with temporary contracts - and those on full-time contracts (18.7%) - compared to 12.2% with part-time contracts. A large percentage of scientific and intellectual professionals teleworked (37.2%), followed by mid-level technicians (32.8%), while administrative support staff teleworked to a lesser extent (22.6%). Professionals in managerial and managerial positions teleworked above the average, but less than people in medium and higher technical professions (30%).

In addition to working conditions, social class also influences access to teleworking: there is a direct relationship between the level of household income and teleworking, so that among those in households earning less than 1,600€ net per month, only 8.6% teleworked, while 32.3% of those earning 3,000€ or more teleworked.

A higher percentage of women than men report having jobs that would allow them to telework, at least partially (38% of women compared to 32.4% of men). Of these women, 20% say that they have not teleworked although it is possible - compared to 15% of men. More than half (58%) say the reason is that they prefer face-to-face work. This is likely to be related to the fact that administrative support staff - a feminised category - chose not to do so, although the option was there.

Among the disadvantages of teleworking which were identified, the most important is the lack of contact with colleagues (82.2%). Lack of digital disconnection is identified as a disadvantage by 60.8% of respondents, and is more strongly emphasised by women, as well as work overload - identified by 50% of women compared to 44% of men who telework.

According to the same survey, the advantages of teleworking are widely appreciated by workers. The most important are: avoidance of commuting (95.4%), self-management of working time (87.3%) and work-life balance (87.2%). Along these lines, teleworking is rated overall very highly, both on a personal and professional level (above 8 out of 10), although there are some elements worth mentioning in terms of work-life balance: those who rate teleworking best from a personal point of view are couples living together without dependent children (8.6 out of 10), while those who rate it lowest are single-parent families (7.8 out of 10).

Artificial intelligence: work organisation and working conditions

Research on working conditions and digitalisation is increasingly investigating algorithmic management, using artificial intelligence to make decisions in the field of human resources and work organisation. The implications of the still emerging use by companies of algorithms in automated decision-making, through smart devices or smart credentials, are of increasing concern. Automated work management is now in the final rung of optimising efficient management and control of workers, precisely without human intervention. In this way, the aim is for artificial intelligence to replace the people in charge of human resources, middle management, even in decision-making. This way of managing human resources and organising work has far-reaching consequences in terms of constant monitoring of workers, intensification of work, lack of autonomy, bias and discrimination caused by algorithms, complexity and lack of transparency, or dysfunctionalities and ethical problems (Todoli-Signes, 2021).

The so-called 'platformisation of work' is launching a new wave of the digitalisation process, with the extension of the work organisation model from pure digital platforms to other links in the value chain. This model is spreading rapidly to higher-skilled jobs. There are unofficial estimates that low-skilled platform work in Spain accounts for less than 50% of total platform workers, while software design or management and personal services are gaining in importance. The implications for working conditions bring us back to the unfinished debate on flexibility and autonomy. The platformisation of skilled work, now taking place, would tend to amplify the risks of precariousness and a cognitive and emotional intensification of work. (Álvarez-Hernández and Pérez-Zapata, 2020).

One element enabled by these new technologies, which began in sectors such as digital platforms, is the evaluation and scoring by the customer of the service received from workers. This forms a digital reputation that ranks workers in terms of access to jobs. It is a formula that was encouraged by digital platforms but is now spreading to other sectors, where evaluation is no longer only carried out by middle or senior management, but also by the public. This type of dynamic is starting to be seen even in public works.

Algorithms using the multitude of data that these devices collect can generate predictions used to take decisions about workers. Their use can range from recruitment processes, shift organisation, productivity measurements, promotion processes or even disciplinary measures and dismissals. Although it is still an incipient risk, algorithmic work management has enormous implications for the quality of employment, with a clear impact on the intensification of work rhythms (INT1,2 and 3). The constant monitoring of workers also heightens their stress and anxiety. Indeed, invasive technological monitoring and lack of privacy can cause various psychosocial risks (techno-stress, techno-anxiety, techno-fatigue or burnout). Besides, constant observation may cause workers to

behave in unnatural ways (always smiling or always being active) to achieve targets requiring great physical or psychological effort, or to be unable to interact socially with colleagues or to take breaks (Todoli-Signes, 2021).

Linked to artificial intelligence is another new area of working conditions, to do with privacy and data protection, as new technologies are very invasive and open up violations of privacy rights such as monitoring. These are technologies that allow not only the collection of a multitude of personal and even biomedical data, but also automated predictions that could interfere not only with labour rights but also with fundamental rights. Despite their supposed neutrality, the criteria with which these algorithms tend to be generated are conditioned by human perspectives. Thus, it is clear that the designs *'(…) often made by young male computer scientists, contain significant gender biases. For example, certain algorithms have been shown to reward extended working hours and participation in after-hours work, while penalising those who do not comply with them'* (INT1).

The opacity of the management of these data, coupled with the lack of technical knowledge for their analysis and understanding, allows companies to justify their decision-making on the basis of certain parameters whose criteria are either unknown or are very difficult to analyse or understand. This makes monitoring for accountability extremely difficult: it is, moreover, dressed up in a supposedly neutral objectivity, which makes it more complicated to question decisions.

Working time and reconciliation of work, personal and family life

Studies on the implications of new technologies on working time point to the psychosocial risks of hyper-connectivity and availability. There is an ongoing debate on possible ways of making the right to digital disconnection effective.

The pandemic and the lockdowns have given rise to varied academic and grey literature on the implications of the use of new technologies, telework and the reconciliation of personal, family and work life (Serrano, 2019; Gala Duran, 2021; Baena, 2020). The potential for telework in certain jobs makes it possible to reduce commuting times and facilitate greater time flexibility in a way that will broaden the options for organising working time according to the personal or family needs of workers. However, the intensified work rhythms and monitoring make a work-life balance very difficult. There is no doubt that new technologies facilitate work and favour productivity and efficiency, but they also modify the traditional parameters of working time by promoting self-management, as well as the ability to work at any time due to the ease of location and permanent connection (Serrano, 2019).

Skills and competences

Probably the most important element in terms of impact on working conditions is the area of training and re-skilling requirements. There is growing pressure to update digital skills. This is influenced by the socio-demographic characteristics of individuals (age, level of qualification or gender) and job characteristics, and the impacts can differ. The digital gap by age is becoming more and more significant: older people may be highly skilled in their job after decades of work but find it difficult to update and retrain in the use of this type of technology. The risk of psychosocial impacts from the pressure to reskill is becoming increasingly prominent. In this sense, it is important to pay attention to the limitations of adaptation and access to digital training, as they may seem to favouring the winners from the new wave of digital change more than the losers (Mateo effect); the latter may become even more vulnerable, in terms of the labour market, due to a process of exclusion from training, and may remain in low-skilled positions and thus lose out in the redistribution of skills between AI and human labour produced by digitalisation (Lahera, 2021).

There is a general consensus on the importance of training, updating and retraining throughout the working life, but this does not automatically determine who should bear the cost: companies, the public sector or employees. This is not a simple issue, in that the most efficient way to carry out retraining seems to be to improve general skills and competences, and not so much company-specific training (Muñoz de Bustillo, 2020).

SECTION 2. IMPACT OF DIGITALISATION ON JOB QUALITY

The impacts of technological change are considered ambivalent because they are not determined solely by technological aspects. On the one hand, it is necessary to consider the implications of changes in production processes, the consequences they may have on employment, as well as the adaptations that employees are forced to make. On the other hand, we must highlight the impact of changes and the use of digitalised mechanisms on the management of human resources, timetables and people's ability to adapt to both new and old production processes (INT3).

But there are also other elements that generate change: *'It is not the innovation itself that determines the impact, given that other types of factors have an influence.: the characteristics of the company, its activity, its workforce or institutional issues, such as the role trade union organisations can play. It should be taken into account that each sector has its own peculiarities and dynamics'* (INT1).

Respondents generally have a negative assessment of the effects of digitalisation (INT2,3 and 4), although they tend to be optimistic if proper regulations are adopted and collective bargaining is further developed. *'The first impact observed can be considered negative, given that workers do not have the capacity to negotiate change. Once the consequences of change become apparent, collective bargaining can start'* (INT3).

While recognising positive aspects such as speed and flexibility in the performance of many tasks, the trade union assessment is that, in general terms, digitalisation has led to an intensification of work (INT1, 2, 3, and 4*): 'digitalisation implies an adaptation of the worker, and this adaptability to a new production process simply translates into greater intensity. Moreover, when there is a change in a company, it is to increase production first, and then productivity'* (INT3). Along the same lines, the unions pointed out that *'digitalisation makes it possible to measure productivity through marginality. It is possible to measure the work actually performed and the value of work per unit of worker. This leads to a higher burden and stress per worker when linked to human resource policies'* (INT4).

Our interviewees expressed widely differing assessments of elements such as routine performance of tasks, and, maybe for this reason, varying perspectives. On the one hand, they pointed out that any process that is automated becomes more routine, as the person's capacity to intervene is reduced: *'classic production processes that incorporate automation become more routine'* (INT3). From another perspective, the use of tools such as Big Data opens up the possibility of optimising the organisation of work, so that on paper the idea is to reduce the routine aspect of work and optimise routine work in order to spend less time (INT2).

Improvements in physical health and safety are recognised, but multiple psychosocial risks are identified: longer working hours due to the blurring of boundaries between working time and personal life made possible by portable devices, the breakdown of privacy, surveillance through video and audio systems or geolocation, dehumanised ways of dealing with the workforce, the growing uncertainty when confronted with new needs for adaptability and new training requirements. All of these are risks and problems derived from a lack of planned, negotiated and regulated management (INT2 and 3).

They also expressed concern about the algorithmic management of work, and more specifically, in the management of human resources, which covers all sectors of activity. Thus, the people interviewed mentioned that *'digitalisation affects all sectors, both public administrations and services and the rest, so there will eventually be a convergence. Public companies may be the last to incorporate control mechanisms through AI, but they will probably end up implementing it'* (INT2). In particular, it is noted that the changes have been subtle, so that *'although it has gone unnoticed by workers and even companies, some primary or basic artificial intelligence has already been applied, for example, in digital time control'* (INT4). These changes are significant not only for the organisation of work, but also for the organisational culture of work, resulting in greater deregulation and a stronger impact on working conditions.

The lack of training repeatedly emerges as one of the elements that most hinders participatory and inclusive productive change. Some of those interviewed pointed out that new qualification requirements sometimes become an excuse used by companies to dismiss and hire new workers with new profiles. There is no commitment to continuous training, while companies take advantage of the tools that workers already use on a daily basis, such as mobiles and laptops. There is concern that the training requirements entail higher costs for workers (INT2 and 3).

This negative perception of trade union officials of the effects of digitalisation on working conditions contrasts with the seemingly more optimistic view of workers. Individual workers see technological change as providing opportunities for improvement (INT9 and 11). For example, workers' positive assessment of telework often contrasts with the trade union perspective.

Another aspect mentioned by the interviewees is the impact of digitalisation on labour relations and, in particular, on the individual and collective rights of workers. They state that, as a result of digitalisation, individual rights are already being undermined by bargaining that is no longer individual, but fragmented (INT4). On the other hand, they highlight the difficulty of exercising collective rights to participation and negotiation by workers' representatives when faced with processes of technological change.

In this sense, the interviewees detected a lack of training of workers in their emerging new digital rights, as well as a need for regulation of workers' rights. To this end, they highlighted the need to carry out training activities for all workers to reinforce their knowledge in this area (INT2 and 4).

In the following sections, we present the results of the analysis of the impact of digitalisation on working conditions in the three public sectors selected for this study: electricity production and distribution, public administrations and the hospital sector. The analysis is based on fieldwork consisting of key informant interviews, a survey and a focus group for each sector.

Section 2.1 Electricity production and distribution sector

2.1.1 Overview of the sector

The electricity production and distribution sector in Spain employs 85,751 employees, only 0.5% of the total number of employees. It has undergone a privatisation process of such magnitude that currently only 0.3% of the employees are employed by the state. They are all older, between 56 and 65 years of age, with only lower secondary education. All of them are full-time, permanent employees (Encuesta de Población Activa, INE, 2021).

The public electricity production and distribution service in Spain was managed by ENDESA, which was established in 1944 by the National Institute of Industry. In 1985, in accordance with European legislation, high and medium voltage distribution was separated and Red Eléctrica de España was created. In 1988, the privatisation of ENDESA started and the State's shareholding began to be reduced, a process which culminated in 1998.

Given the peculiar Spanish situation, with virtually no public energy sector ([12]), ENDESA (although it is now a private company) will be taken, for the purposes of this report, as a company that provides a public service. ENDESA is a privatised company, bought by the Italian public company ENEL. It employed 9,600 workers in Spain in 2021. In addition to privatisation, certain activities have been outsourced, resulting in fragmentation of certain processes, in terms of control and integration, and differing working conditions.

2.1.2 History and patterns of digitalisation in the sector

Digitalisation has taken place gradually, with some acceleration in the last decade. In parallel to the acquisition of ENDESA by ENEL, digital implementation was accelerated together with changes in the business strategy.

12. Currently, the only significant company that is partially public is Red Eléctrica (20%), with 2,000 employees. Two more are part of SEPI (Sociedad Estatal de Participaciones Industriales): Enusa (100%), with 664 employees and Ensa (100%), with about 500 employees.

The company has introduced various digitalised systems, to ensure interoperability and integration of the different areas: production, distribution and marketing. Digitalisation has impacted customer management, contracting, billing, control of networks and plants, data collection and remote repair of digitalised electricity meters by means of telematic mechanisms. This has recently resulted in the implementation of a teleworking system, with percentages of office work which vary between production areas.

New technologies are fully implemented in the company in various areas related to the organisation of work, control of the working day and workplace management. The entire workforce has a corporate mobile phone, most have laptops and some have tablets. All staff use a unified management system and have a clocking application. They all make use of work software. In addition, there are specific software programmes for each department or area (FG2). The staff have mobile applications that allow them to clock in, reserve their workplace in the office, receive alerts, messaging or GPS navigation to go to clients or check and manage the electricity network (INT10 and 12).

The DIGIQU@LPUB web survey (DGQS) conducted for this project in the electricity sector ([13]) confirms this very extensive use of digital tools and software. Thus, almost all respondents stated that they regularly use portable devices and tablets at work, mainly for four functions: communicating with colleagues and internal and external services (25%), to plan/schedule the performance of work tasks (23%), to measure data to collect/organise/retrieve information (22%) and to monitor the performance of working tasks (19%). The use of ICT tools is also widespread, mainly for sending and receiving emails (35%), using web-based applications for training and learning online (29%) or for exchange with other services or institutions (23%).

Teleworking is a widespread practice: more than half (52%) of the workforce say they telework three days per week and 36% one day per week. A large percentage of staff also work remotely from home or users' premises (34% fully and 30% partially). This practice is expected to become increasingly common, *'In fact, buildings are already being sized with remote working in mind'* (INT9).

The use of machines operated by digital commands to perform certain operations does not seem to be widespread: 33% of respondents say they use these machines at work, to measure data and

13. The survey was completed by 323 respondents, mainly from the staff of ENDESA, the former Spanish public energy company that was privatised and is now 70% owned by ENEL, an Italian public company. 74% of the respondents were men, mainly workers aged between 45 and 64 (62%). 64% had a university education and a further 31% had post-secondary education. Nearly all respondents had full-time permanent contracts. The respondents were mainly people in skilled technical positions (40%), followed by highly skilled professionals and technicians (29%) and skilled professionals (17%). 10% of the respondents were trade union representatives and 40% were trade union members.

collect, organise and retrieve information (38%) and to monitor and control the parameters of equipment or people (34%).

2.1.3 Work organisation

The widespread implementation of technology, hand in hand with the outsourcing process, has profoundly changed the organisation and the content of work (FG2). The availability of a company Smartphone for each employee, with a software system, mediates the organisation of work. Also, the daily use of telematic communication and teamwork tools has influenced the routine tasks. This extensive use of new digital technologies is perceived with a certain mistrust, as it provides more autonomy in work performance, which is perceived as greater individual responsibility for work (FG2).

The introduction and use of ICT has implications which differ according to areas, profiles or age. Technical staff working in distribution activities say that they have experienced a major transformation in the organisation and performance of their work, whereas commercial staff have not experienced such radical change, although they have made extensive use of telework. Age and career path have a major impact on adaptation to new ways of organising work: older people and those with more years of experience have seen their work change radically.

The content of the work has changed, due to both digitalisation and the outsourcing process, especially for technical staff working in distribution. *'We have moved from working in the field to being data managers'* (FG2.6.). In addition, there is a heavier workload and greater responsibility for work done by other people with whom they do not even have contact, because the work is outsourced: *'I say I have no autonomy because I am responsible but I cannot fix the problems'* (FG2.9). Marketing staff claim that the introduction of methodologies such as Agile ([14]) was causing increased pressure and work intensity.

Regarding work organisation, the DGQS shows that there has indeed been an increase in autonomy and conditions to increase productivity. 70% of the staff surveyed consider that, at least somewhat, digitalisation reduces the time spent on routine repetitive tasks, 66% believe that it improves coordination of tasks with colleagues, 60% that it improves cooperation with colleagues. In addition, it provides more autonomy to organise (67%) and schedule tasks (64%) and gives more time to focus on the most important aspects of the job (61%).

14. Agile methodology is the application of the principles of Agile software development to product development and project management. Client satisfaction is anticipated through the continuous delivery (step-by-step) of value-adding product. There is constant communication with the client, but also close communication between team members.

However, the union delegates interviewed and participating in the focus group emphasise the need to take into account the negative effects of greater autonomy: an individualisation of responsibility that ultimately means greater dependence on and control by the company. Digital tools reinforce the direct and indirect monitoring of the hours worked (from the digital clocking system to a traffic light system that assesses connection activity). There is also more monitoring in the workplace, by means of job reservation systems or the tracking of people working at the customers' premises. In addition, on-site attendance is organised through clocking-in and workspace reservation systems functioning via a mobile app, which are often perceived as control mechanisms (FG2 and INT10). In fact, 60% of the employees surveyed in DGQS say that the monitoring of employee performance has increased at least somewhat. Moreover, in recent months, direct monitoring has intensified (FG2).

It is also highlighted that the workload has clearly increased, in a model of work organisation that prioritises meritocracy and encourages individual responsibility; this promotes greater involvement, in terms of workload and working time, on the part of employees. The company takes advantage of the digital option so that workers are permanently aware of business needs (INT9 and 10). In addition, other mechanisms have been implemented to incentivise this logic through competition, using 'meritocracy' salary bonuses, with medal systems among colleagues or by knowing how other people's tasks are progressing (FG2). The results of the survey confirm this assessment, albeit partially: 69% of the people surveyed consider that work intensity has increased, 52% say that they have to be connected very often in order to manage their professional life.

2.1.4 Working time

Working time is an element that has come to be managed through the various digital systems, especially time and attendance. The digital clocking system initially planned to prevent overtime, following state legislation, records when the working day starts and warns when it is due to end, but does not record extensions (FG2).

The survey shows that staff have not generally seen major changes to working time as a result of digitalisation. However, 29% say that they work, at least somewhat, more hours than those set out in their contract, 23% report a rise in unpaid overtime hours and 30% say that they have increased their working time during unsocial periods (evenings, or weekends).

The delegates and FG participants interviewed perceive, on the basis of their experience, that working time has increased. However, although there is beginning to be more direct control, so far the company's policy has been that the workers themselves choose whether they need to extend the working day. Thus, not everyone has increased their working hours to the same extent and not everyone acknowledges that they have done so. It is something that, in their opinion, is related to age and career path in the company. Thus, new recruits come in with a lot of motivation

and take on a heavy workload, responsibility and longer working hours, although they do not acknowledge this.

Inflexibility on working time is one of the subjects of conflict, which is being addressed through agreements on flexibility and digital disconnection (FG2). According to the survey results, teleworking does have a significant effect on working time, and 56% consider that the time spent commuting from home to work has been reduced.

2.1.5 Health and safety and outcomes for workers

When it comes to the physical health of the workforce, the survey provides mixed results. Thus, while 39% of respondents believe that digitalisation has not brought about any changes, 36% believe that it has either caused new physical ailments such as back, neck, hand or vision pains (25%) or worsened pre-existing ones (11%). Conversely, 22% believe that they are less vulnerable to illness or accidents at work, and a minority even believe that it has helped them to manage previous physical problems. Among the most common physical problems are vision problems (22%), back problems (19%) and neck problems (17%).

FG2 participants consider that there has been an increase in some conditions, such as back, head or neck pain. They point out that some of the physical workload, especially in distribution, has been outsourced and is therefore not reflected in the surveys. On the other hand, delegates believe that there is an increased risk associated with the lack of human control in the use of electrical equipment to be used by technical staff (INT9).

The interviewees and FG participants generally perceive increased pressure due to clear intensification of work, necessarily implying higher levels of stress, anxiety and even burnout (FG 2). However, they associate this with both the organisation of work and the incorporation of new technologies. They also refer to the isolation of the months when people were teleworking because of the pandemic. However, trade union representatives with responsibilities for occupational health point out that work-related health problems are not sufficiently considered, as workers do not report them as such (INT10).

In fact, the survey shows that mental health problems are not perceived as a widespread problem: more than half of the respondents have not noticed that the digitalisation process has had any impact on their mental health. 28% of them have experienced new psychological problems linked to stress, mental fatigue and depression, and another 7% have seen a worsening of pre-existing problems. Among the most common conditions are stress (20%), mental fatigue (17%) and demotivation (16%).

2.1.6 Skills and learning

Respondents agree that digitalisation has led to a widespread process of professional reskilling. In relation to the need to update digital skills, the survey shows that 41% have needed to improve their digital literacy either through training and/or professional experience and another 35% say they have needed to develop specific digital skills required by digital tools or software. A further 14% say they have needed both digital literacy and specific digital skills.

More than half of the workforce say they have received some form of training from the company. Specifically, the survey notes that:

- 26% say they have received training in both general and specific digital skills and another 23% say they received specific training for certain tools.
- 34% of the respondents say they have not received any formal training from the company, although a good proportion of them say they have had to be trained informally in the work environment (23% of the respondents).
- Some 25% of the respondents feel that the training they receive is adequate for their needs, but a further 48% feel that, although adequate, updates are needed. A minority believe that the training is insufficient: 12% would like to see more training opportunities and another 15% believe that not enough time and resources are allocated to it.

This contrasts with the perception of the participants in the FG2, who consider that the training offered is very scarce and precarious. By way of example, when new systems are introduced, training is cascaded: *'They trained a group one day and they then became trainers for the rest of the staff'* (FG 2.10). The knowledge of how new digital technologies work ends up falling to the teams or even to individuals, who, in an uncoordinated way, decide to explore on their own, according to their time and abilities, in order to make the most of the opportunities offered by the systems (FG2).

From a qualitative point of view, the new profiles demanded are for highly qualified staff, so that practically all the new recruits to the distribution division have at least a higher engineering degree (INT9 and FG2).

2.1.7 Reconciling work and personal life

The work-life balance is affected by the greater use of teleworking, in addition to, according to interviewees, the digital disconnection agreement and another agreement being negotiated on flexibility. Teleworking is thought to facilitate a work-life balance, but the pandemic months showed that in practice it could lead to more hours of availability (INT10).

In this area, the survey notes that 71% of staff feel that their work-life balance has improved (49% strongly agree). Just over half of the respondents consider that digitalisation has at least somewhat increased their personal and family time, while 27% consider that it has not really affected their time outside work.

The extension of working time (online or face-to-face) at the expense of personal time does not seem to be a problem, with one third of respondents saying it has affected their work/personal time somewhat and another third saying it has not. More than half of the respondents deny that teleworking conflicts with family responsibilities and only 17% acknowledge such a conflict. In addition, 46% disagree that teleworking blurs the boundaries between work and personal time.

2.1.8 Career prospects and employment security

In general, the digitalisation of work is assessed as positive, with more than half of the respondents saying that it improves, at least somewhat, society in general, public services, social welfare, job quality and working conditions or the work-life balance. In particular, 51% strongly agree that it improves the work-life balance, 49% that it improves society in general, and 46% that it improves public services.

The element least positively affected by digitalisation is wages: 19% of respondents strongly disagree that it improves wages, 12% disagree somewhat and 42% believe that it does not affect them. However, the people interviewed pointed out that in recent years some of the pay formulas have been changed, leaving those that reward seniority and experience based on new meritocratic formulas. This is strongly criticised by trade union representatives, given that *'in practice, it is young people who agree to increase targets and extend working hours to earn points for this misnamed meritocratic bonus'* (INT9).

The personal perception of the respondents is that digitalisation improves their personal well-being at work (51% strongly agree and 26% somewhat agree). Much of this is associated with the improvement in the work-life balance. The majority also consider that it has improved the quality of their work and their productivity, can make their work more attractive and interesting and, to a lesser extent, has improved their job security and future prospects. This view is not shared by the interviewees and focus group participants, who associate this idealised vision with the new enthusiastic young staff joining the company. It is perceived that after three years, they become more disillusioned with the job and the turnover of staff seems to increase (FG2). This perception is somehow confirmed by the DQPS, as many younger respondents agree that digitalisation has improved their personal well-being at work (67% of respondents between 25 and 34 years old strongly agree, 63% of respondents between 35 and 44, while in the case of the age range 45-55 the percentage is 47% and below 40% of older workers). The perception in FG2 is negative, not so much because of digitalisation itself, a process which they recognise has positive impacts, but

because of the way it is being implemented in the company, which is having negative effects. Increased productivity and access to teleworking are perceived as overshadowed by increased pressure, monitoring - both indirect and direct - excessive individual responsibility and work overload (FG2).

Finally, in the view of the interviewees, digitalisation and the new training requirements it entails are used by the company to facilitate the early exit of older workers from the company (INT9, 10 and 12).

2.1.9 Workers' rights

The people interviewed do not consider that collective rights to information and consultation have changed substantially due to technological change. There are no information mechanisms prior to the implementation of new systems or digital tools, so no information is given either to the workforce or to trade union representatives (FG2). Moreover, the survey shows a wide lack of knowledge: between 43% and 46% say that they do not know if there have been any information and consultation processes in relation to the different levels of implementation of digitalisation. Around 25% said that no such process was carried out.

29% say that they have received formal information about the digitalisation strategy and its implementation, 23% about the possibilities and options for practical application of digital methods in everyday tasks and 22% about the reasons for using digital methods and tools and the opportunities they offer. Half of the respondents who accessed this formal training say that they did so both individually and through trade unions.

The impression of the delegates is that information is passed on after the event and the negative effects have resulted in a need for negotiations and agreements on issues such as telework, digital disconnection and flexibility (INT9, 10, 12 and FG2). In this respect, the right to digital disconnection is widely seen by respondents as an essential right, which needs to be clearly established by law (81% strongly agree), and in collective bargaining, both at their workplace and at sectoral level (82% strongly agree).

Trade union participation and representation rights have changed. On the one hand, communication between unions and staff has been facilitated, thanks to the possibilities offered by new technologies. The new possibilities for holding mass training meetings or the collection of information by trade union representatives open up new opportunities (INT9 and 10). However, trade union activity has become very difficult. Without direct contact, it is very difficult to build a solidarity network with the necessary commitment (FG2).

2.1.10 Conclusions on the sector

The incorporation of new technologies in the company has gone hand in hand with privatisation of the sector, with a change in business strategy and work organisation. Very many new technologies have been introduced, both in personnel management and in the development of work processes.

Although one clear finding from the survey, the interviews and the focus group seems to be that work has intensified, views on other impacts of new digital technologies are mixed. While the employee survey reflects quite a positive perception of the potential for greater autonomy and the benefits of teleworking, the delegates interviewed and the FG participants highlighted the negative impacts associated with increased individual responsibility, monitoring and the stirring up of competition between colleagues.

Section 2.2 Public administration sector

2.2.1 Overview of the sector

In Spain there are 851,314 people employed in the public administration and on economic and social policy, which represents 5% of the salaried population. It is a female-dominated sector, with one third of the workforce over 55 years of age (EPA 2022).

The public administrations are organised territorially in three territorial levels: the general State administration, regional administrations and local entities.

2.2.2 History and patterns of digitalisation in the sector

The digitalisation of the public administration has been carried out in two phases: a first very long and hard one, and another abrupt and stressful phase in the wake of the pandemic (INT7). The public sector has undergone a significant transformation in recent years, incorporating a multitude of telematic citizen services, which have become known as the 'digital administration'. Probably the most important example of this transition is the tax office, which has managed to process more and more tax returns for individuals and companies online.

In parallel, the use, by businesses and citizens, of digital credentials and certificates to carry out procedures has been slowly expanding, even though the process for accessing them is not yet simple (INT7 and FG3). Due to this process, the public administration was able to respond to lockdown. With the pandemic, the implementation of digital services has advanced rapidly, and digital tools have increased exponentially to the point that, in 2021, 98% of companies with less than 10 employees used electronic signatures to communicate with the public administration (INE, 2021).

The people interviewed state that a multitude of digital resources are used: corporate software, digital time and attendance systems, basic ICT tools, virtual meetings, teleworking, laptops, smartphones available to workers (INT7, 11 and FG3). In line with this assessment, the survey conducted among workers in the sector ([15]) confirms that the use of new technologies is widespread among public workers: 84% say they regularly use smartphones, tablets or laptops. These devices are used for various functionalities: to measure, collect, organise and retrieve information (19%), to plan the performance of work tasks (22%), to communicate with colleagues and internal or external services (23%), or to interact with users of the public service (18%). Only 23% claim to use programmed machines to perform certain activities.

The use of ICT tools is also very widespread (95%), especially to send or receive emails (32%), to carry out training and learning through web-based applications (23%), to exchange information with other services or institutions (21%) or to connect with public service users (19%).

Teleworking was abruptly introduced at the time of the pandemic during the lockdown. It was maintained for months, in various combinations with work at the workplace, and has again been approved as an energy efficiency measure in the wake of the war in Ukraine. Decree RDL 14/2022 ([16]) is a reference, which the various administrations must implement by adopting their own regulations, determining to what extent different workers and services are eligible to work remotely. This is resulting in considerable differences in implementation across regions, institutions and services (FG3). The survey found that 11% were able to telework fully and 39% partially. A further 21% were able to telework only during the pandemic. Most of those who telework do so one day a week. Less common is working from a user's home or location or working from an office or satellite location. However, the use of new technologies and the option to telework are not available to all public employees to the same degree in all institutions.

On the other hand, digitalised machines and artificial intelligence tools are not yet used (INT7 and FG3). The introduction of artificial intelligence is not seen as something imminent: *'artificial intelligence will not be introduced unless there is a cultural change in which the digital transformation is conceived at a global level, (in the public administrations) which will not happen in the short-term. The public administration, for various reasons, is very slow in taking up change processes and in organising work, unless the change is driven from Europe by the Next Generation*

15. 399 public sector employees responded to the survey, 55% of whom were women. 47% of the respondents were between 55 and 64 years old and another 39% were between 45 and 54 years old. 66% of the respondents had completed university education and another 23% had completed post-secondary education. 32% of the respondents were skilled professionals, and another third were moderately skilled clerical workers. 78% were civil servants, 79% had a permanent contract and 98% were full-time. Of the respondents, half were members of a trade union and a further 26% were union representatives in their workplace.
16. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-12925

funds beyond pilot experiences' (INT 7). Inspection selection, registration, database maintenance, identification of needs are fields where artificial intelligence could be introduced. Others are more difficult due to the legislative complications involved, such as in public procurement, *'but it is impossible that this will happen in the next five years'* (INT 7).

Moreover, the public administration expert points out that recruiting staff with the required profiles for this change is very complicated and costly. Public employment is likely to be unattractive for the hyper-skilled categories of workers required, and the public administration is already outsourcing specialised digital management services to private companies. In addition to privatisation, there is a risk that this outsourcing process will give rise to influence, lobbies and monopolies (INT7 and FG3).

2.2.3 Work organisation

So far, digitalisation has meant that a large share of the work processes of large swathes of public administrations are managed using clocking tools and software for information management, communication between institutions or team meetings (FG3). Teleworking has been implemented unevenly, adapting to the situations and organisational needs of the different workplaces, a process which is perceived with mistrust given the arbitrary way in which the conditions for its application are determined (INT6 and FG3).

Several aspects have been very strongly affected by the introduction of digital tools and software. According to the survey data, some can be highlighted: the reduction of the time needed to perform routine repetitive tasks (66% strongly agree or somewhat agree), and the increase in work intensity (63% strongly agree or somewhat agree). A majority also consider that, at least somewhat, they have gained time to focus on more important aspects of their work, that the quality of interaction with users has improved, that they have gained autonomy in the organisation of tasks or that the coordination of tasks with colleagues has improved. Nearly 50% of respondents also appreciate that digital tools have improved cooperation with colleagues or that they provide greater autonomy in the scheduling of their tasks. However, there is a feeling that they have not influenced other elements such as supervision over subordinates, doing the tasks that make up their work, internal evaluation of job performance by their supervisors, internal evaluation of job performance by direct peers or external evaluation by users.

The interviews highlight 'the paradox of autonomy' linked to digitalisation. On the one hand, from a trade union perspective, it seems that digitalisation confers more autonomy on public sector staff, which they associate with positive aspects, but also with negative ones, such as increased responsibility. However, from the perspective of public employees, work processes in the public administration do not allow for much autonomy, and neither does digitalisation. However, they recognise that this potential exists (INT6, 7 and 11).

2.2.4 Working time

The sudden implementation of teleworking was a major challenge for public sector employees and sometimes involved overtime, as there were no effective formulas to ensure that workers' circumstances and jobs were not negatively affected. In these months, public staff acted in a 'hyper-responsible' manner to ensure access to public services (INT6 and 7).

Interviewees also recognise that overwork can be caused by the potential to access work content telematically, if the worker him or herself is generating or organising his/her work (INT6, 7 and 11). Some 30% of respondents say that working time during non-standard hours (evenings, nights, Saturdays or Sundays) has increased somewhat, even though, in general, respondents say that they have not noticed any major changes in working time. It is worth noting that 38% say that their commuting time from home to work has been reduced at least somewhat. Occasionally, longer working hours were found to be the result of employee training (FG3).

Since the introduction of digital tools and methods, 20% say they do not need to log in from outside the workplace, 31% say they are not under pressure to log in during their free time and another 17% say they log in but as a personal choice. Most agree with regulation of the right to digital disconnection. Digital disconnection does not seem to be a major issue, but it does require people to be informed about this right, as many public workers can choose whether to be available outside the normal working day (FG3).

2.2.5 Health and safety and outcomes for workers

Interviewees emphasised the effects of digitalisation and teleworking in terms of mental overload. *'In addition, the process of digital change generates a lot of insecurity, mistrust and fear in many people'* (INT7).

The impact of the introduction of digital tools at work on physical health is perceived as somewhat uneven. While 39% say they are experiencing new physical conditions, 37% say they have not noticed anything. Among the possible ailments, the most notable are vision problems (22%) and back pain (19%). As far as mental health is concerned, half of the respondents say they have not noticed anything, but 27% admit that digitalisation at work has caused them psychological problems. Among the psychological problems, stress (21%) and mental fatigue (20%) stand out. Respondents associate these effects not only with longer working hours and work intensity, but also with increased responsibility in a solitary work environment.

Digitalisation experts and FG3 participants identify several sources of stress linked to digitalisation. On the one hand, work has intensified in some occupations: *'there is less and less time for dealing with files'* (INT6 and 7). On the other hand, stress comes from the process of change and

adaptation to new requirements, from software systems to the application for digital certificates to interact with the public administration as an employer (INT7 and FG3).

From a trade union perspective, teleworking entails significant risks: the psychosocial risks of isolation, problems linked to the material resources at home workplaces and longer working hours. In addition, it is important to consider the lack of adequate technological and physical resources for working from home (lighting, desk, etc.) (INT6). However, interviewees acknowledged that these risks are either not recognised by a large number of public employees or not given the importance attached to them by the trade union (INT7 and FG3).

In this sense, the survey shows no perception that digitalisation has brought about major changes in well-being at work, although there seems to be a positive perception. Although around 40% do not believe that their job satisfaction has changed, another 40% believe that it has improved somewhat. The result is similar when assessing their own job satisfaction in relation to the quality of the service offered or the improvements in exchange and collaboration between services and departments. A significant percentage also considers that the need to be connected in order to manage their professional life has increased (47%) or believes that the monitoring of workers' results has increased somewhat (46%). More respondents also disagree that they are more exposed to physical or verbal violence by users, colleagues, superiors or management. Respondents do not perceive significant changes in exchanges and collaboration between colleagues, in their expectations for the future or in their work-life balance.

The way processes have been designed in the public administrations, enhanced by digitalisation, and the lack of human contact require emotional intelligence, but this is not taken into consideration. There is even greater demand for people who have been trained and work well with different tools, with significant biases by age and level of qualification, something that intersects with gender (INT7).

2.2.6 Skills and learning

Interviewees and participants in the focus group perceive that the training offered to staff is insufficient, despite the fact that basic office automation and information management tools are used extensively. Public sector employees are forced to self-manage training and learn by themselves (INT 6 and 10). FG3 participants consider that training is insufficient and that the online training that has become widespread is unattractive and ineffective. Moreover, as noted above, it often involves training outside working hours.

According to the survey, 39% of respondents say that they have needed to develop some specific digital skills for certain tools or software. A further 27% say that they have already achieved the digital literacy they need through their education or professional experience. In the public

administration, 25% say they had to learn these skills informally in their work environment, another 22% say they did not receive any training at all and another 19% say they received some training from the administration but only on the use of specific machines or software. 46% felt that the training they had received was adequate, although updates are required. 26% remarked that insufficient resources and time are devoted to training.

Lack of training is seen as one of the main problems in the implementation of new technologies and telework. However, staff recognise that the pandemic may have been partly to blame for this lack, with a significant gap in the use and updating of these tools according to age (INT6, 7 and 11).

2.2.7 Reconciling work and personal life

Since the pandemic began and teleworking was introduced, some aspects of the work-life balance seem to have improved, but others have deteriorated. Taking results from the DGQS, although the majority opinion is that digitalisation has not generally affected the respondents' ability to balance family and personal life, 40% say that to some extent they have seen their working time increase at the expense of their personal time, and 44% feel that work and personal time are somewhat mixed when teleworking from home.

Trade union representatives are adamant that teleworking is not a work-life balance measure. During the pandemic, it became clear that teleworking did not take account of the work-life balance measures needed to care for dependents, leaving teleworkers without the cover they needed and overburdening them with work and care responsibilities (INT6, 11 and FG3).

In addition, the respondents showed a clear resistance to considering teleworking as facilitating the work-life balance, describing the risks that they see in teleworking. The consequences are gender inequalities, as women tend to make greater use of telework, the risks of isolation both for the mental health of workers and for the generation of collective awareness, insufficient health and safety monitoring of the place of work, and the tendency to extend working hours. In addition, they fear that telework is being used as an alternative to real work-life balance measures for the care of children or elderly dependents (FG3).

However, the respondents recognise that there is a strong demand for teleworking among public employees, and that the work-life balance is one of the reasons most often put forward, given that the savings in travel time have a significant impact on the working day (FG3).

2.2.8 Career prospects and employment security

Trade union representatives point out that there has been a clear reduction in the number of public sector employees and that people who retire are not often replaced. Given the relatively

ageing workforce, finding it harder to retrain and adapt to new digital tools, it is likely that new recruits will be forced to take on a heavier workload, thus reducing the size of the public sector.

Robotisation and the impact of the use of the electronic office are perceived as risks for certain jobs in public administrations due to the reduction of tasks, especially in the less qualified professional categories (INT 6). Among the risks perceived by respondents and participants in FG3, two stand out: 'all pre-existing gaps are exacerbated by digitalisation' (INT7); for people in certain jobs, teleworking may entail a risk of being more obviously dispensable and pave the way for outsourcing of certain services (FG3).

Taking the results from the DGQS, there is a positive perception of the effects of digitalisation on the public services (44% strongly agree that it has positive effects and another 34% somewhat agree). There is slightly less agreement on the positive effects on society in general (74% agree at least somewhat). Although less marked, respondents generally think that digitalisation benefits employment (60%), quality of service to users, the well-being of society (60%), the overall quality of jobs (61%), working conditions in the sector (62%) and the work-life balance (58%). On the other hand, digitalisation does not seem to have a marked impact on wages or on the reduction of inequalities and discrimination.

Individually, respondents perceive beneficial effects on their personal well-being at work (65% agree at least somewhat), their work-life balance (57%), improved quality of work (64%), improved productivity (64%), and more interesting or attractive work (59%), with at least half of the respondents agreeing somewhat or strongly agreeing. However, they do not see a marked impact on their job security or future expectations (with 34% neither agreeing nor disagreeing).

2.2.9 Workers' rights

Formal information and consultation processes when the digital switchover is implemented are considered insufficient. *'The power to organise the work lies with the Public Administration'* (FG3). In this respect, 37% of the DGQS respondents say they have been informed or consulted on the process and implementation of the digital strategy, 31% on the possibilities and options for use of new digital tools and methods in everyday tasks and 27% on the reasons for this implementation and the opportunities it offers. Of these, half say they have been informed or consulted both individually and through trade unions.

Few measures seem to have been developed to assist employees in the introduction of new digital technologies: 21% of respondents say that no measures have been put in place. The introduction or increase in teleworking seems to be of some significance (21%), but other possible measures are very rarely mentioned: improvements to the physical environment in the workplace (10%), a

manual of good practice on digital tasks (9%), training during working hours (8%) or a specific training plan aimed at the employee (7%).

Employees' perception of trade union action in negotiating on digitalisation is very mixed. But in general terms, action at sectoral level seems to be more appreciated than in the workplace. Respondents fear that the individualisation linked to teleworking will have an impact on collective awareness and will result in loss of union power to negotiate working conditions (INT6 and 11, FG3).

2.2.10 Conclusions on the sector

The public administration has undergone a very intense process of digital transformation in the last decade, even more so as a result of the pandemic: the implementation of digital public services has advanced rapidly and today public workers use a multitude of digital resources in their work processes and in the services provided to citizens.

Our analysis shows that the impact on working conditions is uneven. Thus, for example, in terms of work organisation, the greatest impact is related to teleworking, which is perceived as the major way in which digital tools have been taken on by public employees in recent years. The public sector workforce seems to see teleworking as an opportunity to improve certain working conditions, but trade unions are very reluctant to consider these benefits without weighing up the serious risks they perceive as associated with teleworking. However, inequalities can be seen in terms of processes and tasks, linked to the reduction of repetitive tasks and increased work intensity. This implies longer working hours, generating difficulties in reconciling work and family life and the emergence of occupational risks, especially psychosocial risks.

This process of digital change has taken place without adequate training for public sector workers, who state that they have had to train themselves in digital tools. In addition, the public services have a small and ageing workforce, who are confronted with a heavier workload and greater difficulties in adapting to the new tools.

Section 2.3 Hospital sector

2.3.1 Overview of the sector

In Spain there are 464 hospitals with 113,616 beds and 19,346 day hospital positions, i.e. 2.6 beds per 1,000 inhabitants and 40.9 day hospital positions per 100,000 inhabitants, according to the Spanish Hospital Indicators statistics.

741,407 people are employed in hospital activities, 4.4% of the salaried population; a percentage which in the case of women rises to 6.9%. Around 78% of these employees are employed in the

public sector. Of the employees in the public hospital sector, 76% are women; 62.6% are between 30 and 55 years old and 24% between 56 and 65 years old; 75.2% have higher education and 20.6% have more than secondary and post-secondary education; 94% have a full-time contract and 46.9% have a temporary contract (Spanish Hospital Indicators statistics).

2.3.2 History and patterns of digitalisation in the sector

The health sector in Spain has been incorporating digital tools for years, and the pandemic, as in other sectors, gave a strong impetus to the process. The entire patient management has changed rapidly and will continue to do so in the future.

The study 'Smart Health Systems International comparison of digital strategies' ([17]) ranks Spain highly in fifth position on the Digital Health Index, behind Estonia, Canada, Denmark and Israel, due to the nationwide implementation of identification systems, digital medical records and prescriptions, patient portals and electronic appointments. Its ranking also reflects the strong development of security and privacy practices in data processing, as well as the widespread application of data terminology and coding standards.

For years the medical sector has been rapidly adopting new digital technologies in diagnosis and surgery, and digital means have gradually been incorporated into the management of patient relations and the relationship between healthcare professionals and services.

In recent years, the digital system for making and managing medical appointments has become widespread, while digital clinical records are spreading in the national health system ([18]). Another common tool is the electronic prescription, which allows the physician to issue and transmit prescriptions by electronic means, using information and communication technologies, so that the medication can then be dispensed.

With the pandemic, the options for rapid interaction between patients, professionals and their schedules have expanded. During the pandemic, laptops, screens and equipment were purchased, as well as network systems and software. This has, for example, enabled the transmission and visualisation of images and thus streamlined work processes and patient care, as long as the systems worked (network failures). The systems make it possible to computerise and record all processes (FG1).

17. https://www.bertelsmann-stiftung.de/en/publications/publication/did/smarthealthsystems-1
18. Almost all regional health systems issue and receive digital reports. The reports that are issued digitally are diverse, and there are regional differences. Despite these differences, according to data from the Ministry of Health, practically all the territories issue the summarised clinical history digitally (94%) and also download clinical reports (72%) or emergency clinical reports and outpatient clinical reports (62%).

In the day-to-day work in hospitals, a multitude of digital tools, applications and programmes are used, some of which are shared and some of which are function-specific. In recent years, new programmes have been introduced, others have been changed and others have been updated. Tools such as videoconferencing for meetings between professionals have also been incorporated (INT5 and 8).

The survey results ([19]) show that 84% make use of mobile devices on a regular basis, for a variety of functions: to communicate with colleagues or internal or external services (25%), to plan the performance of tasks (23%), to monitor the execution of tasks (18%) or to measure, collect, organise or retrieve information (20%). Similarly, 55% of respondents say they use programmed machines to execute certain operations. These are used to measure, collect, organise or retrieve information (30%), to monitor and control parameters of equipment or people (29%), or to perform routine repetitive tasks (21%). 88% of the workers surveyed make regular use of information and communication tools, mainly to send and receive emails (30%), to use online applications for training (26%), to exchange with networks of other services or institutions (21%), and/or to connect with public service users (18%).

These results are confirmed by the focus group, in which it was stated that most of the tasks are performed digitally, those related to both work and human resources. However, the focus group allowed a more precise qualitative assessment of the use and implementation of technology. Several points were made (FG1):

- There is a common system, with varying degrees of implementation, called *Selene*, which began as a pilot, but has been extended to the rest of the hospitals. Its implementation is considered to be chaotic, and no comprehensive training was provided. In addition, it was pointed out that in most cases *Selene* is outlined/defined for some categories (doctors and nurses), while for the rest (technicians, for example), it is not so well defined. This definition varies from one hospital to another and is closely related to the organisation of work.
- There is a technological gap between occupations, professional categories and services. In services such as X-ray, they are up to date with technology (very high tech), while in others such as linen services (pyjamas, sheets, towels, etc.) there is not proper use of digital tools.
- There are differences between hospitals in the extent to which technology has been implemented. There are hospitals in which they only work digitally (tablet, computer) and where the changeover was very costly, but now the assessment of the processes is very good,

19. The DGQS responses from 79 hospital workers, so the results can be considered as merely illustrative. 58% of respondents were women. 44% were between 45 and 54 years old, and 34% were between 55 and 64 years old. 54% had a university degree and 37% a post-secondary education. 49% of the people were skilled professionals, 13% were moderately skilled clerical workers. Of those surveyed, 49% were trade union members and 29% were trade union representatives in their workplace.

while there are others in which staff continue to work in both modes, digital and paper, with an overload of tasks.

Teleworking has been introduced timidly in hospitals, in management and service positions in some management or medical directorates. Only a minority of staff have the possibility to work remotely, according to the survey: 22% can telework from home partially and 10% did so during the pandemic. In general, the public health administration seems to be very reticent about remote medical consultations, while in the private sector they have become more widely used since the Covid-19 pandemic. It does not seem to be a practice that will continue over time (INT5).

According to the experience of the people in the focus group, it was administrative workers who teleworked during the pandemic. After the first few months of the pandemic, these people returned to their jobs, in face-to-face mode. Some consultations were conducted remotely, e.g. to inform of test results, but the doctor had to be at his or her workstation, as there is an issue concerning security of data and medical reports, which must not leave the system (FG1).

At the end of 2021, the government approved the Digital Health Strategy ([20]), a reference framework to promote the digital transformation of the National Health System in a 'harmonious and coordinated' manner. The strategy is organised around three lines of action: the development of digital health services, across-the-board interoperability of health information, and the promotion of data analytics related to health, its determinants and the health system. In the specific case of hospitals, the plan aims to introduce digital tools that, on the one hand, improve the interrelationship between patients and professionals from different health services, and on the other hand, improve the recording, integration, access to information, communication, coordination and cooperation of teams and professionals from different departments and services, even from different health centres in Spain.

2.3.3 Work organisation

The possibility of accessing the patient's clinical history digitally has had an impact on the organisation of work: it has facilitated the pooling of patient information which can be accessed from different places and by different medical personnel.

Much of the accelerated introduction of digital means of making appointments and patient communication during the pandemic was based on the premise that 'the less time the patient spends in hospital, the better', leading to a greater burden on schedules (INT5). Taking data from the DGQS, there is a broad perception that the pace and intensity of work has increased (23% strongly agree with this statement and 34% somewhat agree).

20. https://www.sanidad.gob.es/ciudadanos/pdf/Digital_Health_Strategy.pdf

The focus group participants do not think that new technology has increased their workload, although they say that there are differences between services and/or categories. They report that despite the speeding up of some processes for technical staff, there is increased complexity as more information is being managed (FG1). In terms of processes and tasks, the focus group detected different situations depending on the level of implementation. Thus, in those hospitals that have not yet fully incorporated the digital system, workers suffer from duplication and increased workloads, while those working in hospitals that have completed the changeover perceive the change positively (FG1).

Regarding the effects of digitalisation on job performance, the respondents to the DGQS also expressed a positive perception in most of the aspects considered. Thus, 27% strongly agree that digitalisation has had positive effects on job quality and that it has improved their productivity (29% strongly agree and 31% somewhat agree). Some 27% strongly agree that time spent on routine repetitive tasks has been reduced and another 27% agree somewhat. More than half of the respondents agree at least somewhat that it has improved interaction with public service users (55%), that it has provided more autonomy in scheduling and organising tasks (51% and 52%), that it provides a clear overview of the execution of tasks being performed (51%), and that it has improved coordination of tasks between colleagues (47%). These results coincide with results from the focus group, whose members agreed that the patient is provided with a much more complete service (FG1).

Finally, the hospital management show a huge mistrust of teleworking, which seems to be due to a false perception that teleworking is less efficient than face-to-face work. The consequence is that managers increase the number of tasks to be performed when working remotely and at the same time there is greater pressure on professionals to demonstrate the effectiveness of this way of performing tasks (INT5).

2.3.4 Working time

Digitalisation is generally not thought to have had a major impact on working time. This is partly because the shift system by which hospital work is organised in principle limits overtime. However, 25% say that the number of hours set in the contract has increased to some extent and 30% say that there has been at least some increase in time worked at unsocial working times (evenings, nights or weekends). It is worth noting that, in addition, 16% say that, at least somewhat, breaks or rest periods have been reduced.

These data may reflect some of the situations referred to in the interviews and focus groups, related to the diversity of circumstances between categories and services. For example, some technical staff have been asked to extend their working hours at times when new digital tools

were being introduced, some medical departments have been asked to extend their working hours over and above those spent in person, to give consultations over the phone from home, or to take part in training outside working hours (FG1 and INT5).

Lack of training has been a factor in extending working hours. Since training on digital tools was not provided on the job, workers were required to train outside working hours. Workers were motivated to follow training outside work by the wish to provide a good service. This was also done at other times, when everything was paper-based, and not just for the sake of incorporating technology - for example, with the introduction of new techniques, tests, knowledge or services (FG1).

2.3.5 Health and safety and outcomes for workers

According to the DGQS, 33% of respondents say that their physical health has been affected by the introduction of new digital technologies, while another 27% say they have not noticed any changes. Among the most notable conditions were back pain (20%), neck pain (19%), vision problems (16%) and headaches (16%).

In terms of mental health, there does not seem to be a clear view on the impact of digitalisation on work intensity or mental workload. Although 47% of respondents reported no new conditions, 27% said they had experienced them: 27% reported mental fatigue, 18% stress and 17% anxiety.

Interviewees perceive that the new technology makes it easier to carry out a greater number of consultations or interventions, while, on the other hand, digitalisation is perceived as making tasks less onerous. On the one hand, there is a perception that working with people can increase pressure, but on the other hand there is better human contact. The interviewees agree, however, that people have suffered from increased fatigue and stress, in some cases explained by the intensification of work, which is psychologically demanding, and in others by the anxiety generated by working without adequate training. These phenomena have also been observed among the few people who telework, largely due to the suspicious attitude of the management, which increases the number of tasks (INT5 and 8).

Some of the focus group participants emphasise that the transition from paper to digital is hard work and stressful; its impact depends on the services, categories and the conditions under which the transition takes place. The experiences of those who were able to reduce their care work and had sufficient training were more positive (FG1).

Finally, in relation to job satisfaction, the survey results indicate that the introduction of new digital technologies has not markedly affected different aspects of their well-being at work. 61% agree, at least somewhat, that digitalisation has improved their personal well-being at work; 23%

strongly agree and 20% somewhat agree that it has made their job more interesting and attractive. 39% say they neither agree nor disagree that digitalisation improves work and therefore leads to greater job satisfaction, but 34% say they more or less agree. It is worth noting that 59% say that it has increased the monitoring of work results at least somewhat and 48% feel an obligation to go online very often to manage their professional development at least somewhat. 53% say that collaboration between services and departments has improved. 48% agree in a way that they feel more useful as they provide a better service to users.

There is, however, some reluctance on the part of certain employees, especially older ones, to use digital tools. The attitude of the workers is a significant factor when it comes to making the digital change, and has been an added difficulty for the rest of the colleagues. This is why the role of team coordination and organisation is a key element in motivating workers to become involved and in encouraging training (FG1).

2.3.6 Skills and learning

On the training required, 35% of respondents to the DGQS say they have had to acquire new specific digital skills linked to digital tools or software. A further 34% say they had to learn both digital literacy and specialised skills. 19% say that the skills they needed were acquired via training or professional experience.

A third of respondents say they have had to acquire the new digital skills informally in their work environment and another 25% say they have received training from the administration, but only in the use of specific digital tools. A majority of staff believe that the training they received met their needs but that training updates are required (56%). However, 30% consider that no further training is needed in this respect.

From the point of view of the delegates interviewed and participating in the focus group, the training provided is very poor. First of all, the training plans in hospitals are not digital-specific, and there are no training measures to ensure that all occupations affected by the change receive the necessary training. In fact, instead of including trade union representation in the plans, responsibility is often shifted to the union representative (FG1).

Secondly, the lack of training, especially for the more technical jobs, means that not all possible use is made of the technologically advanced machinery that is acquired. Part of the problem is that substitutions are not planned to give people the necessary time to train (FG1 and INT8).

Thirdly, there is a link between the lack of training and the negative impact on working conditions. As mentioned above, the lack of accurate continuous and updated training is also leading to work overload, as professionals are forced to learn by themselves and to share what they have learned

with colleagues (INT5 and 8). The time taken to train workers is therefore not taken into account (FG1).

Fourthly, with regard to the contents and means available for training, the majority of workers are trained on the basis of information that comes to them from the salesperson. Alternatively, one worker is trained, and he or she trains the rest. In some cases, this procedure is formal (as certain machines require certification). In the case of state-of-the-art machines, training does take place; otherwise, it is impossible to use the machine (FG1). In the field of data management, services requiring advanced skills have been privatised due to the lack of staff in this field (INT8).

One practice that has been taken on in recent years is the use of digital media to train staff. This practice has intensified with the pandemic: training courses can be followed online or trainees can take part in conferences or congresses on-line, the weekly training sessions held by doctors can be carried out remotely; even certain surgical interventions can be recorded or streamed. Digitalisation has provided very significant opportunities for training: medical sessions, congresses, lectures (INT5).

Fifthly, serious training gaps and needs have been detected. Thus, there is a large gap in training between job categories: while medical and nursing staff and midwives seem to have more opportunities, the other categories – ward staff, auxiliary nurses and technical staff – are somewhat neglected. Likewise, replacements should be trained, with coordinators and training contracts. For certain categories, there is a need for training in basic tools and basic digital training (FG1). Moreover, there are training gaps related to age. Older workers have difficulties in using the applications and the information given (pdf with instructions), if they do not even use the computer ([21]) (FG1). Age is a major determinant of digital skills and willingness to learn and incorporate digitalisation (INT5 and 8).

Sixthly, training is seen as a key element for the career path. The type of programmes that the staff member can handle determines his or her ability to move between different departments in the hospital. In this area, some trade unionists are proposing common homologation of a degree which includes all the health care technical studies (X-ray, radiography, etc.)

Finally, workers are not involved with regard to their training needs. It is commonly felt that workers are not asked what training they need, or how machines can be used in the different services to achieve the best results (FG1).

21. The trade unions help these workers to do this; the hospital should have trained its workers (FG1).

2.3.7 Reconciling work and personal life

Digital connectivity through existing media can either facilitate or hinder the work-life balance of workers: the end result depends on human resource management and work organisation.

This ambivalence can be seen, for example, with regard to connectivity and teleworking. For those who can make use of it in the hospital context, it is perceived as an opportunity to balance personal, family and work life (INT5). However, there have been attempts by some new hospitals to contact workers via mobile phone if any kind of incident occurs in the service (not recorded in their employment contract). This has led to an intense debate as to what constitutes an incident, whether it is due to a real unforeseen event or a lack of organisation of work and staff (FG1).

When assessing the effects on work-life balance, digitalisation seems to have had a major impact on working conditions, although 27% strongly disagree that it has increased the time they spend with their family and 41% say that it has not affected the time they spend outside of work.

2.3.8 Career prospects and employment security

The age of staff can be considered a key element, as hospitals tend to have somewhat ageing workforces. Older people seem to be more reluctant to make certain changes to their tasks in relation to technological development, and the lack of adequate training complicates this. There is a clear age gap in digital re-skilling, which means there is even more of a need to have certain resources such as a digital certificate in order to be able to carry out tasks or access promotion options (INT8). Moreover, this lack of interest creates mistrust of the effects that digitalisation may have on employment. There is a fear that there will be a reduction in staffing needs as certain tasks are automated or as the efficiency of each individual is increased (INT5).

The introduction of new technologies is posing a clear risk to staff retention. *'The number of telephone operators will be reduced by one third with the introduction of a new system for telephone answering'* (INT8). In recent years, many functions have been changed, *'in a cascading movement ward staff are taking over the functions of nurses, nurses are taking over the functions of doctors... because there are fewer and fewer doctors'*, which creates a need for retraining. This should be viewed as career development, taking account of the benefits of continuous training to increase salaries.

In general, there is a very positive perception of the impact of digitalisation. 37% of respondents strongly believe that it has benefited society in general and a further 34% that it has benefited society in some way. 33% consider that it greatly benefits the public service in general and another 32% that it does so in some way. Similar percentages see improvements in the quality of service for users, the level of employment. To a lesser degree, there is also a very positive perception of the effects in terms of improved welfare in society, the general quality of work or

improved working conditions in society (more than 50% of respondents see benefits in these aspects). Fewer seem to see an impact on the reduction of inequalities and discrimination, on the improvement of salaries in the sector or on the work-life balance.

In terms of the impact on the individual, there is also a generally good perception of the benefits of digitalisation. 60% of the people surveyed consider that their productivity has improved at least somewhat, 59% that the quality of their work has improved and 61% that their personal well-being at work has improved at least somewhat.

2.3.9 Workers' rights

Generally speaking, workers' representatives are not informed or consulted about the changes being made. There is also no direct involvement of workers in the digital transformation. Workers are not involved, as machines are purchased without taking into account the workers and their needs. There is no direct or indirect involvement in the introduction of new technology, the changes that are taking place, or the existing needs (FG1).

29% of the respondents say that they were formally informed or consulted about the digitalisation process and its implementation strategy as well as the possibilities and options for implementing digital methods in their work and 33% about the reasons for digitalising tools and working methods. Of these, half were informed both individually and through trade unions.

There is a mixed impact on the exercise of labour rights (individual and collective). Numerous references were made to the right to digital disconnection. Teleworking implies isolation and direct communication with the boss or supervisor. In such cases, the opportunity for collective problem management, which often occurs in hospitals, is lost. Moreover, given the low status of teleworking, professionals accept worse working conditions in exchange for the possibility to telework, which is presented as an option that makes it easier to combine personal, family and working life.

According to the survey data, 39% of people say that no improvements have been made to support the digital shift in the workplace. Around 14% say that some improvements have been made in the physical environment (better chairs, for example).

In terms of control/monitoring, 15% perceive frequent pressure from their supervisor to log on from outside the workplace. Meanwhile, 28% say their work does not involve the need to log on remotely and 22% say they feel no such pressure. There is broad agreement, over 70%, on the need to regulate digital disconnection and make it a topic for collective bargaining. In general, the perception is that collective bargaining is less effective at workplace level than at sectoral level.

With regard to collective rights, the exercise of representation rights has been enhanced by the use of digital tools in trade union work (telegram, email). In hospitals with a large number of members, these tools allow them to reach many workers, with great immediacy. In addition, it allows them to address the common problems faced by the different representations in the different hospitals (FG1).

Finally, trade union representatives mention that the use of digital media provides them with important information on workloads, staffing levels, work needs and working conditions in the hospitals (it allows them to record all work and workloads, but at the same time, what is done outside the workload is not counted) (FG1).

In trade union work, the use of digital media has meant that the working day can be extended as long as you want. *'You can be hooked in 24 hours a day'* (INT8). It was suggested that more delegates are needed to cover the needs that arise, which are very diverse and in various areas. They receive many requests from people asking for help in carrying out procedures using digital tools because they do not know how to do this. In fact, in one hospital, the trade union representation has one person whose job is to deal with these types of formalities and queries (which come from all categories of staff). In total, this represents a quarter of the union's resources provided by the union and not covered by the administration (FG1).

2.3.10 Conclusions on the sector

The benefits of digitalisation in improving care and quality of work are generally acknowledged, but it seems that the workload has intensified and the working day has lengthened. It cannot be overlooked that part of this perception is probably due to the profound impact of the COVID-19 pandemic on the healthcare system, which overstretched it significantly and highlighted its shortcomings.

It is clear that the impact of digital change and the facilities provided to carry it out depend to a large extent on the management of the hospitals and services themselves, on the professional category or the age of the workers in the sector. Our research highlighted the difficulties caused by the lack of resources for training during working hours, particularly for technical staff, which results in longer working hours, a stressful learning process and, ultimately, under-utilisation of existing resources.

Section 2.4 Overall sectoral cross-cutting conclusions

The analysis has shown that the digital transformation process is well advanced. In the three sectors of activity analysed, many of the processes, tasks and public services provided are already digitalised.

However, it should be noted that digitalisation can occur either in the whole set of work processes and occupations (e.g. the electricity sector) or in an uneven way, with differences between types of workplaces (hospitals), services and work processes (public administration). For all three sectors, the Covid-19 pandemic was a major boost to the digital transformation process.

Regarding the quality of work, digitalisation has had an uneven impact on the variables examined in the project. On the one hand, there has been an increase in work intensity and workload, as well as an increase in working hours. These are elements linked to work organization. On the other hand, with regard to other elements, such as teleworking, the impact on working conditions is less evident. Factors such as age, professional occupation or service/area of work partly determine the perception of digital change.

Finally, our analysis of the selected sectors shows that the digital transformation has been carried out, in many cases, with insufficient human resources, and with a lack of vocational training for workers.

SECTION 3. DIGITALISATION AND SOCIAL DIALOGUE

Section 3.1 Introduction: the national system of industrial relations

The Spanish social dialogue has been a central element of the democratic state. From the constitutional recognition of trade unions and employers' organisations, a culture of labour relations emerged in Spain, structured by the social dialogue - with the participation of trade unions, employers' organisations and the government - and the collective bargaining system, led by the most representative trade unions and employers' organisations. The dynamics of industrial relations in Spain are presented below, with a special focus on social dialogue and collective bargaining and their role in the digital transformation process.

Social dialogue in Spain: framework and dynamics

The culture of consensus in social dialogue in Spain is reflected in the agreements signed by the country's most important trade unions and employers' organisations: Comisiones Obreras (CCOO) and Unión General de Trabajadores (UGT) – the most representative trade unions - with the Spanish Confederation of Business Organisations (CEOE) and the Spanish Confederation of Small and Medium-Sized Enterprises (CEPYME), the most representative employers' organisations.

The model of labour relations in Spain has been shaped by these agreements, which set the standards and recommendations for collective bargaining negotiators. These agreements have been reached in the past and have continued into the present day, experiencing successive periods of growth, recession and recovery. Although they are voluntary, the standards set in these agreements have, by and large, been effectively transferred to a large part of sectoral and corporate collective bargaining.

Social dialogue has had varying dynamics over the last few decades. When the 2008 crisis broke out, resulting in major job destruction, social dialogue suffered greatly. Although the social partners' collective bargaining agreements were maintained, working conditions were devalued as a result of the 2012 labour reform, which allowed - among other things - the unilateral changing of wage conditions by the employer. In this context, there was no tripartite agreement on major reforms of the labour market, pensions or education.

From 2014 onwards, collective bargaining agreements reached in the early days of the economic recovery faced many difficulties, largely due to the negative effects of the 2012 collective bargaining reform. Other factors come into play, such as the discrediting of negotiators or the poor leadership skills of the organisations themselves at the various dialogue and negotiation tables (Cruz Villalón, 2015). The latest Collective Negotiation and Bargaining Agreement (IV AENC) signed in 2018 acknowledges that the economic situation is improving and recommends

reinforcing collective bargaining instruments to consolidate growth in employment and working conditions ([22]).

During the COVID-19 pandemic period, social dialogue (bipartite and tripartite) experienced an undeniable resurgence and momentum. In the face of growing political polarisation in recent years, social consensus has taken on a central role since the pandemic began in 2020. Policies and measures promoted by the government to tackle the economic consequences and the destruction of employment were based on tripartite agreements, which not only successfully mitigated the effects of the crisis, but also minimised labour conflicts.

Thus, the impulse of social dialogue agreements has allowed the government to build a 'social shield': agreements on furloughs between employers and unions; agreement on telecommuting; agreement on special COVID-19 benefits, II, III and IV (AENC) Social Agreement in Defence of Employment; Agreement on Economic Reactivation and Employment; Agreement on Labour Aspects of Delivery Work via Social Platforms; Plan to Promote Vocational Training for Self-Employment and the Social Economy; Royal Decree-Law 6/2019 of 1 March on urgent measures to guarantee equal treatment and job opportunities for women and men; Royal Decree 713/2010 of 28 May on the registration and filing of collective bargaining agreements; and Royal Decree 902/2020 of 13 October on equal pay for women and men. There have also been numerous agreements reached by sectoral roundtables, such as the social dialogue roundtable on vocational training for employment linked to the National Qualifications System; the social dialogue roundtable on vocational training for employment; the social dialogue roundtable on talent; the social dialogue roundtable on pensions; and the social dialogue roundtable on the dependent care system, among others.

Likewise, social dialogue has played a leading role in tackling the digital transformation of production and work processes, linked to working methods and the regulation of digital rights, as evidenced by the social partners' agreement on remote working (RD 28/2020) and the regulation of work sharing (RDL 9/2021). Finally, the social dialogue work has continued in the recent labour reform, which addresses central issues of employment and collective bargaining policies, such as temporary work, ultra-activity or wage regulation at the sectoral level (RDL 32/2021).

This period has been one of the most decisive and important times by far for social dialogue in Spain in recent decades, embodied in the agreement reached by the social partners on labour reform. For the first time, this reform (Royal Decree-Law 32/2021) attempts to correct some of the factors impacting precarious employment, temporary employment and sectoral collective bargaining on wages.

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22. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2018-10096

Collective bargaining system: main characteristics

In Spain, the collective bargaining system is the result of the productive structure, with a predominance of small and micro-enterprises. There is a long tradition of collective bargaining and collective agreements, and the agreements reached generally apply to all workers whether they are members or not, in accordance with the *erga omnes* principle.

Because of this, bargaining at the sectoral level (national, regional or provincial) takes on special importance. At this level, worker representation is in the hands of each sector's predominant unions. The number of workers covered by collective bargaining agreements at sectoral level is quite high: in 2020 (last published consolidated data), 92.6% of workers were covered by a collective bargaining agreement at higher than company level (table 1). According to the collective bargaining statistics, there are 3,849 collective agreements at company level, covering 787,000 workers, i.e. 7.4% of workers covered by collective agreements.

Table 1. Collective agreements and workers covered in Spain, by level of bargaining, 2020

	Collective Agreements		Workers Affected	
	N	%	N	%
Company-level	3.849	78,3	787.822	7,4
Higher-level	1.066	21,7	9.912.935	92,6
Total	**4.915**	**100,0**	**10.700.757**	**100,0**

Source: Ministerio de Trabajo de España. Spanish Collective Bargaining Agreements Statistics, 2022.

At company level, workers' representation is structured in various instruments: a) works councils or labour delegates, depending on the size of the company; Elected prevention delegates are responsible for specific functions in the area of occupational risk prevention. Companies with 50 or more workers must have a Health and Safety Committee; c) each company has a union section that represents the employees who are union members. Not only do the unions represent their members but they also play an active role in negotiations with the company.

Finally, Spanish labour relations have developed labour dispute resolution mechanisms, created by the social partners. In 1996, the most representative trade unions and employers' organisations signed the Agreement on the Out-of-Court Settlement of Labour Disputes (ASEC). Since then, other ASEC agreements have been signed, as well as an Autonomous Labour Dispute Solution (ASAC) in 2001 (ASEC II), 2004 (ASEC III), 2009 (ASEC IV), 2012 (ASAC V) and 2020 (ASAC VI),

the latter of which is in force until 31 December 2024. These mechanisms are managed by the Inter-Confederal Mediation and Arbitration Service (SIMA).

Social dialogue and digitalisation

Social dialogue has been identified as a 'blind spot' in the digitalisation process, despite acknowledgement of its importance as a tool for the socioeconomic governance of the country in the last four decades (Rocha and De la Fuente, 2018).

In this regard, social partners in Spain have been formulating their digitalisation strategies and positions over the last decade. Both employers and trade unions acknowledge the need to promote a 'country-strategy' through social dialogue to manage the process. There are some common themes to the proposals put forward by both sides of the social dialogue, mostly concerning infrastructure development, connectivity and improving workers' digital skills. However, there are also clear differences between employers and unions when it comes to addressing the level and scope of legal regulations or tools to preserve labour rights (Rocha, and De la Fuente, 2018).

Digitalisation is viewed favourably by the employers' confederations (CEOE-CEPYME), given its benefits. They argue that 'the digital transformation of our country should not be an option but a reality, since it is the biggest and best opportunity that Spain has to generate high-value employment, consolidate economic growth, evolve the public administration and improve the welfare of citizens' (CEOE, 2017). Business associations (CEOE-CEPYME) have developed a positive view of the benefits associated with digitalisation (Rocha and de la Fuente, 2018). For them, new technologies will be the main driver of social and economic transformation and could be a source of competitiveness. In fact, digitalisation is seen as a path to economic recovery, fostering growth for European companies, especially small and medium-sized enterprises. These changes will have an impact on all agents: public administrations, companies and citizens. Moreover, it could bring major changes to the economy and society. On the other hand, business models will be noticeably affected by the disruptive changes (CEOE, 2018).

The most representative national trade unions (CCOO and UGT) share the view that digitalisation is an economic and social process under construction, whose limits and effects have yet to be explored in depth. They argue that the rollout of the digitalisation process is not homogeneous. On the contrary, the intensity and scope of these impacts vary significantly from one country, region, productive sector and company to the next. In fact, the impacts even vary among different population groups (CCOO, 2020). They propose three different measures to address the digitalisation process within collective bargaining: a) Promote the role of industrial relations and collective bargaining at the sectoral and company level; b) Adapt traditional trade union schemes

to the new workplace realities; c) Promote appropriate regulatory frameworks and policies to support female workers through tripartite social dialogue.

In 2018, a business organisation in the digital technology sector in Spain (AMETIC) and the two leading trade unions (CCOO and UGT) signed a document entitled 'Joint Recommendations on the Impact of Technology in Productive Workplaces' (AMETIC et al., 2019). This document offers guidance for incorporating new technologies into productive processes and also includes a recommended protocol that can apply to any sector of the Spanish economy. This protocol is not a substitute for collective bargaining procedures but could promote best practices in information and consultation procedures. In 2019 these three organisations also signed an agreement entitled 'Manifesto for the Leadership of the Digital Transformation of the Spanish Economy through Talent Development' ([23]) which is based on three pillars: reducing gender gaps in training and education in STEM subjects, fostering digital skills and job quality, and training and education for a digital society.

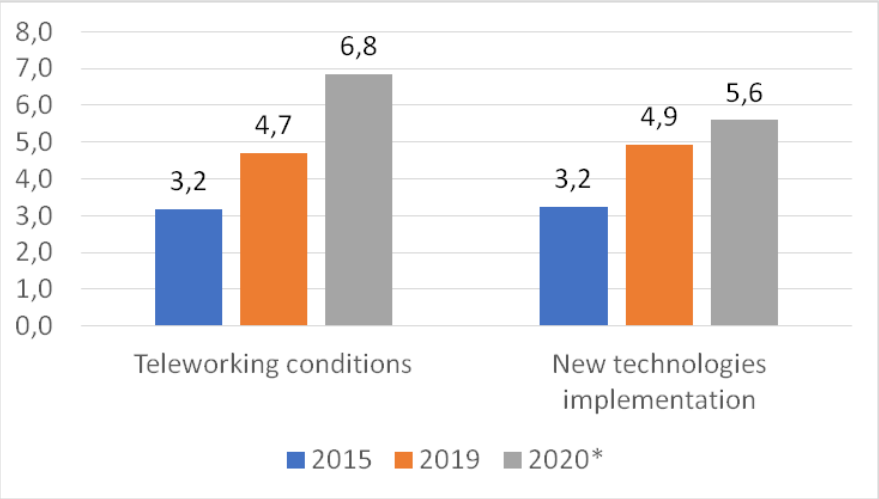
As has been mentioned before, as a result of social dialogue, Royal Decree-Law 9/2021 was passed in May 20 ([24]) to guarantee the labour rights of workers employed by digital delivery platforms. The purpose is to 'recognise the right to information of the representatives of workers in the digitalised work environment and to regulate the employment relationship in the field of digital delivery platforms'. On the one hand, the Decree-Law recognises 'the right of the works council to be informed by the company of the parameters, rules and instructions that form the basis for the algorithms of artificial intelligence systems that affect decision-making and that can affect working conditions, access to and retention of employment, including profiling'. On the other hand, 'it introduces a new provision on the presumption of job-relatedness of the activities of delivering or distributing any type of product or merchandise, when the company exercises its powers of organisation, management and control, using algorithms to manage the service or working conditions on a digital platform'.

Matters related to digitalisation are of limited importance within collective bargaining, according to the Ministry of Labour's Collective Bargaining Agreements Statistics. The following chart shows the number of clauses related to the participation of male and female workers in the organisation of work, teleworking conditions and the implementation of new technologies for the years 2015, 2019 and 2020 (provisional data). It shows that there has been an upward trend in the subject of teleworking, although, based on the provisional data for 2020, it appears in less than 7% of all collective bargaining agreements. Similarly, there is an upward trend in clauses on the introduction of new technologies, although this is a weaker trend and an issue that appears in less than 6% of

23. https://industria.ccoo.es/5e72576e1e8c8546f75bfe9a44b64963000060.pdf
24. https://www.sanidad.gob.es/eu/profesionales/hcdsns/contenidoDoc/Inf_Sit_HCDSNS_junio2022.pdf

the collective bargaining agreements. As one interviewee pointed out, 'we are a long way away from collective bargaining agreements that reflect the reality of new technologies in labour realities' (INT2).

Chart 3. Percentage of collective agreements with clauses on telework conditions and the implementation of new technologies, 2015, 2019 and 2020* (%).



Source: Collective Bargaining Statistics. Ministry of Labour (*2020: provisional data).

Section 3.2 Trade unions' position on digitalisation at national level

Digitalisation raises many questions about its effects on the world of work, and its intensification with the onset of the pandemic has abruptly opened up new areas for bargaining.

From a trade union perspective, both legislation and collective bargaining have a key role to play in regulating these processes. Digitalisation is understood to be more than the introduction of new technologies; it involves changes in how work is organised. And trade unions, which still play a reactive rather than a proactive role (INT1 and 2), are demanding their role in this transformation through the exercise of information and consultation rights. Thus, the question arises, 'why is it that collective bargaining is not initiated until the consequences become apparent, and not the other way around? For two reasons: Firstly, because the responsibility for organisation lies with the employer and secondly, because in most cases the information about the whole organisational change is handled by the employer without prior consultation with the workers (INT3).

The unions recognise that they are at a serious disadvantage as social partners and confronted with a growing imbalance of forces, in an economic, productive and business logic that sidelines them from decisions.

On the other hand, priority is given to defending the working conditions of traditional jobs and ensuring conditions in new jobs. In this sense: 'What have we trade unions done? We have been trying to manage the changes in the production processes, both in traditional and new jobs, through the achievement of labour rights. And now we are trying to raise the discourse to generate a much more powerful theoretical space that allows our delegates to know where this originates and where it will go in the coming years' (INT3).

The trade unions identify various positive aspects of digitalisation, ranging from the reduction of the physical strain resulting from certain tasks, the potential for reducing the working day due to increased efficiency, the possibilities opened up by the development of remote work to reduce costs, travel time and the facilities it opens up for reconciling work and family life. However, the accelerated implementation of digital change in the last few years of the pandemic has made the risks very clear. The role of trade unions, they believe, is crucial if we are to reap the benefits of digitalisation for working conditions and to avoid and minimise the risks.

Trade union concerns about the impact of digitalisation are numerous: from the potential job destruction, to the various possibilities it opens up for the casualisation of working conditions. Other concerns include the new unrecognised formulas of work through digital platforms, the role of algorithmic systems in the organisation of work, the new mechanisms for monitoring and surveillance of the activity of workers, the increased vulnerability to work overload and long working hours, the need for reskilling of workforces, and taxation.

All these concerns are reinforced by the unequal impact they have according to socio-economic criteria such as age, gender, or socio-cultural and economic level, as well as labour criteria such as economic sector or professional occupation (INT1 and 2; Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019; Secretaría Acción Sindical CCOO, 2020). UGT has therefore proposed the creation of a Digital Gap Observatory to develop benchmark indicators and annual targets to be met, including gender targets.

In general terms, the unions warn that, in practice, digitalisation is leading to greater discretionary power for companies, in an imbalance of forces in the capital-labour conflict. On the one hand, they consider that in the last decade 'the social contract in terms of the distribution of wealth between workers and governments and companies has been violated. Pushed by globalisation and new technologies, the economic returns generated for workers, through increased productivity in companies, are increasingly lower' (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019).

On the other hand, new technologies provide employers with tools to control work, workers' autonomy and quantify objectives. This is having a clear impact on work rhythms, especially in

certain sectors, where monitoring implies a strong intensification of the pace of work. Thus, 'what used to be used only in the productive part, to facilitate the work of management, efficiency and productivity of companies, is now also being used in the management of workers. It is an element of control, from selection and recruitment to the process of evaluating and monitoring productivity in a much more exhaustive way. This generates risks of stress, psychosocial risks, etc.' (INT2).

Technological advances such as artificial intelligence, automation and robotics generate a clear skills gap that will have to be addressed by the workforce. In this context, the confederal trade union technicians emphasise three problems: 1) there is a comparative disadvantage due to the low volume of workers specialised in this type of advanced ICT; 2) in relation to training, there is a Matthew effect, so that those who have more digital skills are those who receive more training, which provides them with greater opportunities for job retention and promotion; 3) there are significant gaps marked by age, gender, territory or sector. Anticipating the need for re-skilling can be a key element in avoiding job loss and taking advantage of new opportunities (INT1 and 2).

Specifically, there are a number of areas for trade union action. The documents Guia Negociación Colectiva y Digitalización (Secretaría Acción Sindical CCOO, 2020).) and UGT Ante la Digitalización: tres años de acción sindical (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019) set out the central elements that they consider should guide trade union action in companies in order to protect working conditions:

- **Information and consultation rights.** Trade unions call for forewarning of and participation in the digital transformation. For this reason, they demand the full exercise of all information and consultation rights. In order to be involved in the implementation of technological changes, CCOO proposes the creation of committees or working groups to monitor the digital transformation, as bodies for mutual information and consultation between the company and the legal representation of the workforce (Secretaría Acción Sindical CCOO, 2020).
- **Training and vocational skills.** Trade unions are observing a transfer of responsibility for training from companies to workers, conveying the message that workers must make an effort to update their knowledge and skills. In this context, CCOO stresses that training is a right and as such must be exercised within a collectively agreed framework that adapts the contents to the needs of the company, always respecting workers' rights (Secretaría Acción Sindical CCOO, 2020). UGT, for its part, stresses the need to organise systematic, scheduled and compulsory continuous vocational training, with hours set aside for this purpose (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019).
- **Data protection rights.** There is great concern about the invasive effect of new technologies on workers' privacy: their use must be monitored in order to ensure workers' rights. In this sense, unions emphasise the need to ensure and extend the personal data protection rights of workers. To this end, they demand their right to information and consultation prior to the

implementation of new technological processes that entail changes in the digital rights of workers. Linked to this, trade union organisations are warning of the role that new technologies can play in the selection and recruitment of personnel, as well as in promotion, assessment and dismissal processes. Trade union participation is a key demand to prevent rights from being violated, through awareness and the creation of frameworks to monitor the mechanisms used for this purpose (INT1 and 2).

- **Health effects.** There is a need to monitor the preventive obligations and participation rights of workers through their representation. Psychosocial risk assessments are essential to establish preventive measures; trade unions call for such processes to be carried out before and during the implementation of a technological change in order to assess the impacts and measures to be taken.
- **The regulation of telework.** Trade unions are trying to strengthen information and consultation mechanisms with the aim of ensuring that individual agreements result in a collective bargaining framework for telework. Some of the elements highlighted are compensation for expenses, avoidance of discriminatory situations in terms of career advancement, ergonomics from the point of view of occupational health, privacy and monitoring, and the protection of collective rights.
- **Protection of collective rights.** All legislation being passed in relation to digitalisation, from privacy to the right to digital disconnection, concerns individual rights. Trade unions point out that the impact of technological change on collective rights is not being addressed. Firstly, a reduction in trade union representation is to be expected: a reduction in human labour would result in a reduction in the number of representatives. Information and consultation rights are also affected by the opacity of the algorithmic systems used.

The indeterminate nature of the workplace also poses a problem of access and communication between workers and trade union representatives. Digitalisation opens up the possibility of another violation of collective rights: technological scabbing, a practice that the Supreme Court defines as 'the substitution of human means by mechanical and automatic means during the strike', a practice that violates and empties the right to strike of its content.

- **Environmental impact.** The impact of the digital switchover in terms of energy and material resources also needs to be addressed. In the words of one interviewee, 'right now there is technically the ability to create a computer that not only does its own thinking but also teaches other computers. The problem is that the most recent calculation that has been made of a computer that is capable of imagining a watercolour or a drawing consumes the resources of an average American family for six months' (INT4).

Ultimately, the main objectives of trade unions are to achieve participatory mechanisms that ensure their bargaining power over how new technologies are implemented, and to have the

capacity to minimise the negative impacts they may have on employment and working conditions. To ensure this, unions must refute the business perspectives that consider this to be the sole preserve of management as it involves the organisation of work, but must also make a major commitment to training negotiators.

In practice, bipartite social dialogue and collective bargaining have so far played a limited role in governing the digitalisation of productive sectors and companies in Spain. In particular, it is striking to see the low volume of collective agreements that include content related to this matter (Agra and González, 2020; Álvarez, 2019; Cuatrecasas, 2020; Muñoz, 2020; García, 2021; Rocha and De la Fuente, 2018; Vicente and Rocha, 2021).

The limited role of collective bargaining in technological change can be explained, to a large extent, by the employers' position of considering it a component of work organisation and therefore the exclusive power of the firm. But other factors also come into play, such as those linked to the characteristics of Spanish production (low technological content and a high percentage of small firms), the lack of knowledge on the part of bargaining actors about the elements involved and even the asymmetry of bargaining power between capital and labour resulting from labour reforms (Rocha and De la Fuente, 2018; Vicente and Rocha, 2021).

However, in recent years, collective agreements have increasingly addressed issues related to digitalisation, such as training, working time, telecommuting, employment, anticipation of change, management of restructuring processes and participation of workers' representatives (Agra and González, 2020; Álvarez, 2020; Cuatrecasas, 2020; Gallego, 2022; García, 2021; Rocha and De la Fuente, 2018; Tascón, 2020). In addition to these matters, there are other still anecdotal involving information rights linked to the use in human resources of data analytics or artificial intelligence systems (XXIV banking collective bargaining agreement 2019-2023).

Trade union experts (INT1, 3 and 4) consider that the ability to steer the impact of digitalisation on working conditions to one side or the other of the scale depends to a large extent on the bargaining power of the workforce over how new technologies are applied in the organisation of work. In this sense, new rights must be created, such as the right to digital disconnection.

Obviously, this social dialogue will require capable and knowledgeable social partners, hence the imperative of changing the trend of falling affiliation rates faced by trade unions in many countries. In this regard, the Digital Revolution and its ubiquitous social media could act as a potential agent of change for trade unions, opening up new channels of communication with workers who, due to the temporary nature of their employment or the digital nature of their work, are now more isolated from fellow workers than in the past. The new participation tools facilitated by digital technologies could also help make trade unions more democratic and representative.

Section 3.3 Electricity production and distribution sector

3.3.1 Collective bargaining in the sector

The privatised electricity company has organised its labour relations around various structures recognised in the legal framework: on the one hand, the works council, on the other hand, the trade union section (also organised on a territorial basis). In addition, there are other bipartite participation structures, such as those dedicated to occupational health and safety or the European Works Council.

3.3.2 Role and importance given to digitalisation in the national industry-wide agreements

At the moment there is no national collective bargaining framework for the electricity sector or the energy sector. There is no sectoral reference collective bargaining agreement for ENDESA. Therefore, working conditions are regulated at company level.

Digitalisation is addressed generally, in the trade union demands for an industrial pact at state level. 'It is essential to define as soon as possible a Plan for the Digitalisation of Industry with clear and defined support for investment that will allow the modernisation of Industry' (UGT-FICA, CCOO Industry, 2022).

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

In recent years, collective bargaining has focused on the negotiation of various agreements which, while not directly addressing the company's digitalisation strategy, have this as a very central element. There have been several agreements related to digitalisation, structured along two axes. Firstly, there are employment regulation agreements, which include agreed retirement systems. These agreements allow the exit of more technical staff whose work has been outsourced and who have difficulties adapting to digital change. Secondly, there are other agreements more closely linked to the implications of digital change. These include an agreement on time control (associated with the digital clocking-in system), another agreement on teleworking and a final agreement on disconnection. In addition, a flexibility roundtable was set up, with the participation of the social partners, to monitor these agreements (INT12 and FG2).

In addition, the CCOO trade union section is promoting a reflection on the need to democratise labour relations. This is the union's counter-proposal to 'The statute of the person', a regulation agreed between management and trade unions in the parent company in Italy, which has been proposed unilaterally by management in Spain. Although the aim of this statute is to implement 'a new model in which the person and their harmonious interrelationship with the world around them is placed at the centre', the union criticises the real lack of both collective and individual

participation in this model. For this reason, they are working on three lines of action: a) to carry out a research project to analyse the consequences of the new working methods on the workforce; b) to introduce democratic practices of direct participation of the membership through assemblies; and finally, c) to exercise transparency and transmission of information to include the workforce. These three elements are intended to give content to trade union action in order to proactively introduce proposals instead of taking a reactive and confrontational position vis-a-vis company initiatives (INT9).

3.3.4 Conclusions on the sector

The electricity sector does not have a state-wide collective bargaining framework and there is no sectoral reference agreement. Collective bargaining therefore takes place at company level. From a trade union perspective, digitalisation is being addressed transversally in many of the negotiations and agreements on other issues, such as time control, teleworking, flexibility and the democratisation of labour relations.

Section 3.4 Public administration sector

3.4.1 Collective bargaining in the sector

In the public sectors in Spain, two types of employment coexist and are subject to different regimes and different legislation.

The rights of public employees are set out in the Consolidated Text of the Basic Statute of the Public Employee (TREBEP), which recognises the right to collective bargaining and participation in determining working conditions. Employees are governed by the Workers' Statute and in their case the instrument of collective bargaining is the collective agreement. Even so, these collective agreements have certain particularities derived from the personality of the 'employer' (public entities), and from the negotiating dynamics ('Single' Collective Agreement for State Administration staff, Agreement for Judiciary staff, Agreements in Autonomous Communities, in local corporations, etc.).

Collective bargaining on working conditions for civil servants is organised around the Negotiating Tables, which are set up at the three levels (state, regional and local) and by sector. The representatives of the corresponding public administration and the trade union organisations take part in the negotiations. In recent years, these roundtables have negotiated agreements on public employment (supply, stabilisation), on working conditions such as leave, working time, teleworking, salaries, and various other matters, from the management of the Public Administration Pension Plan to labour inspection measures or issues relating to trade union representation.

3.4.2 Role and importance given to digitalisation in the national industry-wide agreements

In the area of digitalisation, the main issue negotiated is teleworking. In April 2021, the General Negotiating Committee of the General State Administration reached an agreement on teleworking that envisaged the possibility of teleworking three days a week (and two face-to-face), whenever possible and on a voluntary and reversible basis. Recently (October 2022) an agreement has been signed between trade unions and government in which wage issues are addressed and which tangentially includes the need to develop the Public Administration Digitalisation Plan 2021-2025. This area of the agreement has yet to be finalised.

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

Concerning digitalisation, telework is high on the trade union agenda. Trade union representatives criticise the fact that, up to now, this issue has been addressed unilaterally by the government, and it is the focus of trade union concerns in the public administration, given the extensive demand from public employees. The unions call for effective implementation of teleworking. The application of the law means that workers have arbitrary levels of access to telework for the performance of their functions. The trade unions are calling for collective teleworking agreements on issues such as identifying the needs of the services and the conditions applicable to teleworking, thus extending collective rights in an agreement that is considered to be individual (FG3).

In this specific aspect, the trade unions see a need to reinforce training and the provision of resources in homes where teleworking takes place (INT6). From the perspective of public employees, the fact that certain measures such as teleworking are proposed as a contingency for the pandemic or the energy crisis, but are not considered as measures to improve working conditions and regulated as such, generates disaffection with the public company (INT7).

There are two areas for future negotiation: a) implementation of the transformation, recovery and resilience plan in its firm and decisive commitment to the development of the employment stability plan; and b) an end to precarious and temporary work and the modernisation of the electronic headquarters so that all applications, from benefits to subsidies, can be made electronically (INT6).

On the one hand, digitalisation should not lead to an increase in the digital divide and should ensure equal rights for users, without inequalities based on gender, place of residence or socio-economic level. On the other hand, unions propose that the incorporation of technology should be accompanied by training and qualification measures that make it possible for workers to exercise their right to training.

3.4.4 Conclusions on the sector

Digitalisation as such is not a central issue in collective bargaining, which is currently focused on securing employment and its quality, through job stability, as well as securing the purchasing power of public staff in a context of rising prices. However, since teleworking has become common in many public administrations, negotiations on agreements at different levels and their practical application in the various institutions and services have been a major focus of trade union work.

Section 3.5 Hospital sector

3.5.1 Collective bargaining in the sector

The labour relations of people working in the health sector depend on the public or private ownership of health care, which determines the scope, effectiveness and procedure of collective bargaining.

Most responsibility for healthcare lies in the hands of the regional governments and other competences are exclusive to the State (external health; bases and general coordination of healthcare and legislation on pharmaceutical products). During the 1980s and 1990s, healthcare was decentralised, and competences in the field of health were transferred to the regional Governments.

The Framework Statute of the Statutory Staff of the Health Services (Law 55/2003) recognises sectoral negotiating tables as a venue for collective negotiation of the working conditions of the statutory health service staff through the representative capacity granted to the trade union organisations in the Constitution and in the Organic Law on Trade Union Freedom (Law 11/1985).

For each health service, there is a sectoral negotiating table, where discussions take place between the representatives of the corresponding public administration or health service and the most representative trade union organisations at the State and regional levels, as well as those that have obtained 10% or more of the representatives in the elections for delegates and staff boards in the health service. There are, therefore, negotiating tables at the regional level (regions and cities).

These bargaining tables may conclude pacts and agreements. The pacts, which are directly applicable to the staff concerned, deal with matters falling within the competence of the body in question. Agreements deal with matters falling within the competence of the public administration governing body.

A variety of matters are usually subject to negotiation, such as those relating to statutory staff remuneration, training plans and funds, selection of statutory staff and the filling of posts, regulation of working hours, working time and rest periods, leave and leave of absence, professional career systems, occupational risk prevention, trade union rights and participation, as well as matters affecting working conditions and the relations between statutory staff and their trade union organisations and the public administration or the health service.

Finally, the health sector has a 'Framework Forum for Social Dialogue', a forum for labour-related dialogue and information in the National Health System, in which the most representative trade union organisations in the health sector are represented. This forum must be informed of the agreements taken by the sectoral health sector roundtables, as well as those taken by the general roundtables affecting the sector.

3.5.2 Role and importance given to digitalisation in the national industry-wide agreements

Digitalisation is not a subject that is dealt with as such in hospital collective bargaining. On the other hand, its consequences for work organisation and working conditions are addressed. Due to the increase in the competences of the health services, a full analysis of these at the level of the autonomous communities would be beyond the scope of this section. Therefore, the most significant issues are outlined below.

Teleworking is one of the issues that have been addressed by the negotiating parties. At regional level, there are regulations on telework which define it and set out the applicable requirements and areas of the health service that can telework. In the opinion of the people interviewed, a minority of people access teleworking, as its practical implementation is based on the conditions determined by the centres, departments or units, which ultimately define the individual agreements on this matter (INT5).

The incorporation of technology is not an issue discussed by the social partners at the sectoral negotiating tables. Given that policies for the incorporation of new technologies, their purchase and introduction in hospitals are often centralised, at least at the regional level, trade unions are calling for the different needs of the hospital centres, their size, specialisations and services to be taken into account.

As mentioned above, the lack of training is one of the major shortcomings in the implementation of technological changes. However, according to the information we were given, trade unions are sometimes excluded from the training committees set up in hospitals. On other occasions, they take part but only to be informed (INT5).

Finally, the impact of the pandemic on work in hospitals has been the focus of much of the social partners' recent negotiations. Since the pandemic, other issues (wages, employment, training, etc.) have regained importance and require new impetus in collective bargaining.

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

The place of digitalisation on the trade union agenda depends on the context in which trade union action takes place. According to qualitative information, sometimes digital change is the focus of the union's attention, sometimes it has less influence (FG1).

The majority of respondents stated that workers are asking for recruitment and training in order to be able to adapt to change. In this sense, unions point out that there are people who are very committed to their work, who do not want to do it badly and demand training. The union provides basic training in digital tools, among other subjects (FG1). The sectoral level also manages the training needs of affiliates (INT8).

The trade unions point to the need to address the following cross-cutting issues, among others, which are affected by digitalisation (FG1; INT5 and 8): a) recruitment of staff; b) coordination of equipment policies between the different hospitals; c) training and retraining of staff to adapt to the new machines and digital tools; and c) greater participation of workers' representatives, which demand a consultative and negotiating role both in the introduction of new technologies and in the vocational training of workers.

Finally, trade unions are beginning to exchange experiences between hospitals on how to adapt to changed tools and equipment. This area of trade union cooperation, it is felt, should be enhanced (FG1).

3.5.4 Conclusions on the sector

In hospitals, the incorporation of new digital technologies is not in itself a focus of collective bargaining, which has been marked in recent years by the impact of the pandemic and the shortage of material and professional resources. In any case, digitalisation cuts across many of the needs raised with regard to working conditions. Particularly striking is the need for quality training for professionals, as well as the involvement of workers' representatives in the management of digital change.

Section 3.6 Overall cross-cutting sectoral conclusions

In general terms, the digital transformation is taking place with little social partner involvement, which happens ex-post, in order to address changes in work organization and working conditions.

Regarding the content, collective bargaining deals with the regulation of specific matters that are modified by digitalisation, which means that there are no 'digitalisation' agreements: social partners instead negotiate on specific aspects of the reality of work. In this respect, the main issues addressed relate to teleworking (public administration, hospitals, electricity), training (public administration, hospitals, electricity), time control and flexibility (electricity).

Trade unions stress the importance of addressing the changes brought about by digitalisation in a comprehensive and proactive manner. They are critical of the conditions in which digital change is taking place (mainly lack of staff and training for workers), as well as the lack of participation in the process. This way of proceeding contrasts with the way in which the Covid-19 pandemic was tackled, when social dialogue had major results, concluding important agreements on various issues.

SECTION 4. RECOMMENDATIONS TO NATIONAL AND EU STAKEHOLDERS

The digitalisation of public services is a process under construction, whose intensity has yet to be determined and whose final results depend on various factors, linked to technology, but also to the demographic, economic, social and institutional characteristics of each country.

This process of change must be approached from a holistic perspective, in order to guarantee, on the one hand, the quality of public services for all citizens, and on the other hand, the quality of employment and working conditions of civil servants and public employees.

To this end, the analysis carried out allows us to highlight several priority lines of action:

- **Job stability**. Public services must have the necessary staff to provide these services. The digitalisation of processes should not be an argument for reducing staff or privatising/outsourcing activities and services, which would have an impact on the quality of service and the working conditions of public employees.
- **Quality of employment.** The effects of digitalisation on employment need to be analysed not only from a sectoral perspective, but also from an occupational perspective, given the uneven impact of digitisation on different professional categories. Gaps also need to be addressed so that they do not turn into discrimination (by age, occupation, etc.). Working conditions. The impact of digitalisation on the content of work and its organisation needs to be addressed. Staff shortages and changes in work content lead to increased work intensity, with a decisive impact on physical risks, but above all on psychosocial risks. It is therefore necessary to take account of these risks. In particular, psychosocial risk studies should be carried out in a participatory way, considering the approach to these issues, the measures to be taken to resolve them and monitoring of their functioning.
- Regarding working conditions, two areas are of equal importance: work organisation and training and qualification. With regard to **work organisation**, it is necessary to specifically address the intensification of the pace of work and its impact on workers' health. In this field, issues related to the possibilities for reducing working time could be explored. Workers' needs for a work-life balance should also be addressed.
- Concerning **training and qualification** of workers, it is very important to address the challenges brought by digitalisation in this regard. The analysis carried out has highlighted the current shortcomings in training on the new digitalised work processes. It is important therefore to guarantee the right to training and retraining, during working hours and ensuring that trainees are replaced in the workplace to make access to training effective.

The process of digital transformation must be approached in a pre-emptive and participatory manner, so that both the management and the workers' representatives take the reins of the

process of change, in all phases of development (from design to evaluation). This requires two fundamental premises:

- **Strengthening of information and consultation rights.** Information, consultation and participation rights need to be improved and strengthened at all levels to anticipate change: representative trade unions should be included in digital switchover strategies at state, sectoral, institutional and workplace levels. Representatives should also monitor compliance with digital labour rights (e.g. the right to digital disconnection).
- **Enhanced social dialogue and collective bargaining**. Digitalisation requires an enhanced role for labour relations, as well as mechanisms for internal democracy in the public sector. Likewise, spaces should be created for the direct participation of workers, to identify needs, involve workers in changes and ensure the well-being of the workforce.
- Regarding the trade unions, joint and coordinated work should be strengthened in the public sector and the various services on issues related to trade union transformation. In this regard, trade union representatives must receiving training on individual and collective digital rights.

Finally, the digital transformation of public services requires attention to be paid to two particularly important areas, to ensure their quality:

- **Assessment of the public-private relationship.** Digitalisation can have negative consequences if governments see it as a way to outsource functions and their responsibilities. But it can have positive outcomes if standards are defined, limits are set and control procedures are implemented to help improve the working conditions of public employees and make services more user-friendly and accessible to users.
- **Data protection.** Digitalisation led by technology companies alone can lead to a breach of the privacy of data and of users of public services, resulting in a deterioration of the quality and efficiency of public services. Particular attention needs to be paid to data protection and the control of public services by administrations.

Within this general framework, the study puts forward some general recommendations on social dialogue in public services, from both a national and European perspective.

Section 4.1 Recommendations to national stakeholders

In Spain, the government and stakeholders are making progress in the social dialogue on digitalisation processes, with the aim of ensuring improved working conditions and higher quality public services. The 'Framework Agreement for a 21st Century Administration' ([25]) recognises the importance of ensuring digital services with guaranteed access to citizens, the creation of training

25. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-18961

paths for public personnel to acquire new skills, knowledge and abilities in digital matters, the creation of new public employment opportunities in line with needs and the promotion of collective bargaining.

These recommendations serve as a framework for designing specific tools to address digital transformation from a comprehensive collective bargaining perspective. In line with the recommendations of the social partners (AMETIC, CCOO & UGT, 2018, 2019), progress should be made on the creation of specific and clear procedures to ensure the proper implementation of digital transformation in the workplace.

- **Draw up protocols** for action, as cross-cutting tools designed with the participation of representatives of administrations and workers, incorporating a clear and specific procedure to ensure that new technology is not intrusive for workers. This would mean identifying the benefits and risks in the workplace and proposing solutions, setting out specific recommendations and eliminating barriers to the incorporation of technology.

  Information and consultation are key for the process to work, so it is essential that communication mechanisms are established, both with the workforce and with trade union representatives, to address workers' concerns or transmit information on data protection.

  t is also vital to create training and/or retraining mechanisms and to establish new job profile needs that may be appropriate in view of the incorporation of new technologies**.**

- **Pilot projects** should be proposed to evaluate the impact of technological implementation on workplaces and specific jobs. Specific criteria should be proposed for the start, duration and end of the project.

  It would be of great importance to generate a technical report containing all the necessary information for a subsequent general implementation. This report could contain information on the impacts on process improvement, employment, working conditions and skill needs. It should also include an assessment of physical and psychosocial risks.

  The report should provide a framework that justifies and specifies the necessary conditions (workability, purpose, proportionality and suitability) for the implementation of the technological innovation. It should also specify the data protection safeguards.

  If an impact is identified on employment and professional profiles, the report should include an implementation schedule for the retraining and reskilling of workers.

  If algorithmic mechanisms are introduced for automated decision-making, an analysis of possible biases is recommended in order to avoid discrimination.

- **Bipartite monitoring committees** should be set up with regular meetings, able to adapt recommendations based on experience and problems that may arise during implementation, to facilitate early resolution.

Section 4.2 Recommendations to European stakeholders

In the field of European social dialogue, it is important to continue to make progress towards agreements that establish minimum requirements to ensure the proper implementation of new digital technologies in the workplace, ensuring equal opportunities and treatment, good working conditions, proper organisation of work and the prevention of health risks, as well as guaranteeing human control of artificial intelligence tools and promoting social dialogue and trade union rights at different levels. In line with the framework agreement concluded by the European social partners ([26]), it is very important to continue generating collective bargaining frameworks in the different areas related to the implementation of new technologies in the workplace: teleworking, health and safety at work, training and professional qualifications, data protection and use, user access, and other matters such as subcontracting, employment protection and 'agile' working methods.

The European social dialogue plays a very important role in supporting the social dialogue in the different countries, generating and promoting the negotiation processes of the social partners on matters affected by digitalisation, in the various areas and at the different recognised levels.

Progress continues in the analysis and study at European level of the impact of digitalisation on working conditions, with examples such as the studies carried out in the context of the European social dialogue, focusing on the work-life balance of public employees, as well as on the well-being, health and occupational safety of workers in public administrations ([27]).

In this regard, it is necessary to continue analysing the impact of the digital transformation on the work processes of public administrations, with a particular focus on the effects of implementing new digital technologies on the working conditions of public sector employees.

26. https://funcionpublica.hacienda.gob.es/dam/es/portalsefp/funcion-publica/dialogo-social/Di-logo-Social-UE/SDC_CGA_Agreement_on_digitalisation_EN.PDF
27. https://funcionpublica.hacienda.gob.es/dam/es/portalsefp/funcion-publica/dialogo-social/Di-logo-Social-UE/ES_GUIA_OSH_DEF_0.pdf

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Annex 1. List of interviews

ID	Gender	Age	Institution	Sector	Position	Date	Method
INT1	Male	50-60	Comisiones Obreras	Confederation	Union expert	04/04/2022	Zoom
INT2	Male	30-40	Comisiones Obreras	Regional Confederation	Union expert	26/04/2022	Zoom
INT3	Male	40-50	Comisiones Obreras	Confederation	Confederal Secretary of strategic transitions	05/05/2022	Zoom
INT4	Male	30-40	Comisiones Obreras	Confederation	Union expert	05/05/2022	Zoom
INT5	Male	50-60	Comisiones Obreras	Health and hospitals	Sectoral delegate	26/04/2022	Zoom
INT6	Female	50-60	Comisiones Obreras	Public Administration	Sectoral delegate	09/05/2022	Zoom
INT7	Female	40-50	Observatorio Nacional de Tecnología y Sociedad		Public administration expert	17/05/2022	Zoom
INT8	Male	40-50	Comisiones Obreras	Health and hospitals	Sectoral delegate	17/06/2022	Zoom
INT9	Male	50-60	Comisiones Obreras	Electricity	Sectoral delegate	14/07/2022	Face to face
INT10	Female	50-60	Comisiones Obreras	Electricity	Sectoral delegate	14/07/2022	Face to face
INT11	Female	50-60	Comisiones Obreras	Public administration	Sectoral delegate	11/06/2022	Zoom
INT12	Male	30-40	Comisiones Obreras	Electricity	Sectoral delegate	27/09/2022	Zoom

Annex 2. List of focus groups

FG1. Hospitals. List.

ID	Gender	Age	TU affiliation	Sector	Occupation
FG1.1.	Male	30-35	Comisiones Obreras	Hospitals	Radiology Technician
FG1.2.	Female	50-55	Comisiones Obreras.	Hospitals	Nurse
FG1.3.	Female	50-55	Comisiones Obreras	Hospitals	Warden
FG1.4.	Female	55-60	Comisiones Obreras	Hospitals	Warden
FG1.5.	Male	45-50	Comisiones Obreras	Hospitals	Radiology Technician
FG1.6.	Male	50-55	Comisiones Obreras	Hospitals	Radiology Technician
FG1.7.	Male	45-50	Comisiones Obreras	Hospitals	Radiology Technician
FG1.8.	Male	50-55	Comisiones Obreras	Hospitals	Radiology Technician

FG2. Energy. List.

ID	Gender	Age	TU affiliation	Sector	Occupation
FG2.1.	Female	50-55	Comisiones Obreras	Energy	Commercial
FG2.2.	Female	40-45	Comisiones Obreras	Energy	Commercial
FG2.3.	Male	40-45	Comisiones Obreras	Energy	Generation
FG2.4.	Male	30-35	Comisiones Obreras	Energy	Distribution
FG2.5.	Male	35-40	Comisiones Obreras	Energy	Distribution
FG2.6.	Male	50-55	Comisiones Obreras	Energy	Distribution
FG2.7.	Male	45-50	Comisiones Obreras	Energy	Commercial
FG2.8.	Male	50-55	Comisiones Obreras	Energy	Distribution
FG2.9.	Male	60-65	Comisiones Obreras	Energy	Distribution
FG2.10.	Female	35-40	Comisiones Obreras	Energy	Systems

FG3. Public Administration. List.

ID	Gender	Age	TU affiliation	Sector	Occupation
FG3.1.	Male	60-65	CC.OO.	Regional Administration. C. Madrid	Administrative
FG3.2.	Male	55-60	CC.OO.	Regional Administration. C. Madrid	Administrative
FG3.3.	Female	50-55	CC.OO.	Education Administration. C. Madrid	Administrative
FG3.4.	Male	40-45	CC.OO.	State General Administration. Ministry of Economy	Computer technician
FG4.5.	Female	46-50	CC.OO.	Higher Council for Scientific Research	Researcher