



Digitalisation and **R**estructuring:
which **s**ocial Dialogue?

Work Package 3: Case Studies

Synthesis report

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Authors:

Fernando Rocha. Fundación 1º de Mayo
Frédéric Naedenoen. LENTIC, HEC, University of Liège



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1. INTRODUCTION

The current report summarizes the main findings of the third work package (WP) of the DIRESOC project¹. The general aim of this WP is to describe and assess the roles played by social dialogue in shaping restructuring processes linked to digitalisation at a company level (see box 1 for the related concepts used in this project).

Box 1. DIRESOC Project. Definitions

Social dialogue: the processes between social partners at various levels of industrial relations: especially national and cross-sectoral level, sectoral level and company or at establishment level (Eurofound).

Digitalisation: all types of changes that are based on the changing use of digital technology, which in some way affects individuals, as employees in their exercise of their professional role. The project focuses on the two main technological transformations: the digitalisation of production through automation/robotics/artificial intelligence/big data (also referred to as ‘*Industrie 4.0*’), and the digitalisation of work through the platform economy (also referred to as ‘*Uberisation*’) – the platform business model being based on exchange of goods and services between interdependent individuals or groups.

Restructuring: all types of changes that, from the point of view of the individual worker, imply a change in employment status or working conditions. This can include dismissals, reduction of wages, reduced working hours and other forms of changes where the employer changes the working conditions in an effort to reduce labour costs and or adapt the workforce to avoid redundancies.

Source: Kirov, V.; Beuker, I.; Franssen, M.; Naedenoen, F. (2019), *Work Package 1: Transnational analysis. Synthesis report*.

To achieve this goal, an empirical research, based on case studies, was conducted in eight European countries: Belgium, Bulgaria, France, Germany, Italy, Portugal, Spain and Sweden; The research also covered the four economic sectors addressed by the DIRESOC project: manufacturing; banks/financial services; postal & logistics; and tourism.

This methodological approach is motivated by two intertwined reasons:

First, the literature review carried out in WP1² shows that most of the debates and analysis carried out on restructuring linked to digitalisation have been driven so far on the macro level, with little empirical evidence regarding the implementation of these processes in practice and the related labour impacts. This diagnosis can be found for example in the report published in 2019 by the European Commission, which notes that “despite of the public controversy focused on the potential impacts of digitalisation on employment, there is little input into current debate about what actually happens to jobs

¹ The project has been developed through 5 Work Packages (WP): Literature review & Experts Interviews (WP1); Transnational Survey (WP2); Country case studies (WP3); Good Practices, Conclusion and Policy Recommendations (WP4); and Dissemination and Communication (WP5): For further information, see: <http://diresoc.eu/>

² Kirov et al (2019, op.cit.).

and recognition of the socio-political processes that create options and choices about the introduction and implementation of digital technology”³.

In this regard, the analysis of case studies provides detailed information about the specific developments of this phenomenon at a company level. This is highly important to the goals of this project, at least by a twofold reason: on the one hand, due to there may be various labour impacts related to digitalisation, not only job losses and job gains. So, the empirical analysis is important to get a more in depth view of these impacts. On the other hand, because the methodology of case studies allows going beyond technological determinism and evaluating the relationship between material and social practices in the development of innovations linked to digitalisation.

Second, the DIRESOC project covers eight countries with different systems of industrial relations, which can be classified in four types according to a Eurofound report from 2017: social partnership (Germany and Belgium); State-centred (France, Italy, Portugal and Spain); transition economies (Bulgaria); and organised corporatism (Sweden)⁴.

The empirical research provides then a great opportunity to collect very diverse status quo by analyzing how social dialogue works in shaping the restructuring processes linked to digitalisation at company level in the four sectors addressed by the DIRESOC project. In this regard, the different case studies, analyzed for the current report, provide us with useful insights, which are complementary of the findings and conclusions drawn from the two previous working packages carried out within the DIRESOC project: the comparative analysis of the national situation in the eight countries and four sectors addressed in the project⁵; and the transnational online survey targeted to the social partners of the related countries and sectors⁶.

It is worth noting on the other side that this approach also has limitations, especially with regard to the extrapolation of the findings. Even more, if the conclusions drawn from the results are applied to other realities hardly comparable to those of the cases analyzed (for example, in terms of the sector or characteristics of the firms).

The content of this report is organized as follows:

We begin by exposing the methodology used. Section 2 briefly describes the methodological aspects related to the selection, data collection techniques and data analysis of the case studies.

We next focus on the data analysis. Section 3 addresses the comparative analysis of the case studies.

Finally, section 4 summarizes the main conclusions of the report.

³ Warhust, C; Hunt, C. (2019), *The Digitalisation of Future Work and Employment. Possible impact and policy responses*, Seville: European Commission, JRC117404, p. 2.

⁴ Eurofound (2017), *Mapping varieties of industrial relations: Eurofound’s analytical framework applied*, Publications Office of the European Union, Luxembourg.

⁵ Kirov et al (2019, op.cit.)

⁶ Franssen, M.; Naedenoen, F.; Pichault, F. (2020), *Work Package 2: Results from the transnational survey*.

2. METHODOLOGY

2.1. Selection of the cases

The selection of the case studies, according to the general goals of the DIRESOC project, has been based on two main criteria:

- First, the cases focused on companies which are or have been under restructuring processes linked to digitalisation. The concept of restructuring, as noted above, includes all types of changes due to the introduction of digital technologies that, from the point of view of the individual worker, implies a change in employment status or working conditions.
- Second, the sample of cases corresponds to the eight countries and four sectors addressed in the DIRESOC project (see introduction above). Case studies were distributed in order to have at least one case in each of these sectors.

The selection of the companies has been conducted by the national research teams, drawing from the information provided by desk research and the findings of the country reports carried out under the work package 1 (based, among other sources, on interviews with key informants at national and sectoral level). The final sample is composed of 15 cases (table 1).

Table 1. Sample of case studies

Country	Manufacturing	Postal/Logistics	Financial services	Tourism
Belgium		Bpost Group		Hotel Alban*
Bulgaria	Sopharma Group	Bulgarian Post Plc		
France		La Poste Group		
Germany	Otis GmbH & Co. OHG Voit Automotive GmbH	Hamburger Hafen und Logistik AG (HHLA)		
Italy	Lamborghini		Monte Paschi di Siena	
Portugal	Volkswagen Autoeuropa		Portuguese Bank*	
Spain	Spanish Naval*		Spanish Insurance Company*	
Sweden	Swemantech*			

*Fictional names, taking into account the “informed consent” of interviewees, who expressed the preference for anonymisation

The identification and selection of the cases has faced some constraints, due to the difficulties to identify firms fulfilling the research criteria and whose managers were willing to participate in the research. As a result it has not been possible to collect a minimum of two cases per country, as initially planned, and fieldwork had to be extended. This explains also the sectoral imbalance of the sample.

2.2. Organisation of the fieldwork

The main source of information for the cases studies has been a qualitative fieldwork through semi-structured interviews with company representatives and workers representatives, complemented with desk research aimed to collect both quantitative and qualitative data related to the companies analyzed.

The interviews have been based on a common questionnaire, later adapted by the national experts from the Diresoc team to the national language and context. This questionnaire includes a set of open questions structured around four broad sections/dimensions⁷:

- General information of the company
- Description of the process of digitalisation
- Digitalisation impacts on employment, including: job destruction; job creation; job change; and job shift⁸.
- Social dialogue on digitalisation

Regarding the informants, one common principle for all the case studies has been to collect information from both sides of industrial relations, namely trade union representatives and employer representatives. Thus, we have interviewed on the one hand trade unionists, shop stewards, members of works councils and European work councils...; and on the other hand human resources managers, health and safe departments, etc. The final number of interviews varies among the cases, depending on each company situation. On average, six interviews per case study have been performed. All in all, the research team approached 79 interviewees for the completion of the empirical research⁹.

Finally, an informed consent was signed by all the respondents in order to guarantee ethical and data protection regulation accomplishment.

2.3. Dimensions of the comparative analysis

The comparative analysis of the case studies is focused on four broad dimensions and a number of related items (table 2)

⁷ See the common questionnaire in annex 1.

⁸ This typology of labour impacts is broadly explained in section 2.3.

⁹ Most of the interviews carried out were individual, but in some cases collective interviews were conducted.

Table 2. Dimensions of the comparative analysis of case studies

DIMENSION		ITEM
I.	Characteristics of the firms	1. Sector of activity 2. Size (number of employees) 3. Public/private 4. Framework of industrial relations
II.	Restructuring linked to digitalisation	5. Motivations 6. Way of adoption of new technologies 7. Main lines of digital transformation
III.	Impacts on employment	8. Job destruction 9. Job creation 10. Job change 11. Job shift
IV.	Role of social dialogue in shaping restructuring linked to digitalisation	12. Participation of workers' representatives 13. Outcomes of social dialogue

The first dimension is referred to the *characteristics of the companies* analysed. In this regard, this report briefly summarizes some basic information as a general background, while the detailed aspects can be found in the national reports of WP3¹⁰.

The second dimension concerns to the *restructuring linked to digitalisation*, with regard to three aspects that can influence and shape the characteristics and scale of the process:

- The *motivations behind the restructuring process* of the company, which can be driven by the continuous introduction of digital innovations, the need to increase response to client demands among others.
- The *way of adoption of new technologies*. This is relevant, because usually technologies are often seen as deterministic, having the same type of effects in all firms and workplaces. Nevertheless, various researches in the sociologic and managerial fields¹¹ highlighted the role played by workers during the implementation of every new technology in order to adapt it to their own interest. The way of adoption of technological innovations at a company level is then paramount to understand their real impacts.
- The *main digital innovations* implemented can be very heterogeneous according to the strategy of the company, ranging from the implementation of a broad concept of “smart factory” till the development of specific digital applications (apps).

The third dimension is related to the *impacts on employment* of restructuring linked to digitalisation. Here we follow the typology drawn by a researcher from the European Trade Union Institute, who establishes four types of potential impacts¹²:

¹⁰ See list of reports in annex 2.

¹¹ For example, see Orlikowski W.J. (2007), “ Sociomaterial Practices: Exploring Technology at Work”. *Organization Studies*, 28(9), 1435-1448.

¹² Degryse, CH. (2016), *Digitalisation of the economy and its impact on labour markets*. Working paper 2016.02. European Trade Union Institute, Brussels.

- *Job creation*: new sectors, new products, new services;
- *Job change*: digitalisation, human/intelligent machine interface, new forms of management;
- *Job destruction*: automation
- *Job shift*: digital platforms, crowdsourcing, ‘sharing’ economy.

The last dimension focuses on the *role of social dialogue* in shaping restructuring processes linked to digitalisation. Here, there are two main items considered:

- The *participation of the workers’ representatives*, taking into account three aspects: the mechanisms of participation; the levels of participation; and the main enablers and barriers influencing the role of social dialogue in shaping restructuring processes linked to digitalisation.
- The *outcomes of the social dialogue*, paying special attention to those company collective agreements which include contents related to digitalisation.

3. COMPARATIVE ANALYSIS OF CASE STUDIES

3.1. Characteristics of the companies

The present report is based on the comparative analysis of 15 cases, 7 of which come from the manufacturing sector, 4 from the Postal & Logistics, 3 from the insurance/banking services and 1 from the tourism sector (see table 1 above). The basic profiles of firms are summarized in table 3 (see below), while a more detailed picture can be found in the national reports.

Broadly speaking the sample is mostly composed of big companies, some of which are subsidiaries of transnational groups, and with presence of both private and public companies. This is expected since social dialogue is usually more developed in large companies. From our experience, larger companies also tend to cooperate with researchers more easily, considering the available resources. In addition, the results of WP1 show that these large companies are often the spearhead of the adoption of digital technologies¹³. Paying attention to the way they manage digital transformation may provide valuable lessons to be spread.

Regarding to the framework of industrial relations, all the companies have local workers’ representation bodies with the exception of the *Hotel Alban*¹⁴. The reason is that only thirteen persons were directly employed and therefore the hotel was under the minimum threshold for the establishment of union delegation, according to the Belgian law (Franssen, 2019)¹⁵.

¹³ Kirov et al, 2019 (op.cit.).

¹⁴ Fictional name. The other two cases studies with names anonymized are Portuguese Bank and Swemantec.

¹⁵ All the references to the cases studies in this section are related to the list of national reports (annex 2)

Table 3. Profile of the firms

Branch	Company	Number of employees	Public/Private	Collective agreement in force and level
Manufacturing of pharmaceutical products	Sopharma Group	2.274	Private	No collective agreement signed after 1988
Automotive supplier	Voit Automotive GmbH	1.000*	Private	Company level agreement
Producer of elevator systems	Otis GmbH & Co.OHG	370*	Private	Company level agreement
Shipbuilding	Spanish Naval*	4.953	Public	Sectoral level agreement Company level agreement
Manufacturing of cars	Lamborghini	1.754	Private	Transnational collective agreement (VW group) Sectoral level agreement Company level agreement
Manufacturing of cars	Volkswagen Autoeuropa	5.800	Private	Charter on Labour Relations within the Volkswagen Group Sectoral level agreement
Manufacturing of cars	Swemantech*	115.000**	Private	Company level agreement
Postal and courier activities	Bpost group	33.934**	Public	Company level agreement
Postal and courier activities	Bulgarian Post Plc	10.020	Public	Company level agreement
Port logistics	Hamburg Hafen und Logistik AG	5.900	Private	Company level agreement
Postal and courier activities/financial services	La Poste Group	251.219	Public	Company level agreements
Insurance activities	Insurance group- Spain*	4.379	Private	Transnational collective agreement (Insurance group) Sectoral level agreement Company level agreement
Banking activities	Monte Paschi di Siena	25.566**	Private	Company level agreement
Banking activities	Portuguese Bank***	3.610	Private	Company level agreement
Hotel	Hotel Alban***	13	Private	National collective agreement Sectoral collective agreement

* Employees at the site. ; ** Employees for the entire group; ***Fictional nameSource: Nationak reports

Working conditions are regulated by collective agreements in most of the companies, at sectoral and/or company level depending of the case. There is the exception of the Bulgarian firm Sopharma, where no company collective agreement has been signed since 1988 (Terzyska, 2019.a).

Finally, it is worth noting that table 3 includes the information available at the time of the development of the case studies (2019). This is important taking into account that these companies are passing through restructuring processes, which can affect to some items in the future (for example, the number of employees).

3.2. Restructuring processes linked to digitalisation

This section is focused on the analysis of the restructuring processes linked to digitalisation, addressing three specific items: (a) the main motivations of the firms to launch the restructuring process; (b) the way of adoption of the new technologies; and (c) the main lines of digital innovations implemented in the firms.

3.2.1. Motivations

The restructuring processes implemented by the companies analysed are driven by various reasons, some of which are specifically linked to digitalisation while others are related to different factors (for example, a complicated economic situation or the re-organization strategies of the firms).

It is worth noting that, although usually there is no one single reason behind the firms' strategy of restructuring, it is possible at least to highlight the main driver factors in the different cases. Also variations and similarities between the four sectors covered can be found, but even in some cases among the companies within the same sector.

In order to classify these motivations, we rely on the “Study on monitoring the application of the EU Quality Framework for anticipation of change and restructuring” from the European Commission¹⁶. According to this report the drivers for restructuring can be either internal – change in management staff, workforce capacities, innovations - or external : change in societal and customer demand, political change, global financial crisis, etc.

A) Internal factors

The first – and most represented in our case studies - relevant internal driver for the implementation of digital technologies is the improvement of the production processes and the related – and expected – strengthening of the competitiveness. In the **manufacturing industry**, it is the case for example of the Bulgarian company **Sopharma Group**, which operates in a branch of activity –pharmaceutical industry– with a long tradition of investments in this field. In this regard, according to one representative from the company, “*the company is continuously investing in technologies, innovation, research and science. Our everyday big challenges are to widen and improve quality production standards and technologies*” (quoted in Terzyska, 2019.a, p.7).

¹⁶ See <https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8154&furtherPubs=yes>

This is also the case of two German manufacturing companies: *Voit Automotive GmbH*, which has fostered the digitalisation of the area of maintenance in order to improve the performance in this field; and *Otis GmbH & Co. OHG*, a company in the branch of elevator systems, which has launched a process of “paperless production” to be introduced at the site as part of the strategy towards a “smart factory” (Mühge and Harbecke, 2019). Similarly, the Italian company *Lamborghini* launched in 2014 a process of restructuring after assuming the manufacturing of the model “super SUV (URUS)”. In this regard, this is a case “*in which an important product innovation has led to an equally significant process innovation, from a socio-technical point of view*” (Leonardi, 2019, p.3).

In the **logistic industry**, the German company *Hamburger Hafen and Logistik AG (HHLA)*, undergone a digitalisation process framed under a general business strategy aimed to shape the competitive position of the firm in the future in a proactive way (see box 2).

Box 2. Hamburger Hafen and Logistik AG. Motivations for restructuring

The German firm Hamburger Hafen und Logistik AG (HHLA) is a leading European port logistics company. In 2017, HHLA's Executive Board agreed on a business development process that aims to remain prepared for the future in a dynamic market environment and to strengthen the company's ability to shape future. This implied

- Anticipating and usage of the future environmental conditions
- Guarantee flexibility, through quick action and adaptability
- Integration and usage of new possibilities

As part of this corporate strategy, the following four initiatives were identified by the executive board

- a) Prepared for the world of tomorrow: The core business has to be strengthened and competitiveness, quality and profitability should be increased
- b) Opening up new growth areas: To tap the growth potential of future transport flows and digital business models
- c) Organisation and culture: To focus on future developments, with a stronger focus on the customer.
- d) Investments and Finances: Sustainable and profitable growth should be maintained

The planned corporate strategy measures underscore openness to innovation and the willingness to react flexibly to a changing environment.

Source: Harbecke and Mühge (2019).

Another important internal factor is the development of new products or business models. Two of our case studies highlight such motivation for restructuring.

In the **manufacturing sector**, *Volkswagen Autoeuropa*, in Portugal, the production of a new “T-ROC” model in 2017 leads to a technological innovation linked to digitalisation and automation/robotisation in particular. In this case it is worth noting that this

transformation paves the way for expectations about the development of electric cars as possible disruptive driver for the restructuring of the company in the coming years (Rego and Apolinário, 2019.b).

In the **tourism sector**, the Belgian *Hotel Alban* is an illustration of a strategy based on digitalisation to offer a new experience for the customer. The hotel has been fully renovated and digitalised as a pilot project aimed to test a new customer centred model of work in the hotel industry (see box 3).

Box 3. Hotel Alban. Motivations for restructuring

The Belgian Hotel Alban is owned by a large property management firm. The Hotel was closed from December 2017 to August 2018, in order to be fully renovated and digitalised. These changes were a pilot project aiming to test a new customer centred model of work in which traditional functions (cooks, receptionists, bartenders) are replaced by a single multifunctional job called “host”. The motivation was to develop a new philosophy of working in the hotel industry, in which staff: (a) focuses on providing a core service which, by definition in the hospitality sector, is to provide customers with rooms to sleep in; (b) it is relieved from routine work (e.g. check-in) and low value added tasks (in terms of personalisation of services) through digital innovations; and (c) it has their role transformed towards a guest-centric attitude, acting as hosts receiving their favourite guests home.

Source: Franssen (2019).

Another very different and interesting motivation factor is the issue of job shortage and the need for the Swedish industrial sector to attract young workers. *Swemantech*, is a Swedish company with a long history of innovation and workplace reforms. In the wake of the Great Recession of 2008, the company implemented a depth process of restructuring with a relevant impact in terms of job losses that hit harder to the youngest workers of the group. Afterwards, in the face of introduction on new technologies in the automobile industry, the company needed to recruit to new young workers with higher skills. This was one key motivation to foster a programme of the local adaptation of new technologies at the site level (Bergström, 2019).

B) External factors

In the three **Postal** services companies –the *Bulgarian Post Plc*, the Belgian *Bpost* and the French *La Poste Group*– restructuring has been driven mainly by an “external factor” which is the steady decline of the traditional and core activities, offset by the growth of new markets linked to digitalisation (e-business), and the emergence of new competitors. In the **manufacturing sector** the *Spanish Naval Firm* is a case where the process of digital transformation has been mainly driven by a depreciation of the company in its globalizing naval market, with the need to ensure its own survival, threatened by a highly adverse economic situation. Against this background, the management board of the company launched an ambitious restructuring strategy aimed to ensure the sustainability of the firm in the coming years, in which technological innovation linked to digitalisation is a key pillar (see box 4).

Box 4. Spanish Naval. Motivations for restructuring

Spanish Naval is a Spanish state-owned company engaged in the design and construction of military and civil ships. Since 2015, *Spanish Naval* has strived to foster the digital transformation of the company. More specifically, it has launched a strategy aimed to develop the so-called “*Shipyard 4.0*” model, whose goal is to apply and optimise the Fourth Industrial Revolution principles and technologies to the naval construction world. The adoption of this strategy was driven by three main reasons. First, the economic crisis of the naval sector, with a peak in 2016 when the production of the shipyards registered the worst indicator at a global level since the 90s. This crisis hit hard to the company, particularly taking into account that the main domestic customer is the Spanish Navy (what makes the demand very dependent on public budgets).

Second, the strong competence coming from the Asian countries, who have increasingly gained positions in the market of the military shipbuilding. Finally, the impact of the emerging debates taking place in other European countries on the industry 4.0 and its potential application and benefits in the shipbuilding industry.

In this regard, it was decided to promote a profound restructuring of the company aimed to guarantee its long-term sustainability, and placing the digital transformation as one of the key pillars of this process. According to one company manager interviewed “*the search for a solution for a complicated situation for the company leads us to propose digital transformation as a strategy; the company internalizes it and, after a process of maturation, it becomes one of the strategic pillars of the company, which is where we are right now*”

Source: Rocha and De la Fuente (2019.b).

In the three case studies belonging to the **financial sector**, the motivations to restructure were also linked to two main external factors.. First: the impact of the Great Recession of 2008, which led to a significant decline both in term of offices and employment (especially, in the banking sector). Second: the transformation of the traditional business environment of the banking and insurance companies, driven by the impact of digitalisation on the production processes as well as in the consumer practices and preferences for the use of e-banking and mobile banking. This has been clearly the case for example of the Italian bank *Monte dei Paschi di Siena* (see box 5) and the *Portuguese Bank Group*. In the Portuguese case other additional motivations can be noted, such as the simplification of the internal bureaucratic processes and fostering the reduction of the organisation’s environmental footprint (Rego and Apolinário, 2019.a).

Box 5. Monte dei Paschi di Siena. Motivations for restructuring

Monte dei Paschi di Siena is an Italian joint-stock commercial bank, active both in Italy and on international markets. The bank has faced an intense economic crisis during the last decade with deep restructuring processes, oriented on the one hand towards a deep reduction in the number of employees; and on the other, to a push towards digitalization, which continues a trend of continuous innovation that has been progressing slowly but gradually since the 2000s, in order to face the increase of the international competition and to the changes in the customer’s services

Source: Di Nunzio (2019).

In the case of the *Spanish Insurance firm*, the emphasis is also placed in some specific impacts of digitalisation in the market environment of the insurance companies, such as: (a) the changing consumer practices and preferences; (b) the multiplication of channels of communication and interaction between consumers and the providers of services; (c) the own relationship between consumers and information; (d) the emergence of new fields for the insurance business linked to new types of risks (for example, cyber risks); and (f) the emergence as competitors of new platform based companies, not submitted to the legal regulations affecting the sector. In that Spanish Insurance firm case, another internal factor may be mentioned: the implementation of technological innovation such as Big Data and IoT for new ways of assessing and managing risk and claims (Rocha and De la Fuente, 2019.a).

3.2.2. Ways of adoption of new technologies

As mentioned earlier, technologies are often seen as deterministic, having the same type of effects in all firms and workplaces. Nevertheless, numerous studies in the sociologic and managerial fields¹⁷ highlighted the role played by the different stakeholders during the implementation of every new technology in order to adapt it to their own interest.

Broadly speaking, the company strategy to implement the technology may take place in at least three different manners: (a) adopting the technology within the framework of the existing business and production structure; (b) by setting up a side line organizational structure, developing the new technology and production structure, substituting the established structure or transferring new knowledge to the established production structure; and (c) the new technology may be adopted by new actors, using or developing the new technology substituting or competing with the established actors in the industry.

The compared analysis allows remarking the three different ways of adoption of technological changes.

First, in most of the firms analyzed the implementation of digital technologies has been carried out *within the framework of the existing business and production structure*. Thus, various companies have incorporated specific innovations aimed to improve the competitiveness and efficiency of the existing production processes, the management of the internal procedures of the organisation and also the relationship with the clients and customers.

Nevertheless, it is worth noting that the firms whose motivations (see previous chapter) were the improvement of the production structure have fostered a more ambitious strategy of digital transformation. It is the case for example of the Spanish firm *Spanish Naval*, which has launched a process of radical digital restructuring of the company around the flagship concept of “Shipyard 4.0”.

Second, there are two companies that have set up a *sideline organisational structure*. On the one hand, the Belgian firm *Bpost* has built a whole new automated and digitalized sorting centre in order to remain a competitive actor in both postal and delivery branches, the later being the most competing one. This explains the need to

¹⁷ for an overview, see Orlikowski (2007, op.cit.)

relocate the activity to the new building, due to a lack of space as a result of the increasing volume of parcels, which needed to be stored (Naedenoen, Franssen and Beuker, 2019).

On the other hand, the Italian company *Lamborghini* addressed the manufacturing of a new automobile model by doubling the surface of the factory, and further modernizing it with the construction of a new line, a new logistics center and a test track. In this regard, the current plant is divided into two main areas: the historical one, for the integral production of two super-sport models; and the most recent one, for the assembly of the new automobile model (Leonardi, 2019).

Finally there is the case of the digital platform Stuart, part of the French case study *La Poste Group*. Besides the implementation of digital innovations within its existing business units, the French public company has bought an *external digital platform* – Stuart - in order to develop a specific service innovation. Stuart illustrates the case of a new actor, adopting a new technology to compete with the established actors in the industry (box 6).

Box 6. La Poste Group. Use of an external digital platform

La Poste Group is the most significant postal company in France, and also the main employer in the country.

In order to develop a new service called “Urgent urban delivery”, DPD Group – one of the business unit of *La Poste* at the express delivery segment- increased in 2017 its share in *Stuart*, a French digital platform created in 2014, to 100%. *Stuart* has thus become a subsidiary of the Group. This company has developed a mobile application for businesses and companies that need to have a package delivered in a precise place: thanks to this application, the customer can receive his order by a professional courier in less than an hour. *Stuart* is active in 3 countries (France, Spain and the UK) and employs 250 permanent workers. However, as an on-demand technology platform, *Stuart* connects e-retailers to a fleet of geolocated independent couriers for the delivery of goods in urban regions. *Stuart* general strategy is to provide with a sustainable and time efficient urban logistics.

Also, it is worth noting that *La Banque Postale*, which is another business unit of the group, is engaged in the takeover of fintechs in order to get more innovative services.

Source: Teissier (2019)

3.2.3. Main digital innovations

Digitalisation remains, in the mind of many people, as a fuzzy word whose content is hard to clearly identify. The compared analysis of the 15 firms allows highlighting six broad strategic axes or lines of innovation: smart factory; robotics process automation; robotics logistics automation; smart products & services; digitalisation of internal organisation processes; and development of applications (see box 7).

Box 7. Axes of innovation. Definitions

Smart factory: highly digitized and connected production facility that relies on smart manufacturing. Used by manufacturing companies, a smart factory works by employing technology such as artificial intelligence (AI), robotics, analytics, big data and the internet of things (IoT) and can run largely autonomously with the ability to self-correct.

Robotics process automation: form of business process automation technology based on the notion of metaphorical software robots (bots) or artificial intelligence (AI) workers.

Robotics logistics automation: form of business logistics automation technology based on the notion of metaphorical software robots (bots) or artificial intelligence (AI) workers.

Smart products & Services: specializations of hybrid products/services with physical realizations of product categories and digital product descriptions that provide the following characteristics: (a) Situated: recognition and processing of situational and community contexts; (B) Personalized: tailoring to buyer's and consumer's needs and affects; (c) Adaptive: change according to buyer's and consumer's responses and tasks; (d) Pro-active: attempt to anticipate buyer's and consumer's plans and intentions; (e) Business aware: considering business and legal constraints; (f) Location aware: considering functional performing and restricted location choice; and (g) Network capable: ability to communicate and bundle (product bundling) with another product (business) or product sets. Since smart products combine a physical product with additional services, they are a form of product service system.

Digitalisation of internal organisation processes: implementation of digital systems aimed to integrate and automate the management of the main business processes

Development of applications (apps): type of computer program designed as a tool, to allow a user to perform various types of work or activity

Source: Wikipedia

It must be remarked that there are differences among the firms analysed regarding to the axes of innovation addressed, as well as to the specific digital technologies implemented (table 4).

Table 4. Main lines of innovation and digital technologies

Sector	Company	Axes of innovation	Digital technologies
Manufacturing	Sopharma Group	<ul style="list-style-type: none"> • Automation of logistics • Smart services • Digitalisation of internal organisation processes 	<ul style="list-style-type: none"> • Automated warehouse for management and distribution of its products • Online platform to provide customers with the ability: to easily create orders, extended product information, track deliveries, invoices and other features, all in real time • Enterprise Resource Planning (ERP) system, aimed to integrate the management of the main business processes
Manufacturing	Voit Automotive GmbH	<ul style="list-style-type: none"> • Smart factory 	<ul style="list-style-type: none"> • Internet of Things
Manufacturing	Otis GmbH & Co.OHG	<ul style="list-style-type: none"> • Smart factory 	<ul style="list-style-type: none"> • Paperless production
Manufacturing	Spanish Naval	<ul style="list-style-type: none"> • Smart factory • Robotics process automation • Robotics process logistics • Smart Products & Services • Digitalisation of internal organisation processes 	<ul style="list-style-type: none"> • Robotics • Additive manufacturing • Virtual and augmented reality • Big Data and Analytics • Internet of Things • Artificial intelligence • Secure cloud • Cyber security • Virtual modelling • Autonomous vehicles • New materials • Digital Platform • Blockchain
Manufacturing	Lamborghini	<ul style="list-style-type: none"> • Smart factory • Robotics process automation • Smart products & services 	<ul style="list-style-type: none"> • Automated Guided Vehicles System • Manufacturing Execution System • Collaborative robots • Digital bracelet
Manufacturing	Volkswagen Autoeuropa	<ul style="list-style-type: none"> • Smart factory • Robotics process automation • Robotics process logistics 	<ul style="list-style-type: none"> • Robotics
Manufacturing	Swemantech	<ul style="list-style-type: none"> • Smart factory • Robotics process automation 	<ul style="list-style-type: none"> • Robotics
Postal/Logistics	Bpost Group	<ul style="list-style-type: none"> • process automation • Smart Products & Services 	<ul style="list-style-type: none"> • Robotics • App

		<ul style="list-style-type: none"> • Digitalisation of internal organisation processes • Development of apps 	<ul style="list-style-type: none"> • Drones
Postal/Logistics	Bulgarian Post Plc	<ul style="list-style-type: none"> • Distribution process automation • Smart Products & Services • Digitalisation of internal organisation processes 	<ul style="list-style-type: none"> • System for processing the internal data • System for automated control of the money transfer • System “Postal Services” for the front desks linked to the International Track and Trace system • System for custom services in the sorting centre • Automation of the processes in the Sofia sorting and distribution center • Planned creation of a sales Platform for e-commerce
Postal/Logistics / Financial services	La Poste Group	<ul style="list-style-type: none"> • Robotics process automation • Development of apps 	<ul style="list-style-type: none"> • Automation of sorting of mails and parcels • Development of mobile application for delivery (via external digital platform) • Development of apps for the banking services
Postal/Logistics	Hamburger Hafen und Logistik AG (HHLA)	<ul style="list-style-type: none"> • Robotics process automation • Robotics process logistics 	<ul style="list-style-type: none"> • Automated Guided Vehicles system • Block storage system with rail-guided gantry cranes • Digital train recording system • Potential developments: <ul style="list-style-type: none"> – Hyperloop: container transport in high speed tubes – Drones – 3D printing – Artificial Intelligence
Financial services	Spanish Insurance firm	<ul style="list-style-type: none"> • Smart Products & Services • Digitalisation of internal organisation processes • Development of apps 	<ul style="list-style-type: none"> • Mobile applications related to the different types of products and services offered by the company • Artificial Intelligence • Big Data
Financial services	Monte Paschi di Siena	<ul style="list-style-type: none"> • Smart Products & Services • Digitalisation of internal organisation processes • Development of apps 	<ul style="list-style-type: none"> • Digitalisation of accounts • Remote digital signature • Certified Electronic Mail • Digital bank
Financial services	Portuguese Bank	<ul style="list-style-type: none"> • Smart Products & Services • Digitalisation of internal organisation processes 	<ul style="list-style-type: none"> • Skype calls • Digital saving • MS Office tool 365

Tourism	Hotel Alban	<ul style="list-style-type: none"> • Robotics process automation • Smart products & services • Digitalisation of internal organisation processes • Development of apps 	<ul style="list-style-type: none"> • Self check in/out kiosks • Online check-in • Point of sale system • Centralised system for online reviews • Application for managing housekeeping

Source: National reports

3.3. Impacts on employment

Following the typology already defined (see section 2.3 above), the compared analysis is focused on four kinds of labour impacts caused by the restructuring processes linked to digitalisation: job destruction; job creation; job change; and job shift.

3.3.1. Job destruction

The comparative study allows remarking that there have been negative effects of digitalisation on the levels of employment – due to the automation of production processes and of an increasing number of tasks (manual and non-manual). For instance, the only case study reporting significant job destruction directly linked to digitalisation is the Italian bank *Monte dei Paschi di Siena* (MPS). Here it is remarked that “during the last decades, MPS has undergone deep restructuring processes. Digitalization and innovation, in relation to the need to compete in a high competitive global market, caused a strong reduction in the workforce” (Di Nunzio, 2019, p.11).

But most of the time, it is hard to assess any direct impact of digital transformation in this destruction of jobs. In fact, all the restructuring processes have been driven not only by technological change, but also by other factors with higher influence in the short run on job losses. For example, different companies –such as the shipbuilder *Spanish Naval*– have faced a highly adverse economic situation, which led to significant decline of employment.

A significant fact – which is aligned with the lessons learned in the previous step of the project - is that destruction of jobs has been relatively limited so far in most of the firms analysed. The level of maturity of the cases studied may explain this. In most of them, the process of digital transformation is still at an early stage. In this regard, it is worth noting that the adoption of new technologies at the workplace level is not an easy task, with several barriers to overcome (Bergström, 2019). So this is a process that takes time, especially when the firms are dealing with the implementation of complex technologies, and the effects on employment can be delayed. In the case of the Spanish Insurance firm , for instance, the headquarters launched an intense strategy of reorganization and simplification of the structure of the global group. In that case, there is a clear expectation of potential job losses for tasks and professional profiles more routine, and therefore with higher risk of automation. But until now, these fears of job reductions remain assumptions (box 8).

Box 8. Spanish Insurance firm. Estimations of job losses linked to digitalisation

According to an analysis carried out by the own company, in the short run the impact of digitalisation is mainly focused on those tasks and professional profiles more routine, and therefore with higher risk of automation:

- In the area of *Product development, marketing and sales support*, the strong decrease is expected in those tasks related to standard product reporting and sales monitoring.
- In the area of *Operations* (insurance survey, policy service, claims management), the higher impact is expected in the most regular operations, such as processing standard applications, and handling simple policy or claims processes.

- In the area of *IT support*, the strong decrease is related to tasks such as designing and building solutions for core systems or infrastructure operations. In this case, however, the reason is the externalisation of these operations to third companies.

- In the area of *Support*, it is expected a higher effect in tasks such as transactional Human Resources processes, postage handling, or standard reporting in activities such as finance.

Source: Rocha and De la Fuente (2019.a).

Another explaining factor is that some companies have adopted measures to mitigate the most negative impacts on employment. To give just one example, in the case of *Volkswagen Autoeuropa* “the jobs eliminated did not imply redundancies in keeping with the established company policy. Workers are re-trained and re-assigned to other jobs” (Rego and Apolinário, 2019.b, p. 9). The same observation may be made in several cases, such as in the logistical industry where the decline of letters is compensated by the increase of parcels delivery, with as corollary, the destruction of jobs being balanced by the creation of new workstations.

Beyond these elements, the analysis of the case studies does not provide clear empirical evidence about the potential negative effects of digitalisation on employment in the mid run. Inversely, we can find cases pointing out to opposite trends. This is situation for example of the port logistics firm *HHLA*. According to the analysis of this case, there are potential restructuring processes linked to technological developments. However, “so far the possible effects of automation on employment are still unclear. Some of the processes could also create jobs” (Harbecke and Mühge, 2019, p. 7).

3.3.2. Job creation

The restructuring processes linked to digitalisation have led to job creation in six of the 15 companies, although this positive impact on employment has been limited so far (in terms of the volume of jobs created). Similar to the destruction of jobs, one of the explaining factors is certainly the lack of hindsight to assess the positive impact of such restructurings in the long run (given that we are not dealing with longitudinal studies).

The creation of jobs has been specifically driven by two main factors.

First, the need to reinforce the workforce of the company in order to attend the increasing demand of activity associated to new markets or new products. This is the case of the firm *Bpost*, where there is a constant grow in the Parcels department with a global increase of jobs as a consequence (Naedenoen, Franssen and Beucker, 2019). Also, the automobile company *Lamborghini* has registered a significant increase in the number of employees, in order to attend to the manufacturing of a new car model (box 10).

Box 10. Lamborghini. Job creation linked to digitalisation

Lamborghini is a historic Italian manufacturer of luxury cars, which is currently integrated within the Volkswagen Group. In 2014, Lamborghini managed to snatch the production of a new model –super SUV (URUS)– from the Slovak site of Audi, obtaining for this purpose important investments both from the German group and from the national and regional public authorities.

In 18 months, the Italian plant doubled its surface, further modernizing itself, with the construction of a new line, a new logistics center, a test track. This led, in just five years, to a 70% increase in the number of employees, going from 1029 in 2013 to the current 1754, with an average annual growth of 10%.

At the end of 2018, there were 229 new hires, at an average age of 29, all on permanent contracts and with a 30% holding a post-university degree. This acceleration was driven by the positive trend of the URUS, which had already allowed the recruitment of as many as 500 workers in previous years. We are therefore in the presence of a case in which an important product innovation has led to an equally significant process innovation - from a socio-technical point of view - contributing overall to significantly jobs creation, and certainly not to cutting them.

Source: Leonardi (2019).

Second, the creation of new professional positions is linked to emerging digital profiles. This is the case of four companies:

- The shipbuilder *Spanish Naval*, who adopted in 2018 a plan of “rejuvenation of the workforce” establishing the hiring of 1.658 new workers in four years in order to meet the expected workload and the new professional requirements linked to the digital transformation of the company. (Rocha and De la Fuente, 2019.b)
- The postal company *La Poste Group*, where job creation is also reported, linked to the raise of new jobs in relation to new technologies and innovations (Teissier, 2019).
- The Spanish Insurance firm, with new hires in the area of Big Data Analytics (Rocha and De la Fuente, 2019.b).
- The *Portuguese Bank*, with the creation of jobs in the technical areas of support for the digital processes of customer and account creation (Rego and Apolinário, 2019.a).

3.3.3. Job change

One key pattern that can be identified in most of the cases is that the implementation of digital technologies implies first and foremost the transformation of some tasks and the emergence of new ones. This process also implies that new skills requirements arise for affected workers. This observation confirms the results found in the eight national overviews (WP1), and in the findings of the transnational survey (WP2)

The transformation of jobs can be illustrated with the case of **Sopharma Group**: a leading pharmaceutical company, which has promoted various measures of digital training as an inseparable part of the implementation of the technological innovations (box 11)

Box 11. Sopharma Group. Digital training

Sopharma Group is a Bulgarian private manufacturing company in the pharmaceutical sector, with a long tradition in investments on Science, Research and Innovation

In order to assure the correct functioning of the new technological equipments linked to digitalisation, the company organizes customized training of its personnel which costs amount to 4% of its total manufacturing expenses.

The process for the implementation of new technological equipment passes through a couple of phases, incl. relevant training of the personnel involved in the work with it (operators, setters and their supervisors) by representatives of the manufacturing company. The trained staff completes 2 training protocols and gets a qualification certificate, which make part of its professional dossier for qualification improvement.

For the other employees, the company provides training related to the daily work / language and digital courses at different level of complexity/ as well as those ones aimed at personal and professional development. Based on their potential each employee is given the opportunity to develop his/her skills.

The HR shares: *“Training programs offered to employees, aimed at increasing their competence levels. The training policy is specifically focused on providing high professional knowledge, acquiring digital competences and improving awareness related to health and safety issues”*.

For the new employees, the company takes care in promoting a rapid introduction workflow by organizing specialized introductory trainings.

Sopharma created as well an internship program for students in pharmacy allowing gaining practical experience in a real business environment. As participants in real cases and projects, trainees have the opportunity not only to learn about the functioning of the company closely, but also to acquire knowledge and experience for a successful career in it or elsewhere.

Source: Terzyska (2019.a).

Another example related to the topic of skills requirements worth remarking is the case of the port logistics company **HHLA**, where it has been promoted the concept of “multiple qualifications” to meet the challenges associated with digitalisation processes (box 12).

Box 12. HHLA. Multiple qualifications

A corporate concept for meeting the challenges associated with digitalisation processes is multiple qualifications, which are carried out throughout the entire German company. At HHLA's subsidiary CTA (Container Terminal Altenwerder) in particular, this concept was proactively promoted by the works council due to the high degree of automation affinity of the terminal. The concept is also welcomed from the management's point of view. Multiple qualifications from two to seven activities are possible at the CTA. However, the perspective of the employees is different with regard to this measure. The majority of employees welcome the offer of multiple qualifications, but there are also employees who are less positive about this measure, as they see the offer of further qualification more as an imposition than an opportunity for further development. This, in turn, calls for comprehensive educational work on the part of the company actors in order to explain to the employees their direct personal advantages of the concept.

On the one hand, the multiple qualifications' concept is intended to create a health benefit for the employees. Unilaterally stressful activities are reduced and supplemented by others. Furthermore, there is the possibility of introducing more variety into the work process. As already described above, some of the employees assess the routine of the work tasks as positive; however, the experience of the actors involved was that after completion of the qualification for a further function, the positive experiences predominate. Routine is important, but should not lead to boredom. On the other hand multiple qualification also protects employees from possible job loss, which can occur by substituting work for automation. Ultimately, the measure also has advantages for the company. In addition to the positive health factors that benefit the employees, these can also be used more flexibly in the various functions and compensate for short-term vacancies better.

Source: Harbecke and Müghe (2019).

Finally, the digital transformation at the *Hotel Alban* has favoured a demand of greater multifunctionality for the workforce. This is considered a key condition by the management board of the company, in order to ensure the success of the new business concept promoted (box 13).

Box 13. Hotel Alban. Job change: multifunctionality

Since the digital transformation, and as the hotel is being compared to a guesthouse, the majority of the employees working in the hotel are not anymore divided between receptionists, cooks, bartenders and other typical functions found in the hospitality industry. Instead, they are now called "hosts" and perform these tasks altogether, depending on the work flow. Hosts can welcome guests, help for check-in or check-out, prepare hot-dogs or drinks, have a small talk with the guests, modify a booking, make coffee, etc. In sum, focusing on the customers and their needs, welcoming them as if they were home is the key driver of the hosts' actions.

Source: Franssen (2019).

The empirical research also provides insights regarding other impacts consecutive to the implementation of digital technologies on jobs besides the changes in the requirements of skills.

Thus, some of the case studies illustrate a worsening of the working conditions. For example, when considering the transformation of working conditions, it is worth highlighting the case of the bank *Monte dei Paschi di Siena*, which offers detailed information about a number of these impacts (box 14).

Box 14. Monte dei Paschi di Siena. Impacts of digitalisation on working conditions

Beyond the job loss, there are other relevant impacts due to digitalisation, on the work organization and employees' working conditions, as emerged from the interviews:

- *A reduction in the workers autonomy* in favour of a strengthen of the decisional power and control for the high management, in a more and more codified and pre-established working process organized through IT assessment and management programs, in example in the evaluation of the disbursement of mortgages and investment plans for customers;
- *Increase in the quantitative (numeric) evaluation and control* with a decrease in the qualitative approaches and in the opportunities for dialogue between workers and management; this control is often “informal” with a daily pressure from supervisors to monitor the achievements of the individuals' results;
- *A shift from the work on “cash and services” operation (increasingly automated) to a “commercial” role* to propose services and solutions to the customers' needs, considering in example provision of loans and mortgages, insurances policies, investments and funds, banking account management and consultancy services, etc.;
- *Work intensification*, due to the increase in the number of operations and services offered by the bank to the customers as well as to the increase of the work given by the administrative operations;
- *Need for a continuous training*, due to the frequent introduction of new products and new working methods, with the difficulty to learn how to manage new complex procedures, such as financial and insurance services, and the consequent growth of complexity in the relationship with customers;
- *Work speed-up* due to the greater speed of the relations with customers and management;
- *Extension of the working time*, with a continuous use of digital communication systems as email, personal account of the MPS website, etc.

Source: Di Nunzio (2019).

There are other negative impacts on working conditions to be noted. In the **Spanish Insurance firm** the implementation of the digital technologies has reinforced the pressure on the workers due to a twofold reason: on the one hand, the multiplication of the channels of communication with the customers and the company has fostered an increased demand of “full-time connectivity” for the workers. On the other hand, this “multi-channel” relationship has also reinforced the trend of the culture of “client-centricity” and the pressure in terms of workload (Rocha and De la Fuente, 2019.a)¹⁸.

The impacts in terms of intensification of the workload are also remarked in the case of the car maker *Lamborghini*, although their effects are judged as reasonably acceptable by the workers' representation, according to the pre-established conditions agreed with the company. Also, it is worth noting that the workers of this factory are provided with

¹⁸ This last topic also can be found in the case of Hotel Alban , where it is stated “the transformation of the role of employees towards a guest-centric attitude, based on changes in customers' needs” (Franssen, 2019, p.11).

a bracelet that is used to log them on the workstation. However, according to the union delegates, the purpose of these bracelets is not the control of workers, but to support them in their tasks (Leonardi, 2019).

The *La Poste group* is another case where working conditions are under a profound change, with impacts on topics such as work schedules and work organisation (box 15).

Box 15. La Poste group. Impacts of restructuring on working conditions.

As for mails and parcels delivery: here, we speak about postmen and employees specialized in delivery, which is more than 50% of the staff employed in the BSCC. We also talk about a profound job transformation. The impact on work schedules is clear: postmen were used to start very early in the morning but they finish their day at the beginning of the afternoon. Considering the current and ongoing transformation, the postman starts at 9am and works all day. This is a new social compromise which has to be set up, that is to shift from *“I receive a relatively low pay but I benefit from an employment guarantee and I only work in the morning”* to *“you always have a job guarantee but you work all day long”*. In addition, working tasks are changing as well as the working conditions, beyond the working time organisation: postmen are now to be able to carry out working processes through smartphones (Facteo program), to collect personal data from customers, to develop soft/relational skills and last but not least to cope with increasing occupational health and safety risks (working outside the company all day long.....). In addition, one of our interviewees notices that the development of new personal services (for instance to old people through La Poste Silver economy strategy) to be delivered by postmen is not well accepted by workers¹⁹. This would be especially the case for ageing postmen who globally face difficulties projecting themselves into La Poste of tomorrow.

Source: Teissier (2019)

It is worth noting that there are also findings of efforts to enhance working conditions through the implementation of new digital technologies. Thus, regarding the bank *Monte dei Paschi di Siena* it is noted that digitalization offers a greater capacity for the workers to manage and control their individual tasks and operations by the use of ICT technologies, with a reduction of the individual risks for errors (e.g. in case of economic damage): at one side there is a reduction of autonomy, on the other the formal procedures help the workers to avoid mistakes with a reduction of individual responsibility from a legal point of view. It is also noted that digitalization offers new opportunities for a better conciliation between work and private life (Di Nunzio, 2019).

Other example is the car maker *Lamborghini*, where “the effects on the work organization and on working conditions are judged sustainable and able to reduce the psycho-physical fatigue of the various tasks. Even at the assembly lines, according to a trade union delegate, “work increases its conceptual component, in an undoubtedly advantageous environmental and ergonomic setting”. The task of the worker consists in fact in reproducing an articulated sequence of different operations, where true craftsmanship is still enclosed” (Leonardi, 2019, p.9).

¹⁹ Who do not necessarily see why services they formerly provided for free should now be paid by beneficiaries

The case of the Swedish company *Swemantech* provides information of how the way of implementation of digital technologies is an opportunity to improve industrial work, as it may contribute to make work less standardized and repetitive, building on the technological curiosity and willingness of workers to develop themselves, their team and the business (Bergström, 2020).

To sum up, the implementation of digital technologies has led to significant changes in the content of work and how it is organized and performed. As a result, new skills requirements arise for affected workers. The case studies also provide information of other impacts of restructuring linked to digitalisation, which in some cases have been beneficial for workers but in others have implied a worsening of working conditions. The reason of this ambivalence is that the characteristics and the scale of the impacts on working conditions are not only shaped by the technologies implemented but by other factors, like the management of human resources and the role of social dialogue.

3.3.4. Job shift

The only case reporting information of this kind of impact is that of *La Poste Group*. As noted above, in 2017 one of the companies within the group increased its share on the digital platform Stuart, in order to develop a new service called “Urgent urban delivery” (see box 6).

In this regard, “the integration to the group, in line with the development of new delivery services in urban areas, of a labour platform providing jobs to self-employed couriers echoes a limited « uberisation » of the company” (Teissier, 2019, p. 13).

3.4. Role of social dialogue in shaping restructuring linked to digitalisation

The analysis of this section focuses on the role of social dialogue in shaping restructuring processes linked to digitalisation, addressing a twofold dimension: (a) the participation of the worker’s representatives; and (b) the main outcomes of the social dialogue, with particular emphasis on the topics linked to digitalisation included in the agreements signed by the social partners.

3.4.1. Participation of workers’ representatives

The comparative analysis of the case studies allows highlighting three aspects related to the participation of the workers’ representatives: the mechanisms of participation; the levels of participation; and the main enablers and barriers influencing the role of social dialogue in shaping restructuring processes linked to digitalisation.

3.4.1.1. Mechanisms of participation of workers

The participation of the workers in the restructuring of the firms has been developed in most of the cases through the traditional body of representation at a company level, namely the local works councils.

There are two exceptions.

First, the company *Bpost* where formal and informal consultation meetings occur with the workers' representatives at the local level, but the big changes and technical innovation are negotiated at the national level.

Second there is the case of *Hotel Alban*. In addition to the direct exchange of information between the management and the employees, the later negotiations were conducted by a regional trade union (box 16).

Box 16. Hotel Alban: participation of workers representatives

The restructuring process at the Hotel Alban has been addressed through two social negotiation waves.

The first wave took place when the company Hadene adopted the decision of turning the building of the hotel into an owning property (see box five above). Hadene had the obligation to take over all the personnel. With low-season coming, and given that rebranding would take at least several months to be complete, Hadene wish was to close the building and send the employees to work in other hotel of the company as a transitional measure. These internal decisions were however not yet explicitly presented to the employees. As the date of the transfer approached, the latter got concerned about their future new employer and what they could expect from Hadene for the property and for their work contracts. Several unionised workers then reached to their regional trade union secretary and asked to establish contact with Hadene in order to receive more details about these matters.

The second social negotiation wave was triggered by the first draft amendments to the work contracts. They materialised the multifunctionality concept of the new hotel project (see box 12 above). The hotel being closed, most of the talks between employees and management about the elaboration of the document happened by phone. New contracts with these amendments were supposed to start from the 1st of August 2018, matching the beginning of the training period. But faced with a concrete document, several employees took fright, especially about the potential consequences of the evaluation of the multifunctionality given that many functions were listed (...) Feeling overwhelmed, they decided to call on the regional trade union secretary a second time for advice and support.

Source: Franssen (2019)

3.4.1.2. Levels of participation²⁰

The firms analysed can be classified in three broad groups attending to the level of involvement of the workers' representatives in the restructuring processes linked to digitalisation. Conventionally, these groups may be categorized as "limited", "reactive" and "anticipatory"²¹.

²⁰ This section put the focus on the *process* of participation. For the analysis of the outputs, see later section 3.4.2.

²¹ Our typology.

A) Limited

This group is composed of four companies where the social dialogue has played so far a very minor role –or any at all– with regard to this topic²². The participation of the workers’ representatives may be considered as “limited” because it is practically reduced to the exchange of information.

It is worth mentioning that these four cases come from Bulgaria and Portugal, two countries that have been identified in the first step of the project (WP1) as offering few opportunities for social dialogue to be involved in case of digital transformation.

The reasons behind this situation are different depending of the cases. Thus, at the Bulgarian pharmaceutical company *Sopharma* “*only the management of the company has the decision power for the technological renovation of the company. It is not an issue of consensus throughout negotiations between the social partners, but the undertaken digital measures and achievements are regularly shared with the trade unions*” (Terzyska, 2019.a, p. 9).

Social dialogue has not addressed this topic either so far in the company *Bulgarian Post Plc*. This can be explained to a large extent by the relative delay in the digitalisation of the firm due to its financial problems. Nevertheless, both social partners are aware of the need for the technological modernisation and “the digital issues have entered in the agenda of the negotiations of the social partners and are to be strengthened with the new collective labour agreement” (Terzyska, 2019.b, p. 9).

At the Portuguese firm *Volkswagen Autoeuropa*, digitalisation as such has not hitherto been the object of social dialogue at any level. More specifically, “*the implementation of technological changes, specifically robotization, did not result from any social dialogue process. As informed by several workers’ interviewees, the information on those changes was received through the regular factory team meetings and there was no special meeting between the company and the workers. No worker representative expressed any surprise or contested the procedure, quite possibly due to the good negotiating climate prevailing and the understanding that the measure results from an effective and real need for the company to adapt to the market as well as to the fact that there would be no redundancies required in the meanwhile*” (Rego and Apolinário, 2019.b, p.9).

Finally, in the case of the *Portuguese Bank* the social dialogue has not addressed this topic yet. From the company’s perspective digitalisation is no doubt a very important issue at stake, but it does not yet play a leading role in the context of social dialogue. On the other hand, the trade unionist interviewed considers that “*digitalisation has been mentioned in a very vague way in the meetings with the company*” (Rego and Apolinario, 2019.a, p.8).

B) Reactive

This group includes five firms where, besides the exchange of information, there have been consultation and negotiation processes between the management and the workers’

²² Of course, this does not imply that the social dialogue is not performing well regarding other topics in these companies.

representatives. In these cases, social dialogue has addressed the adoption of measures aimed *to deal with the labour impacts of digitalisation*, with particular emphasis on the adaptation to the changes of the workforce and the mitigation of the most negative effects of the restructuring processes.

The participation of the workers' representatives in these companies can be considered as "reactive", given that it was aimed to address the *consequences* of the restructuring processes. It must be remarked that this does not mean that there has been a low degree of participation; on the contrary, in some companies it has been very relevant. But social dialogue has been always focused on the mitigation of the *impacts* of digitalization.

The comparative analysis allows remarking some similarities and differences in the development of social dialogue at company level.

For example, the design of the digital transformation of the company *Spanish Naval* took as a reference the German model of Industry 4.0, including those aspects related to the governance of the process. To meet this end, the company proposed the creation of a bargaining table on the Strategic Plan, with the participation of representatives from the management on the one side, and of the six trade unions on the other. The negotiation was focused on three key issues: (a) the workload for the coming years; (b) the organizational structure and the concept of "shipyard 4.0"; and (c) the needs of *Spanish Naval* in relation to personnel management and the collective agreement (Rocha and De la Fuente, 2018.b). The process of negotiation culminated with the signature of two agreements: the Strategic Plan 2018-2022, which includes the main lines of the digital transformation of the company based on the concept of "Shipyard 4.0" (see box 6 above); and the new collective agreement, which addressed some topics related to digitalisation.

At *Lamborghini* social dialogue –through a regular collective bargaining and a system of information and consultation rights– has played a crucial role in the management of the impacts associated to the implementation of digital innovations. This process has been favoured by a solid culture of local industrial relations, rooted in a traditionally participatory style in the industrial districts of the territory, and reinforced by the influence of the transnational company agreement of the global group. In this regard, *"to a top management inspired by a participatory style, the trade union responded with accepting the challenge of an organizational innovation, even when it required an intensification of working times on the assembly lines. Employment growth and the limited impact on working conditions seem to have compensated for this bet at the moment"* (Leonardi, 2019, p. 13).

The situation at the company *Bpost-NBX* shows a dynamic interplay of formal and informal consultation on digitalisation between the management and the workers' representatives, before being formally addressed in the process of negotiations (box 17).

Box 17. Bpost- New Brussels X sorting centre. Dynamics of social dialogue on digitalisation

Bpost is a Belgian public institution active in the postal sector. It is composed of multiple headquarters, postal offices and sorting centres, including the new sorting building NBX.

At New Brussels X, local formal and informal consultation meetings occur with regard to changes in work organization. Big changes and technical innovation are negotiated at the national level. In that sense, local workers' representatives are following the vision that needs to be implemented by them as field actors and driven by the national level.

At Bpost the union representatives are highly present and active in order to preserve the workers' rights and working conditions, said the interviewees. Local coordination and consultation committees are monthly set up between the management team and the union representatives to discuss important socio economic issues and strategic points which need to reach a reasoned opinion. In terms of digitisation, workers' representatives feel that they are being listened too. However, some managerial reflexions related to innovation may not always be shared by the management team, "in order to avoid unnecessary and dangerous tensions towards unions and workers" for projects that may be considered but then rejected by the management, as mentioned by one management team member. Other information regarding working conditions and heavy workloads, technologies, digitalization may be shared between the management team and the local unions during informal meetings, before being legally discussed during formal meetings and agreements. The aim of informal meetings being to refine proposals, suggest improvements and speak about innovations, or small changes and problems which could easily be resolved.

During these local meetings, "volume decrease" in the mail sorting activity is the most used expression in order to discuss digitalization, according to all the interviewees. Real talks at the local level concern practical information and implementations of new technologies or working conditions, and work content such as, the mismatch between national strategy and the non-existence of trainings locally provided regarding digitalization. For the Letters plant manager and production manager, union representatives are interested in digitalization and its effects, and agree on its continuously changing extrinsic nature they need to adapt to.

Source: Naedenoen, Franssen and Beuker (2019, p. 15).

The bank *Monte dei Paschi di Siena* is also characterized by a solid tradition of industrial relations, build on a long-term path that has led to the definition of numerous procedures and structures to support company-level bargaining. This has favoured the negotiation of the measures aimed to mitigate the worst labour impact of the continuous restructuring process faced by the company during the last decade, especially by solidarity funds and anticipation of retirement benefits.

Nevertheless, with regard to the topic of digitalisation the role of social dialogue has not been so relevant. In fact, "*there are several problems for the participation of trade unions in the definition of the national bank strategy as well as in the introduction of technologies and the definition of the new work organization*" (Di Nunzio, 2019, p. 11). In spite of these limitations, however, there have been some opportunities for the trade unions in order to negotiate some specific issues related to the impacts of the digital transformation of the bank.

Finally, social dialogue in the *Hotel Alban* has played an important role through two negotiation waves (see box 13 above), whose outcomes have contributed to mitigate the potential negative impacts of the restructuring process.

C) Anticipatory

This group is composed of five cases²³ where social dialogue has played more proactively in shaping restructuring linked to digitalisation. The main difference regarding the former group (“reactive”) is that, besides of the negotiation of measures aimed to deal with the labour impacts, social partners shared in these cases the will to anticipate and manage the technological and organizational changes at an early stage.

Once again, beyond this common feature the compared analysis shows different dynamics of social dialogue at company level.

Social dialogue has also played proactive role in the restructuring process of the company **Hamburger Port and Logistics**, though the interplay of three “tools”: letter of intent; collective agreement; and company agreement. Of special interest to the quality of participation of workers’ representatives is the collective agreement. The reason is that it provides a framework for the regulation of future restructuring process, which ensures among other aspects the early involvement of the works council as soon as new technological projects within its area of application are due. In other words, this agreement sets the framework for cooperation between social partners on this topic. In this regard, *“the case study shows the manifold possibilities and instruments that arises and can be applied through the trusting cooperation of the company parties and that can benefit both the company and the employees. The social dialogue forms a solid foundation for reaching agreements, even in times of great change, which bring mutual benefits and represent a win-win situation for those involved”* (Harbecke and Müghe, 2019, p.11).

Spanish Insurance firm is another case where social partners have faced the challenges of digitalisation proactively. There are different aspects worth highlighting regarding this process.

First, it is a good example of how local social dialogue can take advantage of the framework provided by an existing European company agreement, in order to anticipate and manage the digital transformation of a national subsidiary. This framework agreement defines the principles for anticipating changes in the European companies of the *Insurance Group*, paying particular attention to managing properly the necessary changes and their possible impact on its employees²⁴. In this sense, when the headquarters of *Insurance group* launched an ambitious plan for the digital transformation of the group –with the support of the European works council– both local management and workers’ representatives at *Insurance group* in Spain used the framework agreement as a reference to tackle this process through social dialogue. According to one representative of the company interviewed, *“our approach to social dialogue is: the transformation is coming, this is already here, but we are in a moment where we can anticipate and we can do it in an anticipated and orderly manner”* (Rocha and De la Fuente, 2019.a, p.15).

Second, the management of the company carried out an internal study to forecast the potential negative impacts on digitalisation on jobs (see box 8 above). Finally, there

²³ One of these cases analyzed is the project “Work and Innovation”, with references to two firms: Otis and Voit (see Müghe and Harbecke, 2019).

²⁴ The agreement was signed in 2011.

have been adopted various measures aimed not only to deal with the labour effects of the restructuring process, but also to favour the adaptation of the workforce and the firm to the future challenges linked to digitalisation. These measures have been negotiated with the workers' representatives, with two major outcomes so far: (a) a new collective agreement (2017-2020), which includes some relevant contents related to the topic of digitalisation; and (b) the "Framework Agreement of Transformation and Employment" (2018-2020), which defines the general criteria for the implementation of changes at the firm in the coming years.

The case of *Swemantech* represents another interesting experience of proactive role of the social dialogue in dealing with technological changes. More specifically, it shows how local social partners may proactively negotiate a "human oriented bottom up" approach for the adoption of new technologies in the workplace. The origin of this experience is an agreement signed at the local level, which led to an initiative called "The Future Industrial Worker" (box 18).

Box 18. Swemantech. Initiative: "The Future of Industrial Worker"

Swemantech a Swedish global firm in the automotive industry. The Swedish model and the establishment of a close collaboration with workers representatives has always been one of the key elements in the way the company is managed. The company has a long history of workplace reforms, trying to avoid health problems and make manual work less repetitive and standardised.

In the face of several disruptive technologies the new CEO of the company decided in 2015 to decentralize operations, leaving more room for local adaptation to technological and market developments.

A new dialogue between local social partners was initiated, and as a result a new local agreement was signed. The agreement led to a new initiative called "The Future Industrial Worker".

The idea was to find a way to expand work content at the shop floor in order to be able to adopt new technologies. The key words were "learning to learn new things". Basically, the goal of this initiative was to stimulate learning among workers in the factories to become more autonomous and be able to take on new technology.

Source: Bergström, 2019.

It is worth noting that in the beginning the practical format of implementation of this initiative was not clear, with some different views between the workers and employers representatives. After some discussions, the social partners agreed to decentralize the process and to set up pilots in three different sites in Sweden. A new way of working should be tested among a limited number of teams and then spread to other units and factories. Finally, "*in mid 2017 an agreement on the structure of the initiative was settled. A coordinator of the three pilots was appointed one of the factory managers and a steering committee, consisting of representatives from Group management, HR and trade unions, was set up. The pilots were ready to start*" (Bergström, 2019, p.8).

The management of *La Poste Group* has been engaged for years in attempt to reinforce social dialogue in a context of profound transformation. This includes, in practice, the negotiated adoption of a comprehensive change management approach and a large

number of resulting collective agreements at different levels. The basis for this approach can be found in the “Commission du Grand Dialogue” report (2012). This report recommended that the development of social dialogue, alongside seven other topics, became a priority for the Group focusing among other things on:

- The ways to ensure a quality social dialogue
- The articulation to be built between the different bargaining areas (Corporate, Businesses, Establishments)
- The clarification of the types of collective agreements to be built (normative, incentive, policy or method)
- The procedures to be put in place to allow making negotiation a process of co-construction
- The information and possibly the terms for information and consultation of staff representatives in the context of the negotiation processes on restructuring projects
- The conditions to be met to enable Unions and employee representatives to be involved as early as possible in organizational decisions.

Following this report, La Poste SA set up, through a collective agreement about quality of working life signed on 22nd January 2013, a global change management method, i.e. some general and compulsory principles aiming to ensure a quality social dialogue in case of transformation projects. This agreement organizes social dialogue at different levels in case of restructuring while at the same time, promoting the global identity of La Poste SA, beyond its numerous and different decentralized structures and establishments (box 19).

Box 19. La Poste Group. Agreement on quality of working life

- “The projects impacting the organization and functioning of services will be systematically presented, before their launch, to trade union organisations. This presentation will have to be made within the framework of a CDSP, at the level of the NOD under consideration. This CDSP will mark the beginning of the consultation/negotiation on the project. This first presentation should indicate the meaning of the project and the expected objectives in terms of customer satisfaction and improvement of the quality of life at work”.
- “The consultation and social negotiation carried out throughout the project will include also the alternative scenarios presented by the trade union organisations
- “Major projects intended to be deployed in several NODs are presented in national CDSP, at the level of the business line in question or of La Poste as a whole for projects at this level, before their deployment in the NODs

The last case of this group is the project “**Work + Innovation**”: an ambitious program of training launched by the German trade union IG Metall, aimed to foster a proactive approach to shaping future of work and expanded its trade union education work and company policy in the companies through social dialogue. This initiative was implemented with the collaboration of a number of enterprises and the Federal Ministry of Labour and Social Affairs (box 20).

Box 20. IG Metall. Project Work and Innovation

The origin of the project “Work+ Innovation” (W+I) is rooted in the public debate launched in Germany by The Ministry of Labour and Social Affairs with the “Green Paper Working 4.0”. The Green Paper was addressed as a basis for discussion to the relevant actors in charge of shaping a future work in Germany. The results of the debate were published in November 2016 in the White Paper “Work 4.0”.

IG Metall took up the topic of "Working 4.0" at its trade union conference in the year in which the Green Paper was published and thus derived its claim to a safer, fairer and more self-determined world of work. To ensure this, trade union education-work has an outstanding role to play. It must be able to provide full-time trade unionists with the appropriate qualifications for their future tasks and to train employees involved at the company level.

This proposal paved the way for the project series "Work and Innovation - Strengthening Competences +> Shaping the Future". The aim of the ambitious programme was to further expand the labour policy focus in the design of digital work and to further develop the educational work and company policy of IG Metall. The question arose as to what concrete impulses trade union education work and company policy could provide in restructuring processes in the context of digitization, so that these could be shaped in the interests of employees. The conclusion of collective bargaining agreements and co-determination are an indispensable basis for this, as they are instruments for shaping future work in a way that is humane and effective.

The "Work and Innovation" project series started in February 2016 and ended in February 2019 with a final event at the IG Metall headquarters in Frankfurt (Main). During the three-year period, more than 250 participants were trained in 21 qualification series. Each qualification series consisted of 5 modules, whereby the participants of each module took part in a 3-day qualification seminar. Altogether 150 pilot enterprises, consisting of medium-size mechanical engineering enterprises up to numerous automobile final manufacturers represented in Germany, participated in the W+I project.

Source: Mühge and Harbecke (2019).

At the end of the project series "Work and Innovation" ten company projects were selected as examples of good practices. The company projects mainly deal with the introduction and use of new (digital) technologies and their (possible) effects on work-organization and the employees in the companies. This group includes two firms analyzed in the present research as case studies: VOIT Automotive GmbH; and OTIS GmbH & Co. OHG. Both cases are two examples of how proactive social dialogue may benefit and contribute to better implementation of digital technologies in the workplaces. In this regard, the analysis shows that *“by informing and involving employees at an early stage, their perspective can be directly integrated. This generates additional ideas and suggestions and at the same time eliminates fears and scepticism about impending change processes. By involving both social partners at an early stage, scope for action can be exploited and emerging conflicts can be resolved at an early stage”* (Mühge and Harbecke, 2019, p.11).

3.4.1.3. *Barriers and enablers to social dialogue on digitalisation*

The analysis carried out in this section shows that the interplay of social partners may be very different, depending of a number of factors related to the specific situation of each company and the national system of industrial relations

In this sense, it may be interesting to conclude by highlighting some of the main barriers and enablers provided by the empirical research to social dialogue in shaping restructuring processes linked to digitalisation (table 4). This information may be useful as a reference for further analysis of other companies and also for the elaboration of recommendations to reinforce the role of social partners in this field.

Table 4. Main barriers and enablers to social dialogue on digitalisation

Barriers	Enablers
Design and implementation of technological innovations identified as a part of the prerogative of the employers on work organization, not submitted to collective bargaining	Collective bargaining system based on mutual trust
Lack of knowledge/expertise of the bargaining parties	Proactive approach of social partners, with an anticipatory and non-deterministic view on technological change and their impacts on jobs and working conditions
Focus of the bargaining agenda on traditional topics and priorities	Improvement of the competences of the bargaining actors on digitalisation / best practices knowledge/
Lack of information on the process of digital transformation	Involvement of workers at the early stages of digital transformation
Lack of coordination along the value chain	Establishment of bodies and mechanisms of information and collaboration between management and workers' representatives
Lack of awareness of how digitalisation can impact each company daylife	Existing transnational agreement, to be developed at national level

Source: own elaboration based on case studies

3.4.2. *Outcomes of the social dialogue*

The aim of this section is to highlight the main outcomes of the social dialogue related to the restructuring processes linked to digitalisation in the studied companies. In this regard, there are three previous issues worth noting:

First, digitalisation is not the only driver of the restructuring as noted above. In this sense, the analysis carried out here focuses on those specific outcomes linked to the digital transformation of the companies, but do not focus on outcomes that are the results of other restructuring factors²⁵.

²⁵ For example, at the *Hotel Alban* the first wave of negotiations after the restructuring decision adopted by the company resulted in two outcomes: a general presentation of the new business model by the management to the employees; and a verbal agreement on the transitional measures during the temporary closing of the hotel (Franssen, 2019).

Second, this analysis addresses only the outcomes of the social dialogue, without taking into account therefore actions unilaterally adopted by the management of the firms (regardless of their relevance)²⁶. The reason is that the role of social dialogue is the key research goal of the Diresoc project.

Finally, the intention of the qualitative study carried out has been to collect some relevant and innovative contents of the measures negotiated by the social partners regarding different topics linked to digitalisation, providing illustrative examples from the companies.

A) Training

The development of “digital” **training** actions aimed to favour the adaptation of the workforce is one of the most common measures negotiated to deal with the job changes linked to digitalisation.

The contents and implementation of these measures varies among the different companies. This can be illustrated with some examples (box 21).

Box 21. Examples of training measures

At *Lamborghini* there is a project (DESI) of alternating school and work. An agreement on cognitive surplus value was signed in 2016. The "new workers" follow an internal training course of at least three months for the most basic tasks and six months for the most delicate ones. The training takes place both on the line and through virtual reality viewers, present in a special room. Other spaces are home to high school students who for some years, through the DESI program, have been selected by technical institutes and spend six months in the factory, where they attend classes and practice on the assembly line.

Also, of particular interest is the agreement signed in 2018 at *Lamborghini*, which establishes four weeks of classroom and on-the-job training for temporary agency workers (TAWs) and the consequent certification of acquired skills.

The Framework Agreement of Transformation and Employment signed at *Spanish Insurance firm* includes a first point on “training and development for transformation”. The key idea behind is that the process of digital transformation of the company does not affect only to the dynamics of destruction/creation of employment but, basically, to the evolution of the existing jobs. Against this background, the agreement establishes that 50% of the annual budget on training will be allocated to the training of workers on those critical skills and knowledge that are expected to be necessary in order to deal with the future products and services.

²⁶ For example, the case study of *Sopharma* shows that digital training of employees is an inseparable part of the technological innovations (see box 11 above). However, so far these actions seem not to be part of the agenda of social dialogue within the company (Terzyska, 2019.a). Also, the La Poste Group has developed -alongside industrial relations- HR or CSR policies aiming to address directly issues at stake, especially a significant training policy to support changes in workers’ jobs as well as a so-called “responsible employment policy” covering support to workers’ mobility (Teissier, 2019). At the *Hotel Alban*, a training plan was set up by project managers to provide staff with the appropriate skills needed for their new function as hosts (complaints management, English Horeca language, wine training, POS training, hygiene, fire training, first aid training, guests experience, hospitality, IT, etc. (Franssen, 2019)

The Agreement negotiated at *Monte dei Paschi di Siena* also address staff training programmes in order to adapt skills to the changed internal and external contexts, with a view to requalification to strengthen commercial and customer support activities. In this regard, the Agreement enhances the logic of diversification and personalisation of training by role clusters (Top Management, Management, Middle Management, Core), training interventions focused on areas of greatest need such as, for example, risk measurement, and introduces important new features aimed at facilitating easier access and consequent usability of training through the combination of integrated tools (classroom, online, webinar, etc.) and methods of fruition (protected time and use in “agile work” mode)

Sources: Leonardi (2019); Rocha and De la Fuente (2019); Di Nunzio (2019)

B) Working time

The analysis of the case studies provides two interesting examples regarding the regulation via social dialogue of working time. Both companies are from the financial services, a sector where the topic of working time has gained increasing momentum in the debate about the social impacts of digitalisation on workers (Kirov et al, 2019).

At the bank *Monte dei Paschi di Siena* an experimentation phase for the introduction of the so called “agile work” (remote work from home) was launched in 2017 by an agreement between the company and trade unions. “Agile work” is provided for at most one day a week and workers can access to agile work on a voluntary basis with prior authorization using IT tools provided by the company. However, this opportunity is available for a limited number of workers: for those working in the back office and in general management activities in the Central structures, while it is not provided for those working in the territorial branches (they have only few days a years for online training from home) (Di Nunzio, 2019).

The collective agreement (2017-2020) signed at *Spanish Insurance firm* also address the topic of telework. The agreement recognizes the telework as a way to favour a good work-life balance in *Spanish Insurance firm* under the following principles and criteria:

- Voluntary principle, both for workers and for the company.
- Principle of reversibility, both for workers and for the company.
- Principle of equality with respect to workers who perform their duties in the company's facilities.
- Criteria of adaptation to the function, that is, that it can be done through teleworking.

However, the most prominent provision on working time is that one regulating the “right to the digital disconnection”. This agreement was the first to regulate this topic in Spain, joining to other emerging initiatives in different European countries aimed to address in the collective bargaining those new issues related to work-life balance, increased flexibility around working time arrangement, or regulation of the use of new technological tools (box 22).

Box 22. Collective agreement of Spanish Insurance firm (2017-2020)

Article 14. Right to digital disconnection

The technological changes produced in the last decades have caused structural modifications in the field of labour relations. It is undeniable that nowadays the phenomenon of «digital interconnectivity» is affecting the forms of work execution, changing the scenarios of the development of labour occupations towards external environments to the classic productive units: companies, centres and jobs.

In this context, the place of job provision and working time, as typical elements that shape the framework in which the work activity is carried out, are being diluted in favour of a more complex reality in which permanent connectivity prevails, affecting, without doubt, to the personal and family environment of the workers.

That is why the signing parties of this Agreement agree on the need to promote the right to digital disconnection once the working day has ended. Consequently, except in cases of force majeure or exceptional circumstances, The firm recognizes the right of workers not to respond to emails or professional messages outside of their working hours.

Source: Rocha and De la Fuente (2018.a)

C) Work Organization

The analysis of three companies provides good examples of how social dialogue can address the adaptation of work organisation to the technological changes.

The first one is the collective agreement on “Protection of innovation and rationalisation” concluded in 2014 at the company ***Hamburger Port and Logistics***. The aim of the agreement is to avoid any (psychological) burdens on employees that may arise as a result of innovation and rationalisation measures human-centred and thus to avoid negative effects of technology to the detriment of employees. At the same time, the positive company culture towards further technological developments cultivated by the employees of the CTA is emphasized (box 23)

Box 23. *Hamburger Port and Logistics*. Collective agreement on “Protection of innovation and rationalisation

First of all, the collective agreement provides for early involvement of the works council as soon as projects within its area of application are due. If necessary, a joint working group will be set up between the company parties. In order to assess the expected impact of a planned measure, three materiality criteria are assessed as the basis for assessment. The criteria include:

- The number of persons employed in the department concerned (X)
- The expected Degree of change in workflow (Y)
- Improving the internal productivity of the department affected by the measure (Z)

According to the formula: $X*Y*Z=$ Factor

The factor of innovation or rationalization-protection of the measure is determined. Depending on the number of affected employees, the degree of change in the workflow and the degree of improvement in internal productivity, the individual factors are measured with values between 1-10. Based on the calculated value (product) of the factor, measures to be discussed and defined between the parties are derived.

At a value of >100 - 250:

- Early consultation with the works council
- Investigation / recording and documentation of the expected transformation
- Information of employees about the results of the investigation
- Training of the employees concerned

If the value is > 250, the following additional measures are added:

- Training of the affected employees in the form of project-related qualification measures
- Measures to maintain or promote health
- Job security measures
- Offer of an alternative workplace

Source: Mühge and Harbecke (2019).

The second example is related to the shipbuilder *Spanish Naval*. The collective agreement (2018-2021) includes a detailed section aimed to foster the adaptation of the work organisation to the digital transformation of the company. To meet this goal, it establishes the creation of a Joint Commission on Productivity, composed by management and workers representatives (box 24).

Box 24. Collective agreement of *Spanish Naval* (2018-2021). Work Organisation

Article 6

In order to contribute to the improvement of the productivity of the Company, through the study and discussion of the determining factors involved in it, a Productivity Commission will be established with the objective of generating new productivity indicators and defining the model of Shipyard-oriented work 4.0.

The adequacy of the new professional and organizational classification structure will be examined annually, taking into account the experience acquired since its implementation and the possible modifications that were necessary as a result of the insufficiencies and / or distortions detected during its adaptation to the scheme will be analysed. Current organizational structure and its development, as well as those derived from the technological and scientific-technical evolution itself. The modifications deemed necessary to be introduced will be carried out by mutual agreement between the Company Management and the legal representation of the workers, in the scope of the Inter-centre Committee.

This commission will study, among others, the following tasks and anyone delegated by the Inter-Centre Committee:

- Monitoring of the objectives of global productivity, both in the production process and in the support process.
- Study of applications of new technologies, organization and distribution of work.
- Use of human resources at all levels.
- Study of cycles and workloads, as well as their distribution.
- Conjugation of productivity-quality and ergonomics.
- Production support alternatives to improve efficiency.

- Measures to reduce absenteeism.

Source: Rocha and De la Fuente (2019.b)

The third example is referred to the **Hotel Alban**, where a new definition of the multifunctionality was established, in order to adapt the work organization to the new business model. The agreement to compose the “host” function: receptionist (main function), collaborator for quick service restaurant, and waiter in dining room and at the bar (complementary functions). The change was put in a letter of agreement employees were to sign before starting the training period. To cope with employees’ fear about being evaluated as hosts on functions they were not performing before, an initial test period of three months was established. This trial period was also put in the same letter of agreement. The real contract amendments would only be signed after the trial period (Franssen, 2019).

D) Participation of workers in the implementation of technological changes

There are two experiences particularly innovative worth addressing little more in detail, which establish a framework for a proactive involvement of the workers in the implementation of technological changes in the workplaces: the initiative “The future of Industrial Worker” adopted at **Swemantech**; and the two agreements signed at the companies Otis and Voit, under the umbrella of the project “Work + Innovation”

D.1. The future of industrial worker

The key idea of this initiative was to stimulate learning among workers in the factories of **Swemantech**, to become more autonomous and be able to take on new technology (see box 19 above). To achieve this goal, the social partners agreed to set up pilots in three different sites in Sweden. A new way of working should be tested among a limited number of teams and then spread to other units and factories. The initiative is based on local involvement and implies that teams decide their own priorities. The autonomous teams gather in team work exercises, where they decide upon what kind of activities to be involved in. It is based on what the team members find relevant and what they are interested in doing. A key point is that the new technologies should not be dropped upon workers. New technologies should be brought in by workers at the shop floor. It should be introduced through a bottom-up process where the technology becomes a solution to problems identified in the workplace, not the other way around. This would be explaining to a large extent the good reception of this initiative among the groups of workers involved (Bergström, 2019).

One of the potential outcomes of this initiative is that the autonomous teams should take on responsibilities from technical support functions. In this regard, “machine operators should be able to take on work tasks from support functions, for example maintenance of machines in the production process” (Bergström, 2019, pp 9-10). The implementation of this project faces on the other hand different challenges, including for example the implications for the first line managers, the changing role of supervisors, the barriers to extend the initiative to more groups of workers²⁷ or the spread of the initiative to other factories and subsidiaries across the world. Also, this

²⁷ The development of these new ways of workings is primarily limited to those workers who are working day shifts, without involving to the night shift and weekend workers.

seems to be a case with limited applicability to other companies and industries with very different social and institutional background (for example, in terms of the culture and practices of industrial relations).

Nevertheless, despite of these restrictions this case study illustrates that –given certain social and institutional circumstances– social dialogue may play a proactive and positive role in establishing the conditions for adopting new technologies in the workplace and at the same time improving working conditions for workers (Bergström, 2019).

D.2. Project “*Work and Innovation*”

The initiative “*Work and Innovation*” promoted the development of a number of company projects, as noted above (see box 21 above). For the purposes of this study, there have been analyzed two projects developed at the manufacturing firms Automotive GmbH (Voit); and OTIS GmbH & Co. OHG (Otis).

Basically, these projects dealt with the introduction and use of new (digital) technologies and their (possible) effects on work-organization and on the employees in the two companies (Mühge and Harbecke, 2019).

Thus, in the case of *Voit* it was taken the decision to conclude a far-reaching company agreement for the entire company in order to maintain the works council's ability to act and to be able to react adequately to the new, digital work processes. Due to the prevailing partnership relationship within the company, the management of Voit was positive about the project, so that a company agreement could finally be reached in 2017. This agreement regulated the following points:

- Maintaining and developing employment
- Design of age-appropriate workplaces
- Integration into operational planning and timely information flow
- Establishment and involvement of an internal working group
- Determination of qualification needs and selection of employees

One key aspect worth highlighting of this agreement is related to the involvement of the workers' representatives in the adoption of digital technologies in the workplace (box 25).

Box 25. Voit Automotive GmbH. Agreement June 2017. Involvement of workers' representatives in the adoption of digital technologies

In order to plan suitable measures and processes for the design of digital processes, it is essential that an early flow of information takes place in order to involve those responsible within the company in the planning phase. This point was the main concern of the works council of VOIT GmbH, because it had recognized in the course of the digitalization of maintenance that it had missed important information and had only accidentally learned about the scope of the planned digitization processes. In order to ensure this early involvement, the establishment of an internal working group was agreed in the works agreement. The working group is made up of two works councils and one each responsible for personnel, production and IT. In addition, managers of the departments concerned as well as internal and external specialists can be involved.

The working group meets regularly once a quarter for discussions. It also meets when the occasion arises. It determines whether existing jobs could be affected by the implementation of company projects or measures and what effects can be expected. These are evaluated and recommendations for implementation are then drawn up.

For example, suggestions are to be made for the qualification of employees at affected workplaces so that they can meet the new requirements that have arisen. To this end, the individual competencies of employees must also be assessed in order to determine whether internal or external further training is required. From this, a qualification plan is finally drawn up, which is granted to the management and the relevant specialist department. The costs of the qualification measure required by the company for the employee are borne by the employer. If the employee refuses the measure, he will be informed about possible consequences, which in extreme cases can include the loss of his job.

Source: Mühge and Harbecke (2019)

OTIS has a joint-committee consisting of representatives of the management and the works council. It meets regularly and plans the implementation of new technologies as part of the planned smart-factory strategy that the company is pursuing. Employees are also involved who advise the committee as experts in their work.

Furthermore, there are also plans to conclude a company agreement, which essentially lays down the principles and framework conditions for the introduction of digitalisation technologies.

Once again, the most innovative aspect in comparison to other company level agreements is the participation of the workers' representatives in the adoption of digital technologies. It applies to all technical and work-related changes based on the introduction of information and data processing systems. In this regard, "*early involvement of the works council is regulated so that it can deal with planning, design and possible effects and make its own proposals. In addition, it is stipulated that the new technologies do not lead to an intensification of performance. Furthermore, the employer is required to elaborate a concept that deletes the corresponding personal data within a specified time frame*" (Mühge and Harbecke, 2019, p.10).

To conclude, both cases are good examples of how social dialogue may introduce innovative elements such as the reinforced involvement of the workers in the process of restructuring linked to digitalisation. In this sense, the findings of this case study show

that “by informing and involving employees at an early stage, their perspective can be directly integrated. This generates additional ideas and suggestions and at the same time eliminates fears and scepticism about impending change processes. By involving both social partners at an early stage, scope for action can be exploited and emerging conflicts can be resolved at an early stage”(Mühge and Harbecke, 2019, p.11).

E) Other measures

To end this section, it is worth remarking other examples of specific measures of interest negotiated by the social partners in different companies (box 26). The contents of these measures point out to the will of social partners of tackling the impacts of job changes driven by digitalisation on the traditional topics of social dialogue.

Box 26. Examples of other outcomes of social dialogue related to restructuring linked to digitalisation

Use of technological tools by employees. The collective agreement of *Spanish Insurance firm* establishes the following rules to the use of the technological work tools provided by the company to the staff:

-Workers must make proper and responsible use of the tools made available to them. The exceptional use of them for personal purposes of a necessary and preemptory nature will not imply labour breach.

- The company's computer systems and equipment are exclusively for professional use.

- Internet access is limited to those who, due to their responsibilities, require its use for the necessary time of consultation.

- In the use of email it will not be possible to access the emails of other users without their authorization, send emails of offensive content or use the email account for purposes other than those for which they have been assigned.

- *Spanish Insurance firm* may exceptionally, when there are indications of illicit or abusive use by a worker, timely and necessary checks (including periodic checks or audits), to the extent possible in the presence of the affected user and with A legal representative of the workers.

-The control systems used by *Spanish Insurance firm*, as far as possible should be agreed with the social party and in any case be previously known by it.

Restriction of labour layoffs. The collective agreement negotiated at *Bpost* includes some restrictions directed toward the management partially linked to digitalisation: no layoff and the possibility for +57-year-old workers to work part-time because of the heavy workload introduced by some machines that are more complex, and that introduce heavier conditions mainly in the Parcels department.

Levels of payment. The agreement concluded at *OTIS* establishes that employees are guaranteed the existing level of pay. This means that the use of new technologies must not lead to any grouping of activities. If, in certain cases, a reduction in the work requirements of an existing workplace should be unavoidable, the aim is to restore the existing requirement profile in the medium term by designing the workplace. If this is not possible, the difference to the old incentive bonus is still cleared.

Safe and Health at work. At *Bpost-NBX*, the unions' representatives and the management team are negotiating on a new agreement regarding two main points at stake: 55+ year-old-workers would not work on machines which need an important

physical implication and they initiated a rotation on those machines for all the workers, according to the flux coordinator.

Anticipation of changes. At La Poste group, there have been signed different agreements aimed to anticipate and manage the changes within the group:

A first Group agreement: “*Un avenir pour chaque postier*», signed on 5th February 2015. This agreement appears to be a detailed framework of policies and tools to be implemented in order to anticipate changes within the group: human resources planning policy, regulation of motilities, training and support to workers

A second one is the agreement on “*l’amélioration des conditions de travail et sur l’évolution des métiers de la distribution et des services des facteurs et de leurs encadrants de proximité*», signed on 7th February 2017. In the context of new activities and/or activities in growth, the agreement plans detailed provisions related to the evolution of jobs profiles in the service-mails-parcel unit, including new job profiles like “multipurpose postmen”, as well as to their impacts in terms of work organization, working time and occupational health and safety.

An agreement “*Avenir des métiers bancaires des centres financiers et nationaux 2016-2020*” was signed on 17th December 2015. It covers workers employed in financial centres operating for the Banque Postale (who are legally employed by La Poste SA). In the context of the changes in clients’ preferences due to the increasing digitisation of the society, the agreement intends to address resulting evolutions in work organisation, occupations and working conditions. It includes Group commitments related to the future of financial centres and related guarantees for workers: no forced geographical mobility, promotion and support to professional mobility, support to workers in situation of redeployment in case their activity disappears, support to worker in case of job change.

Source: Rocha and De la Fuente (2019.a); Naedenoen, Franssen and Beuker (2019); Müghe and Harbecke (2019); Teissier (2019).

4. CONCLUSIONS

The elaboration of this report has been built upon the findings provided by an empirical social research conducted through company case studies, distributed among four sectors and belonging to eight European countries with very different backgrounds (for example, regarding the institutional frameworks of industrial relations).

The 15 case studies carried out provide valuable findings on the concrete role of social dialogue in shaping restructuring processes linked to digitalisation, whose comparison allows us remarking the following conclusions:

1. The implementation of technological innovations at the workplaces is a complex process, which may be conditioned by various structural factors besides technology – from the characteristics of the companies to the institutional framework of industrial relations. Also by the motivations and strategies of the management of the companies and the involvement of workers. As a result, the digital transformation of a company may be shaped and implemented in various ways, and with very different results.. In this regard, the findings from the case studies analysed provide empirical basis for the

rejection of the technological determinism regarding the development of restructuring linked to digitalisation.

2. Digitalisation is clearly one important factor for change of the firms analysed, but in most of the cases there can be found in parallel other drivers for restructuring (cost-cutting strategies, increasing international and national competition, changing nature of regulations, implementation of new services and products and so on).

3. Most of the companies implement new digital technologies within the framework of the existing business and production structure. This can be partly explained by the fact that, contrary to the “hype” on the high speed of changes fostered by digitalisation, the adoption of new technologies at the workplaces is almost never a smooth and quick process, but with a couple of barriers to be overcome. There are only two cases where the adoption of new technologies has implied the creation of a sideline structure. And just one firm has opted for the takeover of an external actor (digital platform) to take advantage for the development of an innovation.

4. So far, the implementation of digital technologies has had little effect on the number of jobs, but it has led to significant changes in the content of work, its organisation and performance. The findings of the case studies point out that job changes are the most relevant impact in the – at least - first stages of the digital transformation of the companies. More specifically, in most of the cases analysed the implementation of digital technologies implied both the transformation of some tasks and the emergence of new ones. As a result, new skills requirements arise for the affected workers.

5. The case studies also provide information of other impacts of restructuring linked to digitalisation on working conditions, which are very diverse. On the one hand, there are examples of efforts to enhance working conditions through digitalisation and the use of new technologies to make jobs more attractive. On the other hand, there also examples of how digitalisation foster a worsening of working conditions, in terms of: intensification of the workload and the work speed-up; reduction of the work autonomy; increasing control of workers; and the extension of working time, as well as of the demand of “hyper-connectivity”.

The reason of this ambivalence is that the characteristics and the scale of the impacts on the working conditions are not only shaped by the technologies implemented, but by other factors, like the management of human resources and the role of social dialogue.

6. Social dialogue has played a very different role in shaping the restructuring process linked to digitalisation developed in the studied companies. This may be explained to a large extent by the different patterns of institutional settings and culture of industrial relations in the eight countries covered by the Diresoc project.

The cases studies shows that the interplay of social partners is also influenced by a number of factors (“barriers” and “enablers”) related to the specific situation of each company²⁸.

In this regard, the comparative analysis allows us to establish a classification of these firms in three different groups, depending of the levels of involvement of the workers’

²⁸ See table 4 of the report.

representatives, which can also be relate to the national industrial relations patterns (table 5).

- *Limited participation*: This group is composed of cases where the social dialogue has played a very minor role – or none– with regard to digitalisation. The participation of the workers’ representatives may be considered as “limited” because it is practically reduced to the exchange of information.
- *Reactive participation*: This group consists of cases where, besides exchange of information, there have been consultations and negotiations between the management and the workers’ representatives. In these cases, social dialogue has addressed the adoption of measures aimed *to deal with the labour impacts of digitalisation*, with particular emphasis on the adaptation of the changes of the workforce and the mitigation of the most negative effects of the restructuring processes. The participation of the workers’ representatives in these companies can be considered as “reactive”, given that its main goal is to address the *consequences* of the restructuring processes. It must be remarked that this does not mean that there has been a low degree of participation; on the contrary, in some companies it has been very active. But social dialogue has been always focused on the mitigation of the *labour effects* of digitalization.
- *Anticipatory participation*: This group is composed of firms where social dialogue has played more proactively in shaping restructuring linked to digitalisation. The main difference regarding the former group (“reactive”) is that, besides of the negotiation of measures aimed to deal with the labour impacts, social partners shared in these cases the aim to anticipate and manage the technological and organizational changes at an early stage.

Table 5. Role of social dialogue on restructuring linked to digitalisation

Limited	Reactive	Anticipatory
<ul style="list-style-type: none"> • Sopharma • Bulgarian Post Plc • Volkswagen Autoeuropa • Portuguese Bank 	<ul style="list-style-type: none"> • <i>Spanish Naval</i> • Lamborghini • Bpost-NBX • Monte dei Paschi di Siena • Hotel Alban 	<ul style="list-style-type: none"> • Hamburger Hafen and Logistik AG • <i>Spanish Insurance firm</i> • La Poste Group • Voit Automotive GmbH • OTIS • Swemantech

7. In most of the cases, digitalisation is not a subject of social dialogue as such. Instead, it is related to developments in training, working time, work organisation work-life balance, management of redundancies and safety and health at work have been addressed by collective agreement. In this regard, it could be resumed that the social partners are tackling the impacts of job changes driven by digitalisation through the traditional topics of collective bargaining.

8. Finally, there are two good examples of innovative experiences negotiated through social dialogue, aimed at establishing a framework for involvement of workers in the

implementation of digital innovations at the workplaces, namely: the project “*Work and Innovation*” launched by the IG Metall in Germany; and the initiative “*The future of industrial worker*”, promoted at the company Swemantech in Sweden.

Certainly, there are always reasonable doubts regarding the applicability of good local practices to other companies and industries with very different social and institutional background (for example, in terms of the culture and practices of industrial relations). Nevertheless, these experiences provide useful lessons on the potentialities of social dialogue to develop a more proactive and fair management of changes linked to digitalisation at the workplaces.

Thus, the present report confirms the main lesson of the online survey carried out in the WP2 of the Diresoc project (Franssen et al, 2019) over the paramount role of the efficient social dialogue to successfully manage the digital transformation of the companies.

ANNEXES

ANNEX 1. QUESTIONNAIRE OF THE SURVEY

A. GENERAL INFORMATION ON THE COMPANY

1. Company + competitive structure and trends

- Sectoral background
- Size (employment), domestic control.
- Competitive pressures: trends, reasons
- Subsidiary of a bigger company (if so, it should be analyzed the influence of the headquarter)

2. Employment, by sex, age, occupation, educational attainment

3. Job Quality

- Share of temporary employment
- Share of part-time employment
- Wages

4. Industrial relations

- Workplace representation
- Collective agreements
-

B. PROCESS OF DIGITALISATION

5. Expected or manifest vectors of change in the company

- Automation of work
- Digitalisation of processes
- Digitalisation of products/services
- Digitalisation of workers
- Outsourcing to digital platforms
- Other

6. Most important digital innovations related to the above vectors, which are expected to (or already have an) impact in the company

7. Current public policies + support structures relevant for digitalisation in the firm

9. Business Strategies

- Change in the business model, strategic reorientation
- Introduction of new digital technologies in production
- Introduction of new digital services

- Outsourcing to digital platforms
- Others

C. IMPACT OF DIGITALISATION ON EMPLOYMENT STATUS AND WORKING CONDITIONS

Expected or manifest changes/challenges with regard to:

10. Job destruction

11. Job creation

12. Job change

13. Job shift

D. ROLE OF INDUSTRIAL RELATIONS

14. Management's view and strategies to cope with the processes and impacts of restructuring linked to digitalisation

15. Workers representatives' view and strategies to cope with the processes and impacts of restructuring linked to digitalisation

16. Role of the public authorities

17. Involvement of workers representatives in the process of restructuring linked to digitalisation:

- Level of involvement: information; consultation; bargaining
- Board: works council; European works council
- Topics addressed:
 - ✓ Changes in employment
 - ✓ Tasks, occupations and skills
 - ✓ Wages
 - ✓ Working time
 - ✓ Work-life balance
 - ✓ Training
 - ✓ Internal mobility (external mobility)
 - ✓ Health and safety
 - ✓ Monitoring and control
 - ✓ Data protection
 - ✓ Telework; ICT mobile work
 - ✓ New topics: right to disconnect; “smart work”; outsourcing to platforms...

- Outcomes: anticipation; restructuring policies and practices, negotiated transitions, measures for protecting particular vulnerable statuses/groups..., health and safety policies addressing new risks related to digitalisation.
 - - ✓ Kind of agreement : collective agreement, individual agreements, code of conducts, etc
 - ✓ Scope of the agreement : only salaried workers or also self-employed workers, contingent workers , etc.
- Involvement of other stakeholders in the process of restructuring linked to digitalisation

18. Policy pointers suggested by the social partners in the field of.

- Tripartite social dialogue
- Social dialogue at sectoral level
- Social dialogue at company level

ANNEX 2. LIST OF NATIONAL REPORTS

BERGSTRÖM, O. (2019). *Adopting new technologies in the workplace: A human oriented bottom up approach at a Swedish manufacturing company. Sweden.*

DI NUNZIO, D. (2019). *The case study at Monte dei Paschi di Siena.*

FRANSSEN, M. (2019). *“Is there anything I can help you with?” Modernisation through digitalisation: the case of Hotel Alban.*

HARBECKE, T. & MÜHGE, G. (2019). *Hamburger Hafen and Logistik AG*

LEONARDI, S. (2019). *The case study of Lamborghini.*

MÜHGE, G. & HARBECKE, T. (2019). *Supporting co-determination in restructuring: the experience of “Arbeit+ Inno>ation” (Work and Innovation).*

REGO, R. & APOLINÁRIO, S. (2019.a). *Case study: Portuguese Bank.*

REGO, R. & APOLINÁRIO, S. (2019.b). *Case study Volkswagen Autoeuropa.*

ROCHA, F. & DE LA FUENTE, L. (2019.a). *Spanish Insurance firm.*

ROCHA, F. & DE LA FUENTE, L. (2019.b). *Spanish Naval.*

TEISSIER, CH. (2019). *Transforming a traditional business model in a digitalised world? The case of La Poste Group.*

TERZYSKA, E. (2019.a). *Case study’s report on the Pharmaceutical Company Sopharma Group.*

TERZYSKA, E. (2019.b). *Case study’s report on the Bulgarian Posts Plc.*