

INCODING case studies reports

**Artificial Intelligence and Algorithmic Management at work:
A case study approach on the role of Industrial Relations in Spain**

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PREFACE

The INCODING project is a two-year project supported by the European Commission, Directorate-General for Employment, Social Affairs, and Inclusion, receiving funding under the call for proposals SOCPL-2021IND-REL aimed at improving expertise in the field of industrial relations.

The INCODING is a joint project of 5 partner organizations from five countries. The aim of the project is to analyse the role of collective bargaining and other forms of employee involvement at workplace level in (co) governing the black box of Algorithmic Management (AM) with a view to identify the main challenges for workers and their representatives, and explore its contribution to Inclusive AM understood as the turn to more transparency in the design and implementation of Artificial Intelligence (AI) based systems at company level and guaranteeing human oversight of automated processes. Moreover, the project also aims to learn from best practices, develop collective bargaining strategies and provide recommendations for trade unions, workers' representatives and employers negotiate the conditions under which AM and AI systems are used.

The first phase of the project consists of gathering existing information on the role of collective bargaining in governing Artificial Intelligence and Algorithmic management systems. The output of this activity is the publication of four national (DK, ES, GE and HU)¹ stock taking reports summarising the state of the art in each country, paying attention to the sectors where company case studies have been selected, and one stock taking report summarising the state of the art in relation to legal and social dialogue development at EU level.

The second phase of the project consists of empirical qualitative research of two companies (in two sectors) where artificial intelligence and algorithmic management is used by the company. At supranational level, fieldwork consists in the analysis of positions, views, and discourses of relevant actors in relation to artificial intelligence. The output of this activity is the publication of a set of national reports and an EU-level report presenting the findings of the two company cases studies and the analysis at EU level.

1. INTRODUCTION

For the specific context of Spain, the public debate on the labour market implications of AI in Spain has focused mainly on its impact on employment relations and conditions, though with a narrow emphasis on the employment misclassification of platform food delivery workers, provoking a judicialization of labour conflicts in the sector. This issue was addressed by the Ministry of Work and Social Economy and the social actors in May 2021 to regulate Royal Decree-Law 9/2021 (known as 'Rider Law') guaranteeing the labor rights of people dedicated to delivery in the field of digital platforms. Even though this law was officially promoted in the face of the acceleration of platform economy, with regard to AM and AI systems it contained a second article through which the Work

¹ INCODING Stock taking reports available at: <https://incoding-project.eu/country-stock-taking-reports/>

Council was authorized to be informed about the parameters, rules and instructions on that algorithms and AI systems use in decision-making, and that may have an impact on working conditions. Among others, this concerns questions related to access to and maintenance of employment including profiling of workers and applicants. This part of the law is not limited to the platform delivery sector but covers all private sector companies, enforcing as well the role of collective bargaining at the company level (concretely the role of workers representatives) to supervise the use of these technologies (Molina et al., 2023).

Since then, the interest of social actors (particularly unions) in the collective governance of AM and AI-systems at work is growing (Godino et al., 2022): UGT union has recently published a document warning of the risk involved in the implementation of these technologies without union control. This document also contains a series of recommendations to guide representatives on how to request information on the use of algorithms and AIs from companies (UGT, 2023). In other words, to guarantee and facilitate the right to information on the use of these technologies regulated in Royal Decree-Law 9/2021. Numerous media have reported on this publication, marking the first anniversary of ChatGPT's launch by OpenAI, since this technological innovation has sparked significant interest among the Spanish public, particularly concerning its potential impact on employment.

Another notable initiative on the union side was spearheaded by the CC.OO. Catalunya union. This organization was a forerunner in the practice of algorithmic information rights, as regulated by the Rider Law. Consequently, in October 2022, the work council at the food delivery platform Glovo (primarily composed of CC.OO. representatives) requested from the company's management information regarding "parameters, rules, and instructions of the artificial intelligence systems that influence employment decision-making" within a maximum period of 15 days (CC.OO. Catalunya, 2022a). This strategy has been coordinated across all sectors where CC.OO. has a union presence, creating a guide that explains algorithmic management and its potential impact on working conditions and occupational health (CC.OO. Catalunya, 2022b). This guide was accompanied by a standardized form for union's representative to request this algorithmic information from their companies (CC.OO. Catalunya, 2022c). Currently, this strategy is primarily being implemented in large companies within logistics, services, and industrial activities.

Employers' organizations were also proactive during this period of rapid technological advancement. The Spanish Association of the Digital Economy (Adigital), the most representative employers' association within the digital economy sector(s), launched in October 2023 a program for Algorithmic Transparency Certification. Adigital aims with this certification to engage companies in a commitment to transparent, explainable, and inclusive Artificial Intelligence (Adigital, 2023a). This program not only seeks to comply with the regulations of Royal Decree-Law 9/2021 but is also designed to prepare companies for the upcoming European Union Artificial Intelligence Regulation (Adigital, 2023b).

In this context, the research conducted by the INCODING project has focused on two pivotal sectors. On one hand, the illustrative activity of the logistics sector is explored, with an emphasis on a specific company within the platform-based food-delivery sector. This activity is characterized by the intrinsic use of algorithms in its business model, which significantly impacts employment conditions and work organization. On the other hand, attention is given to the industrial sector, where AI-based system technologies have been progressively integrated into a well-established and regulated work organization. Consequently, this report comprises an analysis of two case studies within these respective sectors. It includes contextual information about these companies,

highlighting their significance in their sectors. The second section of each case analyses the adoption of Algorithmic Management (AM) and AI-based systems in organizing work processes. This is followed by an examination of the potential effects on workers, and a final analysis of negotiation practices, collective action, and regulation at the company level. The report concludes with a comparative study of both cases and offers some concluding remarks.

2. METHODOLOGY

The focus of the analysis was both developments at a sectorial level and on a company level, observing potential mechanisms of vertical coordination (Godino & Molina, 2022). As agreed within the consortium, the sectors that were declared of main interest were the logistics- and the industrial sectors. Before focusing on the company level, a round of interviews with key informants on a sectorial level was conducted. These ‘exploratory’ interviews helped not only to get a clearer picture of what is happening on a sectorial level but also to discuss the appropriateness of the company cases.

The criteria for the selection of companies were twofold. In the first place, the processes and operations needed to be digitalized. In the second place, in order to assess the role worker’s representatives play in the regulation of the phenomenon the company must have a Work Council.

Concerning the logistics sector, the case of Just Eat was selected because it was the first food-delivery platform that celebrated elections for a Work Council and signed a collective agreement. Here, interviews were carried out with four members of the Work Council of Spain in two different cities. Also, from 12 to 16 December, fieldwork was conducted in the first city where a Work Council was elected. The fieldwork served mainly to talk with employees and understand how the role of algorithms impacted their experience.

Concerning the industrial sector, we selected a manufacturer of trains, metros, and trams. As agreed with the interviewees, we prefer not to disclose the name of the multinational. The factory raised our interest because of its pronounced ambition to become the first Industry 4.0 factory in its sector. In total, 13 interviews were held with members of the Work Council and workers. The reason for the elevated number of interviewees in comparison with Just Eat is the complex nature of the manufacturing process. Also, in addition to the interviews, we visited congresses related to Industry 4.0 technologies to better grasp how they impact the organization of work.

With some of the interviewees, we have conducted more than one interview. In the table 1, the positions of each interviewee and the number of interviews respectively conducted can be consulted:

Table 1. Company-level interviews during the period March 2022-March 2023 in the cities of Barcelona and Valencia.

Logistic/ Platform delivery sector	President Work Council (Valencia) (two interviews)
	Secretary Work Council (Valencia) (two interviews)
	Member of Work Council / employee (Valencia)
	Secretary Work Council city (Barcelona)
	Employee (Barcelona)
	Employee (Valencia)
Industrial sector	President Work Council (two interviews)

	Secretary Work Council
	Member Work Council / operator (three interviews)
	Operator (two interviews)
	Ex-secretary Work Council / current operator
	Ex-president Work Council / current operator
	Ex-president Work Council (until 2010) (three interviews)
	Ex-member of Work Council (until 2010) (three interviews)
	Industrial engineer
	Ex-head of Human Resource Department (until 2010)

An important limitation of both cases is the absence of a view from management. Despite various attempts to get in touch with management, our request for an interview was not responded favorably. The results of the industrial case have been presented and discussed in the National Knowledge Sharing Seminary (1/12/2023) with representatives from both the sectorial employer’s association and the union.

3. MANUFACTURING COMPANY

3.1. A.I. IN THE INDUSTRIAL SECTOR: INDUSTRY 4.0

When it comes to the industrial sector, the question of how algorithms and AI technologies are changing the organization of work becomes more difficult to answer. In contrast to the food-delivery platform – where the use of algorithms is intrinsic to the business model -, technologies in the factory are introduced in a consolidated organization of work. The introduction of new technologies mainly takes place as a part of the “Industry 4.0”-plans. Originally, this concept came from Germany, where it was heavily promoted by spokesmen from as well the State and the business world as a means to improve the competitiveness of its sector. From there on, it has been picked up by practically every European government and has become central in the formulation of industrial policies. For example, in the case of Spain, the ambitions of the government have been laid out in the ‘Strategy of Industry 4.0 Connected’. Since then, numerous factories have jumped on the bandwagon and presented themselves as Industry 4.0 factories. The factory we are studying for this project is among one of them.

As a side mark, it must be indicated that despite the popularization of the concept of Industry there exists no clear-cut agreement on what it precisely means. Through the course of the last ten years, Industry 4.0 has acquired a different meaning according to its subsector and factory. Still, what is common in the discourse is its emphasis on the digitalization of processes and the importance of data collection for decision-making. As we will see, in the case of our “Industry 4.0 factory” efforts were concentrated on the introduction of a Manufacturing Execution System (MES).

3.2. DESCRIPTION OF THE CASE

The center we studied is part of a multinational that manufactures trains, trams, and metros for railway operators. It is the biggest one in Spain and approximately employs 700 operators. Concerning its industrial relations model, the site is characterized by the strong role of the union. This is reflected in the high degree of affiliation: according to the estimates of the Work Council, 90% are affiliated with a union. In addition to its collective agreement on a national level, the site also has its own (signed in June 2022 by the management of the site and the two majoritarian unions).



3.3. THE USE OF TECHNOLOGIES AT THE COMPANY

Organization of work

As previously mentioned, the center we are studying is focused on the manufacturing of trains, trams, and metros. It does not produce material but is only concerned with its assembly. It must be mentioned that the manufacturing of a train is substantially different from the manufacturing of cars; whereas the manufacturing of cars is organized according to the logic of mass production, trains are produced in smaller batches. The clientele of the multinational consists mainly of public railway operators from all over the world. Even though the manufacturer has a catalog of several models, in the manufacturing it still needs to be modified according to technical specificities or desired layout from the client. This means that automatization at the factory has been limited and the workforce is high-skilled.

For each project, the Industrialization-department designs the process so that is manufactured according to the request of the client and finished within the agreed timeframe. Within this department, those working within the Method and Time department are responsible for the formulation of the instruction cards and the establishing the timeframes within which the workers are required to finish a certain operation (for example, painting, Through the use of tables, observation, and timekeeping this department defines for each operation the Standard Time. This is the time an operator formally has to finish the operation. In contrast, the time an operator needs to finish the operation is known as the Method Time.

Ever since the opening of the center, operators received a bonus based on their accomplishments with the Standard Time. However, in the 2000s the work council proposed to shift to a reward on a teamwork basis (*Grupos de Trabajo Integral*). The alleged reason for this was that the completion of an operation is much more a group-based activity than an individual one. Counting with the approval from management, bonuses were started to be rewarded on the group-based accomplishment with the 'Standard Time'.

Industry 4.0 plan

The years of the 'Great Recession' were difficult years for the factory. Because the number of projects at the site diminished, management decided to carry out four rounds of collective dismissals. Each one was contested through manifestations and strikes. Once recovering from the turbulent years of industrial conflict, the management opened a new cycle of investment in the year 2016. It was in this context that management communicated its ambition to become the first 'Industry 4.0'-factory of its sector. As part of this ambition, management announced the introduction of a Manufacturing Execution System (MES) developed by an external software developer. (At the time of introduction, this software was already in use at other sites of the multinational.)

Although the aim of an MES goes beyond the mere management of human resources, it did imply some changes in the organization of work for the operators. In the first place, whereas before operators were communicating their Method Times through pen and paper, now they were expected to clock in and out for each operation through a computer. This allowed managers in the workshop and back office to have real-time access to the activities of the operators. Also, operations were divided into micro-operations. Whereas before operators enjoyed a certain sense of autonomy in the way they were carrying out the work, now they are forced to clock in for every micro-operation.

“Because before... well, you were working on the whole wagon, and there was nothing that forced you to clock those hours. You just did five different things, and at the end of the day, you would say: “In these two hours I did this, I did this.” Basically, you justified yourself. Not more, now we have different tasks, and there are tass of two hours, but there are also tasks of five minutes.” [Work council man #2]

In the second place, management announced the reversion of the previously mentioned GTI-based bonus back to the system where exclusively individual effort was rewarded. However, the work council campaigned against this plan through what is referred to as a ‘pact of no collaboration’. In the following section, we review the role of the union.

3.4. THE ROLE OF THE UNION: CONTESTING INDUSTRY 4.0?

In the first place, it is important to indicate that the Work Council does not have a ‘Ludistic’ position when it comes to the use of technology. Members of the Work Council even have said to embrace technologies because of their benefits for production. For example, they celebrated how virtual reality has helped to train welders and prevent failures in the phase of testing. Because of the high-skilled character of the work, there is no fear of automatization and job loss. On the contrary, the introduction of automatic welders has been labeled as a necessary investment for the in-team delivery of the vehicles to the customer.

The absence of regulation of technology in the collective agreement is another indication that it is not a priority of the Work Council. The current collective agreement does not foresee any participation of the workers' representatives in the introduction and deployment of technology: the management is merely required to inform the Work Council of its introduction.

“The organization of work is always a matter of the company. We’re not in the codetermination system of Germany. So, the only thing they’ll do is inform us: “We are going to do this.” And that’s it. What do we say? “Listen, will it affect us in any way? Yes, or no? Inform us and do whatever you want.” That’s it. Will it have an impact? We’ll see it in the future.” [Work council man #3]

This does not mean that all aforementioned changes in the organization of work were met without criticism, However, it was never so much the technology itself but the side-measures that were the focus of conflict. The reduction of autonomy is considered as a degradation of working conditions. The Work Council took an even more critical position with the reversion of the group-based bonus system to an individual one. Alleging that the current instruction cards and “Standard Time” as elaborated by the Time and Methods departments are no accurate reflection of the operations, the Work Council responded through the “pact of no collaboration”:

“What we were saying is “if we follow the instruction cards as they are written right now, I am going to do precisely what the instruction card told me to, with the material it tells me to and the time it gives me to.” With the result that the vehicle never will be finished. They’ll ask: “hey, why didn’t you assemble this part of the vehicle?” So, I’ll say: well, it doesn’t appear in the instruction card...” [Work council man #1]

In this case, the union-orientated attitude of the workforce and management dependency on their skills leveraged the Work Council the resources to successfully contest the measure. Since then, management and the Work Council agreed that all operators receive the bonus independently of the efforts. The result is a divergence between the official policy of the company and the reality on the shop floor. A final agreement on the role of Times and Methos and the organization bonus system has been postponed to the previous collective negotiations.

3.5. THE BLACK BOX OF THE MES

As previously mentioned, technology as such has never been a priority of the Work Council. Hence, what precisely the hidden features of the Manufacturing Execution System are and how it could pose a threat to working conditions were matters that the Work Council never really worried about. Even though it is clear that through its continuous interaction with the MES the operator leaves behind lots of data, the question of what happens with this data has never really been asked out loud until the interview.

At the same time, members of the Work Council do recognize that data plays a role in the strategies of management. For example, as already mentioned in the previous section, it has occurred that the “Standard Time” is based on data from other sites in Europe. Nevertheless, as recognized by the Work Council, this generalization does not take into consideration other factors, such as the quality of the production process or the state of technology that is being used.

“Well, there was a change... a quite substantial change regarding timelines and work methods. Because those of us who have been here for many years had a very clear understanding of how long it took to do certain things. I'm talking about my own experience, because that's what... To do the wiring from top to bottom took me twenty-four hours. You now go, and the wiring to pass it underneath takes twelve hours, right? But why? Because there is no method behind it that supports the time or the process or anything. The only thing they've done is that, if it takes 15 in Rochelle, then here it has to be done in 12.” [Work council man #1]

Also, as in the case of other multinationals, Assignment of projects is decided at this level, of the multinational, and the different manufacturing sites are engaged in an intra-company competition. Hence, management at the top level uses benchmarking as an input for decision-making. In the past, data on productivity on other sites has been used to put pressure on the site in Spain where, for example. Also, it has been mentioned that management uses benchmarking to tackle proposals from the work council during times of collective negotiations:

“I don't know how they do it. Everything that we ask for is measured along the “hourly rate”. And what we say is: “We do not measure in not in terms of numbers, we measure in terms of rights.” Also about time, the time that I will be resting. I am not going to... What I want to do is work less and earn more. Because the company earns every day more. But they measure, and I don't know how, but everything seems to affect this “hourly rate”. [Work council man #2]

However, the question of to what degree algorithms and AI play a role in this remains open and has become impossible to answer. As already mentioned, it was precisely for this reason that the legislator now authorizes Work Councils to be informed on the use of algorithms that impact working conditions (art. 64 d) of the Workers Statute). Nevertheless, at present times the Work Council does not have the priority to request this. The alleged reason for this was other priorities.

4. PLATFORM DELIVERY COMPANY (JUST EAT)

4.1. CONTEXT

The pandemic has been a turning point in the rise of digital platform-based delivery service companies. Confinement measures, limited restaurant hours, the boost in remote work, and the

overall digitalization of businesses and citizens explain the increase in the number of users of these services compared to before the pandemic. Thus, these companies received almost 25 million orders during 2018 compared to more than 36 million in 2020 (representing 35% of all delivery orders made to restaurants). As a result, the sector experienced a 193% turnover increase in 2020 (ADIGITAL, 2022). This trend has consolidated in the post-COVID period, thus representing a change in the consumption patterns of restaurant users: the turnover of food delivery companies reached 1,079 million euros in 2021, which was an increase of 15.9% compared to 2020 (Esade, 2022; ADIGITAL, 2022). Therefore, 50% of home food delivery in 2021 was carried out through delivery platforms (Mena Roa, 2021).

This surge in the use of delivery platforms merged the labour conflicts within the sector, with a judicialization concerning the employment status of couriers. After 50 mostly favourable court rulings, the Ministry of Labor and Social Economy promoted the Royal Decree-Law 9/2021 (commonly known as the 'Riders' Law') in May 2021 (Molina & Godino, 2022). This law ensures employment contracts for couriers and mandates workers' representatives' rights to information about algorithmic or AI based systems that influence decision-making, impacting job access, work conditions, and performance evaluation across all economic sectors. Despite corporate threats and announcements of job destruction, the total number of workers in the sector has doubled: from 5,464 in May 2021 to 10,980 in August 2022 (Esade, 2022).

In this context, delivery platform workers, often central to debates about algorithmic management in human resources, witnessed unions actively advocating for employment contracts for those nominally self-employed. The argument was that algorithmic management leads to a dependent and hierarchical relationship. As a result, some companies in Spain, such as Just Eat, began negotiations to address these concerns. Notably, Just Eat was the first delivery platform to establish its own network of couriers with employment contracts, even before the enactment of Royal Decree-Law 9/2021. The company made this decision based on "its firm commitment to regulatory compliance, the generation of quality employment, and the sustainability of the platform business." This was a significant shift from their previous employment strategy, which largely relied on Temporary Agency Workers (Just Eat, 2020).

This company, founded in Denmark in 2001, was the first to enter the food delivery sector in Spain in 2010 and is now present in over 90% of the national territory. The company is divided into two legal entities: on one hand, Just Eat Spain is the Marketplace division, which includes corporate services (Finance, HR, Sales, etc.) with 400 employees in 2022. The second entity of the company is Takeaway Express, the Operations division responsible for coordinating and planning delivery activities, with about 2000 couriers hired directly. In addition, nearly 50% of delivery operations are carried out with personnel external to the company (Factor Humano, 2022; EFEagro, 2022). However, high turnover within the company makes it difficult to determine the total number of workers. In fact, members of the work council in Valencia estimate this figure to be between 3000 and 4000 workers. Just Eat was positioned in 2021 as the second-largest home food delivery company in Spain in terms of user numbers and the first based on digital platforms (Mena Roa, 2021). However, this position fell to fifth place in 2023 (second if only counting delivery platforms) (Statista, 2023).

While Just Eat does not have worker representatives at the national level, the main work centres do have local company work council. For example, this is the case in Valencia and Barcelona, each with 9 representatives. The absence of a sectoral collective agreement covering delivery activities was one of the main drivers for negotiating a company-level agreement for Just Eat to adapt Spanish labour legislation to the demand-based platform work model. After the enactment of the 'Riders'

Law', the management and trade unions reached an agreement on December 17th, 2021. This collective agreement was negotiated and signed by 6 representatives of the company's management (the general manager, 2 members of Human Resources, and 3 advisors) and 7 sector-level union representatives (2 from the services federation of the General Workers' Union (UGT), 1 coordinator of digital platforms from UGT, 2 from the services federation of Workers' Commissions (CC.OO.), and 2 from the federation of services to the citizenry of CC.OO.).

4.2. ALGORITHMIC MANAGEMENT IN JUST EAT

Just Eat's work is organized on a weekly basis at a local level in what are known as "bases," which are work centres present in each major city where the company operates (e.g., Valencia, Barcelona, Alicante, and Madrid). Each local base has a manager and several local coordinators (four in the case of Valencia), who manage the daily work. Regarding the actual work process of the couriers, employees typically receive their work schedule for the week on Wednesdays or Thursdays. This schedule specifies the assigned delivery area (seven zones in the case of Valencia). Every two weeks, the coordinators change the delivery area assigned to the couriers. Additionally, in these weekly schedules, it is common for the company to include more hours than what the couriers are contractually obligated to work:

"Usually they give you more (time). Because twenty hours is not enough for... they're not enough people to work. So, they need like a support. So, they give you some more hours." – [#1 Courier in Valencia]

In other words, the company structurally plans the work for a number of hours that cannot be covered by the hours signed in the contracts of the couriers. Therefore, the use of overtime, far from being a result of adapting to unforeseen peaks in demand, is part of a planned strategy by the management of Just Eat at local level. This approach indicates that overtime is not an occasional requirement but a regular aspect of their operational model:

"We would be doing an average of 6.5 additional hours (per week). Obviously, we all want to do more complementary hours because that means having more money." – [#2 CC.OO. union representative in Barcelona]

In terms of algorithmic management, the company bases its business management on two different platforms. On one hand, Just Eat is the app accessible to users for ordering food and serving as an intermediary tool between consumers and restaurant businesses. On the other hand, the company organizes the delivering process of these orders through the Scoober platform, which is only accessible to employees of Takeaway Express². Scoober's function is managed at the national level by the Traffic Department (located in Madrid). This department supports the couriers in case of incidents related to the platform (e.g., erroneous customer location or unfeasible route suggestion), collects data generated by the couriers during their work process, and automatically generates metrics to then provide them to the local coordinators.

Couriers must arrive 15 minutes before the start of the daily shift. During this time, local coordinators provide them with the necessary work equipment: a backpack, jacket, helmet, and vehicle (motorcycle or bicycle), in case they do not use their own motorcycle. Subsequently, couriers are responsible for placing the battery in the motorcycles and checking their proper functioning. Finally, they need to scan the codes of the motorcycle and the courier. Once these steps are completed, the

² The company changed from the Slack platform to Scoober at the beginning of the research fieldwork. Based on the information gathered in the interviews, both platforms are similar, but Scoober automates more tasks.

workday officially begins. Couriers must head directly to their assigned area of the city. From that moment, when the Just Eat platform receives an order, Scoober automatically redirects it to the couriers based on their location. Usually, couriers receive orders as soon as they leave the base. Once the courier accepts the order, Scoober calculates the maximum time it should take to reach the restaurant (generally about 10 minutes). Upon arrival, they inform the app of their presence and wait until the restaurant hands over the order, a step they must also report to the app. At that point, Scoober automatically recalculates the time it should take to deliver the order to the customer (about 10 minutes also, always depending on the distance):

“There’s like a time when you came to the restaurant, how long did you wait, if it’s like ten more minutes, or twenty more minutes, and then how long did you... ..from the restaurant to the client. And the time matters. So, like, the average of all then, and they would say like: ‘you have to improve from the restaurant to the client, faster!’ Or something like this.” – [#1 Courier in Valencia]

The interviewed couriers often reveal that the automatic calculation of time based on distance does not consider any type of contingency. Thus, the courier must deal with potential delays arising from weather conditions, traffic incidents, etc., on their own. There are even structural aspects of the urban geography that Scoober ignores. This is particularly true in the case of Barcelona, a city with slopes throughout its territory except in some neighbourhoods near the sea. Routes are calculated and measured without considering the effort and the actual speed that can be achieved on these slopes. Worker representatives have repeatedly demanded that these aspects should be corrected in the algorithm, but they are not aware of any changes made by the company in this regard.

User ratings on the Just Eat platform are not considered to evaluate the performance of workers. However, Scoober does produce metrics and rankings based on the information gathered during the delivery process, primarily accounting for the time it takes for couriers to accept orders, the time to reach restaurants, and the time taken to deliver the order to customers. These metrics are provided to local coordinators at each work centre, who are responsible for coordinating the weekly work of the couriers and for live tracking of their routes during deliveries (in addition to managing equipment). The couriers interviewed often express a total or partial lack of knowledge about how these metrics are collected and calculated:

“I don’t know, I don’t ask them for many details (about the metrics). ‘Mate, am I doing well with the metrics? And hey, these metrics, what are they? Explain to me later. I don’t know how I am doing with the metrics’ (simulating a conversation with a local coordinator).” – [#3 Courier in Barcelona]

The worker representatives themselves lack information on how these metrics, which are used to evaluate worker performance, are produced. When asked how the minutes couriers have to pick up or deliver an order are determined, worker representatives perceive this calculation as an inherently opaque process to both workers and representatives. In this way, this algorithmic management turns the organization of the delivery process into something external and unknown. A member of the council in Valencia shares assumptions about how the algorithm calculates time margins, but no accurate information that has been conveyed by the company’s management or local coordinators:

“Well, I guess they must have done a study, they must have done some tests to figure out more or less how long it takes. Like on Google, they give you an estimated time of arrival. So, they calculate, well, the customer has just placed the order. It has reached the restaurant, and this guy is in Antiguo Reino (a neighbourhood in Valencia) and is three kilometres away,

so it's four minutes. [...] Everything is automated, obviously." – [#4 Courier and UGT worker representative in Valencia]

The maximum control that workers assure to have over their work process relates to the knowledge acquired over time about the location of restaurants and even the streets of customers, which allows them to carry out deliveries more agilely without consulting the platform. In any case, workers and union representatives also point out problems when they receive orders from restaurants and/or customers far away from their assigned area. This problem is exacerbated when Scoober calculates an expected time margin for the route that is less than what is realistically feasible:

"You have to be there in, say, 13 minutes, and you are 15 minutes away. So, of course, we said 'how am I going to really meet the metrics if I am in Diagonal Mar and you are sending me to La Maquinista (two different and not close neighbourhoods)?' Obviously, that way I am not going to meet the metrics." – [#2 CC.OO. union representative in Barcelona]

The interviews often point to the disciplinary role of local coordinators when they point out to the couriers an insufficient work pace, an inconvenient route, and other aspects that are followed through the metrics. These comments from the coordinators occur in real-time during the routes through Scoober's chatbox or periodically when several unsatisfactory metrics are compiled. The fundamental directive of both Scoober's algorithm and coordinators in this process is to ensure as much as possible that the working time of the couriers is effective working time. These disciplinary messages are sometimes automated and sent by email to the workers, occasionally making mistakes in the notification of delays by the workers:

"At the beginning, they sent me a lot of emails. And I told them I have never been absent, I have never been late, but why? I always clock in 10-15 minutes early to calmly get the backpack, the bike, and the phone. Others do arrive late. [...] They (the coordinators) make mistakes and you... To scare you shitless." – [#3 Courier in Barcelona]

UGT union representatives in Valencia claim that these errors in the metrics detecting delays are, in fact, intentional on the part of the company:

"You arrived at the restaurant, where they know you and they (the restaurant workers) tell you 'You just got here, right?' And you say 'Yes, yes. What's up?' And they tell you: 'Look, you've been at the door for half an hour according to the app and I'm just watching you arrive'. Of course, and that's where we realize that our numbers are not just what we see. [...] That's where we realized they were deceiving us with the metrics." – [#5 UGT Worker representative in Just Eat Valencia]

In another matter, if there is high demand and all Takeaway Express employees are busy, orders received by the Just Eat platform are automatically redirected to other platforms like Stuart, Uber Eats, or Rocket (which implement different employment models than Just Eat). In other words, the company engages in algorithmic outsourcing practices as an external flexibility strategy to quickly adapt to changing demand. Thus, while Just Eat's business model is officially based on workers with employment contracts and covered by the collective agreement, the company makes use of workers with different conditions (in companies that still use bogus self-employed workers even after the enactment of the Rider Law) to meet demand spikes.

4.3. THE IMPACT OF THE USE OF ALGORITHMS

As mentioned above, couriers are usually hired initially with contracts of 12 or 16 hours per week (concentrated mainly during weekends), to which approximately 4 to 6.5 hours of overtime are

usually added (including both mandatory and voluntary overtime). From the beginning of their employment relation, local coordinators spread the idea of accessing more fixed hours by contract if they adequately meet the metrics. This is the main corporate strategy to involve workers in the game of complying with the automatically established time margins for each delivery. Additionally, Scoober tends to send orders continuously, without a gap from the previous one:

“Valencia has approximately a thousand orders for one night. And the company has 110 workhorses (workers). So, the company keeps giving you orders while it measures your metrics.” – [#6 Courier and UGT worker representative in Valencia]

This situation prevents couriers from taking breaks between one order and another, leading to an intensification of the work pace. It’s important to note that the company agreement establishes a daily rest period of 15 minutes, but only if the workday is longer than 6 hours (unlikely in a workforce with a vast majority of part-timers). Moreover, this rest time is not paid and must be agreed upon with local coordinators, usually through Scoober’s chatbox. The alternative is to take breaks without prior agreement, which leads to penalties in their metrics. All these factors discourage workers from resting during their shift, intensifying the work pace. If couriers meet the expected standards in their metrics during the first months, they are often “promoted” with contracts for more hours (in addition to the overtime):

“The problem here is that there really are people who come in with 16-hour contracts and say, ‘look, I want a 30-hour contract’ and the company tells you ‘Well, let’s wait to see how your metrics are, let’s see how you evolve with your team’. [...] Of course, and in a way, the company uses that increase in contract hours as a promise of promotion to make you comply with the metrics.” – [#2 CC.OO. union representative in Barcelona]

These practices that discourage rest breaks represent a significant risk in terms of occupational health considering that these workers deal with urban traffic in vehicles that are particularly vulnerable to personal safety (bicycles and motorcycles). Thus, couriers and workers representatives often point to traffic accidents as one of the main consequences of this intense and non-stop work pace:

“You can’t push the machine to the max, and then have an accident. And there are many accidents. I haven’t fallen. But a lot of people have broken legs, there have been accidents on bikes, on motorcycles. You can’t stress with metrics, nor can you stress people to the point of suffocation. You have to have a minimum of common sense to make sure things are done well for the good of the company.” – [#4 Courier and UGT worker representative in Valencia]

Moreover, the demand for rush set by Scoober faces the contradiction that often orders are not ready when they arrive at restaurants. In this sense, worker representatives tend to be clear that it’s not worth playing the game of meeting metrics at the expense of personal safety:

“What I’m not going to do is put my life and my safety ahead of some metrics that aren’t real. And that have many points at which you can be delayed. For example, how long the person (who prepares the order) takes, if there are people in the restaurant, if they are full, overwhelmed.” – [#4 Courier and UGT worker representative in Valencia]

On the other hand, the company also implements practices to encourage voluntary resignations both during the summer season (when food delivery demand decreases) and with those couriers who do not meet the expected metrics. Specifically in these cases, the company reduces the amount of overtime, negatively impacting the couriers’ earnings, which pushes them towards

voluntary resignation. This is one of the factors behind the high turnover within the company, which in turn makes it difficult for union representatives to organize the workers collectively:

“The problem here is that a lot of people come and go, there are people who only come for four months, five months and then they leave. So, you know? They are new faces, it’s another new process, you know?” – [#2 CC.OO. union representative in Barcelona]

These elements hinder the possibility for representatives to organize enduring and coordinated resistance strategies that create significant counterbalances in the workplaces to modify patterns in this semi-automated management of delivery work. The constant influx of new workers and high turnover rates challenge the establishment of stable, unified efforts among workers, making it more difficult to effectively address and negotiate changes in the operational and managerial approaches of the company.

4.4. REGULATION AND GOVERNANCE OF ALGORITHMIC MANAGEMENT: COLLECTIVE BARGAINING AND NON-FORMAL NEGOTIATIONS

Just Eat has not only been an exception in the realm of gig economy companies by being the first to directly hire its workers in Spain, but it has also been the first to sign a company collective agreement with worker representatives (December 2021). The company’s management announced this agreement as a guarantee to combine technological innovation with the safeguarding of social agreements on one hand, and, above all, as a framework for clear competition rules in the sector (Esade, 2022). And CC.OO. union valued the agreement as an essential step in regulating this activity with the ambition of becoming the starting point for future standardized negotiations across the entire delivery platform sector.

Regarding aspects related to algorithmic work management, the agreement includes various clauses. Firstly, it regulates the right to privacy in the use of geolocation systems in the workplace. This section mandates the company to explain to workers the characteristics of geolocation systems and their rights to access, rectify, limit processing, and delete data. Additionally, this clause limits the processing of data obtained through geolocation systems exclusively for the purpose of controlling work process (based on article 20.3 of the Workers’ Statute).

Secondly, the agreement establishes the right to information regarding algorithms and artificial intelligence systems. Specifically, it obliges the company to inform worker representatives about the use of these technologies for decision-making in human resource management and labour relations, especially when such decisions may affect working conditions, employment access and maintenance, including profile creation (SIMA-FSP, 2021). This reflects the content already regulated in Royal Decree-Law 9/2021 (the Rider Law).

However, the agreement between Just Eat and the unions goes further, specifying that the company must provide worker representatives with relevant information used by the algorithm and/or artificial intelligence systems to organize their activity. This includes determining the type of contract, number of contractual hours, workers’ hourly preferences, and previous days off. Moreover, the company must ensure that the use of these technologies involves a minimum level of human supervision and does not collect information that could violate fundamental rights (for example, workers’ sex or nationality). The agreement also regulates workers’ right to be informed if they interact with any AI-based system (e.g., Chatbots). To guarantee these rights, the parties commit to forming an “algorithm commission” to serve as a channel for fulfilling these rights. Despite the agreement stipulating the creation of this commission within a maximum period of 90 days, it has

not yet been formed two years later. Regarding union rights, the parties agreed that in smaller cities where the company operates and, therefore, there is no work council, unions can use the Scoober' chatbox as a communication channel with workers.

5. COMPARATIVE ANALYSIS

As previously indicated, unlike the food-delivery platform where algorithmic usage is integral to the business model, technologies in the industrial sector are introduced within an already consolidated work organization. This differential element distinctly marks the comparison between the two case studies analyzed. It's true that both cases are characterized by a focus on data collection for decision-making – the factory through the implementation of a Manufacturing Execution System (MES), and Just Eat through algorithmic management executed via Scoober. However, there are two fundamental differences.

On one hand, factory workers possess a higher level of autonomy in deciding the tasks to be performed during the work process, based on the consideration of their acquired professional technical knowledge. Thus, the workers in the train factory enjoy a work environment more akin to a highly technologized workshop than an automated assembly line. In contrast, Just Eat delivery personnel have virtually no decision-making power over routes, breaks, work pace, or any other aspect of the work process. On the other hand, in both cases, there is an automated comparison between standardized timeframes and the actual time employees spend on certain processes. This is used to evaluate employee productivity also for both companies. However, while the outcome of this evaluation serves a compensatory/incentive role in the factory, at Just Eat, the metrics are used with a disciplinary intent and to promote competition among colleagues.

These differing trends are largely influenced by sectoral patterns, which highlight the differences between the two cases. This is primarily reflected in their industrial relations model. The industrial sector boasts high collective bargaining coverage and unions with associative and institutional power. Consequently, the manufacturing company under study has strong unions, high union density, and an institutionalized tradition of collective bargaining. In contrast, workers in the platform delivery sector are highly demobilized, with low union density, and lacking direct employment contract until relatively recently, resulting in weak union representation. The intense cycle of protests and labor conflicts that facilitated the regulation of the Royal Decree-Law 9/2021 was primarily possible due to, initially, a small group of self-organized workers (the 'Riders por Derechos' (Riders for Rights) union, with significant communicative power) and, subsequently, the associative and institutional power of the major unions.

Just Eat was the first company in the sector to directly hire its employees. The work council is newly formed, and unions are just beginning to design their strategies for collective action. Given this relative weakness, the workers' representatives predominantly rely on the collective action of unions at the sectoral and national levels. Therefore, it's not surprising that the first collective agreement of Just Eat was bargained by sectoral federations representatives from logistics, catering, and the digital economy within the major unions, rather than by the workers' representatives within the company.

In this context, it is indicative that the collective organization of workers at the studied factory managed to ensure that productivity bonuses were first applied based on the productivity of teams, and later, based on the overall labor efficiency of the whole factory. Moreover, this productivity

bonuses have been applied to the entire factory for years, irrespective of the performance evaluation results, pending an agreement between management and unions. In contrast, Just Eat evaluates real-time performance in deliveries not for productivity bonuses, but for disciplinary measures. These measures are individually applied, fostering dynamics of lateral conflict among employees, thereby discouraging collective organization.

6. CONCLUSIONS

One of the main challenges faced by unions in relation to the implementation of AI-based systems concerns the opacity of companies in sharing information about the use and functioning of these technologies. The inherent complexity of these systems hinders collective action and effective governance. National regulations on the right to access information about the use of algorithms provide legal coverage, but limitations in terms of competencies and real information about the use of these technologies remain. Hence, it is striking that despite the Spanish government efforts in strengthening the role of worker representatives in the regulation of AI-based systems, the effectiveness and even usefulness of the legislation at the company level is questioned.

The case studies analyzed show that established collective bargaining mechanisms can prevent situations where these technologies are used in a disciplinary and non-transparent manner. If a fundamental use of these technologies is to measure labor efficiency for rewarding or punishing, the industrial case studied shows that setting these salary bonuses collectively deactivates practices that could generate negative impacts on, for example, work pace and occupational health. However, this should not be a reason for unions at the company level to not advance in breaking down this opacity and improve their competencies to negotiate clauses that govern these technologies.

In this sense, it is important that both employers' organizations and trade unions at the sectoral level continue to enhance the importance of algorithmic transparency. Social actors have a key didactic role to advance in future collective bargaining processes. These advances can be achieved through the incorporation of more technological profiles within the teams of employers and unions to train their members, participate in negotiation processes at company level, or design sectoral mechanisms that can be easily applied in companies. In any case, these measures may be more or less successful depending on the real possibilities and attitudes of companies in each sector. That is, expecting greater reluctance in intensive and deficit activities with a weaker position of workers and unions, that base their business model on parallel activities of extraction and trade of consumers data (e.g., the platform-food delivery sector). And greater acceptance in companies with highly productive activities, wider profit margins, higher qualification levels, and established collective action and negotiation mechanisms (e.g., the industry).

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