DIGITAL PROGRAMME
ALGORITHMS AT THE WORKPLACE

ALGORITHMIC MANAGEMENT AND WORKPLACE DIGITALISATION IN FINLAND

INSIGHTS FROM THE TRANSPORT AND LOGISTICS AND RETAIL SECTORS

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ACKNOWLEDGEMENTS

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This policy study examines the impacts of algorithmic management and digital technologies on traditional employment in Finland. Using two qualitative case studies on the transport and logistics and retail sectors, it analyses the firsthand experiences of workers and trade unionists engaging with these technologies day to day. A comparative analysis identifies common insights and themes across both sectors, providing a broader perspective on the effects of algorithmic management and digital technologies on workers and workplace dynamics. The final section offers a detailed set of recommendations for policymakers and trade unions, aimed at guiding the technological transformation of workplaces in a manner that benefits both workers and businesses.

"While digitalisation and algorithmic management have the potential to increase efficiency and productivity, their implementation has frequently led to increased pressures, reduced worker autonomy and greater precarity."

The analysis reveals several critical insights. While digitalisation and algorithmic management have the potential to increase efficiency and productivity, their implementation has frequently led to increased pressures, reduced worker autonomy and greater precarity. Where the research did unearth cases of success, where digital tools enhanced worker welfare and satisfaction, levels of trust and collaboration between employers and employees appeared to be a vital mediator. In workplaces with strong, proactive collaboration, technological tools were more likely to be viewed positively and used effectively, supporting workers to improve and work towards shared goals rather than constraining and undermining them. The questions posed by the underpinning datafication of work also loom large throughout the research; workers are increasingly involved in generating the data that algorithmic systems rely on, raising concerns not only about privacy and surveillance but also around the generation and distribution of value.

"In workplaces with strong, proactive collaboration, technological tools were more likely to be viewed positively and used effectively, supporting workers to improve and work towards shared goals rather than constraining and undermining them."

This policy study provides several recommendations to both Finnish policymakers and trade unions themselves to ensure that the ongoing technological transformation of workplaces protects and benefits workers as well as firms. These are grouped into five mutually supportive categories: enforcing transparency and disclosure; extending legal powers and protections; building individual and collective capacity to act; steering technology implementation; and anticipating long-term trends. These recommendations build on Finland's strong tradition of social democratic legislation and workplace democracy, aiming to adapt these principles to the challenges posed by modern digital technologies.

While focused on Finland, the analysis concludes by acknowledging that many of the deeper issues unearthed by the work, and the larger trends of technological transformation they are bound up in, cannot be addressed at the national level alone. EU policy is a vital foundation of national action, and our colleagues in Brussels must use the opportunity afforded by this and similar research to continue their leadership in technology regulation. Our companion study, bringing together the findings from the Nordic studies in this series, offers guidance on how this might be done.

INTRODUCTION

INTRODUCTION

Technology and digitalisation promise a wave of workplace productivity, efficiency and security. We are told that increasing automation will reduce the strains of unfulfilling tasks, creating space for human capacity and ingenuity to flourish. In particular, algorithmic management – the use of algorithms and artificial intelligence (AI) to direct and control workers[1] – has been identified as a new path to "seamless" workplace optimisation.

However, while this narrative is no doubt alluring, the reality is far more complex. While the digitalisation of workplaces holds undeniable potential – and has brought about real benefits in a number of domains – its effects have been far from harmless. Driven by the competitive logic of global capitalism, the development and deployment of workplace technologies can act as a ruthless force, imposing strict pressures, greater precarity and reduced autonomy on workers in the name of increasing profit.[2] But it doesn't have to be this way. The march of technological progress is not preordained, and a future where digital tools can support rather than undermine workers' agency and welfare, while still generating significant gains for businesses, is possible.[3]

"At least in theory, the Nordic countries seem better placed than most to realise such a future, where technological development is steered collaboratively by labour and capital for mutual benefit."

At least in theory, the Nordic countries seem better placed than most to realise such a future, where technological development is steered collaboratively by labour and capital for mutual benefit. However, to understand the potential opportunities offered by the Nordic model of workplace democracy in channelling technological progress, and the threats posed by new technologies to this widely praised

arrangement of labour relations, we must first understand the reality on the ground today.

This study – focusing on the national context in Finland – is part of a series exploring the impacts of algorithmic management and digital technologies on workers across the Nordic region. Sibling studies in Sweden and Norway have also been conducted, along with a theoretical overview of algorithmic management in workplaces.[4] A synthesis report unpacking the implications of the Nordic findings for the EU as a whole is forthcoming.

"Given the more longstanding history of labour organising in the Nordic countries, action in traditional workplaces to address the impacts of emerging technologies may be more feasible in the shorter term, and capable of acting as a demonstrator for the wider European economy."

While algorithmic management is most commonly associated with the platform economy,[5] these studies focus on the use of digital technologies in traditional workplaces. The use of algorithmic management in platform work has thus far received the most attention in research, including via other studies published by FEPS.[6] However, the increasing "platformisation of work" in traditional workplaces,[7] along with wider trends of digitalisation and the spread of algorithmic management,[8] warrant attention. Additionally, given the more longstanding history of labour organising in the Nordic countries,[9] action in traditional workplaces to address the impacts of emerging technologies may be more feasible in the shorter term, and capable of acting as a demonstrator for the wider European economy.

These country studies take a qualitative approach, using semi-structured interviews to gain a more granular understanding of the experience of workers and union representatives engaging with these

technologies. These findings act as a complement to another stream of work within the programme, which has used mass surveying across the Nordics to gain a more expansive but high-level view on the topic.

"A set of recommendations are offered to national policymakers and to trade unions themselves, to inform how the technological transformation of workplaces can be directed in a way that benefits both workers and businesses alike."

The policy study proceeds as follows: the first section offers background information on algorithmic management technology, along with the two pillars of co-determination and collective bargaining as a model of workplace democracy. More detail is then offered on the national context of Finland for these domains to provide context for the work. The second section outlines the findings of two sectoral case studies, one conducted on the transport and logistics sector and the other on the retail sector. In each case study, a brief sectoral background is offered, along with a summary of the technologies used and an integrative analysis of core findings. The third section then conducts a comparative analysis of the case studies, identifying common insights and themes across both sectors. Finally, a set of recommendations are offered to national policymakers and to trade unions themselves, to inform how the technological transformation of workplaces can be directed in a way that benefits both workers and businesses alike.

BACKGROUND

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Algorithmic management and digitalisation

This section gives a preliminary overview of algorithmic management and digitalisation in the workplace. To avoid duplication, it eschews a full review of the literature, and readers interested in a deeper theoretical background on the topic are directed towards the companion study published by our colleagues Bonn Juego, Tereza Østbø Kuldova and Gerard Rinse Oosterwijk: "Algorithms by and for the workers: Towards a fair, democratic and humane digitalisation of the workplace".[10]

"These enhanced technologies promise employers the opportunity to gather and leverage increasing insights into their business and workers, and optimise for efficiency through automated or semi-automated decisions."

Algorithmic management refers to the use of algorithms – computer-coded processes – to control workers. This control can take many forms, from coordinating labour through the use of algorithmic systems to performance evaluation and even hiring and firing. Modern algorithmic management systems draw on the use of AI technologies, such as machine learning. These enhanced technologies promise employers the opportunity to gather and leverage increasing insights into their business and workers, and optimise for efficiency through automated or semi-automated decisions.[11] While algorithmic management is commonly associated with platform work, where it is used to assign work tasks, direct work and evaluate performance,[12] it also now permeates a variety of more traditional workplaces.[13] For example, algorithmic management systems have been increasingly used to allocate and optimise work shifts, to screen and assess job applicants, assess employee performance, and even

address HR matters. This has sparked legitimate concerns about workers' rights and welfare, leading to a number of these functions being explicitly referenced in the EU's recent AI Act as "high risk", a categorisation carrying strict obligations around the use of AI systems.[14]

"Algorithmic management systems have been increasingly used to allocate and optimise work shifts, to screen and assess job applicants, assess employee performance, and even address HR matters."

Algorithmic management systems rely on data to function. As such, they are underpinned by the related phenomenon of increasing workplace digitalisation and the rise of data-driven technologies.[15] Digitalisation denotes the move from analogue to digital systems in the workplace. This change is usually accompanied by "datafication",[16] a process where various aspects of workplace activities, including regarding workers themselves, are transformed into analysable data.[17] Examples of digital workplace technologies can include workplace surveillance tools, stock management systems[18] and digital HR platforms.[19] This wider array of data-driven digital workplace technologies are related to but discrete from algorithmic management systems, as they do not themselves make managerial decisions or recommendations affecting workers.

This study will take a broader approach to examine both algorithmic management in the strict sense and the wider use of digital tools, which have a significant impact on workers. This is a deliberate expansion of scope from the "strict" definition of algorithmic management outlined above and has been decided upon for two reasons.

"Algorithmic management, digitalisation and datafication are highly intertwined processes, and one cannot consider responses to the former without the latter."

Firstly, algorithmic management systems do not, and in fact cannot, operate alone. They rely heavily on the huge amounts of data being collected in workplaces. Algorithmic management, digitalisation and datafication are highly intertwined processes, and one cannot consider responses to the former without the latter; the data collected acts as an input, which acts as a base layer for building and iterating algorithms.[20] Thus, it is paramount to draw attention not only to the impact of algorithmic management tools, but also more widely to look at this base layer and discern what the existing algorithms are basing their decision on, how this data is in fact created, and how actions are made "legible" and standardised.[21] Furthermore, focusing on the creation of this data layer allows for anticipatory action by considering how data might be used to create new algorithmic management practices.

Secondly, there is often a blurred line between the implementation of other workplace technologies and true algorithmic management systems. Our research highlighted that workers themselves often could not distinguish between different forms of workplace technology. Additionally, the creep of increasing algorithmic management takes place in the context of longer-running trends of workplace digitalisation and datafication.[22] Pre-existing technologies can create openings for the later use of algorithmic management, both through upgrading – as is seen by the addition of AI functionality to common tools, such as Microsoft Teams[23] – or simply through adjusting worker expectations to the increasing encroachment of technology. Finally, when we consider technologies from the perspective of the rights and welfare of workers, what matters is their *impact*. Many technologies, which cannot strictly be classed as examples of algorithmic management, can nonetheless have significant effects on workers and the workplace environment. Adopting too narrow a scope risks undermining joined-up action targeting all technologies that significantly affect workers' lives.

"The creep of increasing algorithmic management takes place in the context of longer-running trends of workplace digitalisation and datafication."

We thus argue that algorithmic management should be considered as a particular and more extreme extension of a longer-running process and logic around the use of workplace technologies, rather than a categorically different phenomenon.[24] Given this, it is important to consider the wider context of digitalisation and datafication, as well as specific cases of algorithmic management. While this policy study thus adopts the framing of algorithmic management, the analysis should also be taken to encompass other forms of digital workplace technologies and the processes involved in their development and deployment.

"The case studies illustrate how workers are increasingly embedded in and directed by a growing mass of data, while, at the same time, becoming not only service deliverers but maintainers of these new digital systems by producing data they require to operate."

At the same time, it should be acknowledged that algorithmic systems, and in fact all workplace technologies, are not independent objects. Technology and data are sociotechnical systems, embedded in specific contexts and unable to work "by themselves".[25] All tools need people to develop, deploy and upkeep them, and the contexts they are developed and deployed in matter. In this sense, the systems described and implemented in the case studies below are also stories of changes in work. They illustrate how workers are increasingly embedded in and directed by a growing mass of data, while, at the same time, becoming not only service deliverers but maintainers of these new digital systems by producing data they require to operate. Foregrounding this enmeshment of human and machine is essential, as it gestures to the fundamentally social contingency of technological outcomes; the same technologies can have widely different effects, depending on how, where and why they are used. In fact, the very shape and

functioning of these technologies themselves is a matter of human decision.[26] Rather than succumbing to a technological determinism or falling for what has been called "agency laundering" – placing accountability on the indisputable "facts" of algorithmic systems and disregarding the role of human decisionmakers[27] – analysing socio-technical systems as a whole, with views from workers themselves can return us to a place of agency, capable of enacting change. This invites us not only to tell deterministically dystopian or naively utopian narratives of technologies, but to attune to the *specific ways* in which technologies shape work and workers, and workers can shape technology.

Why focus on algorithmic management?

"Technology and its uses are never neutral. They impact power relations within workplaces, and have very real impacts on people's lives."

Technology and its uses are never neutral. They impact power relations within workplaces, and have very real impacts on people's lives.[28] Even short of the more extreme warnings of AI-driven unemployment, emerging technologies can create new demands, burdens and expectations on workers.[29] They can transform workplace environments through surveillance and meticulous planning, often designed solely with the optimisation of productivity and profit generation in mind.[30] And their lack of empathy, contextual nuance and flexibility can pose risks not only to the rights, dignity and welfare of workers, but also even to the very workplace optimisation they promise.

"When implemented effectively and in partnership with the workers affected, algorithmic management and digital technologies can create positive sum outcomes for both businesses and workers themselves."

On the other hand, when implemented effectively and in partnership with the workers affected, algorithmic management and digital technologies can create positive sum outcomes for both businesses and workers themselves. They can increase efficiency and productivity, save time and resources, improve safety, and remove potentially stressful or menial tasks from day-to-day work.

"Whether the transformative potential of emerging technologies impacts workers positively or negatively is hugely dependent on how they are designed, implemented and monitored."

Whether the transformative potential of emerging technologies impacts workers positively or negatively is hugely dependent on how they are designed, implemented and monitored.[31] However, despite the importance of active worker engagement, the recency of AI and algorithmic management in particular means they are often not well covered by existing workplace collective agreements in the Finnish service sector, and across Europe more widely.[32] To continue our example above, the addition of AI features to already used platforms, such as MS Office, has the potential to allow algorithmic management to creep into workplaces by the backdoor, avoiding the scrutiny and negotiation of collective agreements.[33]

The Nordic region has long prided itself on the uniquely cooperative relationships between workers and businesses. For countries such as Finland, which have long identified their models of labour relations as sources of national success, this is a pressing issue. If left unaddressed, algorithmic management has the potential to seriously challenge this successful system, dramatically shifting the balance of power between labour and capital in a way that will be hard to redress. Conversely, there are few places on earth better equipped to meet the challenge posed by emerging digital technologies, and realise the potentially huge co-benefits from their just and responsible implementation. Finland and the wider Nordic region can once again act as a demonstrator to the rest of Europe on workplace relations in a changing world. But to do so, they must take action.

Explainer: Co-determination and collective bargaining

"Co-determination refers to a model – or more accurately, a family of models – of workplace relations, where workers are given a meaningful role in decision-making."

The secret to successful cooperation between labour and capital in the Nordics lies in the dual pillars of co-determination and collective bargaining. Co-determination refers to a model – or more accurately, a family of models – of workplace relations, where workers are given a meaningful role in decision-making.[34] In other words, there is a more even balance of power between labour and capital, where the focus is on finding consensus through the institutionalisation of positive conflict to produce better outcomes not only for workers but for the company as a whole. Not only are workers able to enforce red lines in a manner that improves wellbeing, and thus, effort and productivity, but they also work collaboratively with firms to improve business processes.

While models of co-determination are most commonly associated with the Nordic countries, they are also present in various forms elsewhere, with German works councils providing another well-known example. What stands out about co-determination in the Nordic countries is its close linkage to one of the region's most highly lauded features: an exceptionally high level of societal trust. In the context of workplaces, this has traditionally manifested in a sense of good-faith collaboration between workers and businesses, with each trusting the other to act in what is understood to be a shared best interest.[35] Co-determination operates in practice via a number of mechanisms. These can include regular consultation of worker representatives about workplace changes through to worker representation on boards and other decision-making bodies, including the establishment of dedicated works councils.

The other pillar of the Nordic model is collective bargaining, which operates in tandem with co-

determination. Collective bargaining involves negotiations between trade unions and employer organisations to establish employment terms, such as wages, working conditions and benefits, resulting in legally binding agreements covering workers at a mass level. By contrast, co-determination involves structured negotiations between employers and employee representatives on significant operational decisions within a company, aiming to reach a consensus. While collective bargaining focuses on broad employment terms across industries or sectors, co-determination addresses company-specific operational changes, ensuring employees have a voice in decisions directly impacting them. In the Nordic countries, where even despite a recent decline unions have much higher membership and power relative to most other locations in the world,[36] this pairing has proven highly effective.

The success of co-determination and collective bargaining in delivering fairer outcomes and better working environments is unequivocal. However, it is neither perfect nor assured. Those of us outside the Nordics must be cautious not to slip so far into starry-eyed admiration that we do not acknowledge where improvements can and should be made. And more urgently, we must avoid complacency. Labour power is already under threat in Finland.[37] If new workplace technologies are allowed to shift the balance of power too far in the direction of capital, the very foundation of workplace democracy risks being undermined.

The Finnish model of workplace democracy

The Finnish model of workplace democracy is based on the complementary pillars of co-determination and collective bargaining, as outlined above.

The key legal foundation for co-determination in Finland is the Act on Co-operation within Undertakings (334/2007), commonly referred to as the Co-operation Act.[38] Enacted in 2007, this legislation requires private sector companies with at least 20 employees to engage in co-determination negotiations on significant operational changes, workforce adjustments and working conditions. In

larger companies, work councils are established to facilitate ongoing dialogue between management and employees. While public sector organisations and smaller companies follow similar principles, their procedures are less formalised.

"The Co-operation Act referenced above complements this by requiring employers to engage in negotiations with employee representatives on significant operational decisions, often influenced by the established collective bargaining agreements (CBAs)."

Collective bargaining provides a basis for broader employee participation through collective bargaining agreements (CBAs). These agreements, negotiated between trade unions and employer organisations, cover essential employment terms, such as wages, working conditions and benefits. Supported by the Finnish Employment Contracts Act,[39] CBAs are legally binding and ensure that both parties adhere to the agreed terms. The Co-operation Act referenced above complements this by requiring employers to engage in negotiations with employee representatives on significant operational decisions, often influenced by the established CBAs. This dual framework ensures that collective bargaining and co-determination processes work in tandem to safeguard employee interests.

Trade unions play a crucial role in both collective bargaining and co-determination negotiations, consistently advocating for employee rights and interests. While in Finland the elected employee representatives who participate in co-determination processes can be independent, they are commonly associated with unions. Where disputes arise, these are typically resolved through negotiation, mediation or arbitration. The Finnish Labour Court acts as an adjudicator where necessary, while the Ministry of Economic Affairs and Employment can also be called on to mediate where disputes require it. Notably, both employers and labour unions are also engaged by the government to discuss new laws relating to labour and work, in what are known as "tripartite" discussions.

Algorithmic management and digitalisation in Finland

Finland is highly advanced with respect to the use of automation and digitalisation. Finland has been a European leader in digitalisation for many years, and recent reforms enabled public institutions to automate administrative tasks and even basic decisions.[40] Automated decision-making is regulated by the *Tietosuojavaltuutettu*, Finnish Data Protection Ombudsman (DPO), which grants data subjects particular rights to demand information[41] about the process, and human participation in decisions made about them.

With respect to the use of technology in workplaces, the Act on Co-operation in Undertakings includes several provisions that emphasise the involvement of employees in decision-making processes concerning the introduction of new technologies or changes resulting from technological advancements in the workplace. Chapter 2, Sections 8-10, highlight the necessity for dialogue between employers and employee representatives to facilitate information sharing and address matters related to workplace rules, practices, policies and competence development, particularly in the context of technological developments.[42] Furthermore, Section 12 of the same chapter mandates that employers provide comprehensive information to employee representatives regarding the purpose, implementation and methods of surveillance and data processing technologies, in accordance with the Protection of Privacy in Working Life Act (759/2004).[43] Chapter 3, Section 16, of the Co-operation Act stipulates that negotiations between employers and employee representatives are required when significant changes to work duties, methods, arrangements and the adoption of new technologies occur, ensuring that employees' perspectives and concerns are considered during the integration of new technologies in the workplace.[44]

CASE STUDIES

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Approach and methodology

This study draws on semi-structured interviews with ten Finnish workers and trade union representatives across two sectors: transport and logistics; and retail. Prospective interviewees were selected via direct engagement through the local networks of the research team, and then via a snowball sampling methodology, wherein new interviewees were suggested by previous ones. In final decisions on who to engage, attention was paid to the spread of roles and work functions across the sample. The cross section was drawn to cover those working on the ground across different capacities in their sectors, and those working directly for the trade unions themselves in order to triangulate findings across diverse perspectives. Due to the work being conducted in close collaboration with Finnish trade union stakeholders, all interviewees were associated with a trade union in some manner.

Completed interviews were transcribed and then thematically coded using qualitative analysis software. An initial codebook was constructed based on the research team's expertise and initial view of the interviews, and this codebook was then iterated and expanded over the course of the analysis process as new themes emerged. Coded interviews were then reviewed and discussed by the research team to derive the policy-relevant insights contained in this policy study.

We recognise that there are wide differences between workplaces, even in a single sector. These may be in relation to firm size, geographic location or other factors. Our study is aimed to be a preliminary one that scouts out how certain technologies and their related logics work in the sector. Not all technologies and their effects are in place in all workplaces within the entire sector, and some technologies might be used in widely different ways in different companies. Similarly, given the necessarily small sample size of this work, we are conscious that the impacts identified by this sample may differ from the experiences of others. The goal of our study is to illustrate some of the logics and potential effects of digital technologies within workplaces. We do not claim that they present a unified view of all companies or workers. It is for this reason that the recommendations contained at the end of the policy study target general features of the Finnish policy and trade union landscape, which we are confident will prove useful to workers and their advocates, regardless of the specifics of their experience.

CASE STUDY 1: TRANSPORT AND LOGISTICS SECTOR

Case study 1: Transport and logistics sector

Background on the sector in Finland

The transport and logistics sector covers a range of professions dealing with the movement of goods and people. These include bus drivers, goods delivery drivers and waste disposal professionals, alongside forwarding agents; those operating the control centres, ports and supporting infrastructure enabling their movements; postal and railway workers; and seafarers. In Finland, the logistics and transport sector employs about 120,000 people, covering all modes of passenger and freight transport. This amounts to around 6% of Finland's active workforce, which is spread over roughly 20,000 different companies.[45]

The sector is covered by several different unions: the Finnish Transport Workers' Union (AKT); Finnish Post and Logistics Union (PAU); Finnish Seafarers' Union (SMU); Finnish Union of Locomotive Drivers (VML); and the Railway Salaried Staff's Union (RVL), who coordinate activities through the cooperation organisation *Kuljetusliitot ry* (Logistics Unions' Association). Our study focuses on transport workers covered by AKT, which holds collective agreements covering 18 sub-sectors across the wider industry. The union reports having over 40,000 members.[46]

Details of the case study

Sample

Five interviews were conducted to gather perspectives from stakeholders with direct experience of the transport and logistics sectors, with a focus on bus transport, waste management and commercial logistics. Given Finland's small population, interviewee profiles have been kept highly generalised to protect anonymity. These profiles are listed below, including the abbreviations used in this policy study to reference their direct quotes.

Person 1: Union expert (UE1)

Person 2: Driver, bus company (W1)

Person 3: Union expert (UE2)

Person 4: Union representative, waste management company (UR1)

Person 5: Union representative, logistics company (UR2)

Technologies used

Technology	Description	Use
Video surveillance	These are devices installed within or outside buses, waste disposal trucks and road delivery trucks to record videos of the workplace during operation	The data from these cameras is used in the surveillance of operations and to monitor any security concerns
Sensor	Sensor technology has been used in, for example, waste bins to detect the amount of waste loaded and unloaded, as well the time and location of waste pickup	The data from sensors is used to prevent overload of waste in the trucks and to plan and optimise routes for waste delivery and pickup
Tachograph	A device for recording the activity of a vehicle's driver. It is installed inside the vehicle and continuously records location, speed, distance, and driving and rest times	Tachographs function as the main mode of data generation and transmission of vehicles and their operations. They allow real-time tracking as well as vehicle (driver) specific information that can be used for monitoring and optimisation
Phone	Personal phones are used by bus drivers and other logistics transport staff to use some work-related apps and communication	These apps are used, for example, to communicate about work shifts and allow communication between employers and employees of a company. While installing apps on one's own phone is not mandatory (one can use a computer at the company site), most workers agree with the ease of using one's own phone for certain things. Workers also use non-work apps, such as WhatsApp, to communicate between themselves
Mobile device for tracking goods, colloquially called the "*Kapula*" ("relay baton")	A handheld device used to scan packages for logistics shipments	Used to track and log the location and status of shipments for real-time data on the location of goods, to aid planning and avoid lost items
Warehouse automation & monitoring system	Especially larger warehouses have gone through significant moves towards near-full automation of tasks such as pick up, sorting and intralogistics. Depending on the level of automation, the systems may incorporate, for example, robots, sensors and other Internet of Things connected devices as well as video surveillance	Automated warehouse systems have been used to increase efficiency, improve the ergonomics of workers, and keep better track of goods and work processes. Significantly automated warehouses have seen great changes in the tasks of workers, as well as presented the possibility for increased monitoring and optimisation of both workers and processes within the warehouse

Key findings

Trust matters

"Whereas extensive uses of real-time monitoring and tracking of driver performance was seen by many as a slippery slope and a constant area that needed vigilance and intervention by union representatives, this was not the case in every single company."

The use of digital technologies was found to interact with the dynamics of workplace trust in a complex way. Whereas extensive uses of real-time monitoring and tracking of driver performance was seen by many as a slippery slope and a constant area that needed vigilance and intervention by union representatives, this was not the case in every single company. According to one interviewee, one bus company demonstrated overwhelmingly positive experiences with how drivers themselves were keen to use data to improve their own driving – and simultaneously, the efficiency of the company as a whole. The interviewee identified this as being largely due to proactive collaboration with union representatives and an existing atmosphere of trust. This collaboration involved transparent and ongoing dialogue when assessing and implementing new technologies, allowing potential issues to be flagged early and fostering a sense of inclusion among the workforce. This participatory approach helped gain the trust of employees, who felt their concerns were being addressed. The company's efforts to promote a "common goal", such as improving efficiency to secure city contracts, further united employees. The company also exhibited signs of playful competition, where different branches and drivers compared their performance metrics. Rather than seeing this as overpowering surveillance or coercion – which it might well be in other cases – the union expert interviewed genuinely saw that the workers felt positively about the information related to their performance: "It felt like the base was good, that there was a good base for cooperation. There was a model that already existed and it was easy to build on top of that model" (UE2).

"This collaboration involved transparent and ongoing dialogue when assessing and implementing new technologies, allowing potential issues to be flagged early and fostering a sense of inclusion among the workforce."

Yet, despite these positive practices, a significant undercurrent of mistrust was evident in many other interviews. This mistrust was primarily related to surveillance technologies used to monitor workers, with employees expressing concerns about the potential misuse of surveillance data. Performance-based metrics and their use in individual incentivisation were also not seen as a positive development elsewhere, as can be attested to by a case in the hauling sector, where there had been a pilot of sorts that tied individual worker performance to small bonuses, but after attempts by the union to bargain for a more collective model, this had been disbanded. Furthermore, a recurring theme among workers is the presence of "stories", tales and workplace folklore about the extent of data collection. For instance, one interviewee told of a rumour circulating that a particular type of badge on workwear was recording everything – although in this case the rumour was just that, it is itself illustrative of signs of mistrust in the workplace. Drivers also noted a decreased connection with dispatch and control centres, which had shifted from employing experienced drivers to younger engineers, more experienced with technology than driving. This change in personnel, perceived as lacking real-world driving experience, heightened tensions and mistrust among the workforce:

> "This has been going towards an army style: we command you down below, while those down below don't understand anything at all. Leading through an excel [spreadsheet], I think there is not one ounce of sense in that, there would be so many better alternatives." (UR1)

Digital skills and the role of tutors

Disparities in digital skills were found to result in more technology-literate employees taking on unofficial roles as "tutors", helping their colleagues navigate new technologies. Interviewees noted the importance of such informal support networks, as workers frequently encounter new systems that are difficult to master. The predominance of older workers, many of whom were not "born with a computer in their lap", was noted as a particular driver of the need for peer assistance. From the interviews, we can conclude that one of the success factors in technology implementation is the "hidden" work of these tutors, who not only help colleagues, but also act as ambassadors, legitimising new technologies and fostering acceptance. Engaging these digitally proficient individuals early in the process, allowing them to assess and approve new systems, significantly enhances both the functionality of the technology and the sense of legitimacy among workers. In some cases, this was explicitly done through union representatives at the workplace, but attention (and compensation) should also be paid to those whose official roles this does not directly fall under:

> "If there are people who are interested in technologies, they will learn by themselves how to use them. And then we have people who are resistant to change and do not want to learn. Sometimes then if you ask a supervisor how this thing works, they say 'go ask this and this person, they know how to do it' and they might say they themselves do not know. We have different levels of skills among supervisors as well." (W1)

System fragility and lack of contextual information

"Workers frequently encounter scenarios where they must choose between adhering to flawed instructions and risking disruption and delay, or using their initiative and risking being reprimanded for not following the instructions given to them."

Interviewees reported a number of malfunctions and disruptions caused by the systems in response to unexpected events, impacting timing and efficiency. Unpredictable occurrences, such as torn barcodes, missing packages, and road blockages or weather-related events – all of which could be fairly easily responded to by humans – were noted to have disrupted digitally optimised processes, leading to delays and additional work. For example, one driver recounted how the automated route planner insisted they take a route they knew would be suboptimal due to a blockage, and a waste collector noted being required to collect bins they knew were empty. These messy features of reality are often not accounted for in optimisation algorithms, revealing a critical gap between data-driven plans and real-world conditions. Workers frequently encounter scenarios where they must choose between adhering to flawed instructions and risking disruption and delay, or using their initiative and risking being reprimanded for not following the instructions given to them. This discrepancy underscores the importance of integrating human expertise with digital systems, and underlines the division between knowledge on the ground and the types of information systems are able to read and operate upon. For example, one interviewee recounted an experiment in a small Finnish town, where an algorithmically designed public transport system failed and had to be redesigned by an experienced individual. Additionally, human errors, such as incorrectly scanned packages or misjudged routes, were noted by interviewees to cause significant problems for digital systems, challenging the common narrative that digital systems will necessarily reduce time and resources wasted through human error – rather, systems often tend to redefine tasks and move work elsewhere:

> "Yeah, the routes are made by a computer and a human, but the thing is that none of these people who do them nowadays have spent a day of their lives collecting waste. Over there they are engineers and based on their calculations they calculate what can be done. And there are things missing from there, like this thing called the Finnish winter. Even at this moment, we have drivers being late. This is like the new normal." (UR1)

Rising "data gluttony"

"The ease of data collection led one interviewee to report that seemingly anything that can be measured and tracked in the sector now is."

The ease of data collection led one interviewee to report that seemingly anything that can be measured and tracked in the sector now is. A number of interviewees expressed both uncertainty about the extent of data collection and scepticism about its utility. As noted above, the extent of monitoring created notable feelings of distrust in a number of interviewees. Even where direct surveillance has been forbidden in an array of circumstances, one interviewee noted that, given the vast amounts of other data being collected on drivers, they were essentially able to be surveilled by proxy nonetheless. A union expert expressed that the limits and infringements of surveillance were a constant issue that union representatives were dealing with. Another interviewee recounted an incident where a worker's data request took over three months to fulfil, highlighting the complexity and redundancy of existing systems, as well as the difficulty workers face in navigating them: "I don't really know a field with as many tools of surveillance as waste management" (UR1).

"The shift towards data-intensive processes has altered job roles, requiring workers to engage in new tasks, like scanning packages, which were not part of their work previously."

Despite these concerns, not all aspects of datafication are perceived negatively. A number of interviewees acknowledged that accurate data had enabled them to refute accusations such as lateness and speeding, proving beneficial in certain contexts, while data-driven approaches helped them work towards widely held goals, such as fuel savings. However, the shift towards data-intensive processes has altered job roles, requiring workers to engage in new tasks, like scanning packages, which were not part of their work previously, demonstrating the potential for technologies to create new burdens as well as improvements and efficiencies.

Role of union representatives

"Where union representatives were more extensively involved in the commissioning, development and deployment of new tools, interviewees reported a greater fostering of trust among workers."

Unsurprisingly, given the centrality of trade unions in Finnish workplaces, union representatives were found to be highly influential in mediating the impacts of new technologies. Where union representatives were more extensively involved in the commissioning, development and deployment of new tools, interviewees reported a greater fostering of trust among workers. However, interview responses revealed discrepancies in union involvement, across different workplaces and in terms of issues. For example, surveillance technologies occupied the lion's share of union activity and attention, likely because these are the most obvious threats to workers' rights and present the most visible instances of abuse where it occurs. More insidious trends of digitalisation and increasing algorithmic management were not reported to feature nearly as much in union negotiations:

"Then we had the discussion of what the surveillance system is supposed to be used for: to monitor when a person is having a coffee break or to monitor the vehicle, its systems, the cargo and safety. And then the conversation stops there quite fast." (UR2)

"The union representative and the occupational safety representative have been involved [in the introduction of a new system]. I was left with the impression that they were [...] that the employer had made the decision by themselves to use the system, but then they [the union representative and occupational safety representative] were a part of the processes and they were also trained [...] first so they got to know the system. And then it was introduced to everyone. So the employer kind of talked them over, if you can say that. And got them excited, convinced of the positives." (UE2)

CASE STUDY 2: RETAIL SECTOR

Case study 2: Retail sector

Background of the sector in Finland

Retail is an important sector in Finland. From statistics for 2021, it directly employs 270,000 individuals and indirectly supports an additional 450,000 jobs, contributing significantly to national employment.[47] Over 90% of the nearly 40,000 retail enterprises are small businesses, each with fewer than ten employees.[48] In recent years, the industry has further contributed 9-10% of Finland's gross value, and is the largest contributor to value-added tax (VAT), accounting for nearly 49% of the total VAT paid by all industries. Additionally, it ranks as the third-highest payer of corporate taxes.[49]

Employment trends in the retail sector are changing, with temporary agency workers becoming more common.[50] Part-time employment is widespread, with over 58% of part-time retail workers seeking more hours.[51]

The PAM trade union represents the service sector. The union has a collective agreement for the commerce sector, under which fall retail and retail trade.[52]

Details of the case study

Sample

A further five interviews were conducted with retail workers and trade union experts covering the retail sector, spanning both those working in frontline stores and stock warehouses. The profiles of the interviewees – again generalised for anonymity – are listed below, including the abbreviations used in this policy study to reference their direct quotes.

Person 1: Union representative, supermarket group (UR3)

Person 2: Worker and union representative, retail warehouse (UR4)

Person 3: Worker and union representative, retail warehouse (UR5)

Person 4: Union representative, supermarket group (UR6)

Person 5: Collective bargaining specialist, trade union (UE3)

Technologies used

Technology	Description	Use
Video surveillance	Video surveillance is nearly omnipresent in stores, sales floors, stock rooms and possibly outside the premises for car parks and delivery areas to record and store video data of operations	Footage from surveillance cameras is used to monitor any security concerns to prevent theft and security breaches
Till data	Tills are signed into with worker-specific, individual IDs. The tills collect a myriad of data: what was bought; when it was bought; how long an interaction took; and who was at the till	Till data on goods can be used for tracking sales and making predictions on necessary purchases and inventory, while data on the number of customers and the speed of transactions can be compiled to make predictions of, for example, the number of workers needed or tills that should be open at a given time
Electronic access control	All-encompassing electronic access control systems − credentials, key fobs that track and control access − are prevalent. In most cases, fobs and credentials are personalised and allow for access and tracking on an individual level	Where larger systems of electronic access control are in use, all personnel have their own key fobs or key cards. Data use and tracking based on these can vary
Self-checkouts	An increasing number of supermarkets have replaced a small number of checkouts with self-service ones, where customers themselves scan items and pay by themselves	Self-checkouts are supervised, customers are aided when needed and random checks are performed by those working at tills
Automated and predictive staff shift-scheduling tools	Recent years have seen pilots and more extensive roll-outs of automated and predictive shift-scheduling tools. Based on data on customer volume and speed of transactions from tills, the systems are able to make recommendations on how many people should be working on a shift and how many tills should be open at a time	The shift predictions can be used to create shift schedules for coming weeks and optimise the number of staff working at a time. There have been pilots of using fully automated shift scheduling, but the more prevalent use seems to be combining manager discretion to finalise shift allocation
Portable inventory tracker	A portable handheld device used for inventory management, carried by a large part of the workers in the store	These devices help the employees in performing inventory checks and reporting the inventory data. Whereas before inventory was done in one go, the devices enable more continuous monitoring of inventory
Phones	Personal phones are used to access workplace apps used in the supermarkets	There are several apps being used to improve communication and collaboration between managers and store workers in the retail stores. These range from applications that communicate your work shifts and where you can pick new ones, to apps to record information about HR matters and social media like internal company platforms for communication
Inventory monitoring and ordering systems	Centralised digital system for stock tracking and management	Larger supermarkets are especially data driven, also on the inventory side, and able to make predictions and recommendations for ordering inventory based on till data and store inventory data
Warehouse automation and monitoring systems	Larger warehouses in particular have gone through significant moves towards near-full automation of tasks such as pick up, sorting and intralogistics. Depending on the level of automation, the systems may incorporate, for example, robots, sensors and other Internet of Things connected devices, as well as video surveillance	Automated warehouse systems have been used to increase efficiency, improve the ergonomics of workers, and keep better track of goods and work processes. Significantly automated warehouses have seen great changes in the tasks of workers, as well as presented the possibility for increased monitoring and optimisation of both workers and processes within the warehouse

Key findings

The work of data production

As noted in the introduction, algorithmic management systems cannot operate in a vacuum. They rely on vast amounts of data to function, and this data must be collected somehow. While the production of data by workers was a recurrent theme throughout the research, the retail sector in particular highlighted how the very workers who themselves were controlled by algorithmic and digital systems were increasingly turned into the sustainers of these systems. Interviewees identified various technologies that generated or collected data, from surveillance and digitised stock management systems through to algorithmic shift-planning systems, drawing on till data, and even self-guided HR processes requiring workers to upload and track their own data.

"The work of data production is emerging as a central tenet of work more broadly; workers increasingly generate and input the very data that, in turn, comes to dictate their working lives."

Interviewees expressed concerns around privacy and surveillance, with respect to this expanded data collection, with one discussing surveillance technologies and noting that "we have discussions every year, what is the purpose of this". However, perhaps even more interestingly, the interviews paint the picture of a retail sector where the work of data production is emerging as a central tenet of work more broadly; workers increasingly generate and input the very data that, in turn, comes to dictate their working lives: "Whenever you do something in the system, it leaves a trace" (UR4).

The continuing creep of this trend was highlighted by interviewees mentioning two further phenomena. The first was the keenness of managers to expand the use of algorithmic shift-planning software. Despite chaotic results from attempting to rely entirely on the system's recommendations – which are subject to major blind spots around activities not appearing in till data or which emerge unexpectedly, such as

spills – an interviewee noted that management were highly enthused to expand the use of the system and intended to add more data to improve its accuracy. A recurrent theme throughout the interviews was the tension between the expert, contextual know-how of workers and the context insensitivity of algorithmic systems. Currently, this means that managers in retail stores have taken on roles less in generating data to feed directly to algorithms, but using their own knowledge to steer them and address their blind spots.

"The use of artificial intelligence and the use of data that underlies it does not accurately represent the everyday of what is actually going on on the ground" (UR3).

However this emergent role for management may be increasingly skewed towards expanding digital systems, rather than centring on human expertise. Our interviews imply the preferred longer-run solution to data-driven systems' insufficiency simply being "more data", and thus, gesture towards an even greater shift towards workers generating data and maintaining digital systems in the future. Interestingly, the move to centralising shift allocation through predictive systems can also be seen to harm the expertise of good managers and supervisors: whereas before they were able to use their built-up knowledge of worker preferences to plan shifts according to individual preferences, now such knowledge is not taken to account by systems: "The use of artificial intelligence and the use of data that underlies it does not accurately represent the everyday of what is actually going on on the ground" (UR3).

> "The use of artificial intelligence and the use of data that underlies it does not accurately represent the everyday of what is actually going on on the ground" (UR3).

The same can be said for the concept of "clocking". One interviewee noted how algorithmic management systems are encoded with standardised times for core activities, to then assess staffing needs for shifts. How these time standards are decided presents an interesting site of potential contest. But again it also gestures towards a new place for workers in increasingly data-driven organisations; even the most basic, digitally detached tasks are no longer "just" work, they are assessed and used as inputs to better train and expand digital systems. As the enthusiasm for these systems' expansion shows, it appears likely that this dual function of even non-digital activity will only expand:

> "We know that stocking toothbrushes and lip balm tubes onto shelves is different from stocking ground beef packets. Different product groups are different. This means you should clock times for each one separately, you can't take a lump sum of time. Our conversation with the employer stopped when I started asking for this information that they themselves know they don't have." (UR3)

Increased platformisation and reduced human involvement

As an apparent early adopter of algorithmic and wider digital technologies, indicators of the platformisation of work presented far more strongly in the retail than the logistics sector. Shift planning has been increasingly automated, with an AI-driven shift planner, which generates recommendations for shift rotas based on till data playing an increasingly central role in workforce allocations. Despite none having concrete evidence to this effect, two interviewees reported suspicions that increasing use of the system led to shorter and more fragmented shift allocations, with workers feeling

as if they were handed an inadequate number of hours to sustain themselves on the basis of their default allocations. If accurate, this phenomenon is perhaps intertwined with reports of the increasing creep of "flexible" shift picking via apps on workers' personal phones. Many core HR functions were now also reported to be carried out via a digital platform, where the onus was shifted onto workers to enter and track their development progress and direct their own participation. Similarly, in these cases, the trend appears to be towards ever-diminishing involvement of the humans who would traditionally have taken roles of personal responsibility, with the outsourcing of tasks and decisions either directly to the machines themselves, or onto workers via digital platforms as mediators.

> "I think the trend is maybe difficult to see but interesting to think about, that what is the flexibility required from a worker — if there is a mass of people that the employer can call on ad hoc via the phone, what kinds of opportunities does this offer the employer to 'cut slack' in work shift planning?" (UE3)

In the warehouse, the extent of the algorithmic management system extends even further to performance management, with one interviewee reporting management intervention based on not meeting targets around speed. Similarly, the idea of "clocking" the work planning system, namely, entering standardised timings for key activities into the system to facilitate its planning show that the rigid and exacting expectations placed on platform workers have the potential to infiltrate further into these more traditional workplaces.

The interviews unearthed a seemingly strong commitment to expand further in this direction by management, even in the face of initially problematic

results. For example, the predictive shift-planning system mentioned was noted to have led to chaotic results when its recommendations were followed without human modifications. By only drawing on data from tills, the system fails to capture the wide array of activities necessary to keep the store running, nor can it respond to unexpected events such as spillages requiring immediate attention. These shortfalls have led to the return of some human oversight of final staffing decisions; however, the eagerness by management to extend the use of the system more widely and integrate additional data, as reported via the interviews, indicates this concession is one of pragmatic necessity rather than a real commitment to "human in control" operating modes. Yet, there are also signs of a different direction as well: in one case, a union representative reported the use of "autonomous" shift planning, where larger and direct worker involvement in final shift decisions that were initially calculated by predictive systems was seen as a competitive advantage for the company and worker retention:

> "Instead of artificial intelligence, we tried collective intelligence. In a way this was giving the ball to the workers, just like in some cases in the healthcare sector where this has been tried for a longer time and where they've had good experiences as well." (UR4)

New sites of (prospective) contestation

The "clocking" of algorithmic management systems mentioned above also indicates how the digital transformation of workplaces also creates new potential sites for contestation. The idea of attaching standard times to routine tasks – and with these, expectations of compliance to these standards – has the potential to be highly problematic. Human workers are inevitably diverse,

with differences across areas such as age and (dis)ability having the potential to create significant differences when performing certain tasks. If the increasing standardisation of work practices does not remain sensitive to these differences, then digital systems will impose unfair and unrealistic expectations on many of the workers subjected to them. Emerging battlegrounds such as these will prove crucial for organised labour, but responding adequately requires a high level of awareness. Sites of contestation around and within digital systems may not always present as obviously, particularly as these systems get more advanced and the parameters of importance become more opaque. Labour representatives must remain vigilant to ensure that they do not miss important opportunities to challenge what will be increasingly influential factors in workplace conditions:

> "Yeah, the head union representative is also there, observing the situation, how it is done. In clocking we have to take into account that of course it can't be done on one person. Different workers are different. Different ages, different abilities, workers in different stages of their lives. So we can't clock things just according to the fastest and the most efficient person." (UR3)

Weariness and lack of awareness regarding contestation

"Where consultation did occur, interviewees noted that this often felt like a formality, with worker representatives merely being informed of an upcoming decision that was already set to be imposed from the top down."

Worryingly, given the need for increased contestation in the face of technological change,

our interviews unearthed both appetite and capacity for contestation that was far more limited than is arguably required. Several interviewees expressed weariness and resignation with respect to the increasing impacts of digital technologies, even as these had detrimental effects. One expressed that "this [form of algorithmically managed work] is just the way it is", and that there was thus little point in attempting to push back. Such sentiments are likely influenced by what appears to be the limited success in using the provisions of the Co-operation Act to challenge the implementation of technological systems by employers. The Act requires consultations with worker representatives on significant changes to workplaces and working roles and was reported by one interviewee to have been used successfully in a pushback against an algorithmically managed system of performance-based pay. However, a number of other interviewees noted that often the rollout of new technologies was presented as a small enough change to warrant bypassing these more significant channels of communication. Where consultation did occur, interviewees noted that this often felt like a formality, with worker representatives merely being informed of an upcoming decision that was already set to be imposed from the top down. The result of these dynamics appeared to be a sense of acquiescence; workers and their representatives seemingly accept that technological transformation may well be detrimental to them, because alternatives are deemed unrealistic.

Lack of awareness, rather than merely lack of will, provides a further (albeit complementary rather than alternative) explanation of what is going on. It was notable that several interviewees mentioned that their interviews were the first place they had really reflected on the role of digital technologies in workplaces, with one trade union representative exclaiming that the research had made them realise they should look into the matter more thoroughly – and of course, meaning that the companies should be more forthright about what kinds of systems are in place and how they function. At the same time, the motivation for thinking further and finding ways for collective action is clearly there: for example, one person interviewed was especially glad of the

opportunity to talk further on the issues because they had been recently thinking about exactly the same questions. While simply drawing attention to the emerging reality will not alone be sufficient to motivate change, it does appear to be necessary when faced with a phenomenon, the growth and impact of which may not be immediately apparent.

"It's probably not the best idea to just put our head in the sand and try to stop everything. As representatives and the labour movement as a whole we should grasp things as quickly as possible in order to ensure that [technology] is… let's say worker friendly." (UR3)

COMPARATIVE ANALYSIS

COMPARATIVE ANALYSIS

Despite differences in the specific technologies and effects identified across each sector, a number of cross-cutting dynamics were identified. These dynamics are outlined below, and point to the necessity for an overarching approach to addressing digital workplace and algorithmic management technologies.

Role creep and burden shifting

A notable theme that emerged across the interviews was the ways that digital technologies were changing the activities workers were expected to carry out day to day. It is inevitable that the specific requirements of almost any job will shift over time, and that technology bringing about changes in work is not itself a matter of concern. What is more problematic is the imposition of new, unacknowledged burdens and obligations on individual workers in the name of wider organisational efficiency. This pattern mirrors one of the longstanding critiques of the mainstream platform economy, that the perception of ease, seamlessness and cheapness for users does not actually amount to a reduction in cost or friction, but instead merely shifts cost and effort onto the shoulders of platform workers themselves.[53] It appears that workers in traditional workplaces are also now experiencing these cost-shifting dynamics, as tasks and accountabilities creep into their roles without additional pay or recognition.

For example, interviews in the retail sector highlighted that increasingly functions such as HR required workers themselves to proactively access resources and track progress via an online platform, whereas, in the past, this would have been done by a dedicated HR professional. Similarly, ordinary workers have become tasked with contributing to stock tracking via the use of new digital tools, distributing the role of a stock manager across the wider team. This digital tracking was also reported in the logistics sector, where drivers reported new requirements

to scan items for delivery themselves. As one interviewee from the logistics sector aptly put it:

> "All of this has cut down on tasks in the middle, but all of that has trickled down to the operative level. Before there were three people working on different tasks in addition to the waste truck driver, but now the driver does the work of almost three people, pressing buttons, routing and all the rest." (UR1)

Finally, the very process of digitalisation itself requires that workers develop a level of digital literacy that has not been historically required in many roles. Interviews noted that this shift has created particular difficulties for older workers, who are forced to learn how to use new tools and systems late in their careers: "Our average age [of employees] is around 50 years. Not all of us have been born with a computer in our lap. We still have a lot of people who use phones with buttons" (UR2).

Both the differences in digital literacy and skills, as well as different levels of motivation for adoption, have led to more technologically proficient workers taking on informal coaching and support roles to help their struggling colleagues. While this is an admirable demonstration of camaraderie, both this process of learning itself and the informal support around it highlight further unaccounted burdens that have been placed on workers.

It should be acknowledged, however, that there were indications of how new technologies could

actually empower workers by providing them with new opportunities for action which were not present before. For example, reports from the logistics sector that digital monitoring tools had been effectively used to respond to complaints and overturn speeding fines demonstrate how technologies can present new options as well as simply new burdens. Similarly, in warehouses, the automation of certain tasks in the long run can reduce ergonomically harmful tasks like heavy lifting. This distinction between uses of technology that expand what workers can do and those that expand what they must do (at least, without corresponding shifts in other duties or compensation) is an important consideration for policymakers and unions.

Loss of autonomy, contextual knowledge and discretion

While a number of workers reported an expansion in the tasks expected of them, in many cases, this was coupled with a reduction in their autonomy around work. This was most present in the case of logistics drivers, who reported being required to follow digitally set routes, rather than use their own knowledge to navigate their routes. The centralised shift-planning software identified in the retail case study is another example, which was reported to disregard workers' preferences around the timings and length of their shifts, all the while simultaneously eschewing the use of local manager knowledge and relationships in favour of more centralised planning.

The algorithms directing workers were often found to lack vital contextual knowledge. For example, interviews from the logistics sector noted algorithmic systems insisting drivers take what they knew to be suboptimal routes given weather or other conditions. In a telling example, one union representative from the waste management sector explained how before, when routes were written down, the drivers could use their built-up experience to, at times, skip certain pick-ups that they knew would not yet be full, making their workload more manageable while still completing the set tasks. Now the situation is wholly different, and this use of discretion has been taken away:

"Now that we have all these computers and all the like, they are constantly followed every which way. If you do not go and do the check right where the bin is, you'll get told off. So even if you know the bin is empty, you have to go drive to it. It's been empty last week and the week before but you still have to go shake the empty can. It has a GPS so you have to go right next to it. Not even if you're 300 metres away from it and click check, you'll still get told off." (UR1)

Furthermore, one driver complained that, whereas before the central controllers were also drivers with knowledge and experience of the profession, today they are just "engineers". In the retail context, the work-planning platform did not account for other necessary work carried out beyond the tills, leading to at least one disastrous experiment when it was trialled as a sole determinant of work patterns. Even in the context of centralised shift planning, small details such as which colleagues work particularly well or poorly together have been lost, and the expansion of digital stock-checking activities to all workers meant that one interviewee noted that there was now nobody who had overall knowledge of the store's stocks.

"Workers are increasingly being confined to increasingly limited and repetitive tasks, restricted in their ability to make independent judgements."

The picture painted is one of "Digital Taylorism".[54] Workers are increasingly being confined to increasingly limited and repetitive tasks, restricted in their ability to make independent judgements and constrained in the knowledge of overall work processes they are afforded. The space for professional discretion and autonomy has decreased in favour of a more centralised managerial view

based on data. Not only has this proven detrimental to workers themselves, but, in many cases, it has led to suboptimal outcomes for firms, as worker know-how has been overridden for the worse. Nevertheless, as the example of "autonomous" shift planning – giving a larger final say to workers after an initial suggestion by the system – in the retail sector shows, there are also glimmers of thinking otherwise: "There's different kinds of people in different life situations. For some weekends are ok, for some the evenings are better than mornings. [The autonomous work shift pilot] has worked for this, all were keen to continue (UR4).

Dehumanisation of work

"Rather than interpersonal relationships, one interviewee experienced a shift towards digital instruction as like "army style leadership from a distance" – a tendency also to break down more local-level managerial relationships in a shift towards more quantitatively justified centralised management through data."

The general direction of the shifts described above has been for work and workplaces to become both dehumanised and dehumanising. Most obviously, workers reported diminished sociality when digital systems were introduced. Rather than interpersonal relationships, one interviewee experienced a shift towards digital instruction as like "army style leadership from a distance" – a tendency also to break down more local-level managerial relationships in a shift towards more quantitatively justified centralised management through data.

However, perhaps more fundamental, and more insidious, was the shifts in expectations and treatment of workers. Our research noted a creeping expectation in some workplaces to be "always on" during work hours, even if this required undertaking preparations outside of work. A notable example was retail workers feeling implicit disapproval of their use of a work computer to use shift planning and other work platforms, creating pressure to instead use these on their personal phones outside of their working time. Even though several interviewees

across the sectors did agree on the general sentiment of convenience of such arrangements, it is important to stay attuned to the amount of work seeping outside the work context. This was especially prominent in the retail sector, where many also depend on picking up additional shifts to make a sufficient income:

> "Especially in retail for extra shifts they use a lot of apps and you have to have them on your own phone and in some way have to keep an eye on it if you want the extra shifts. And that is of course really burdensome from the point of view of individual workers. It's easy to just say 'don't look at the app in the evening', but if your whole income depends on getting enough hours, it's pretty obvious that you're going to keep on looking." (UE3)

Similarly, the "clocking" of work tasks on the task management platform in the retail sector demonstrates a tendency to treat workers as standardised units, with an expectation of compliance to this standardisation. The natural extensions of these dynamics were the algorithmic systems for performance-based pay referenced by interviewees in the retail sector, although luckily the reports noted that these were contested enough by unions to not yet be widespread.

In all these cases, the expectations for worker behaviour and performance in the workplace squeeze out increasing flexibility and affordance of difference, or even reasonable adjustment for carrying out enabling activities – such as shift planning – which are essential to core functions. While the Nordic cases have been nowhere as extreme, these dynamics evoke the reports of warehouse workers who are expected to function more like automatons than humans.[55] Importantly, it

should be noted that these are not only technological changes, but changes in processes, such as centralised decisions in shift planning, erasing local manager knowledge and possibilities for dialogue.

Again, however, the research unearthed evidence that the use of technology does not have to bring about these outcomes by default. In one bus depot, data collected on driving efficiency and similar metrics were gamified in a way that suited the workers to create friendly competitions over the metrics they measured. They reported an overwhelmingly positive experience in the use of the systems, and enjoyment in the comparisons and games they enabled. The crucial element here was the use of digital tools to support workers to reflect and improve, rather than impose strict expectations and pressures.

> ″There was one driver who said that it's a bit like having a co-driver next to you following and giving feedback – now it is this system doing it and the person said it was a good thing, and so does the employer." (UE2)

What is striking is that a similar scenario could just as well be described in another company as overly invasive monitoring that impinges on the autonomy of the driver:

> ″When this [tracking system that measured, e.g., fuel efficiency] came to our company, it felt like the employer was pressing the boot on us. There were three of us testing the system at first and they told us no this is not about snooping around, it's just information for the employer." (W1)

Clearly, different bases of trust and clear guidelines as to what the data collected can be used for can have vastly different reactions from the worker side.

The more collaborative and supportive use of technology that is emblematic of the positive reactions must be at the core of future regulation and advocacy, with company-level union representatives empowered and knowledgeable to guide tools in a direction that is beneficial for both employees and the wider organisation. At the same time, the use and collection of data is not a one-time thing, but rather calls for constant vigilance and negotiation of technologies used, which data is collected and for what it is used.

Role of trust

Our research identified trust as arguably the most significant mediator of workers' experiences of new technologies. This is no surprise, but rather an attestation to a Nordic model that has long sought to tie together the increases in production and collaborative, worker-friendly roll out of technologies.[56] Finnish workplaces are known for their high levels of trust in general; however, variations nonetheless exist.

"Trust was linked to a more consultative and collaborative rollout of technologies, with workers given a meaningful role in how and where technologies were used."

The cases where positive experiences of technology were identified, such as the bus driver case outlined above or the mention from several interviewees that, in general, privacy and ethical data management are important for their employer, also referenced high levels of workplace trust. Trust was linked to a more consultative and collaborative rollout of technologies, with workers given a meaningful role in how and where technologies were used. It also correlated with a far greater good-faith view of technologies, with workers reacting positively to their implementation and regarding them as beneficial additions to the workplace. The importance of mutual trust – on the side of workers that their management is acting in their best interest, but

also on the side of management that workers are best placed to know how to conduct and improve their work – is essential for worker-friendly usage of technology. This gestures to the importance of measures to maintain and build trust in workplaces through what is certain to be a time of significant transformation.

The importance of trust also highlights significant risks. On one hand, it was notable that a number of interviewees appeared to react quite unquestioningly to uses of technology and data collection in their workplaces. As mentioned above, there is a clear idea in the minds of union experts that the "data exhaust" of workers is being used for algorithmic management and building further digital tools: "Whenever you do something in the system, it leaves a trace" (UR4).

Yet, union representatives also described situations where especially the collection of data outside of more visible forms of surveillance and monitoring was seen as rather innocuous and comparable to the everyday life of surveillance of digital platforms: "One person told me that in the morning he updates his Facebook that he is now at work – so why not at the same time sign into the work application, it's not that much different" (UE2).

"Are we nowadays so much on social media, on Facebook, TikTok and everywhere that we open ourselves up so much in any case to this digital world? And what concerns me then is that we haven't really considered where this all will lead to at some point." (UE2)

"When high levels of trust are not coupled with robust and active engagement, including mechanisms for generative conflict, there is potential for detrimental change to catch workers and their representatives unaware."

In a similar vein, one retail worker's response to the prevalence of data-collecting workplace technologies was that "I use Facebook, and I trust my employer more than Facebook". While not negative, these attitudes point to the potential for complacency around the rollout of new technologies in traditionally high-trust contexts; trust has the potential to be abused or even simply enable mistaken overstepping on the part of businesses. When high levels of trust are not coupled with robust and active engagement, including mechanisms for generative conflict, there is potential for detrimental change to catch workers and their representatives unaware. Given the well-documented lock-in effects of technology use,[57] these changes can then prove hard to reverse.

On the other hand, technologies themselves can erode trust. The most obvious examples identified in our research pertained to surveillance, with interviewees in both the retail and transport and logistics sectors noting that the use of surveillance technologies was felt to overstep boundaries, undermining trusting relationships between workers and businesses. In the retail and logistics sector, the most talked about cases related to surveillance:

"[In warehouses], just like in ports they have camera surveillance. It's so precise that you can zoom in, you can zoom in and say 'hey you got a bit of salad between your teeth there' – they were so precise that we had to put a stop to it. They can be there for general security but not in this way." (UE1)

"Breaks are also followed by the same electronic access control system. The new policy was that also coffee breaks should be punched in, in addition to food breaks. This was not something the employees really like, there was a strong sentiment that the employer is surveilling, that big brother is watching all the time. For the employees it also felt like that they were no longer trusted; it broke down the trust between the employer and employees." (UR3)

Not only is this negative in itself, but it may make it harder to then act collaboratively from a shared sense of trust in the future. These related dynamics point to how quickly technology can, if improperly implemented, shift workplaces from a trusting to mistrustful equilibrium between workers and firms. An initial state of trust can leave space for poor use of technology, which erodes these very same foundations of trust for extended periods to come. If the Finnish and wider Nordic model of workplace democracy is to be protected, protections must be put in place to avoid such occurrences.

Local contingency

Our research also pointed to what were sometimes fairly significant differences in the experience of and engagement around technology across workplaces. There was evidence that regulatory requirements were interpreted differently across contexts, and that action around the use of algorithmic management and other technologies was highly dependent on the skills and knowledge of individual union representatives within workplaces. The picture painted is one of highly localised and contingent outcomes with respect to new technologies, and the potential for significant inconsistencies even under the same regulatory framework. The crux of the matter is different – even case by case – interpretations of what constitutes a large enough change to warrant cooperative discussions with employee representatives:

"It has happened so many times – which is of course a shame that it has happened repeatedly, and also that maybe I haven't been in the know – that the employer has thought that they have held cooperative negotiations about these things. And I've taken them to be like coffee discussions – preliminary and in no way deep enough. Not thinking about the harms but also not about the good sides [of these technologies]." (UR3)

The upshot of such a picture is that regulation alone will not be enough to deliver the outcomes required by workers. Even with regulatory reform, the potential for regulations to be interpreted and enforced differently across contexts shows that unions themselves must continue to play a vital role. For unions themselves, the message is one of the need for standardisation and capacity building, to ensure that all representatives are equipped with the knowledge and tools to enable them to take meaningful action to steer and challenge the use of new digital technologies. In a positive light, many of the interviewed workers, union representatives and experts had an interest in rolling up their sleeves and getting to work around these questions. As one union expert put it: "I think that yes, we have to look ourselves in the eye and do more. We could be a bit more worried about this and think about what we can do, for example through the collective bargaining agreements" (UE3).

Proposals to this end are contained in the last section.

Datafication and value generation

Finally, it is worth reemphasising the pervasiveness of datafication that was unearthed across both sectors by the research. Every interview conducted pointed to a significant uptick in the levels of data collected and utilised in workplaces, with much of this data being generated by and about workers themselves. From monitoring the driving patterns of logistics drivers through to measuring the average time taken for retail workers to perform key functions, and the distribution of digitised stocktaking, which is now present across both sectors, the nature of work has been inextricably bound up in the use and production of data.

This phenomenon is itself notable because algorithmic management and other advanced workplace technologies rely on data to function. Data thus acts as a crucial foundation for digitalisation of all kinds, and is thus useful to attend to as a potential site of action and contestation for labour. This case is further bolstered by the many concerns around surveillance, and the associated erosion of trust, which were raised in both case studies.

"This theoretical lens shines a light on a double bind for workers: increased value from their data-producing labour flowing to employers instead of increased productivity resulting in increased pay or decreased work hours; and the same data labour-bolstering mechanisms for increased control and decreased autonomy."

However, the question of value creation presents another, deeper reason to attend to the question of data generation by workers. The data generated by workers can be seen to expand "surplus value",[58] which is capable of being extracted from their labour; in carrying out their everyday activities, workers are increasingly generating double value to their employers, firstly, through producing the goods and delivering the services that are then sold on the market for profit, and, secondly, by generating data that is then fed back into the workplace to further optimise its ability to generate profit. Drawing on the Marxian conception of "dead labour",[59] workers'

labour is increasingly embodied (or "ossified") not only in what they produce or even the machines they produce these objects with, but in the machines that increasingly govern them.[60] This a light on a double bind for workers: increased value from their data-producing labour flowing to employers instead of increased productivity resulting in increased pay or decreased work hours; and the same data labour-bolstering mechanisms for increased control and decreased autonomy. On the contrary, many of the stories on optimisation and efficiency gains have led to a feeling of increased hurry and the need to do more:

> "There's like 1,500 of us in this [waste management truck driver] business and I think I know like one person who has retired with their health intact during this whole time. [...] This job eats a man and those efficiency things; they have not helped." (UR1)

Particularly in Finland's highly collaborative working culture, it is not abnormal for workers to contribute suggestions for the improvement of work practices. However, the use of data about workers to adapt workplace operations differs significantly from drawing on expert inputs *from* workers. This is most notable in the power dynamics involved. In the latter case, workers make suggestions based on their expert, contextual know-how; these suggestions are formulated by workers themselves, and can be expected to consider how improvements can benefit both workers and their employers. In the latter case, raw data is simply collected about workers – in a manner where our research implies it is often unclear what is being collected and how it is used and interpreted – and the power to use this data to formulate adaptations rests entirely with employers, or even with opaque algorithmic systems that generate suggestions via a "black box".

There are debates in the literature around whether data should more usefully be considered as a commodity or as capital itself;[61] however, it is clear that, in either case, such data holds an entirely different status than the good-faith input of workers to improvement discussions. The conundrum for AI regulators around entitlements to the value generated by systems trained on vast amounts of others' data[62] are increasingly of concern for workplaces as well.

RECOMMENDATIONS

RECOMMENDATIONS

Responding to the challenges posed by algorithmic management and digital technologies requires a multi-faceted approach, encompassing national legislation, trade union strategy and even individual capacity building. The following section outlines a series of recommendations, which we have grouped into the following domains:

1) enforcing transparency and disclosure;

2) extending legal powers and protections;

3) building individual and collective capacity to act;

4) steering technology implementation; and

5) anticipating long-term trends.

These domains are designed to address the use of workplace technologies at all levels, from shop-floor responses through to long-term policy programming. We outline each in turn below:

1 Enforcing transparency and disclosure

Transparency is a necessary but not sufficient condition for action and effective regulation. For workers and their representatives to be empowered to take action, they must be equipped with complete information. Without knowledge of what data is being gathered, on what grounds automated decisions are made or how intrusive surveillance is, contestation and redress are not possible. Formal access to information must not be hindered by high barriers to access in practice, and the potential for obfuscation must be guarded against as far as possible. To this end, we recommend the following national policy interventions:

Mandatory digital workplace audits, with the right to contest harmful systems

Regulation should be used to mandate audits of algorithmic management systems and digital tools used in workplaces. These audits should be conducted annually or at another regular interval, with employers being required to report on the digital systems used (including the parameters and metrics they draw on), the data collected, and the rationale for their use and the effects recorded. Trade unions should have the authority to review these findings, and seek independent evaluation of the impact on workers, funded either jointly with or entirely by employers. Finally, mechanisms should be explored to ensure that trade secrecy cannot be leveraged as a shield against sharing relevant information, as anecdotal findings suggest is currently the case.

"Regulation should also create concrete mechanisms to contest the ongoing use of digital systems that are shown to have detrimental impacts on workers."

Regulation should also create concrete mechanisms to contest the ongoing use of digital systems that are shown to have detrimental impacts on workers. These should provide the ability for labour representatives to pursue rollbacks or transitions to alternative systems. Such a mechanism would imply a natural extension of the roles already taken by the Finnish Labour Court and the Ministry of Economic Affairs and Employment in arbitrating and mediating disputes.

Given the uncertainty around the impacts of new technologies, and the potential for effects to only emerge over time, regular audits and transparent reporting ensure accountability around the use of digital systems, and guard against embedding adverse effects.

Evidence of meaningful human involvement

"To ensure the principle of meaningful human control63 dictates the use of new digital technologies, companies should be mandated to provide evidence of meaningful human involvement in decisions that incorporate algorithmic input."

To ensure the principle of meaningful human control[63] dictates the use of new digital technologies, companies should be mandated to provide evidence of meaningful human involvement in decisions that incorporate algorithmic input. This should include recording the rationale of human decisions and referencing algorithmic input, which should be disclosed to unions via the audits referenced above. Documenting and disclosing the decision-making process is essential to ensuring that human oversight is substantive and accountable, and avoid human participation in algorithmic decision-making collapsing into mere formality. We are aware that this risks an extensive reporting burden being placed on companies, and so work via tripartite exchange and negotiation should be undertaken to make such documentation feasible. A potential compromise position could involve companies ensuring that they are *in a position* to justify decisions involving AI in terms of human-led rationale, without recording the rationale for every decision.

2 Extending legal powers and protections

Transparency must be coupled with formal power to be effective. To increase protection and power of workers, we make the following recommendations for national policy:

Enforcing workers' data rights

EU digital legislation, especially the General Data Protection Regulation (GDPR), gives a strong backbone for the enforcement of not only the data rights of individuals but also workers. On a national level, enforcement should make sure that the collection of data about workers is kept to only what is essential and necessary; that workers have a clear, expedient and accessible way to access, correct and download data about them; and that data – especially sensitive data – about workers cannot be sold to third parties. To ensure this enforcement is carried out effectively and adequately, Finland's DPO must be made more effective. A proposal for how is outlined below.

Expand the funding and scope of the DPO

Finland's DPO receives a comparable allocation of funding[64] as a proportion of GDP to many other EU countries. However, compared with organisations such as the UK's Information Commissioner's Office, its funding amounts to a far smaller relative share of GDP.[65] This indicates reasonable room for budget increases for the DPO. Increases could be funded by dedicated levies on large firms who process personal data, to avoid competition in the national budget.

Budgetary increases should be particularly devoted to expanding DPO's private-sector guidance and enforcement unit, on the basis that the private sector is likely to see the largest and most rapid expansion in the use of new technologies; as the use of technology in workplaces rises, the demands on data protection resources will increase, and regulatory capacity must increase with it.

Budget increases should be accompanied by a review of the function and remit of the DPO, and consider how it can more actively police violations. In particular, it should engage unions and other stakeholders to explore how it can more effectively support worker representatives in workplace action.

Extension of worker protection to semi-automated decision-making

The current GDPR safeguards workers' rights with respect to fully automated decision-making. However, many consequential decisions for workers may more accurately fall under the category of

"semi-automated", in that a human remains at least formally in the loop, but the decision is significantly influenced by a previously automated process. Formal human sign-off on a largely algorithmically generated shift rota, or even set of compensation recommendations, could be examples. These decisions have been identified as a potential blind spot of EU regulation,[66] and as such Finnish authorities should consider how to protect workers subject to such decisions while EU legislation catches up.

"Many consequential decisions for workers may more accurately fall under the category of "semi-automated", in that a human remains at least formally in the loop, but the decision is significantly influenced by a previously automated process."

Two paths are available here. Firstly, there is evidence that certain national data protection authorities have chosen to interpret GDPR as also covering such decisions, with Austria being one such example.[67] The Finnish DPO could update its guidance to take a similar approach. Alternatively, supplementary national legislation might be explored. Note that proof and enforcement of semi-automated decisions will likely be highly complex, and so, will likely need to be supplemented by further steps to mandate stronger evidence of human involvement, as per our first recommendation, and a bolstering of the DPO's capacity as outlined above.

Enable unions to bring collective litigation on behalf of workers

Currently, class-action law in Finland is very narrow, only applying to consumers and allowing only cases with the Consumer Ombudsman as the plaintiff.[68] The law should be changed to enable trade unions to bring class-action cases to challenge employers in court over harmful practices. Collective litigation provides a powerful mechanism for addressing systemic issues related to the misuse of digital tools, mishandling of worker data and ensuring that workers' rights are protected on a broader scale. Collective litigation protects especially those complainants in vulnerable and precarious positions from possible retaliation at the workplace due to raising the issue in their own name, and allows possible legal costs to be borne by the party acting as the plaintiff. It also acts as a far more meaningful deterrent for lax or unscrupulous use of digital tools affecting large workforces, given the higher consequences compared with individual misconduct cases. Particularly when coupled with the auditing described above, such a legislative change would provide trade unions with a powerful tool to respond to possible harms caused by digital tools.

"The law should be changed to enable trade unions to bring class-action cases to challenge employers in court over harmful practices. Collective litigation provides a powerful mechanism for addressing systemic issues related to the misuse of digital tools, mishandling of worker data and ensuring that workers' rights are protected on a broader scale."

3 Building individual and collective capacity to act

Even where formal power and widespread information exist, these must be combined with individual and collective capacity to use them effectively. To this end, we recommend the following at the level of national policy:

Funded training and refresher courses

All firms using and implementing digital tools should be mandated to provide funded training in the use of these tools, as well as the foundational digital skills (such as computer literacy) underpinning them. Additionally, firms should offer refresher courses every one to two years. Continuous training ensures that workers are proficient in using new technologies and can adapt to changes. This enhances productivity, but also reduces the digital divide within the workforce, ensuring that older workers are not left behind and that more technically proficient workers do not need to pick up the slack of informal, unremunerated peer coaching.

An alternative approach could involve the funded training of designated peer coaches, and expanding the formal roles (including associated compensation and time allocation) of these workers to train and support their colleagues. While such an approach risks being less expansive and more liable to contextual contingencies, it enables firms to exploit the benefits of "worker champions" of new technologies; our research demonstrated that having such enthusiastic adopters on board was positive, with wider engagement and positive experience of technology, such that formalising and encouraging this process may be worthwhile.

We also make the following recommendations to trade unions themselves:

Establish dedicated data representatives in unions

Finnish unions should emulate their Norwegian counterparts by establishing dedicated data representatives within trade unions.[69] Dedicated data representatives can specialise in data protection and digital rights, ensuring workers have knowledgeable representatives to address concerns related to digital tools and algorithmic management systems. These representatives can act as expert intermediaries between workers and employers, provide support in escalating issues from the shop floor and identify links between complaints which may indicate more widespread issues.

Train union representatives on data rights and digital tools

Even with improved in-house expertise, the first line of response in the face of new workplace technologies will be union representatives embedded in the workplace. These representatives should be given comprehensive training on data rights, key pieces of regulation like GDPR and the basics of digital workplace technologies. Increased knowledge and capacity will create more consistency in outcomes across workplaces, ensuring all representatives are adequately able to address the use of technology effectively.

Foster experience sharing between unions

Mechanisms should be established for experience sharing between unions from different sectors, to ensure best practices – like the trials in "autonomous" shift allocation based initial algorithmic input – related to new technologies can be rapidly disseminated. Each union may consider selecting a responsible person to engage in these exchange activities, and these responsibilities could overlap with the new role of data representative outlined above, should this be adopted. Central unions such as SAK could leverage their position to take a coordinating role in this process, to ensure accountability for these exchanges taking place on a regular basis. Finally, tools such as UNI Europa's database of AI and algorithmic management in CBAs[70] might also be leveraged as a useful supplement to more direct local collaboration.

4 Steering technology implementation

While an effective response to the use of new technologies is important, steering which technologies are used in the first place, and how, is essential to shift from a reactive to a proactive approach to workplace transformation. To address these upstream issues, we make the following recommendations for national policy:

A precautionary principle for union consultation over new technologies

Currently, the Finnish Cooperation Law requires trade unions be consulted only on "significant changes" to workplaces and work practices. This has led to circumstances where new technologies are implemented without adequate consultation with the justification that they do not constitute a "significant change". This burden of proof is liable to undermine workers' voices in workplace changes. Instead, the precautionary principle[71] should be used to guide the rollout and customisation of new technologies, particularly with respect to worker consultation and engagement. Unions should be involved by default, unless there is clear evidence that the technology will not significantly impact

workers. Such a shift in the burden of proof will help guard against locking in negative downstream effects due to initial uncertainties over impact, which are likely to be pervasive given the speed of technological change.

Incentivise the deployment and development of worker-friendly technologies

While worker involvement in the customisation and rollout of existing technologies is essential, ideally, this should be coupled with a more collaborative approach to technology development. Given most workplace technologies are developed abroad by private companies, this will inevitably be difficult. However, the government might consider mechanisms to incentivise the deployment and even development of more worker-friendly technologies. One method could be to collaborate with trade unions and other experts to identify particularly worker-friendly new workplace technologies and offer incentives for their deployment, for example, via more favourable tax-deduction rates compared with other platforms.

"Challenge funds and other directive funding mechanisms could be used to encourage collaborative software development with worker input, promoting the creation of new, worker- friendly technology aligned with the Nordic model."

More speculatively, Finland could leverage its national digital innovation and entrepreneurship capacity to address these needs directly. Challenge funds and other directive funding mechanisms could be used to encourage collaborative software development with worker input, promoting the creation of new, worker-friendly technology aligned with the Nordic model. Even trade unions themselves could seek out collaboration along these lines with, for example, university entrepreneurship societies or technology companies. Given the increasing concerns across Europe around the issue of workplace technology, there is the potential for Finnish firms to capitalise

on what may become an increasingly receptive European market.

5 Anticipating long-term trends

Finally, as we have noted throughout this policy study, the technologies we see today are part of a wider trend of workplace digitalisation. As well as responding to discrete technologies and the issues they raise, macrolevel trends affecting the nature of work and workplaces must also be addressed proactively. To achieve this, we make the following recommendations for national policy:

Future-oriented policymaking through tripartite discussions

Future-oriented policymaking regarding algorithmic management and digital workplace technologies should be undertaken. The policymaking process should follow the Finnish model of tripartite discussions, involving government, employers and workers' unions. External experts, including the Finnish DPO, may further be included in an advisory capacity. This proactive and inclusive approach to policymaking can help to anticipate and address future challenges posed by technological advancements in the workplace, ensuring that policy reflects the needs of all stakeholders and does not leave workers exposed by rapid new developments.

We also offer the following recommendations to our trade union colleagues:

Develop proactive strategies for technological transformation

Our research shows that addressing technological longer-term trends, such as digitalisation, do not seem to feature heavily in trade unions' strategic thinking or activities. While this is understandable, unions should develop longer-term, proactive strategies to respond to and shape technological transformations, rather than merely react to discrete challenges and rights violations as they arise. Without a more anticipatory approach, unions will

continually be placed on the back foot, as technology continues to transform workplaces in increasingly significant ways.

Push to explicitly include digital and algorithmic systems in collective agreements

Trade unions should make sure that digital tools and their impacts – particularly newer, more automated systems – are explicitly included in collective agreements. The Spanish branch of the insurance firm Axa is an example here, having recently signed a collective agreement obliging management to inform workers about the use of data analysis and algorithms in their selection, assessment and career development.[72] Addressing these tools explicitly ensures that they cannot slip through the cracks of ambiguity in existing agreements, empowering unions to engage most effectively with the new realities of modern workplaces.

Analyse and build trust

The centrality of trust in the experience of new workplace technologies, and in Finnish workplace democracy more widely, warrants special attention. This trust must be fostered and nurtured proactively. This process should start from an informed understanding of the dynamics, processes and structures that are most effective at building and maintaining trust to generate a set of best practices. For example, trade unions could conduct research and analysis of workplace trust dynamics to inform measures aimed at increasing trust between workers and employers. Through such processes, resilient and collaborative relationships can be maintained, even through times of potentially significant technological change.

CONCLUSION

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This policy study provides a deeper insight into the growing wave of digitalisation and algorithmic management spreading across workplaces in Finland. Drawing on the experiences of those workers and trade unionists who are facing the firsthand impacts of these technologies, the findings underscore the critical importance of strong and proactive action on the part of labour, and the creation of a policy environment that empowers workers and their representatives to enact meaningful control over the algorithms which shape their working lives. These are no longer the technologies and problems of the future; they are already here today. Without decisive steps, the very foundations of the Finnish model of workplace democracy are threatened.

"Our sectoral case studies across transport and logistics and retail reveal the potential of algorithmic management and digital technologies to undermine trust, agency and the delicate balance of power between labour and capital that have built up in Finland over many years."

Our sectoral case studies across transport and logistics and retail reveal the potential of algorithmic management and digital technologies to undermine trust, agency and the delicate balance of power between labour and capital that have built up in Finland over many years. However, they also show signs of a different world of work, where technologies assist workers in achieving shared goals, ease the strain of difficult tasks and create benefits that accumulate across both labour and capital. These significant disparities in the outcomes of technology use highlight the importance of contextually sensitive approaches to their implementation, but also the vital role played by mutual trust in steering these workplace transformations for the better.

The recommendations put forth in this policy study aim to provide actionable strategies for policymakers and trade unionists to direct such transformation in a manner that benefits both workers and businesses alike. For these strategies to work, they need to address the challenges posed by emerging workplace technologies at multiple levels. Transparency is a necessary, but not sufficient condition, that needs to be coupled with meaningful power on the part of labour to enact change based on information disclosed. This power must both be enshrined by regulation and supported by the capacity of both individual workers and trade unions to engage with new technologies and the data underpinning them. This capacity is essential if formal power is to be actualised into change.

"Regulation and trade union strategy must shift from a reactive to a proactive stance, creating space for labour to steer the longer-running trends of datafication, digitalisation and the technological transformation of work, which are instantiated by the likes of algorithmic management."

Finally, regulation and trade union strategy must shift from a reactive to a proactive stance, creating space for labour to steer the longer-running trends of datafication, digitalisation and the technological transformation of work, which are instantiated by the likes of algorithmic management. This involvement in how technologies are selected, customised, used and perhaps even designed, with an eye not only to the discrete issues they pose, but the longer-running trajectories they also embody, is the only way that labour will not be left too far behind the curve of rapid change.

The specific recommendations included at each of these levels expand and build on Finland's long-running and successful model of social democratic legislation and democratic workplace governance. They are steps to incorporate the realities of technological change into this model,

rather than leave it open to degradation. Ensuring that the benefits of technological advancements are equitably distributed will not only improve working conditions but also enhance overall productivity and innovation within the Finnish economy.

However, it must also be acknowledged that the deeper issues presented by the digitalisation of work and workplaces, and the increasing algorithmic management of workers, cannot be addressed by Finland alone. The fundamental questions of value creation and distribution, and the social and political decisions that guide the seemingly autonomous march of technological change, go beyond any single nation. They must also be taken up by our policymakers in Brussels, building on the leadership shown by the AI Act and Platform Work Directive, to ensure that across Europe the gains of technological progress are shared by all. This is not merely a matter of morality; in a time of increasing polarisation and economic hardship, such questions will be fundamental to the stability and resilience of our societies. It is for this reason that these country studies are coupled with an upcoming report, which unpacks their implications through the prism of European policymaking, offering important guidance to our colleagues within the EU on one of the most-pressing labour issues of our time.

APPENDIX 1: ORIGINAL QUOTATIONS IN FINNISH

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Quote 1:

"Joo se niinku tuntuu että se oli tuolla se, että siellä oli olemassa se pohja, hyvä pohja ja semmoinen yhteistyön. Malli oli olemassa. Ja sen päälle oli sitten helppo rakentaa uutta." (UE2)

Quote 2:

"Tää on vähän niinku mennyt tämä armeijatyyppistä me käsketään teillä ja alhaalla minä pyöritellään päätä kun me ymmärretään yhtään mitään ja ja sitten kun sä oot johdat excelin kautta niin mä voin sanoa että kun siinä ei ole järjen hiventä meidän näkökulmasta että olisi paljon helpompikin ratkaisuita." (UR1)

Quote 3:

"Jos on ihmisiä jotka joita kiinnostaa tekniikka, ne haluaa opetella käyttämään niitä. Sitten on ihmisiä jotka ei halua opetella muutosvastarinnasta niin sitten siellä niinku keskenään on välillä jopa niin että kun käy esimieheltä kaveri kysyy että miten tää nyt toimii niin sitten me kysymättäiselle se osaa sua neuvoa että se on niinku saattaa olla niinku vielä kysyä työkaverilta se että en minäkään. On tämmöinen vaihteleva osaamistaso myöskin niinku esimiestasolla." (W1)

Quote 4:

"Kyllähän kyllähän se reitityksen tietokone tekee ja ihminen, mutta kun nää ihmiset jotka nykyisin tekee niin ei ne ole päivääkään jätettä kerännyt. Ne on mutta insinöörejä tuolla ja ne laskelmat perusteella laskee mitä pystyy tekemään ja sieltä puuttuu esimerkiksi tämmöinen suomen talvi niin. Tällä hetkelläkin meillä on aiot aika myöhässä, että että tää on niinku nykypäivän normaali." (UR1)

Quote 5:

"Tiedä hirveästi toista alaa mitä missä on niin paljon tarkkailuvälineitä kuin tässä jätehuollossa." (UR1)

Quote 6:

"Joo sitten me käytiin se keskustelu, että mihin se järjestelmä olikaan tarkoitettu siihen kahvin käynti seurantaan vai siihen auton tavaran tai järjestelmän tai kuormatilojen tai turvallisuuden niinku valvomiseen. Se loppuu se keskustelu hyvin nopeasti." (UR2)

Quote 7:

"Luottamusmies on ollut ollut mukana ja työsuojeluvaltuutettu on kyllä ollut mukana, että että kyllä mulle jäi kuva, että he oli niin kuin… että kai työnantaja ikään kuin päätöksen tehnyt itse, että tää nyt tulee käyttöön, niin kyllä he oli niinku mukana sitten siinä prosessissa ja heidät perehdytettiin. Näin mä muistelen että tää kertoo että he perehdyttiin niinku ensimmäisenä että he pääsi niinku tutustumaan siihen järjestelmään. Sitten se esiteltiin vähän niinku porukalle ja sitten. Että tavallaan työnantaja niin kun ehkä puhu heidät siinä ensiksi. Jos nyt sitten näin voisi ajatella niin. Niin ja innosti siihen mukaan ja. Sai heidät vakuuttuneeksi niistä hyvistä puolista." (UE2)

Quote 8

"[A]ina kun järjestelmässä tehdään jotain, siitä jää jälki." (UR4)

Quote 9:

"Tekoälyn käyttö siellä pohjalla ja se datan käyttö siellä pohjalla on ristiriidasta niinku sen arjen kanssa sen niinku että mitä siellä aidosti oikeasti tapahtuu." (UR3)

Quote 10:

"[Me] tiedetään että että niitä hammasharjoja ja hammastahnoja ja huulirasvoja hyökkää hyllyyn samalla tavalla kun sä lyöt sen jauhelihan että että niinku eri tavalla eri tuoteryhmissä on erilaiset ajat. Joo, ja silloinhan ne pitäisi niin kun. Silloinhan ne pitäisi myös kaikki niinku kellottaa erikseen, että ei ei voida ottaa vaan niinku könttää jotain aikaa. Ja sen jälkeen meidän keskustelu sitten loppuikin työnantajan kanssa kun mä rupesin kyselemään lisää tietoja, koska ei heillä ole antaa sitä lisätietoa ei että he itsekin tietävät sen että heillä ei niin kun ole." (UR3)

Quote 11:

"Ehkä mua tai musta yleinen trendi on tosi kiinnostava, että vaikka tämä vaikka sitä ei ehkä voida todentaa mut miettiä, että mikä sen niinku ikään kuin jouston vaatimus on työntekijälle. Ja mitä sitten se mahdollistaa, että miten nää eräät jos on massa ihmisiä jotka yhtäkkiä se on kiinni puhelimelta. Minkälaisia mahdollisuuksia se ikään kuin tuottaa sille työnantajalle vähän niinku leikata löysää pois sitten suunnittelusta." (UE3)

Quote 12:

"Vaihdettiin sitten tekoälyn joukkoälyksi eli eli tavallaan annettiin se pallo työntekijöille ja niinku hoitoalalla tätä on tehty pidempään ja siellä on ihan hyviä kokemuksia ollut sielläkin." (UR4)

Quote 13:

"Siis on siis pääluottamusmies myös mukana, elikkä ihan niinku havainnoimassa sitä tilannetta, että miten se niinku menee ja sitten sitten kellotuksessa meidän pitää niinku muistaa se, että mehän ei voida antaa sitä vaan yksi ihmiselle. Tehtäväksi, koska meillä on. Meillä on työntekijät on erilaisia. Meillä on eri ikäisiä. Meillä on eri kuntoisia meillä on. Meillä on eri elämäntilanteessa olevia työntekijöitä, niin me ei voida ottaa kellotusta sen parhaimman nopeimman ja tehokkaimman mukaan." (UR3)

Quote 14:

"Ei kannata jäädä edistyksen eteen niin kun makaamaan poikkiteloin vaan siihen pitäisi meidän

niin kun edunvalvojina ja ammattiyhdistysliikkeen päästä niinku mahdollisimman nopeasti mukaan, jotta me varmistetaan se, että että se on niin kun. Voisiko sanoa niinku työntekijän ystävällistä." (UR3)

Quote 15:

"Tähän vähentää niin kun paljon työtehtäviä tästä keskeltä pois mutta ne on kaikki valunut sinne suorittavalle niin jäteautonkuljettajan tekee ennen sanotaan että oli 3 ihmistä tekemässä jäteautonkuljettajan rinnalle niin nyt se jäteautokuljettaja tekee melkein 3 ihmisen duunit siinä kun se painaa nappia reitittää ja tekee kaikkea muuta." (UR1)

Quote 16:

"Meidän keski ikä on kuitenkin siellä viidenkymmenen konttorilla. Nää ei ole syntynyt nää kaikki meidän työntekijät tietokone sylissä. Että me on paljon ihmisiä vieläkin jotka käyttää näppäinpuhelinta." (UR2)

Quote 17:

"Tota nyt kun nää kaikki tietokoneet ja himmelit ja ohjelmat tuli niitä seurataan joka paikasta ja jos et sä siinä purkin vieressä kuittaa sitä niin siitä tulee sanomista. Eli se tarkoittaa että se on pakko käydä ajamasta elikkä vaikka sä tiedät sä se astia on tyhjä. Se on viime viikolla ollut tyhjä ja tällä viikolla niin se on pakko käydä kolistelemaan siellä eli siinähän on GPS paikannus niin se paikantaa sen astian vieressä se auton ja toteaa että nyt se on oikealla paikalla. Jos sä paikannat sen esimerkiksi kolmensadan metrin päästä kuitatuksi, niin sitten tulee heti sanomista." (UR1)

Quote 18:

"On erilaisia ihmisiä eri elämäntilanteissa toiselle sopii viikonloput toisille ei toisille ilta paremmin kuin aamu niin siinä on havaittu että että. Niinku se on toiminut, että kaikissa jos sitä pilotoitiin niin kaikki halusivat jatkaa kokeilua." (UR4)

Quote 19:

"Ja sitten tosiaan ne ne lisätunnit on ehkä siellä siellä just siellä päivittäistavarakaupassa niillä niin

niitten osalta niin kun ne käyttää paljon niitä appeja ja ja tota se on sitten vähän niin että aatto sun pitäisi olla se sitten omassa puhelimessa ja toisaalta sun pitäisi jotenkin niinku sitten koko ajan seurata sitä. Jotta sä saat niitä tunteja ja sehän on tietysti tosi tosi niinku kuormittava. Sen yksittäisen työntekijän näkökulmasta että että että niinku. En mä tiedä, että se on tietenkin yksinkertaista. Helppo sanoa, että älä katso sitä appia illalla. Mutta mutta jos sun toimeentulo roikkuu niin niin sä tunneissa niin niin se on aika selvää, että se on koko ajan sitten mukana." (UE3)

Quote 20:

"Siellä yksi henkilö sanoo että sama kuin että heillä olisi joku niinku tämmöinen apukuski siinä vieressä seuraamassa ja antaisi palautetta. Niin nyt nää järjestelmä tekee sen ja hän piti sitä hyvänä asiana ja tietenkin työnantaja kokee myöskin." (UE2)

Quote 21:

"Kun tää järjestelmä meille tuli, niin tota oli sellaista henkeä, että työnantaja kyykyttää kun me sitten näitä oli niinku 3 sellaista kuljettajaa ketkä sitä niinku... alkuunsa vähän testaili sitä järjestelmää ja sitten tota sanottiin, että ei ole kyse mistään kyttäämisestä vaan että se on vaan niinku työnantajalle tietoa." (W1)

Quote 22:

"Yksi käytti niinku ihan tällaista ilmaisua että että hän laittaa yleensä facebookiin aamulla päivitykseen, että hän on nyt töissä, niin miksei hän nyt samalla hän kirjautuu sitten sinne sovellukseen, että se ei niinku ollut sen kummallisempi juttu." (UE2)

Quote 23:

"Ollaanko me vaan nykyisin tosiaan tässä somessa ja facebookissa ja joka puolella puolella, tiktokissa ja muualla, että me niinku avataan itseämme ihan hirveästi jo muutenkin tänne tähän maailmaan tähän tähän digitaaliseen maailmaan? Ja tota niin sitten me ei niinku välttämättä se mikä ehkä mua sitten niinku tuossa rupean huolestuttaa jossain vaiheessa että ne ei välttämättä sitten olla ihan

mietitty, että mihin kaikkeen se voi oikeasti johtaa jossain vaiheessa." (UE2)

Quote 24:

"Siellä on osassa [varastoista] ja ja sitten satamassa on ihan samalla tavalla tuli tätä kameravalvontaa satamiin. Niin siellä oli kanssa että sä pystyt zoomaamaa, Mä sanon että sulla on jäänyt tota salaattia hampaan väliin. Ne oli niin tarkat oli niin se se se loppuu niinku siihen sen jälkeen se zoomaus, minä että totta kai se yleisturvahdus, että nää pitää olla mutta ei tällä tavalla." (UE1)

Quote 25:

"Taukoja seurataan samoilla kulkuluki̇lla eli eli tota meillä on nyt. Taukokäytänteet niin että että myös kahvitauot pitäisi niin sanotusti leimata ruokataukojen lisäksi. Tää ei ollut mitenkään työntekijöille semmoinen mielekäs ajatus, että että sieltä tuli vahvasti heti se, että työnantaja nyt vaan niinku valvoo että isoveli valvoo niinku koko ajan. Se tuntui tosi pahalta työntekijöistä, että heistä tuntuu, että heihin ei myöskään luoteta yhtään, että se murensi mun mielestä niinku yksiköiden, niinku myös sellaista luottamusta." (UR3)

Quote 26:

"Mulle on ainakin tosi monta kertaa käynyt niin mikä on tietysti harmi, että se on ollut toistuvaa, koska en ole sitten kuitenkaan itse jotenkin tajunnut, että työnantaja on niinku omasta mielestään pitänyt ikään kuin muutosneuvottelut näistä asioista. Ja mun mielestä se on ollut edelleen semmoista kahvikeskustelua, että mun mielestä niinku se ei olla menty niinku tavallaan tarpeeksi syvälle. Näihin asioihin ja niinku aidosti oikeasti niinku jotenkin pohdittu vaikka niitä ongelmia mitä sieltä saattaisi tulla tai ei ole niinku myöskään niinku pohdittu kunnolla niin kaikkia hyviä puolia." (UR3)

Quote 27:

"Että varmaan siis on totta kai meillä peiliin katsomisen paikka, että pitäisi. Pitäisi varmaan niinku olla enemmän huolissaan siitä. Miettiä, että mitä sitten jos pitäisi tehdä, tehdä tai TESeillä esimerkiksi saada aikaiseksi." (UE3)

"Sanotaanko näin että meitä on noin puolitoistatuhatta tällä alalla meidän taloustöissä niin yksi ihminen on päässyt terveenä eläkkeelle mun tietojen mukaan koko aikana. [...] Että että kyllä tää duuni syö syö miestä sanotaanko näin. Ja varmaan sitten just tuommoiset niinku tehostamisjutut ei ainakaan autakaan." (UR1)

ABOUT
THE FEPS-NORDIC
DIGITAL PROGRAMME:
ALGORITHMS AT
THE WORKPLACE

# ABOUT FEPS-NORDIC DIGITAL PROGRAMME: ALGORITHMS AT THE WORKPLACE

FEPS, together with our Nordic partners, Tankesmedjan Tiden, Kalevi Sorsa Saatio, Tankesmien Agenda, CEVEA, Arbejderbevægelsens Erhvervsråd (ECLM), Friedrich-Ebert-Stiftung Nordics, Cooperation Committee of the Nordic Labour Movement (SAMAK), and with the support of Nordics Trade Unions, came together for a Digital Research Programme to investigate these developments and their effects.

Over a period of two years, we worked together on three different research strands: one on company case studies of algorithmic management, where workers' performance is tracked and rated; another on online platforms, employment terms and algorithms; and research that led to this policy study on workers' experience in algorithmic management from surveys. Below, you will find more information on two previous publications of the FEPS-Nordics Digital Programme.

"Algorithms by and for the workers Towards a fair, democratic, and humane digitalisation of the workplace"

*Bonn Juego, Tereza Østbø Kuldova, Gerard Rinse Oosterwijk, January 2024*
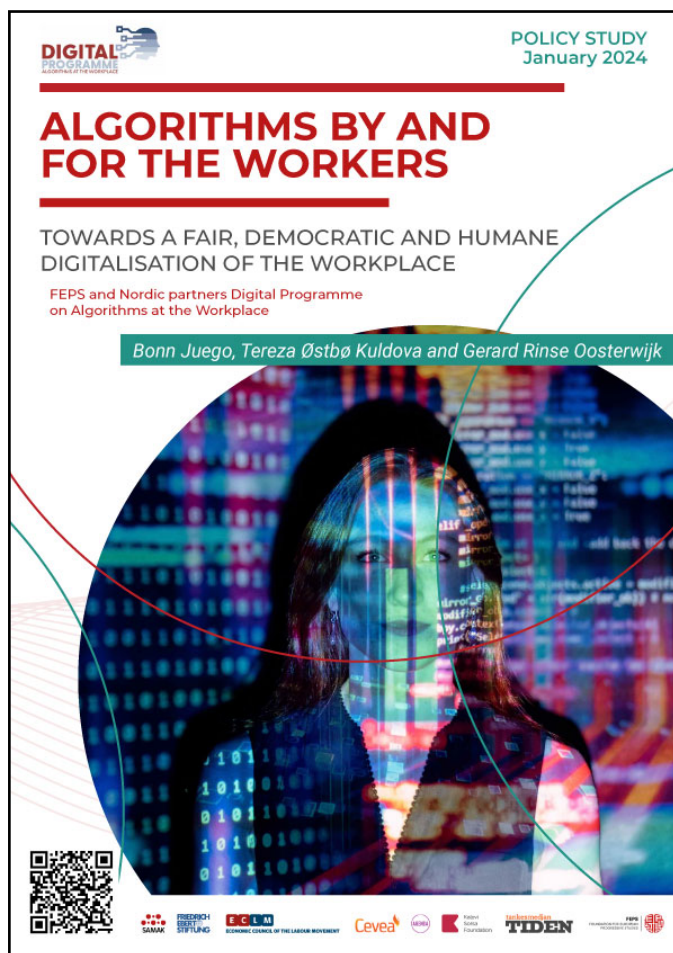
This policy study reflects on the complex interplay between technology and work, focusing on the impacts of algorithmic management (AM) techniques on workers' rights, dignity, and well-being. Drawing on preliminary findings from an ongoing study of FEPS in collaboration with Nordic-based partners, the policy study highlights the complexities and contradictions of AM and the limitations of current policies and institutions in dealing with the fast-paced digital transformation. It emphasises the importance of worker agency and participation in the innovation process.

It proposes the need to create socio-institutional frameworks to direct a pro-labour digital transition and institutionalise co-determination as a viable solution for workers to engage actively with incessant technical changes. It concludes with a forward-looking perspective, advocating for research methodologies and problem-solving approaches that cater to the needs of diverse working contexts. The purpose is to contribute to informed policymaking that ensures a fair, democratic, and humane work environment in the digital age.

Read it at https://feps-europe.eu/publication/algorithms-by-and-for-the-workers/

"Computer in command: Consequences of algorithmic management for workers"

Magnus Thorn Jensen, Gerard Rinse Oosterwijk & Asbjørn Sonne Nørgaard, June 2024
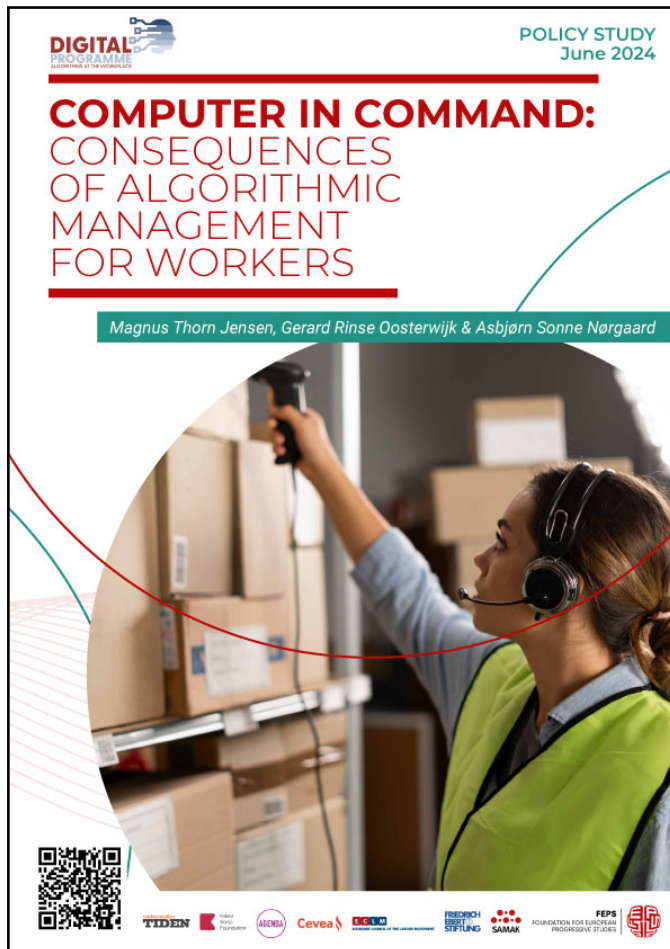
The integration of new technology in the workplace continues to spark intense debate. For years the debate has centered on the fear that robots and computers will displace human workers. Recently, the focus of the debate has shifted: rather than being replaced by computers, more and more employees find themselves managed by computers. Tasks that were once the domain of human managers are now performed by computer systems – a phenomenon known as 'algorithmic management'.

The study is based on a large survey conducted among union members in the warehousing and customer service/telemarketing sectors in Denmark, Sweden, Norway, and Finland.

This use of algorithmic management has several adverse consequences for employees. Workers exposed to algorithmic management experience less job autonomy, increased workloads, and heightened stress levels. Additionally, the study shows that algorithmic management is associated with less trust between employees and management, lower levels of job motivation and satisfaction, and a heightened fear of losing your job. Importantly, the study shows that these adverse consequences are not unavoidable altogether. High levels of employee influence in the workplace and transparency of company decisions significantly reduce the negative effects of algorithmic management. This is crucial insight for policymakers, unions, and others who want to ensure that the digitalization of work does not compromise job quality and workers' well-being.

Read it at https://feps-europe.eu/publication/computer-in-command/

"Johtajana Tietokone: Algoritmisen johtamisen vaikutuksia työntekijöihin"

Jere Immonen, August 2024

In this Finnish report, we design a new algorithm management index based on survey data, which shows that algorithmic systems have a more widespread use for management in Finland than in other Nordic countries. On the other hand, according to the research, the negative effects of algorithmic management can also be prevented. Algorithmic management does not necessarily have to weaken the position or well-being of employees, but it requires that they are made aware of how it's used. Unfortunately, so far that condition hasn't materialised well enough in the Finnish case, as less than half of respondents were satisfied with their employer's communication, or felt they could influence decisions about the use of algorithms.

Read it at https://feps-europe.eu/publication/computer-in-command/

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The Foundation for European Progressive Studies (FEPS) is the think tank of the progressive political family at EU level. Its mission is to develop innovative research, policy advice, training and debates to inspire and inform progressive politics and policies across Europe.

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The Economic Council of the Labour Movement (ECLM) is a Danish economic policy institute and think-tank working to promote social justice in Denmark.

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ABOUT FES NORDIC

The Friedrich-Ebert-Stiftung (FES) is a non-profit German foundation funded by the Government of the Federal Republic of Germany, and headquartered in Bonn and Berlin. The FES office in Stockholm was founded in 2006 with the goal to foster German-Nordic cooperation. The regional project encompasses Sweden, Denmark, Finland, Iceland and Norway.

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ABOUT SAMAK

The Cooperation Committee of the Nordic Labour Movement, better known by its abbreviation SAMAK, is an alliance of social democratic parties and labour councils in the Nordic countries.

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Algorithmic management, the use of algorithms and artificial intelligence to direct and control workers, is increasingly reshaping the modern workplace. These technologies are touted as pathways to greater efficiency, productivity, and streamlined operations. However, the reality is far more complex. While digital tools have the potential to revolutionise work, they often lead to heightened pressures, reduced autonomy, and increased precarity for workers.

This policy study investigates the impacts of algorithmic management and digital technologies on traditional employment in Finland, with a particular focus on the transport, logistics, and retail sectors. Through qualitative case studies, it captures the lived experiences of workers and trade unionists, revealing how these technologies are altering workplace dynamics. The research highlights that trust and collaboration between employers and employees are crucial in determining whether these tools support or undermine worker welfare. As workers become deeply involved in generating the data that drives these systems, concerns around privacy, surveillance, and value distribution are increasingly pressing.

Offering detailed recommendations for Finnish policymakers and trade unions, the study emphasises the need for transparency, strengthened legal protections, and proactive strategies to ensure that technological advancements benefit both workers and businesses.