

LABOUR AND SOCIAL JUSTICE

# ARTIFICIAL INTELLIGENCE AND AUTO- MATION IN RETAIL

Benefits, challenges and implications  
(a union perspective)

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The retail sector is the major private-sector employer in most European economies. However, it has long suffered from relatively low productivity, weak investment, and poor working conditions.



Covid-19 has accelerated the trend of automation, digitalisation and the use of AI and robotics in the retail sector.



While investment in digitalisation offers benefits to firms and consumers, it poses threats to workers. These come in the form of an intensification and degradation of working conditions, and the potential to undermine existing collective agreements in retail.



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## 1

# INTRODUCTION

Digital technologies, automation, robotics and artificial intelligence (AI) are rapidly reshaping the global retail sector. The rise of e-commerce and omnichannel retail, the assembly of detailed consumer profiles through extensive data-gathering and analysis, and the intensification of work through surveillance and automated management systems, and many other applications are bringing significant disruption to the sector. The Covid-19 pandemic – while not a cause of changes in itself – has catalysed and accelerated many of these pre-existing trends.

This short report outlines recent technological developments in the retail that are linked to AI and automation and discusses the implications for consumers, retail organisations and – especially – workers and unions. A core objective in identifying and examining digitalisation processes is to consider what role trade unions should play in the ongoing technological upheavals impacting the retail sector.

The report summarises insights from five three-hour focus groups the researchers conducted with a cross-section of European trade unionists working in retail. The participants worked for unions affiliated with the trade union federation UniEuropa, which organised and facilitated the events. The focus groups included members from a diverse range of countries including Spain, France, Sweden, Denmark, Turkey, Italy amongst others. Focus group discussions examined AI, automation and robotics, the customer experience, sales work, and trade union responses in the context of digital technology adoption. Transcripts were analysed, summarised, and triangulated against publicly available data, quality academic studies and reliable media reports.

The report first provides some contextual information about the sector and the drivers of the recent technological developments. Second, it outlines and discusses some of the key technologies involving AI and automation that were highlighted by focus group participants as having particular implications for the sector. Third, the report discusses the potential role trades unions can play in responding to the challenges posed by technologies that make use of AI and automation. Finally, the report concludes by summarising the main challenges and recommendations highlighted by the research.

## 1.1 DRIVERS OF TECHNOLOGICAL DEVELOPMENT IN THE RETAIL SECTOR

By way of background, the remainder of this section (1) briefly outlines the economic significance of retail alongside productivity and employment trends in the sector; and (2) outlines some key technological trends in the sector, including the rise of e-commerce, and reflects briefly on the Covid-19 pandemic as a catalyst for change.

### 1.1.1 The economic importance of the retail sector and productivity trends

The retail sector is an important part of the economy in advanced economies. In most European economies, retail is the largest private-sector employer with the wholesale and retail trade employing 27.5m workers across the EU in 2019 – around 14% of the labour force.<sup>1</sup> The sector also indirectly supports many more jobs in areas like advertising, payments and logistics. In addition, the industry is critical entry-point to the labour market for many with 15% of European retail workers under the age of 25, and disproportionately high numbers of women and ethnic minority workers working in the sector.

Despite its huge labour market significance, productivity in the sector is almost everywhere substantially lower than in manufacturing and other services. Retail did see a substantial increase in labour productivity from 1995 to 2006 as the use of ICT, logistics and supply-chain management technologies – pioneered by the likes of Walmart in the USA – became generalised across firms and countries. These 'low-hanging fruits' of the digital and logistics revolution were largely exhausted by the mid-2000s. After 2008 retail sales fell due to the drop-off in demand initiated by the global economic crisis and from 2013 the recovery saw employers make growing use of cheapened labour – rather than continuing to invest in labour-saving technologies. As such, productivity-enhancing technologies developed some time back (such as self-scan checkouts) were not well-utilised due to unfavourable economic conditions and a reluctance amongst businesses to make large capital investments. At the same time, the low cost of labour and ongoing wage stagnation has enabled widespread automation-induced redeployment into low-value added jobs (e.g. from checkout operator to meet and greeting) – dragging down overall productivity growth in the sector.<sup>2</sup>

In part because of problems of low productivity and low-value added, the retail sector is dominated by part-time work, flexible contracts, low wages and persistent concerns about job quality. As Carre and Tilly (2017: 148–9) report, across countries, »pressures on job quality have been high« in retail for decades, while »attempts to cut labour costs have been consistent«.<sup>3</sup> The quality of work has as such been systematically degraded. Imposition by management of flexible contracts and non-standard terms of employment has spread across not only the peripheral but also the core retail workforce.<sup>4</sup> European retail jobs are 42% more likely to be covered by flexible contracts than other sectors, and pay is around 30% below the hourly average – typically near the legal minimum.<sup>5</sup>

### 1.1.2 Technological trends and the impact of the coronavirus pandemic

Although overall labour productivity in retail remains low, technologies as diverse as self-scan checkouts, algorithmic staffing planners and RFID tags are increasingly visible in stores and retail logistics and supply chains. Echoing general debates on the disappearance of jobs due to enhanced AI and machine learning capabilities,<sup>6</sup> the new wave of retail digitalisation has prompted many to envision a »death blow« for both job quantity and quality.<sup>7</sup>

However, so far, employment levels in retail have remained remarkably stable, with only minimal change in most European economies over the past 15 years. This is not to deny the major changes underway in the sector. More recently, the Covid-19 pandemic is widely viewed to have exacerbated the trends of rapid automation and job losses in bricks-and-mortar retail and across low-wage services more generally.<sup>8</sup> Undoubtedly, with the exception of supermarkets, the ongoing cyclical lockdowns have posed severe challenges to bricks-and-mortar stores and incentivised some technologically-induced job destruction (such as the case of check-out operators). Contrary to expectations, though, bailout packages appear to have played a major role in supporting labour markets and employment levels. Eurozone retail job vacancy rates in Q2 2021 were just as high in Q4 2019,<sup>9</sup> while the European retail sector experienced robust wage growth averaging 3.1% from 2019 to 2021. Given the large capital outlay often needed for technology adoption, in many cases the potential productivity gains of automation technology may not outweigh the short-term investment costs of using cheap, flexible labour. Not only do these patterns vary considerably from country to country but as yet it is still hard to predict to what extent patterns of consumption and employment will persist as pandemic restrictions ease. The picture is therefore complex, evolving, and in need of close monitoring. But for these reasons, few are predicting widescale technological job destruction in the sector in the short to medium term.

While traditional bricks-and-mortar retail and e-commerce are sometime discussed as if they operate as separate markets, such distinctions between online and offline retail are increasingly hard to sustain.<sup>10</sup> Although only a small minority of sales (10–15%) are made online in the EU,<sup>11</sup> e-commerce

and bricks-and-mortar stores increasingly compete directly for the same markets. A largescale YouGov survey shows that the vast majority (more than 75%) of European consumers shopped both online and instore during the past 90 days, with only small minorities using bricks-and-mortar only as a channel.<sup>12</sup> In addition, there is an increasing trend for bricks-and-mortar stores to act as product showrooms, with customers trying out products in store and completing purchases online later (experiential commerce). And many large online retailers, such as Amazon, also have growing bricks-and-mortar footprints. For these reasons, this report examines trends in both sectors and the deepening connections between them. This report seeks to contribute evidence to these important questions to help trade unions navigate the ongoing turbulence.

## 2

## USES OF AI AND AUTOMATION TECHNOLOGIES IN THE RETAIL SECTOR: BENEFITS AND CHALLENGES

Advances in AI, computer processing power and the availability of big data are enabling computers to automate an increasing range of tasks and process than previously possible.<sup>13</sup> Such systems are already being deployed in a wide range of industries to automate tasks, ranging from warehouse robots and customer service chatbots to analysis of legal documents and tools to aid early cancer detection.<sup>14</sup> While the retail sector has been slower than some sectors like manufacturing to adopt technologies, perhaps due to the low cost of labour in the sector, recent developments have increased pressure on employers to enhance productivity through investment in technology.

This section outlines a number of key technological developments in the retail sector that were highlighted by focus group participants as having particular implications for work in the sector. For each, we outline the technological development and discuss the implications for consumers, retail organisations and workers.

Applications cited by focus group participants were not necessarily entirely new technologies, but rather innovations which make use of or combine existing technologies in new ways. In most cases, these applications make use of or are made possible by advanced processes such as machine learning, natural language processing, advanced image processing or advanced networking that can connect systems and produce outputs in real time. Figure 1 shows the applications reported by participants (right) that were felt to be new and that were felt to have particular implications for retailers, consumers and workers, and lists some of the technologies (left) and processes (centre) that feed into them.

The remainder of this section discusses each of these applications in turn, highlighting the main implications for consumers, retail organisations, workers and unions.

### 2.1 E-COMMERCE PLATFORMS AND OUTSOURCING

Probably the most disruptive developments in retail in recent years has been the growing market share of e-commerce. In and of itself e-commerce is not a new innovation. But developments within e-commerce (and in adjacent sectors such as deliveries and logistics), facilitated by AI and automation, are leading to new practices and pressures which have signif-

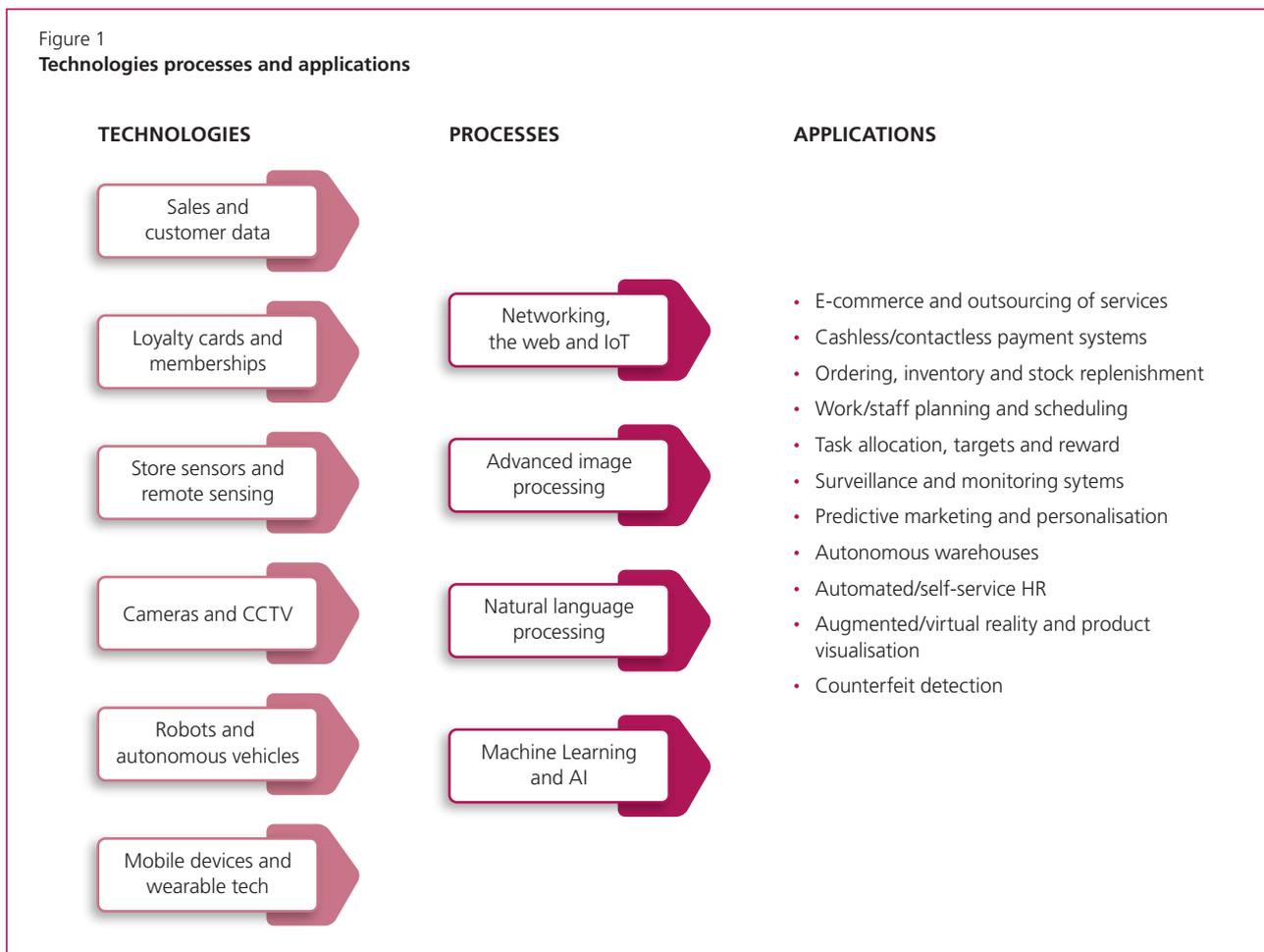
icant implications for the wider retail sector and for unions. Specific innovations that make use of AI and automation, many of which originated in e-commerce, are outlined in the following sections. However, a number of key developments related to e-commerce, raised by focus group participants and discussed here, have implications that go beyond those related to specific technologies and practices.

While e-commerce was expanding rapidly before the pandemic, Covid-19 has greatly accelerated online sales and demand. In the UK, for example, internet sales as a proportion of all retail sales increased dramatically from around 20% at the outset of 2020 to between 30% and 35% during the remainder of that year.<sup>15</sup> This has prompted many brick-and-mortar stores to enter e-commerce markets or expand their existing online offerings. For some, particularly smaller, retailers the cost of setting up an online operation and the necessary technological and logistical infrastructure is prohibitive, thus excluding them or forcing them to outsource parts of the process to existing retail platforms such as Amazon or other large players. This presents a number of challenges for retailers, workers and unions.

Omnichannel retail offers brick-and-mortar stores the opportunity to extend their market reach beyond customers physically present in-store at any given time to those purchasing online for pickup at a later point. The possibility of warehousing provisions for later pickup also saves valuable floorspace costs. On the other hand, e-commerce and omnichannel retail places intense price competition upon retailers given consumers' ability to very rapidly compare prices using smartphones and examine goods in-store before purchasing online. While this has benefits for consumers, it can squeeze profit margins for brick-and-mortar stores given their higher rents and staffing costs compared with online-only retailers. Consumers' ability to compare prices in real-time also has implications for in-store staff as they need to be aware of competitors' offers and be prepared to deal with customers requesting price matches.

E-commerce and the switch to omnichannel provides some smaller retailers to access a wider market, offsetting declines in footfall witnessed in many town centres. As one participant commented (F253):

Figure 1  
Technologies processes and applications



*There are quite a few small shops that open to the public at 9.00 in the morning, but they have had people there since much earlier – preparing online orders that will be sent off during the course of the day. So there is a synergy emerging between bricks-and-mortar stores and e-commerce.*

However, they are at a disadvantage when compared to existing e-commerce platforms that dominate the sector and larger retail chains that have the resources and brand recognition to make the transition. Substantial amounts of capital are required to make upfront investments in potentially risky technologies, and both margins and wages in smaller stores are generally low, so the barriers to entry are substantial. This has prompted many retailers (including larger retail chains like Alcampo and El Corte Ingles) to outsource elements of the e-commerce process, such as marketing, logistics and/or the front end user interface that consumers engage with online. On the one hand this provides the possibility of expanding market reach on very significant scales, but on the other hand, it typically requires handing over sales and product data, access to customer data and profiles. In some cases this can result in the host platform launching competing product lines that are known to sell well. Most notoriously, Amazon is known to use its clients' data to develop own-brand products which it relentlessly promotes and cross-subsidises to wipe out third-party competition.<sup>16</sup> Even

in absence of such flagrantly predatory business practices, data inequities generated by platform-based retail channels are likely to ensue in absence of anti-competitive regulation – since platforms can build detailed models of consumer profiles and construct extremely valuable datasets by acting as a major sales channel. Regulation of such dominant market position may be possible under the Digital Markets Act and Digital Services Act forthcoming under European law, but Amazon seems unlikely to face serious regulatory threats to its market position in the near future.

Apart from the risks to smaller retailers associated with such practices, established e-commerce platforms and larger retailers with an existing online presence have a number of advantages over smaller retail organisations. Not only are they able to benefit from their brand, reputation and online visibility but they often have the advantage of having years of existing sales and customer data and the in-house technical expertise to stay at the forefront of technical developments. And as sales volume in e-commerce increases the economic muscle of the sector increases, which means more funds are available to develop these advanced systems and increases pressure for bricks and mortar stores to compete.

The rise of dark stores and Q-commerce, supported by a proliferation of micro-fulfilment centres, poses a major threat to both smaller bricks-and-mortar stores and larger established chains. Dark stores enable e-commerce customers to receive

goods extremely rapidly through ›click-and-collect‹ or rapid home deliveries. The fulfilment centres that support these modes of retail need minimal decoration and can be located in sites with lower rents substantially reducing overhead costs compared to bricks-and-mortar stores. Q-commerce, meanwhile, is a rapid growth sector in urban areas. New entrants are disrupting the retail sector through extremely rapid (15 minute) delivery offerings. Q-commerce firms are able to offer rapid delivery for even small scale purchases through the use of on-demand delivery from close-to-consumer warehouses/micro-fulfilment centres, including extensive use of automation, order processing and labour management technology (for delivery drivers/riders). Firms such as Getir, Gorillas, Bolt, Dija and others – many backed by substantial venture capital – are competing ruthlessly to attract customers in this market sector. Together, these developments place growing pressure on bricks-and-mortar stores.

A further challenge, highlighted by focus group participants, was the different regulatory frameworks that apply to online versus bricks-and-mortar retail. These range from the need to pay local taxes/business rates and rent on prime real estate, to the requirement for bricks-and-mortar stores to charge for plastic bags while no such requirement exists for packaging in online sales. Such regulations increase the cost of in-person purchases relative to online, which when combined with increased overheads associated with bricks-and-mortar retail (such as higher rents and business rates in town centres) and greater flexibility offered by online retail, further squeezes margins for bricks-and-mortar stores. There were calls among focus group participants for policy interventions aimed at evening up the regulatory environment. This was seen as particularly important given the imbalance in economic power between e-commerce platforms and larger retailers on the one hand and small retailers on the other, particularly as the latter account for the majority of employment in the retail sector.

As noted previously, while online purchases as a proportion of all sales were increasing before Covid, the pandemic has accelerated this trend – and these pressures, exacerbated by lockdowns during the pandemic, have led to a number of store closures and organisational restructuring. There were concerns among focus group participants that employment security and working conditions of workers in the retail sector had been undermined by the growth of e-commerce, as work in the sector shifted from directly employed shop workers to warehouse workers and delivery drivers on precarious contracts. Even within warehousing and logistics, the entry of e-commerce players to the sector has undermined job security as flexible contracts proliferate. This leads to fragmentation of the workforce with workers no longer working directly for one employer but instead working as independent contractors, potentially for a variety of platforms. For example, IKEA have partnerships with TaskRabbit to provide assembly and repair services. This fragmentation can make union organising and recruitment challenging.

There were also concerns about the gendered nature of the shift from retail to logistics work. In-store retail work

was often seen as providing flexible work opportunities for younger workers and women with caring responsibilities, even if not particularly well paid, while warehouse and delivery work is often more physically demanding and is a sector dominated by male employment. One focus group participant noted that the emergence of Amazon as a key player in retail had done nothing to improve the job quality of workers in the sector, partly because their reliance on flexible contracts puts pressure on other retailers to follow suit in order to respond to changes in demand, but also due to poor working conditions in their warehouses.<sup>17</sup> Concerns were raised that the number of staff devoted to fulfilling online orders had not kept pace with the increased demand during the pandemic, leading to work intensification in the sector.

Overall, while e-commerce presents a number of benefits for consumers, such as increased flexibility and convenience and competition on price, these benefits have so far come at a cost for many retailers and retail workers. There are concerns that the increased competitive pressures presented by the growing importance of e-commerce and the associated imbalances described above had led to many retail organisations closing or being forced to review their offering and deciding between taking a ›low-road‹ approach, competing on price and squeezing work conditions, or a ›high-road‹ approach: competing on customer service from skilled and well-remunerated workers and providing a distinctive offering.

## 2.2 CASHLESS/CONTACTLESS PAYMENT SYSTEMS

Digital payments systems encompass a suite of technologies including contactless card and mobile phone payments, scan-and-go checkout systems utilising smartphone apps, and digitalised forms of store credit prevalent on sites like Amazon. These systems offer considerable convenience and flexibility for consumers but also raise privacy and security concerns about surreptitious data gathering.

Initially the preserve of large retail chains, basic contactless card/mobile payment systems are widespread in small/local retailers and even crafts and farmers market stalls due to rapid decreases in cost and applications linked to mobile phones. The accessibility of such systems due to falling price ensures smaller retailers can continue to compete in a period where cash use has fallen significantly. However, smaller retailers continue to remain at a disadvantage due to the possibilities for data capture, analysis, processing and enabled by heavily-promoted scan-and-go and online account-based payments used by large retailers. Efforts to address this disparity remain small but are evident. In Belgium, for instance, smaller local retailers have collaborated in the design of an e-payments connected to local cross-retailer loyalty schemes. In these schemes customer data is retained and pooled amongst small retail participants, permitting personalised offers to be made to consumers in line with practices already established at larger retailers.

Just as cashless payment systems offer security for firms against theft and error, these advantages also hold for workers in stores – as some workers find handling cash and calculating change stressful and accusations of mistakes or theft are a common point of contention with management. On the other hand, contactless payments contribute to the proliferation of self-checkout systems. The growing use of self-checkouts threaten checkout staff roles and also the ability for staff to rotate roles in order to ensure a level of variety in their work. The expansion in self-checkouts and related technologies are further enabling the development of ›staffless‹ stores that can be operated with very few employees. Such stores raise concerns about the potential loss of jobs through automation, but also potentially enable the opening of stores in remote and sparsely populated areas.

New digital credit players are a major boost to both in-store commerce and retail, and close partnership with financial institutions alongside the rise of dedicated retail-based financiers (e.g. Klarna, ClearPay) has significantly facilitated the ongoing sales growth of the sector. As one participant commented ›today, e-commerce wouldn't exist without the possibility of electronic payments, which are in many cases supported by financing possibilities in the shape of low-interest credit and monthly instalments«. Such systems increase convenience for consumers but can encourage overconsumption and indebtedness, particularly among economically disadvantaged groups, and especially when combined with the kinds of sophisticated marketing systems outlined in section 2.7.

## 2.3 ORDERING, INVENTORY AND STOCK REPLENISHMENT

Automated inventory management systems comprise technologies which can digitally monitor and check stock/inventory, analyse sales data, and automatically place replenishment orders. Data on inventory can be gathered from a range of sources such as RFID tags, weighing scales, and image recognition from cameras and scanners. This can then be algorithmically processed and analysed to varying levels of success. Benefits for firms include: more rapid unloading and sorting in warehouses, error and labour reductions in stock checking, more efficient shelf-stacking and picking for home delivery, forecasting demand, optimise efficiency in labour scheduling, and enhance logistical efficiencies and automated re-ordering.

For consumers, digitalised inventory systems can increase product range, availability and information on stock, including lead and expected delivery times. Such systems are increasingly widespread in medium- to large-scale retailers, for whom they offer both reduced labour costs and enhance just-in-time throughput of products. Digital logistics platforms offering inventory and supply chain management services for incoming inventory and e-commerce sales are increasingly opening up the field to smaller firms.

For workers, the effects of such systems are ambiguous. Although cost and competence issues mean shelf-stacking

robots remain some time away from mass deployment, warehouses and logistics centres serving both bricks-and-mortar stores and e-commerce fulfilment are increasingly subject to robotic automation. For instance, Ocado – a pioneer in the field of automated warehousing – recently completed its transition from a food retailer to a high-technology firm by licensing its smart warehousing platform to Casino group.<sup>18</sup> However, warehouse and logistics staff numbers in its robotised fulfilment centres remain substantial – not only in technical roles but also in low-wage picking jobs.<sup>19</sup>

Furthermore, while grocery warehouses lend themselves to the deployment of large-scale automated systems, in higher-value and lower-throughput sectors like furniture and consumer electronics retail, demand for such technologies is likely to remain lower – even as cost reductions facilitate more widespread access to automation. Automated consumer-facing re-ordering systems (such as Amazon's Subscribe & Save) do pose some threat of technological unemployment for sales and checkout workers, but such applications account for only a tiny minority of overall purchases at present and seem unlikely to become widespread in the near future.

On the other hand, automated inventory and ordering systems reduce the need for workers to engage in less desirable tasks, such as time-consuming inventories. This has the potential to free up workers' time to perform more highly-skilled sales tasks closer to the customer, although this would require employers to invest in skills. While these systems reduce the time taken for staff to perform stock taking manually they are not perfect and can require not insubstantial numbers of staff to scan items to ensure the system is working correctly.

Use of automated inventory, ordering and stock replenishment systems require staff working with them to develop skills in navigating digital logistics systems. Workers often find themselves using handheld terminals or smartphones to access logistics data and product details in response to customer queries. However, information is increasingly also being shared directly with consumers via the web and smartphone apps. This threatens to undermine the privileged access to information once possessed by retail workers and reduce their role as mediator between consumer and producer.

Increasing supply chain and throughput efficiency via automated inventory management holds the potential to reduce carbon footprints, particularly if used to eliminate wasted space during transport and to reduce distances travelled by deliveries and customer returns. However, at present it appears any potential benefits may be offset by attendant practices which serve to increase emissions – such as the growing frequency of small-batch orders by retailers to suppliers, and the facilitation of customer-facing one-day, two-hour or even 15-minute delivery services (as in the case of q-commerce), and inefficiencies currently built in to such on-demand delivery systems.<sup>20</sup>

»When I started working in retail forty years ago, if I was asked by a client: »have you got such and such item?« If I didn't have it, I called the other branches of my company to see whether the product was available and how long it would take to be sent to our store... Today this is not happening because people don't want to wait around for you to make those enquiries (which can take time) anymore. What I need now is to use software to locate the item instantly: Where is it? How long will it take to reach my store? Can it be sent directly to the consumer? This necessitates data on stock to be shared between both stores and warehouses... and for the worker to have substantial digital skills and to be able to adapt quickly to new digital systems and ways of working.«

– Spanish retail sector trade unionist

## 2.4 WORK/STAFF PLANNING AND SCHEDULING

Algorithmic work planning and staff scheduling is increasingly common among larger retailers. Benefits for employers include more precisely forecasting and calibrating staffing rotas with peaks of demand – whether in-store or for home-based e-commerce deliveries. Systems like Kronos and Percolata combine multiple data points like customer foot/web traffic, delivery arrivals, workforce skills data, and weather forecasting to optimise staffing numbers over any given period.<sup>21</sup> Use of such responsive digital scheduling systems can help ensure customer demand can be more readily absorbed, providing a smoother shopping experience at peak times.

Automated shift planning software can represent a powerful negative downward force in workers' conditions and in work life balance. This is particularly true when combined with flexible (e.g. »zero hours«) contracts. Used together, these permit employers to deploy labour during demand peaks and reduce labour costs during troughs – shifting the burden of risk for reductions in consumer demand from the firm to the worker. Inside the workplace, moreover, scheduling systems can lead to work intensification since it is intended to minimise »downtime« when workers could traditionally relax on the job. They further can lead to a sense of being »always on« when combined with little advanced scheduling. The kinds of work intensification that you see in e-commerce were felt to be permeating bricks and mortar stores as well. The automation of work planning and scheduling can dehumanise the employment relationship by limiting workers' abilities to change or contest schedules (for example, taking time off for family reasons or swapping shifts) as the system appears »objective«, while even managers often have less autonomy to question such systems. Algorithmic scheduling could in principle act to delimit managerial use of scheduling as a system of discipline, reward and favouritism. However, there is evidence that such »automatic« scheduling systems can in fact have the opposite effect and be used to favour and discipline workers.<sup>22</sup>

## 2.5 TASK ALLOCATION, TARGETS AND REWARD

Alongside planning and scheduling applications, retailers are also deploying digital technologies on a large scale for purposes of »algorithmic management«.<sup>23</sup> Tasks, targets, rewards and bonuses are increasingly being algorithmically allocated to workers by variously sophisticated software analytics packages (including scheduling systems like Kronos identified in section 2.4 above).

Machine learning and AI enable employers to gather, clean and analyse »big data« gathered across a very wide range of sales functions – such as sales calls, webinars, and preparation, alongside customer interactions – in order to pinpoint the most valuable activities and strategies and develop new comparative metrics for staff. Data for such systems is gathered from a diverse set of sources, including kinetic and heat-mapping software, in-store cameras, beacons, sensors, RFID tags, wearable devices, image and language gathering and processing, and browser tracking cookies and apps (in e-commerce). This takes place through sales and customer interaction data, gathered via digital and physical sensors including payment records, cameras and wearable devices (wearables). For firms, such systems promise substantial benefits of being able to develop highly refined customer data, and to closely monitor and improve staff performance more than is possible through human management.<sup>24</sup> For example, a multinational jewellery retailer was reportedly using detectors to monitor footfall and sales data, with this data being used to adjust staff sales targets in real time. Such systems can be used to encourage staff productivity by stimulating sales competition between workers while appearing to legitimise algorithmic control.<sup>25</sup>

Concerns were raised among focus group participants that such systems could lead to work intensification, and that creating such intense competition between workers could undermine cooperation and trust between staff and lead to unintended consequences. Furthermore, such systems necessarily involve increased data gathering on staff and customers and feed in to surveillance and monitoring systems (discussed in the following section), raising ethical and legal questions about privacy and control, alongside whether such procedures can be said to be in line with existing collective agreements.

## 2.6 SURVEILLANCE AND MONITORING SYSTEMS

The task allocation and workforce planning systems outlined in sections 3.4 and 3.5 necessarily involve the gathering and use of sales, staff and customer data on an unprecedented scale, often in real-time. This can include data from wearable technology and in-store (or warehouse) cameras and sensors, as well as data from sales and stock information and RFID tags. While workplace surveillance and monitoring is nothing new, there were concerns among focus group participants that AI and automation were enabling staff surveillance and monitoring on a scale not seen before and could be used to

make decisions that could affect staff with little or no input from a human manager.

For employers, there are obvious benefits for work planning and being able to ensure staff are working in the ways intended. But surveillance and monitoring systems can also potentially undermine employee trust and engagement. For workers, the deployment of increasingly intensive monitoring and surveillance systems represent serious concerns over work intensity and job quality. Dynamically-adjusted targets, such as those discussed above, can impose intense pressure and act as a source stress upon workers, especially when imposed without recourse or human managerial oversight. Further concerns abound in terms of both robustness/quality and transparency. In many cases, algorithmic management systems represent ›black boxes‹, with little information available either to those being managed or even to line managers over how decisions are arrived at and can make it harder to challenge decisions as they appear to be objective, based on science and facts not human biases. This can lead to an element of distrust, increase arbitrary managerial over-rulings, and also make fixing problems more challenging. The rollout of such systems further raises the possibility of attempting to ›game‹ algorithms in ways which do not benefit firms or workers. Monitoring of particular metrics, such as sales targets, time spent performing certain tasks, etc, can lead employees to focus on working to those targets at the expense of other tasks. This can lead to unanticipated patterns of behaviour that may not always have the intended results for employers. This may be a particular problem in ›black box‹ automated surveillance systems that use machine learning as it is not always clear which variables carry the most weight (and these may be quite arbitrary). Finally, such systems can further intensify work, and raise questions about pernicious or illegitimate forms of worker surveillance. This can erode worker-employer trust, particularly if monitoring leads to sanctions for workers, with negative consequences for employee engagement, motivation and potentially staff absence and turnover.

The Covid-19 pandemic has highlighted particular concerns around homeworking. Some worry that AI is (or could) be used to monitor ingoing and outgoing communications in the context of remote working. Systems are already widely used to monitor whether remote workers are working by looking at log-in/log-out times, keystrokes and screen captures. However, AI makes monitoring a far greater number of inputs – raising concerns about surveillance overreach privacy, and fostering distrust between managers and workers.

### ›Refractive Surveillance‹

Academics Karen Levy and Solon Barocas at Cornell University have examined the huge increase in surveillance technologies developed for tracking customers in-store.<sup>26</sup> These include computer vision to determine customers' race, gender or emotional states; facial recognition systems to identify individuals; and smartphone identification devices, among others. These systems are used to collect customer data for sales purposes and to mitigate against shoplifting.

They explore how data gathered for one purpose – monitoring customer behaviour and reducing theft – is increasingly leveraged for another: controlling and disciplining workers. This includes (1) using footfall data and predictions to impose dynamic and unpredictable work schedules (see above), (2) monitoring customer interactions with staff through surveillance footage, kinetic mapping, natural language processing and sentiment analysis to evaluate staff performance (e.g., whether a sale resulted from a conversation); (3) reducing ›clienteling‹ practices of sales workers by digitalising customer data; and (4) replacing workers altogether through advanced customer tracking and self-checkout technologies (as pioneered in Amazon Go stores).

Levy and Barocas develop the term ›refractive surveillance‹ to account for this effect, whereby managers ›piggyback‹ on customer data to enhance their power and control over workers. They suggest that worker advocates should aim to strictly limit firms' ability to use data for cross-purposes, seek greater worker input into programs like automated scheduling software, and enlist the support of consumer groups in challenging retailers' widespread data collection on privacy grounds.

<https://ijoc.org/index.php/ijoc/article/view-File/7041/2302>

## 2.7 PREDICTIVE MARKETING AND PERSONALISATION

Advances in machine learning combined with the availability of vast amounts of consumer data and the processing power needed to process mean that automated systems can market products and offers to consumers in increasingly sophisticated ways. In e-commerce, the widespread use of tracking cookies alongside site-specific accounts makes customer monitoring and profile-building relatively simple (although the success of such systems depends on the right selection of measures and methods). Data can be collected and analysed for a variety of measures and purposes such as time spent looking at an item, click-throughs to related items, repeat purchases and so on. This data is used to produce personal profiles of customers in order both to target them with special offers (emails offering discounts on items left in shopping carts unpurchased) and on a macro-level to monitor customer demographics and popular items. However, increasingly, technologies deployed in-store can replicate such internet-based data-gathering and personal profiling of customers. While loyalty cards have long enabled personal-

ised offers, now smartphone scan and go payment systems, wi-fi and/or Bluetooth-enabled sensors and cameras are increasingly being synchronised to profile consumers' habits and firms can use such multiple data points to construct 'heat-maps' of stores and customer profiles, monitoring flow and lingering. Online these systems can also inform dynamic pricing that can be used to entice customers to buy.

The potential benefits of these systems for consumers and retailers are that customers can receive updates and offers tailored to their interests and preferences, increasing the chances that consumers being able to find the products that they want and increasing sales. This can also indirectly benefit workers where increased sales is accompanied by greater demand for labour and job security. However, there are also some potential risks and challenges. For consumers, there is a risk of overspending and overconsumption, particularly if the temptation of tailored offerings is combined with easy access to credit and round the clock shopping. Also, widespread data collection and sharing raises concerns about transparency and privacy. Many consumers are simply unaware of the level of data-gathering by firms in both e-commerce and in-store or the types of data collected. Spanish supermarket chain Mercadona was recently fined EUR 2.5m by regulators under GDPR legislation due to its processing of facial recognition data for all customers, ostensibly to track shoplifters.<sup>27</sup>

The implications of these technologies for skills and careers are not easy to predict. On the one hand, these systems mirror traditional techniques of upselling and cross-selling, typically a skilled task performed by a sales worker engaged in selling high-value items. However, predictive marketing systems can be applied to products across the price range due to the reduced cost of suggestion algorithms and can be made at a distance to the physical store. Thus, in some ways these systems replace the traditional role of retail workers to make personalised recommendations to customers, potentially undermining sales workers' professional identity. On the other hand, algorithmic customer recommendations can function to enhance skills for workers. If algorithms produce a range of possibilities, the sales worker can talk a customer through the various options on offer to help them make an informed decision. This requires investment in sales workers' product knowledge and digital skills.

Given the opportunities for data collection available online, combined with existing technical capabilities, there were concerns among focus group participants that predictive marketing systems give larger retailers with an existing online presence an advantage over smaller bricks-and-mortar retailers. While it was noted that some smaller retailers are moving in this space, and that some were making use of innovative individual and collective store loyalty schemes to do so, there were concerns about the ownership and sharing of data. There were questions about who owned and had access to data, particularly where smaller retailers used large online platforms to sell their products. As noted in section 2.1, some retailers are turning to platforms such as Amazon Marketplace to sell their products and make use of their

existing infrastructure, but doing so allows Amazon to collect data on what does and does not sell enabling them to develop and market equivalent offerings in direct competition with sellers. There were also concerns that online platforms also have the advantage of being able to profit directly from being able to sell anonymised data to third parties.

## 2.8 AUTONOMOUS WAREHOUSES, VEHICLES AND ROBOTICS

While robots and robotic processes have been in use for some time, particularly in the manufacturing sector, advances in robotics and machine learning have greatly expanded the uses that robots and 'intelligent' machines can be put to. In the retail sector this includes automated sorting, fault detection and quality checking systems, autonomous vehicles and warehouse robots, as well as a robotic process automation (RPA) systems that can perform various customer service, marketing and HR functions. As with many automation technologies of the past, while such systems automate many physically demanding or repetitive tasks – creating productivity gains and potentially making jobs less arduous or monotonous – their introduction is not without issues.

One characteristic of robots and automated computer systems is that they do not get tired and in some cases can perform tasks faster than human workers. This can mean productivity gains for employers and cheaper prices for consumers. However, robots are not cheap and sophisticated RPA systems require large amounts of data to develop. This means that for some uses introduction only becomes cost-effective at scale and many smaller retailers may be priced out of making the most of these technologies or may have to pay for third party providers for some services, both of which have implications for their ability to compete on price. Further, the benefits of deploying such technologies at scale will likely favour larger players, prompting further consolidation of the industry.

For workers, the balance of potential impacts are unclear. On the one hand, where robots are used to automate physically demanding or repetitive tasks this can improve health and safety and free up workers' time to do more specialist tasks leading to job upskilling. On the other hand, there are a number of concerns related to jobs and health and safety.

In relation to jobs there are three main concerns. First, that automation may lead to less demand for human workers and fewer jobs. Second, that removal of repetitive and less-complex tasks may be something of a double-edged sword. The removal of time-consuming or mundane tasks frees up time for workers to do more stimulating tasks closer to the customer, opening possibilities for upskilling and career development. However, this could lead to less diversification of tasks, leaving only complex and demanding tasks as workers cannot switch between easier and more taxing tasks as part of their work day, leading to an intensification of work. A related, third, concern is that any job upskilling needs to be accompanied by: i) the appropriate training, and ii) increased pay commensurate with the work. There were concerns

among focus group participants that these conditions were not always, perhaps even rarely, met.

In relation to health and safety, while advances in robotics mean that they can perform a greater range of tasks with greater precision, their remain limits as to the feasibility of what they can do for the necessary investment. For some tasks, human labour is still cheaper, more flexible and more cost effective than the cost of developing and maintaining a robot, and can have qualities that are hard to replicate with robots. This means that while robots can perform the most arduous tasks, making the remaining tasks less physically demanding, human workers are often still required to work in close proximity to robots. It was reported that in one highly roboticized warehouse at Amazon in the United States the injuries were three to four times higher than the industry average.<sup>28</sup>

Another challenge, raised by focus group participants, in relation to automation under the most extreme scenario, is that the tax system in most countries is not set up in such a way to account for a future where an increasing share of productivity comes from technology and automation. Robots are not taxed in the same way as workers and in most cases corporation tax is much lower than income tax, further encouraging deployment of labour-saving technologies. Thus, there could be a potential shortfall of tax receipts if increases in the tax paid on profits do not match reductions in income tax from workers. Particularly if aggregate working hours were to decline. This could have implications for the functioning of welfare states, particularly if there is substantial technological unemployment. However, reflecting academic debates on the future of work, focus group participants were undecided as to whether the balance would be towards job destruction due to automation or job creation due to productivity gains and increased demand. One participant noted that while Amazon, a retailer that is at the forefront of automation, uses automation and robotics extensively in its warehouses their workforce is still expanding, which suggests that the productivity benefits may lead to more not fewer jobs.

## 2.9 AUTOMATED/SELF-SERVICE HR

Advancements in AI and ML have enabled retail companies to automate a number of HR processes and functions. For example, in the USA Walmart developed a machine learning algorithm to help rank applicants for store-level vacancies<sup>29</sup> and in Europe Carrefour have started to implement self-service system so that workers can access a range of HR services including payslips, schedules and training resources.<sup>30</sup> In the latter case, Carrefour reportedly provide a smartphone for everyone working in the store, which cannot be used outside of the store but can be used to contact human resources and access information related to products, their job, training, etc. Apart from having the advantages for the retailer and customers of enabling staff to access up-to-date information on products and stock availability, the device had the added benefits to employees and the organisation of improving the speed and efficiency of communication between staff and

management and improving staff access to HR services. Prior to the introduction, staff had to find time to go to a laptop to access work communications via email, with the smartphone they could get communications straight away and could contact their manager and human resources much more easily.

While these advantages were welcomed by focus group participants there were also concerns that the use of AI in employee management systems could also be used for worker surveillance, monitoring and control. Also, where AI and ML were used to automate HR decision making there were concerns about transparency and privacy and the use of employee data. As with other uses of AI, there were concerns opaque nature of algorithmic decision making, whereby decisions could be made, or even just informed, by a ›black box‹ process without workers or even managers having any knowledge or control over what information was being used by the system to make decisions or recommendations. Greater transparency and engagement with worker representatives could go some way to alleviating such concerns. There were also concerns about the ›scientification‹ of HR processes and decision-making whereby decisions are perceived to be made on an objective basis and therefore cannot be questioned by workers or even managers.

Additionally, focus group participants raised concerns that work smart devices could be used to monitor staff whereabouts and communications in new ways, including e-commerce and other retail workers working remotely during the pandemic. As noted in section 3.6, there were concerns that extensive data gathering and AI was enabling surveillance and monitoring on unprecedented levels, leading to concerns about privacy and trust. One participant reported that, in the call centre of a large retail firm in Belgium, the recording of a personal call by a young call centre employee to his colleagues was later played by a manager to wider colleagues in order to make fun of the employee. While this example is may well be a breach of company policy and the worker's rights, it raises questions about which communications should or should not reasonably be recorded.

## 2.10 AUGMENTED/VIRTUAL REALITY AND MACHINE VISION

A number of retailers have started to adopt a number of applications that use virtual or augmented reality (AR) and machine vision. These range from phone or tablet-based product visualisation systems, in-store and online, that enable customers to see what outfits look like in different contexts,<sup>31</sup> and apps that can determine body shape and make clothing recommendations, to machine vision applications that can detect counterfeit products<sup>32</sup> or fraudulent customer behaviours like ›item swapping‹ missed scan detection at checkouts.<sup>33</sup> AR-based systems, such as those used by Walmart and Tilly's, can also be used to create treasure hunt and mini-games as marketing tools to try to drive consumers into stores.<sup>34</sup>

Such systems have a number benefits for retailers consumers and retailers. New ›digital catwalk‹ technologies create web-

based ›events‹ in which consumers participate as spectators and shop simultaneously. Product visualisation applications can potentially help consumers make more confident choices and help reduce the number of returns, both for online and in-store purchases – assuming the technology functions accurately and is true to reality. Consumers are offered very substantial convenience by such augmented reality technologies, avoiding both trips to stores and the bother of returning goods which do not look or fit as anticipated, although as with predictive marketing and other aspects of e-commerce this may also increase the risk of overconsumption. This is particularly useful for the sale of large goods like home furnishings which are expensive and difficult to return. Similarly, in-store AR-based content can be used as a marketing tool and can improve the customer experience. Both of which can have knock-on benefits for worker job security through increased sales, reduced costs and increased profitability. In addition, fraud and counterfeit detection can reduce losses for retailers.

While these types of technology were seen as less controversial by focus group participants than some of the other applications discussed above, some concerns were mentioned. First, while product visualisation can be developed for in-store or online use such systems arguably have more potential benefit for online retail as imaging software allows customers to ›try‹ clothes digitally online, enhancing the reach of e-commerce and enabling it to replicate some of the features of in-store retail. Furthermore, the cost of such systems and technical knowhow needed to develop them could price smaller retailers out of such developments in the short term. In addition, product visualisation systems could potentially reduce employee-customer interactions and the opportunities for staff to deploy customer service and sales skills, tasks which until now have been the reserve of human workers. Second, as with some of the applications discussed previously in this section, all of the applications in this section make use of cameras and generate video data, raising ethical questions about privacy and use of data.

## 3

## THE ROLE FOR TRADES UNIONS

### 3.1 THE WIDER POLICY CONTEXT

To some extent the potential opportunities and challenges posed by technological developments in the retail sector mirror wider debates about digitalisation and automation.

Wider debates about the future of work tend to assume that at least some jobs will be lost to automation and that many of the jobs left will need some level of retraining and labour force upskilling. In the most extreme vision, automation will result in the end of work and in the more conservative version there will be increased labour market segmentation with greater labour market insecurity and more frequent periods of unemployment for some workers and a need to retrain and/or change occupation. As might be expected, policy orientations to these possible futures vary depending upon the extent to which they are seen as positive or negative and the degree to which these changes are seen as inevitable or can be shaped. These orientations have been characterised as: those that would embrace the automation of jobs as freedom from work or freedom for entrepreneurs (Advocates); those who accept that the robots are coming and would adapt policy to cope with the challenges (Accommodators); those who seek to contest some of the uses of digitalisation and organise against it or ameliorate its worst impacts (Antagonists); and those who would seek to marshal the use of digitalisation to harness it for good (Alternativists).<sup>35</sup>

While policy responses are still in their early stages, a few international organisations, such as the OECD, ILO and European Political Strategy Centre (EPSC) have put forward policy recommendations.<sup>36</sup> The challenges these recommendations seek to address include: increased unemployment and occupational restructuring due to job destruction, changing skills needs due to job reorganisation and occupational restructuring, reconsideration of the timing and location of work, lack of social dialogue and loss of employee voice due to workforce fragmentation, rising inequality due to increasing job polarisation, more frequent periods of unemployment and labour-market transitions, and reduced hours/pay for workers with some skills due to reduced demand. Policy recommendations aimed at addressing these challenges range from the modest to the radical, depending on the severity of expected impact of these challenges, as summarised in Figure 2. From modest to severe these range from better labour market information, advice and guidance (IAG) and

a more responsive educational system to universal basic income (UBI) or citizens dividend funded by a robot tax or other innovative way of raising revenues lost by reduced levels of employment and/or working hours.

While few focus group participants were anticipating the end of work due to the current technological developments in the retail sector, some of the challenges and possible responses reflect these wider debates.

### 3.2 TRADE UNION RESPONSES TO DIGITALISATION IN RETAIL

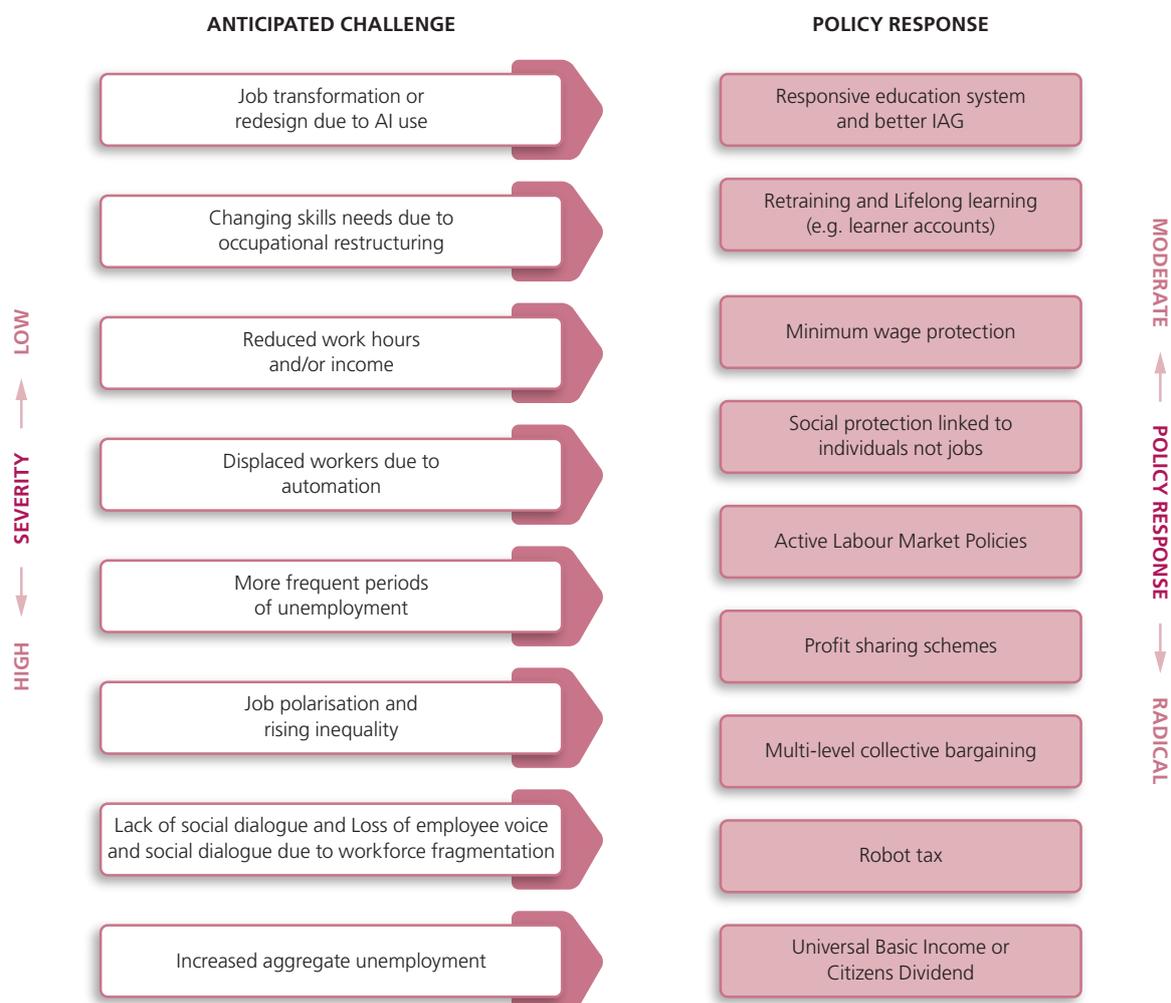
The retail sector is dominated by low rates of unionisation. Union density has been in slow decline across Europe for several decades, and ranges from around 50% in northern European countries like Sweden and Denmark, to around 10% or below in the UK and much of central and eastern Europe. Despite these large discrepancies, virtually everywhere is union density below not only national averages, but also below service sector averages. It further translates into relatively low coverage for collective bargaining agreements relative to other sectors.<sup>37</sup> Partnership and service approaches to trade unionism dominate over classical or antagonistic relations between management and organised workers.<sup>38</sup> Days lost to industrial action hit historic lows during the late 2010s, signifying both the relative weakness of organisation in the sector and predominantly obliging stance toward management.

These existing parameters and legacies shape – but do not determine – how trade unions in the retail sector can respond to accelerating digitalisation and automation dynamics. This section examines five significant areas of focus arising from discussions with focus group participants: training and skilling; research and education; union-management relations; recruitment strategies; and policy frameworks. It combines observations on trade unions' current role and challenges posed by digitalisation in the retail sector with recommendations for trade unions going forwards.

#### 3.2.1 Training and reskilling

Ongoing technological change will require workers to re-skill if they are not to fall victim to reductions in job quality, deskilling, or technological unemployment arising from digitalisation. Indeed, even in the absence of the digitalisation

Figure 2

**Anticipated challenges and policy responses**


of retail highlighted in this report, continuous professional development (CPD) and reskilling programs would remain desirable as they are intimately tied to job quality and career progression.

This raises the question of who (or which mix of actors) should bear the burden of cost for training provision and certification – workers, firms, governments, or unions? Since the sector is dominated by price competition, few employers are likely to voluntarily engage in extensive staff training and skill development programs in spite of the benefits this can bring.<sup>39</sup> National contexts bear heavily on the kinds of outcomes possible. Participants pointed to several examples of agreements involving the state, unions and employers in the Nordic countries. At perhaps the most progressive end of the spectrum, Sweden's government (along with employers and unions organised into employment councils) is developing a EUR 1bn per year program for CPD and retraining including extensive 'sabbatical' periods for retraining paid at 80% of former salary.<sup>40</sup> In Denmark, the HK service-sector union engages in widespread member training initiatives aimed at meeting changing industry requirements, but also presses for the right to and funding for retraining and CPD to be em-

bedded in collective agreements with employers. By contrast, participants in southern Europe and Turkey noted that both employers and governments there appear less forthcoming with funds and time allowances for reskilling and training, leaving unions alone to bear the cost. While there can be benefits in terms of recruitment and growth from unions providing training, it should be noted that such union-funded skilling initiatives thrive in economies with high union density and where unions assume responsibilities for administering social benefits. In contexts with low density and weak embeddedness, take-up of training is likely to remain low and ineffectual as a means for pressuring employers to retain and redeploy labour toward higher-productivity areas.<sup>41</sup>

Retail workers already possess many tacit, unaccredited skills. For this reason, it is unlikely that the sector will experience mass technological unemployment in the short- to medium-term. Building occupational identity and fighting for (existing) skills recognition and accreditation was highlighted as priority by focus group participants. Unions should pressure both employers and regulators to establish sectoral training initiatives which provide workers with recognised qualifications or accreditation for existing skills.

### 3.2.2 Research and education

Digital transformations outlined in section 2 are wide-ranging, interlocking and typically rely upon ›black box‹ technologies – many not necessarily well understood even by managers tasked with their deployment. AI applications remain highly constrained in their capacities, which are often oversold by developers keen to cash in on the boom in such systems.<sup>42</sup> Understanding algorithmic decision-making systems is a precursor to influencing and challenging firms' adoption of them. Because of the profile of the sector (low union density, transient workforce, flexible employment relations), management often feel comfortable in introducing new technologies with little consultation with workers. For this reason, participants felt it important that unions make significant investments in educating shopfloor workers on the mechanics of the digital and AI technologies being introduced in order to demystify these technologies.

Beyond education for workers, another recommended path is to sponsor and publish detailed research into particular technologies, with a focus on their impact on workers – alongside more general research into the path of automation over the years to come. Funding this kind of research will place unions on firmer ground to contest management automation strategies and ensure input over technology adoption and implementation processes.

### 3.2.3 Union-management relations

Partnership unionism approaches predominate internationally in the retail sector. Close relations with management can be successful where density is relatively high and the union is embedded in the workplace (as in the Nordic countries). However, even in high-union economies, partnership approaches can be weakened when collective bargaining coverage is seen to be out of step with (typically falling) union density.<sup>43</sup> For this reason, there is a growing move from partnership to ›organizing‹ approaches, targeting unorganised groups of workers in both the firm and its immediate supply chain (see also 3.2.5 below). Focus group participants identified establishing collective agreements with management as a means of preserving and enhancing worker voice in technology adoption, with the Italian FILCAMS-CGIL union (for example) currently aiming to achieve national, sector-wide collective bargaining and framework agreements.

In the absence of widespread redundancies, technological change is likely to lead to redeployments. Depending on national and firm-level contexts, these might include introducing new task mixtures (combining self-checkout support with shelf-stacking) to wholesale redeployment (from store to warehouse). Focus group participants were clear that in this area, there is scope for unions to substantially influence managerial decision-making. Most significantly, redeployments into high-skill jobs with attendant training provision were one way to resist technological unemployment and deskilling, such as the example of Spanish travel agents rendered superfluous by growing online bookings being trained and redeployed in offering digital services. Careful attention should be given to growth areas in retail, in order for unions

to be able to make strong cases for upskilling redeployments to management.

### 3.2.4 Civil society relationships

As retail sector profit margins have been squeezed by the rise of e-commerce and discount stores, some have identified intensifying demands of consumers as a driver of poor working conditions.<sup>44</sup> As observed in section 2 of this report, consumers do benefit from many of the digital technologies responsible for deskilling and intensifying the demands upon retail workers. However, this conflict of interest is not absolute. Focus group participants observed the benefit to both consumers and retail firms of skilled, well-remunerated and knowledgeable retail workers – in terms of being able to offer specialist and personalised assistance to consumers in navigating the proliferating product categories and supply channels on offer. It was also pointed out that profiteering, rather than consumer demands *per se*, lay behind many of the ›low-road‹ strategies adopted by employers – a problem which also afflicts consumers since labour savings are not passed on in price cuts but retained by owners and shareholders. Participants noted the importance of cultivating solidarity between consumers and other kinds of civil society groups in order to isolate firms using such arguments as a way of challenging labour organising.

#### MAKE AMAZON PAY<sup>45</sup>

*Make Amazon Pay*, a coalition of over 70 trade unions (including UNI Global Union), civil society organisations, environmental and tax groups was formed in 2020. It brings together organised trade unions fighting for labour rights along the Amazon supply chain with campaigners for tax and ecological justice.

After holding launch events in 16 countries in November 2020, on ›Black Friday‹ in November 2021, *Make Amazon Pay* events took place in over 25 countries. These included strikes and labour protests at Amazon facilities in Germany, Italy and France alongside Cambodia and Bangladesh. The campaign is a powerful example of how unions can collaborate with diverse civil society groups to connect struggles for labour rights with socio-economic and environmental concerns of consumers and activists.

### 3.2.5 Recruitment strategies

Focus group participants were unanimous that enhancing recruitment should be viewed as an imperative for unions across countries. Longstanding barriers to recruitment in the sector include the widespread use of marginalised workers, part-time work, flexible contracts, and significant churn in the workforce. New barriers which have arisen more recently raised by focus group participants include franchising – the entry of multinational retailers into the opening of small, local shops in mostly urban areas operated at arms-length and thus excluded from firm-level union agreements and bargaining frameworks. A further issue is the growth of platformisation – growing partnerships between retailers and digital platforms engaging self-employed contractors to carry

out tasks, like that between Ikea and Taskrabbit noted above. Broadening recruitment into new precarious, platformised sectors of retail (e.g. logistics, warehousing, transport and home delivery) was a firm commitment of trade union participants, as was exploring means of collaborating with other unions in these sectors.

The exclusion of growing numbers of workers from existing collective agreements through the emergence of franchise spin-offs and the engagement of digital platforms and platform labourers was highlighted as a major vulnerability by focus group participants. Suggestions were made to mobilise tactics like high-profile organising drivers for un-unionised workplaces, open or community unionism embracing concerns beyond the workplace itself, admitting self-employed platform workers into unions (either as full-members or community-members depending on national laws), and challenging laws around competition policy which may inhibit the latter from seeking to organise.

#### RETAIL ACTION PROJECT

The *Retail Action Project* (RAP), was founded in 2005 by the Retail, Wholesale and Department Store Union (RWDSU) in Manhattan's SoHo shopping district as a ›flexible form of worker representation‹ for ununionized retail workers.

Operating in the tradition of worker-centres, it connected service provision around legal services, housing advice, and immigration support with workplace campaigns amongst the ununionized to win unpaid back-pay and ensuring employers met their contractual obligations – as well as training provision. It did so through targeting ›hot-shops‹ where existing grievances made organising through service-provision attractive to workers.

By acting as a ›one-stop shop‹ for those in precarious situations (be it in terms of migration status, housing access, or in the workplace itself), RAP has rapidly built a network of almost 4,000 workers, alongside a core of paid organisers and a broader network of volunteer supporters. As of 2018, it had led nine workplace campaigns, successfully unionising three workplaces, winning favourable legal settlements in five, and advances in pay and conditions in all. RAP demonstrates the possibilities for expanding unions into community-based organisations.<sup>46</sup>

### 3.2.6 Policy and regulatory frameworks

The above discussion and contributions from focus group participants highlight a number of government regulations and policy initiatives that unions could campaign for which could improve the position of their members (retail workers) in confronting digitalisation-induced upheavals.

Amongst the most prominent suggestions include government funding and state-backed sectoral reskilling and upskilling initiatives matching (or exceeding) the best on offer in Nordic economies (observed above). Second is the

development of standardised and portable professional qualifications, accredited by a state- or industry-sanctioned organisation and recognised by employers and employer organisations, to boost the occupational status and identity of retail workers. Such an initiative would enhance the portability of retail workers' skills and enable greater mobility between roles by workers. There are already moves afoot in some countries to do this. The UK for example has introduced apprenticeships in retail with varying degrees of acceptance.

New sectoral agreements between firms and unions incorporating digital platforms, franchises, workers designated as logistics, delivery or warehousing (and thus outside the scope of existing collective agreements) and other new contractual arrangements designed (in part) to evade union-employer agreements should be a major focus of trade union activity, according to participants. Furthermore, both new and existing agreements should be updated to explicitly incorporate concerns prompted by digitalisation. These include working conditions and career trajectories, data usage/privacy, guidelines for technology adoption.

Participants further voiced enthusiasm for union initiatives aimed at ensuring that digital innovations adopted by firms are worker-centred (i.e. aimed at preserving or enhancing the quality of jobs in the sector). Such a transformation in the culture of management could incorporate, for example, ensuring worker input into algorithmic scheduling software enabling more worker-directed flexibility. Article 29 (1) of the Digital Services Act (DSA) – currently under discussion by the European Parliament – grants users of digital services the ›right to know the main parameters of recommender systems, as well as have options to influence/modify those parameters‹.<sup>47</sup> Embedding such commitments in sectoral agreements would lower the incentives for firms to adopt digital technologies which reduce the quality of retail jobs. Alternatives included an expansion of co-operative business models, including growing interest in the development of co-operatively owned and operated digital platforms which are showing signs of being able to challenge for-profit corporate organisational forms.

Beyond sector-specific initiatives, a broader expansion and strengthening of social and employment protection systems and safety nets in order to shift the balance of power in labour markets in favour of workers would enable greater confidence for retail workers in being able to leave bad and/or low-skill, low-paying jobs, pursue retraining and upskilling, and create an environment encouraging ›high-road‹ skill investments based upon labour retention by employers.

At furthest end of the spectrum, participants shared widespread enthusiasm for a so-called ›robot tax‹ and a Universal Basic Income. A robot tax aimed at slowing technological uptake in the sector by raising its cost, could function to ensure union input into the adoption of digital technologies. The provision of a form of universal basic income to sever social security from employment and ensure poor quality jobs are not sustained by bad labour market conditions alone.

## 4

## CONCLUSIONS AND RECOMMENDATIONS

The digitalisation of the retail sector has advanced rapidly since the advent of the Covid-19 pandemic. As observed in this report, the sudden growth of online shopping catalysed the adoption of many pre-existing technologies, and drove firms to explore new ways of gathering, analysing and using data to grow sales. Although the »new normal« is not yet established, whatever course the pandemic takes over coming months and years, there is likely to be no return to the retail sector as it was prior to 2020. The technologies adopted, while diverse, point to the burgeoning integration between online and offline commerce which will likely dominate the sector into the future.

The technologies discussed in this report clearly have potential benefits for consumers, including cheaper prices and greater convenience and customisation. As noted in section 1.1, labour productivity in the retail sector has historically been lower than most other sectors such as manufacturing, which has historically experienced far greater adoption of automation technologies. Thus, the motivations for retail firms to invest in AI and automation technologies are plain: greater efficiency leading to reduced costs and increased productivity; access to wider markets and increased sales (overall); building extensive datasets and consumer profiles; and achieving far greater control over the work performed by retail workers. For workers too there are potential benefits. For some, technology could mean greater flexibility in the timing and location of work, upskilling and the removal of repetitive and/or physically demanding tasks and, importantly, technology adoption can enable retailers to survive in an intensely competitive environment, thus protecting jobs. Although the realisation of any of these benefits will depend on the extent to which workers have a say in the way in which technology is adopted and put to use. However, this research has identified several challenges related to the adoption of these technologies, including:

1. *Intensification of competitive pressures* – the shift to e-commerce and omnichannel is leading to an intensification of competitive pressures whereby some firms, particularly small retailers, struggle to compete on price and to benefit from technology adoption due to a lack of financial resources and technical knowhow, risking potential liquidations and store closures. This can potentially have the perverse effect of reducing competition in the long run if store closures lead to the consolidation of sales in a smaller number of large firms;
2. *Employment restructuring and job change* – automation and the shift to online sales is leading to the »logisticisation« of the retail sector. Traditional retail jobs are making way for warehouse and delivery jobs, with the latter often characterised by unpredictable hours and precarious contracts. These changes also have implications for particular groups of workers with retail jobs traditionally occupied by women, older workers and labour market entrants making way for logistics jobs generally occupied by male workers;
3. *Surveillance, control, transparency/accountability and privacy* – e-commerce, cashless payments systems, task allocation, scheduling and predictive marketing systems often involve extensive gathering of data. This raises concerns about pernicious forms of worker surveillance and monitoring. Further, the quality of automated decisions made by these systems is increasingly questioned, as they are often opaque and difficult to challenge – leading to a lack of accountability and trust. This raises questions about transparency and worker and customer privacy and data security;
4. *Overconsumption, debt and the environment* – the extreme convenience afforded by e-commerce and omnichannel retail, combined with predictive marketing and the ready availability of credit streams could lead to overconsumption, which could in turn have negative consequences for the environment and lead to increased risk of indebtedness among some consumers.

As can be seen, many of the challenges presented by the technologies covered in this report risk making work worse for retail workers. This presents a challenge for trades unions in the sector. In sectors where workers command high levels of bargaining power and receive substantial investment in skills from management, the technological adoption process is likely to be characterised by high levels of negotiation between management, trades unions, and directly with workers, with a view to ensuring upskilling where possible and redeployments married with reskilling where necessary. In retail, by contrast, low wages and lower rates of unionisation mean workers have less power to influence employer decisions, and management tend to avoid significant investments in skills formation. This situation is compounded by the blurring of lines between traditional retail work and

warehouse, logistics and delivery work, as workers increasingly do not work directly for a single employer and work may be covered by different unions. Technological adoption, therefore, is often characterised by labour displacement, replacement, or work intensification and deskilling.

While consumers may benefit from convenience and lower prices made possible by new technologies, they also share significant interests with workers and unions in modifying and/or ensuring wide input into technology adoption by retail firms. This is because of both the significant privacy and data protection concerns retail firms' extensive data-gathering and data-processing give rise to, alongside the fact that the deskilling of retail workers makes navigating complex omnichannel retail environments increasingly difficult, frustrating, and time-consuming for many consumers. Investment in worker skills, transparency over algorithmic decision-making and stakeholder input into the new technologies adopted, and ensuring a level regulatory playing field between online and bricks-and-mortar commerce are all areas where consumers' and workers' interests converge.

Potential responses and recommendations for unions, provided by focus group participants in the research, include:

- Strengthen existing collective agreements, and demand worker consultation and involvement in decision-making around the adoption and implementation of automation technologies.
- Campaign for accredited upskilling, reskilling and CPD programs supported and recognised by employers across the retail sector, in order to respond to job changes and occupational restructuring.
- Invest in detailed research aimed at understanding and influencing specific digital technologies being introduced in workplaces.
- Push for greater transparency and that employers avoid the use ›black-box‹ forms of algorithmic decision-making. The establishment of recognised standards of transparency could help with this.
- Where possible, work with employers to ensure technologically-induced redeployments are into highly-skill roles, supported by training and covered by collective agreements.
- Foster closer collaborations with consumer groups and other civil society campaigns (e.g. environmental and tax justice organisations) to encourage employers to behave responsibly with regards to consumer and employees alike; and to push for regulation to guarantee worker rights and bolster the position of trades unions in the face of technological change.
- Develop innovative recruitment strategies targeting ununionized workplaces and new sectors being created by digitalisation, including the nominally self-employed (e.g. home delivery workers).
- Work to identify policies that will help provide financial and/or technical support to help small firms to adopt technology and manage the transition to omnichannel retail.

- Push for public policies that level the regulatory playing field between online and offline retail and which support and reinforce the above.

AI, automation and related technologies are causing major disruption to the retail industry across countries. This report has highlighted specific uses of these technologies and identified key challenges. The evidence contained here, along with these recommendations, may help unions navigate the turbulence ahead.

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# ARTIFICIAL INTELLIGENCE AND AUTOMATION IN RETAIL

## Benefits, challenges and implications (a union perspective)



The digitalisation of retail poses challenges to workers and unions. However, by working to strengthen existing collective agreements, organising in new sections of the retail workforce, pushing for skills accreditation programs, and demanding oversight of algorithmic decision-making technologies, retail unions may help ensure retail firms invest in staff alongside new technologies. In this way, digitalisation might bring about improvements rather than degradations of working life in retail during the turbulent changes to come – and revitalise trade unionism in the digital age.



Trade unions must carefully monitor these changes, be careful not to be drawn in by technological determinism, and work to gain footholds in emerging sectors like delivery and fulfilment. In this way, they can exert significant leverage and improve conditions for workers in the sector.