Workers in Transition: Automating Retail

Findings from interviews with workers in the retail sector

Mark Andrejevic and Aneta Podkalicka
School of Media, Film and Journalism
Monash University
May 2025

Research

Between 2022 and 2023, Monash University researchers interviewed 30 workers employed in shops, supermarkets, stores, and warehouses to learn about the ways in which automation is changing their workplace – and the resulting impact on their work and livelihood.

Project background

This research focuses on understanding issues of technological change in the retail sector with an emphasis on major retail outlets. The findings are part of a larger study of the future of work conducted as a collaboration between the Norwegian University of Science and Technology and Monash University (https://autoworkproject.org/).
The project emerges from the lack of studies informed by workers' insights into everyday experiences of digitalisation and automation. We seek to better understand the unfolding changes to work practices from workers' perspective and to map out some pressure points and potential strategies for meaningful and inclusive work in the future. The study is funded by the Research Council of Norway's program for welfare, work and migration - project no. 301088.

The context

Automation is transforming workplaces across Australia, from newsrooms and universities to healthcare, construction, and retail. The retail sector is a labour-intensive one that has been targeted by recent developments in automated systems promising to realise new forms of efficiency while also reconfiguring the experience of workers and consumers. From grab/scan-and-go stores to automated warehouses, new technologies rely on automated forms of data collection and processing, as well as new technological interfaces ranging from self-ordering kiosks to automated rostering guidelines to robots. Automated technologies also contribute to shifts in patterns of consumption associated with the growing prevalence of delivery platforms and the development of "dark" stores, online shopping, and click-and-collect services boosted by the response to the COVID-19 pandemic. In-store workers find themselves at the coalface of society-wide digitalisation, requiring them to make accommodations for customers with different literacies, especially the elderly who may not be comfortable using technologies such as self-ordering kiosks or self-checkouts, or who may not have smartphones or know how to use them.

Automation in the retail sector is facilitated by developments in data processing, networking, and sensor technology. The infrastructure for these systems can be costly, which leads to a tendency toward increasing centralisation in the sector – accompanied by the top-down implementation of new technologies. The heavy reliance on new forms of datafication also tends to increase forms of tracking and monitoring in the workplace: of merchandise, workers, and consumers. As in other sectors, automation requires ongoing forms of retraining and can displace and replace. In some cases the prospect of automation is communicated to workers as a potential future threat to employment. The promise of technological transformation often outpaces actual changes in the workplace because of both the expense of new systems and the challenges of installation and implementation. The research presented here explores how workers experience ongoing technological changes in their workplace as well as the prospect of future forms of automation.

How we conducted the research

We participated in semi-structured interviews with 30 workers across the sales sector, including 16 affiliated with the SDA: Union for Retail, Fast Food & Warehouse Workers.

The interviews sought to understand how automated systems are changing working conditions in the sector. Participants represented diverse experience and seniority in retail and warehousing jobs, including front-of-the store employees, bakers, and warehouse pickers. Years of experience varied from 20+ to less than two years. Topics included the use of scanners, headsets, automated platforms for rostering and assigning tasks and assisted cashier systems.

We are indebted to all research participants who generously shared their insights with us. These insights inform the key findings from this part of the research.

Change is a constant

The changes are the really tricky part: to continually re-educate people, especially some people who are doing only one or two shifts a week (...) The changes, and the dealing with new programmes and new pieces of equipment [are] just constant.

Technological transformations are ongoing, which means platforms and equipment undergo continual upgrades and replacement. Existing routines need to adapt to the need for ongoing adjustment and retraining. These changes are top-down, driven by management in the search for increasingly cost-effective ways of reconfiguring the workplace. Workers are subject to reminders regarding the prospect of future transformations. For example, they are exposed to the prospect of new robotic warehouses leading to cutbacks in the workforce for pickers and other warehouse employees. Cashiers are presented with the prospect of cashier-less “grab/scan-and-go” shops.

In practice, such developments can be much slower to arrive than suggested by the hype, not least because the promise of efficiency and cost-effectiveness is complicated by the ongoing need for retraining, the cost of automated systems, and the relatively quick turnover of the technology which shortens the half-life of the infrastructure for automation.

Consumers experience some of these changes directly, when the checkout systems in their neighbourhood shops undergo continual transformation, including new interfaces, extra security cameras and AI-enabled security gates.

Centralisation and fragmentation

Data driven automation tends to be a centralising technology, in part because it is costly and in part because it relies on large, robust collections of data. Automated warehouses, for example, tend to be much larger in scale than their predecessors, and online shopping makes it easier to rely on centralised facilities than on outlets distributed through neighbourhoods. For workers, centralisation means that some tasks, like baking, may no longer take place fully in-store. Fulfillment centers produce parbaked goods for shipment to stores, where the baking is completed (or offloaded onto consumers). Centralisation can result in large warehouses requiring longer delivery runs or, by contrast, networks of smaller distribution centres that reduce transportation costs. These strategies vie with one another for competitive advantage.

So often in the time that I'm not there [working in store], they've introduced a whole bunch of different stuff and there's new pop-ups on the screen and stuff's been moved around. So you kind of have to reorient yourself quite often.

Automated systems also reconfigure the distribution of tasks between shoppers and employees. For example, online shopping offloads the work of going through the supermarket shelves to in-store pickers, whereas assisted checkouts offload the work of scanning and bagging onto shoppers. This ongoing rearrangement of the physical space and the mental and manual activities of the job can give workers a sense of fragmentation. They may find their assigned tasks shifting to conform to patterns set by automated systems. In many cases their role is to fill in the gaps left by automated systems, such as dealing with malfunctions in the assisted checkout lanes, correcting the mistakes of robots that check the gaps on supermarket shelves, and so on. The hybrid forms of shopping that take place in supermarkets can create new tensions as shoppers find themselves navigating their way around the pickers' large carts to access supermarket shelves. Stores designed to maximise the shoppers' exposure to products can pose challenges for pickers whose task is to collect common items as efficiently as possible.

Surveillance and control

Automation relies on data, and data collection can enable enhanced forms of monitoring, surveillance, and control. In some cases, the surveillance falls on consumers – as in the case of theft-prevention measures at assisted checkouts. But the consequences can also impact workers who are placed in the position of addressing consumers suspected of theft. Automated systems for tracking warehouse work can also be used to monitor the speed and efficiency of workers, just as product scanners can be used to track the speed of cashiers. Some interviewees used the term 'Big Brother' to describe the high level of control over their performance. Others mentioned different mechanisms used by management to model productivity and efficiency at work, for example, via a display of performance reports in the workplace. But surveillance is also interpreted in positive light, as a measure to maintain safety at work, to deter workers' transgressions, or to check on a particular occurrence. One constant of automated systems is that they require increasing amounts of data – in general, the more sophisticated the system, the more data it requires.

As tasks are delegated to automated systems, workers can sense a loss of agency and autonomy. Data driven decision making cannot always take into account the forms of experience acquired by workers. This can lead to frustration when workers know, for example, that predictions for demand generated by automated systems are missing important factors that will affect their workload and performance. One of the consequences of increasing centralisation is that general decisions made to maximise overall efficiency will not take into account local conditions at particular stores and fulfillment centres. Automation also can have imperatives built into it that can either benefit or disadvantage workers.

Sometimes it does feel like we're just following this system and we don't really get to think for ourselves and we're just following this thing – because it literally can be doing the same route over and over again...

Flexibility and precarity

As automated systems become more entrenched, the costly, fixed, technological infrastructure generates efficiency gains through increasingly flexible forms of human labour. Just-in-time inventory stocking and delivery coincides with as-needed scheduling of labour. Rostering platforms, for example, allow for increasingly fine-tuned predictions of labour needs, resulting in flexible scheduling. The platforms themselves can consume managers' time and attention as they attempt to adjust scheduling to meet projected demand. Some workers described the rostering systems as inordinately time consuming. The pressure to demonstrate the cost effectiveness of the technologies can result in the attempt to do more with less staff, and thus to ramp up work expectations. Thus, automated rostering systems designed to cut costs may do so by privileging lower paid (younger or less senior) workers, reducing worker access to regular schedules or the benefits of full-time employment. Ensuring such systems do not become exploitative represents a negotiating imperative in collective bargaining agreements.

There is pressure to gig-ify a growing range of activities. The increase in online shopping and resulting forms of grocery delivery – including the "Uberisation" of delivery in some cases – has outlived the lockdown phase of the pandemic. The efficiencies realised by automation run the risk of being realised at the expense of increasing precarity for the workforce.

At Christmas and Easter time, they don't put extra people in there. I do my, what do you call it, Fitbit thing, and I do five kilometres a night on an eight hour shift, just in a space of 19 by 30 tiles. [about assisted checkout]

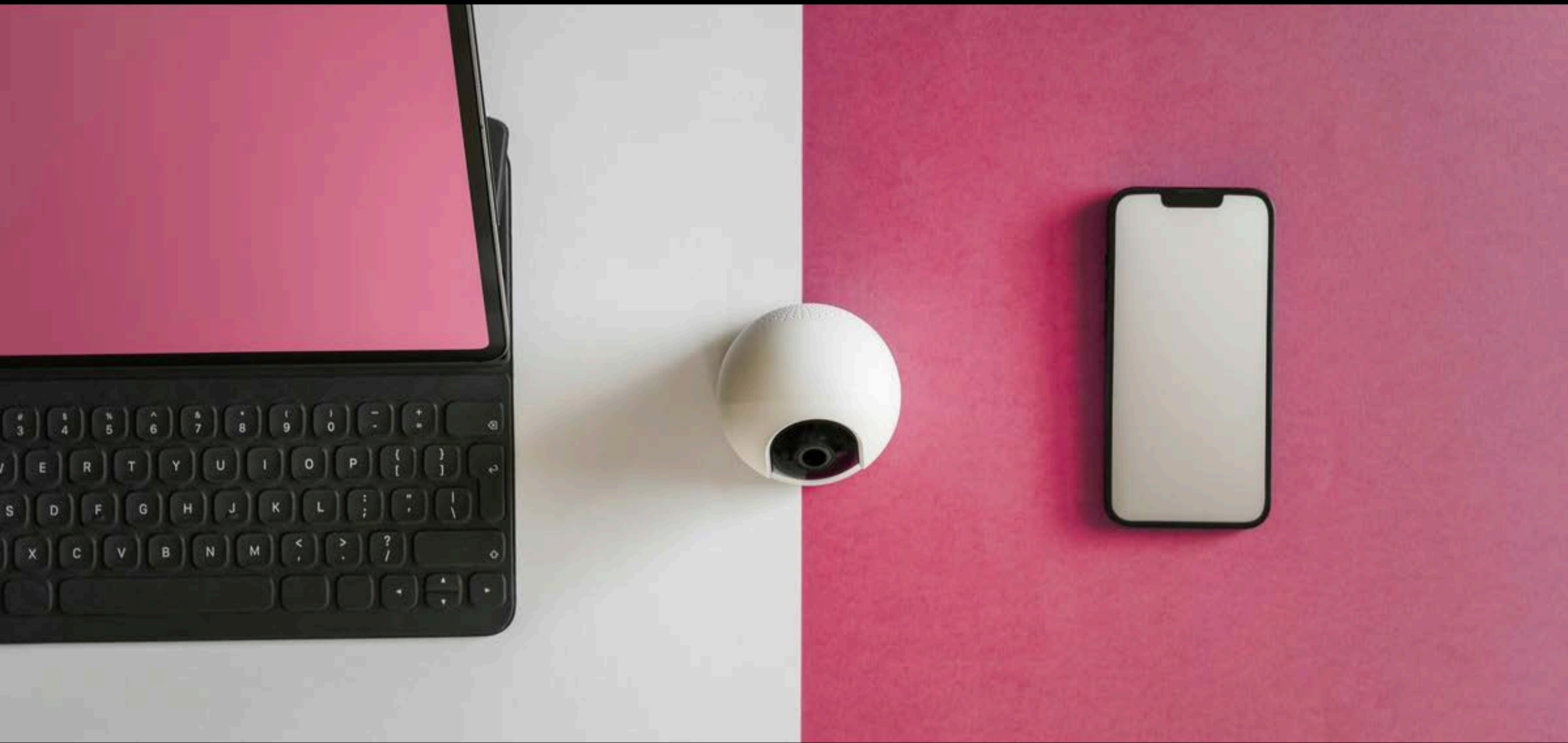
Generational differences and the reconfiguration of social relations

There are generational differences in attitudes and literacies towards the adoption and use of digital and automated technologies, both at the worker and consumer side, with older demographics often requiring more training and help. In-store, the younger portion of the workforce, while often "well-versed" in technology, is also considered professionally inexperienced and, on some accounts, lacking in the social skills for face-to-face customer service. Experienced workers expressed concern about the de-socialisation of consumer relations. In the case of assisted checkout, for example, face-to-face interaction is largely limited to troubleshooting and theft prevention – the latter requiring the social skills to handle situations that can sometimes be confrontational. Face-to-face interaction is replaced by face-to-screen interaction, notably at self-checkouts and self-ordering kiosks.

The Limits of automation

The fast-moving implementation of retail automation raised concerns about the importation of the tech-sector's "move fast and break things" approach. Many interviewees spoke of technological "inconsistencies", "glitches" and "systems-out-of-whack", resulting, variously, from forms of standardisation that are insufficiently flexible and top-down implementation. There was a sense on the part of our participants that the implementation of the technology felt speculative: directed toward a future for which the machines themselves are not yet ready. The result is ongoing adjustment and update – and, in some cases, the decision to scale back the technology (as some retailers are doing with assisted checkouts).

There's a lot of kinks that they have to fix and they're sort of worried about other things rather than worrying about the things they should be fixing. Just something simple like [product] substitutions...



CONCLUSIONS

Data power:

Informational systems are likely to advance more rapidly than physical ones such as robotics. Control over information – and, more precisely, the way in which it is put to use will play a key role in labor relations, as well data collection practices and sensorisation. Powerful technologies for monitoring and tracking will accompany the increasing datafication of the workplace – existing norms around privacy and data will exacerbate the inequality of control data and data collection. Information systems will be used to cut costs, realise efficiencies, and organise the workplace. These systems will raise issues around casualisation of work and the flexibility associated with "gig-ification" – the displacement of steady employment by so-called independent contractors. The rise of "gig" economy arrangements has implications for steady work, benefits (such as sick leave and vacation time), and the need to provide a safe and secure workplace.

Emergent regulatory responses to the gigification/platformisation of work and algorithmic management include the studies by the European Trade Union Institute (e.g. "black box testing" of data collected and used for management) or the work associated with the EU Platform Work Directive to ensure adequate data privacy, transparency and oversight (see references below).

The future of retail:

There is strong interest on the part of large retail companies to reap the benefits of automation promised by greater efficiency and reduced labour costs. Futuristic versions of retail envision the convergence of online and offline shopping around the imperative of frictionlessness. In physical space, this means grab-and-go shopping, automated restocking, and dynamic pricing. It is not a coincidence that labour tends to disappear from these future scenarios. In practice, however, it is displaced – moving to behind-the-scenes functions, maintenance and troubleshooting, and, in some cases, onto consumers. Also impacted is the sociality that comes with visible and present forms of labor in the workplace. But again, this is likely to be displaced – dealing with those instances when automation fails or is inadequate to the task.

Acknowledgments

We would like to thank our Autowork project colleagues at NTNU, especially A/Prof Håkon Fyhn; Prof Roger A. Søraa; Mark Kharas; Dr Kristoffer Nergård; at Monash, Chief Investigators: Prof Sarah Pink, Dr Debora Lanzeni; PhD student: Ms Paulina Noches Pareja; Research Associates: Dr Ari Jerrems, Dr Jigya Khabar (Sales and Services Stream); also Dr Ben Lyall (Construction). Special thanks to Dr Hannah Korsmeyer for sharing examples for the Future Scenario workshop; and Dr Nik Matovinovic, for his assistance with the organisation and conduct of the workshop. We are grateful for the support of the empirical research by the SDA, especially Ms Helen Cooney, and the members of the SDA National Executive Committee for engagement and feedback on the draft report.

Notes

Agosti, C., Bronowicka, J., Polidoro, A., & Priori, G. (2023). *Exercising workers' rights in algorithmic management systems: Lessons learned from the GlovoFoodinho digital labour platform case*. European Trade Union Institute Retrieved 15 March 2024 from bit.ly/3W33Vjp.
Council of the European Union. (2024). *Platform workers: Council confirms agreement on new rules to improve their working conditions*. Council of the EU. Retrieved 15 March 2024 from bit.ly/3Q5osg8.

Contact details

Mark.Andrejevic@monash.edu
Aneta.Podkalicka@monash.edu

Image credits

Picture 1 by ccipeggy from Pixabay
Picture 2 by Alexander Isreb from Pexels
Picture 3 by Jack Sparrow from Pexels
Picture 4 by Karolina Grabowska / Kaboompics from Pexels
Picture 5 by Jakub Zerdzicki from Pexels