Automation and Retail

The retail sector is one of the sectors within the UK in which the increasing use of automation has been most visible. Much of this visibility, of course, has been driven by the replacement of checkouts operated by members of staff with automated self-service checkouts, a process which arguably began with the unveiling of the automated teller machine in 1967, followed by the introduction of the 'operator-unattended checkout system' in an Atlanta supermarket in 1986. By 2021 the global value of the market for self-checkout systems was worth just over four billion dollars, according to Statista, and by 2030 is predicted to have grown to $13.54billion. Other statistics demonstrate that the self-service checkout revolution has far from run its course, with predictions that 46% of cashiers jobs will be replaced by technology by 2030. Despite the visibility of the self-service checkout, and the fact that it regularly crops up in stories which either proclaim how popular self-service checkouts are or, conversely, how they lead to lower levels of customer satisfaction, it is really only the tip of the iceberg when it comes to considering the use of automation across the retail sector. In this article we'll look at the increasing use of automation in almost all parts of the retail process, from retail stores themselves – bricks and mortar and online - to the warehouses which hold stock and the systems used to control inventory and deliveries.

One concrete case study of the advanced use of AI software to manage stock levels within a retail outlet – or indeed a number of retail outlets – is provided by the US based retail chain Niemann Foods, which has recently started using replenishment and inventory software in 43 stores across Illinois, Missouri and Indiana. The software gathers and analyses data from the stores in real time, and uses the information to predict consumer behaviour and purchase trends, combining current demand with things such as seasonal trends to maintain optimal stock levels across all stores. The key difference between existing stock control software systems and those which are powered by AI is that the automated systems, rather than simply monitoring and regulating metrics such as stock levels, sales and deliveries, will utilise machine learning to draw conclusions and make predictions. The other big advantage of automated stock control and inventory systems is that they can easily be scaled up or down to reflect changes in the market or a particular business model, and careful planning can result in a business-wide system which combines in-store inventory with a personalised e-commerce offering and the physical processes involved in order fulfilment and shipping and stock control. On the sales floor itself, automation can be used to gather and analyse consumer data at speed and scale, making it possible to streamline workflows on the basis of what items need to be where and when they need to be there. A seamless integration between bricks and mortar and online stores, with sales from each registered on the system in real time, can ensure that the online offering always accurately reflects the stock available in the warehouse, and that the fulfilment teams in the warehouse know exactly which stock needs to be replenished at any given time. In the warehouse, tracking technology can be used to monitor the movements of either members of staff or automated picking units, and the data used to decide the most efficient placement of stock and the best routes between various parts of the warehouse, with ceiling and shelf mounted monitors utilising technology such as radio-frequency identification (RFID) to 'read' tags mounted in the stock and maintain accurate stock levels at all times. When stock needs shipping rom the warehouse, the automated software will not only be working with real-time data on customer demand and stock levels, it will be able to call upon historical shipping data and factors such as the

latest weather conditions and issues with road, rail or sea transport in order to maintain full and accurate control over when a delivery will reach the intended destination – whether that means a single item landing on a customer's doorstep or multiple pallets shipped to a number of different retail locations.

Another example of a company utilising technology for the purposes of inventory management is Ikea which, earlier this year, announced an expansion of the use of autonomous drones to operate in warehouses during non-operational hours, ensuring that the data held on stock levels is accurate and enabling employees to take an overview of the warehouse. It's estimated that the barcodes checked automatically by the fleet of 100 drones (based in warehouses in Belgium, Croatia, Slovenia, Germany, Italy, the Netherlands and Switzerland), would take three months to check if it were being done manually. Nor is this the only example of Ikea embracing automation to streamline operations. They have also utilised robots such as the MiR500 AMR, which works independently alongside employees and can shift as much as 500kg made up of objects such as pallets or waste material at any one time, working around the clock, seven days a week. They also make use of robots in so-called 'micro-fulfilment centres', which are smaller units than traditional large warehouses, geographically located to help implement rapid delivery. Within the centres the robots – controlled by AI which analyses incoming customer orders – operate by bringing different items of inventory to the Ikea workers who are putting the orders together. Meanwhile the Ikea store in Covina, Los Angeles, makes use of an automated racking system within the warehouse which means that more stock can be held and that customer orders are delivered more quickly, with the use of forklift trucks being almost totally eliminated.

In the UK, meanwhile, Marks and Spencer's made use of autonomous event capture technology to monitor the movement of employees around their warehouse facilities. The reason for deploying AI in this manner was to locate and identify any areas of risk within the warehouses and minimise the number of Health and Safety incidents (accidents, in layman's terms) taking place. The deployment of AI in this manner was a response to a post-Covid increase in the demand for online retail which, in turn, meant more staff had to be employed within existing warehouse spaces. Once the system was in place – integrated with existing CCTV systems - management were able to identify an eventual 80% reduction in the number of unsafe events within the warehouses.

One of the fears generally voiced when the topic of automation is discussed is that increased use of technology such as AI within the retail sector will automatically lead to lower levels of employment. This is clearly a genuine risk but is not something that can be taken for granted. In some cases, automation within retail will develop at a pace which customers kick back against. This seems to have been the case where the Amazon Fresh store, which opened in Dalston, London in 2021 and closed its doors permanently in January 2023 is concerned. The relevance of this particular closure is that the store made use of Just Walk Out (JWO) technology, enabling customers to gather their goods and be charged automatically upon leaving the store without even the minimal friction of a self-checkout process. In March the company announced that 8 similar stores in places such as Seattle, New York and San Francisco were also due to close, raising the possibility that the JWO technology is either not what customers are looking for right now or is still prohibitively expensive to operate. Another argument against the prophecies of doom which often accompany any mention of automation is that automating specific tasks which are

particularly suited to technological solutions can free employees up to engage in other tasks which deliver more value (as well as boosting morale). A concrete example of this phenomenon is provided, once again, by our friends at Ikea. Since the launch of an AI chatbot called Billie to deal with routine customer enquiries in 2021, the company has seen 47% of calls to call centres dealt with by the technology. Rather than this leading to job losses amongst the staff previously tasked with handling the calls, however, this introduction of AI technology led to 8,500 call centre workers being retrained to act as interior design advisers to customers.

What all of the examples given above highlight is the fact that automation can be utilised across the retail sector and, in particular, to streamline control of stock and inventory. Companies that don't invest now in automated technology which can be integrated with legacy systems are likely to find themselves being left behind by the competition, but the areas in which the technology is applied – and the way in which it is used – has to be very carefully planned.