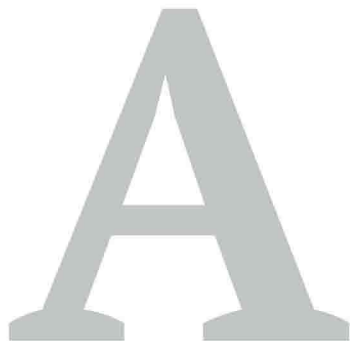


Walmart's Alphabot picking system automates key pieces of the online grocery pickup service using autonomous mobile carts to gather items from a high-density storage system located in the back of the store.

From Food Safety to the Last Mile

HOW FIVE TOP GROCERS ARE MODERNIZING THROUGH AUTOMATION, ROBOTICS.

By Randy Hofbauer



As today's top grocers seek to find ways to cut costs and allow their associates to focus more directly on attending to shoppers' needs, they're employing automation and robotics throughout the store, improving efficiency and accuracy in operations from food safety all the way to the last mile of delivery.

While many grocers have gone on record to share noteworthy ways that they're working internally and externally to integrate these new

technologies — and even more are keeping their lips sealed — here are five noteworthy food retailers and the areas in which they're employing the latest in robotics and automation solutions.

Walmart and Ecommerce Picking

When online grocers ramp up ecommerce operations, it's important that they add technology to make floor associates' lives easier in the order-building and -fulfillment process. Walmart arguably has experienced such growth more than any other traditional brick-and-mortar operator in recent years, so, in partnership with North Billerica, Mass.-based startup Alert Innovation, it launched Alphabot to assist in the picking process.

Said to be the first of its kind, the solution helps store pickers speed up the process of filling online grocery orders, using automated mobile carts that work behind the scenes by picking products from the storage area and delivering them to one of four picking stations, where pickers consolidate the items into customers' orders. Pickers can spend less time walking the aisles for center store items and more time selecting such fresh items as meat and produce.

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—Mark Ibbotson, Walmart

often tell us are the most enjoyable part of the job, while the technology handles the more mundane, repeatable tasks,” said Mark Ibbotson, EVP of central operations, Walmart U.S., at the time of the launch. “Although this is a small pilot, we expect big things from it. We have a lot to learn about this new technology, and we’re excited about the possibilities of how we can use it to make the future of shopping — and working — even better.”

The innovation is being introduced in the Bentonville, Ark.-based mega-retailer’s Salem, N.H., Superstore as part of the location’s grand reopening, so it should be up and running by the year’s end. A 20,000-square-foot extension was built onto the store to house the technology and serve as a dedicated grocery pickup point with drive-thru lanes for customers.

Amazon and ‘Just Walk Out’ Shopping

Scan-as-you-shop technology is one of the hot new technologies for easing the shopping experience. The problem here, though, is pushing customers to do more work by downloading an app and scanning every product as they put it into the basket — which is arguably why Walmart’s solution of this kind failed.

Amazon Go uses computer vision, sensor fusion and deep learning to detect what shoppers put in their baskets, and then charges them automatically upon exit.

Ecommerce giant Amazon sought to change this earlier this year with the public debut of its Amazon Go format, which uses “just walk out” technology to create a truly grab-and-go experience requiring no additional effort on the shopper’s part.

To give a quick overview of how it works: The store uses technology similar to that powering self-driving cars, employing computer vision, sensor fusion and deep learning to automatically detect when products are removed from, or placed back on, shelves. To use the “just walk out” technology, patrons download and check in via a mobile app, take what they want, and walk out the door, where they are charged for the products they take with them. There are no lines or barcodes to be scanned in the process.

Granted, the store’s public debut came 10 months late due to technical difficulties. During a March presentation at ShopTalk in Las Vegas, Amazon Go VPs Dilip Kumar and Gianna Puerini revealed some of those issues, which included pulling off the “just walk out” technology in a way that makes it seamless and effortless, developing algorithms that are beyond state-of-the-art for computer vision and machine learning to solve the problems of who took what, and creating the robust hardware and software infrastructure to support everything. Even retraining customers’ behavior when shopping and leaving a typical grocery store presented a challenge.

The technology appears to be fixed now, as Amazon has since revealed new locations in San Francisco and Chicago, and even a second spot in its hometown of Seattle, where the original is located.

It’s not just Amazon seeking to open stores with this technology, though. Albertsons Cos. could be the next major retailer to roll out “just walk out” technology similar to Amazon’s, according to business journal BoiseDev.com.

Specifically, Shane Sampson, chief marketing and merchandising officer of the Boise, Idaho-based retailer, said in a May presentation that the retailer is experimenting with “Amazon Go-like technology” specifically for use with a “limited set of products, like Plated” meal kits and other prepared offerings. Customers would be able to grab what they want and leave the store without having to scan a barcode or go through traditional checkout.



Ahold Delhaize USA and Out-of-Stock Robots

It's been said that adding googly eyes to any plain object makes it fun. This definitely was the case with Ahold Delhaize USA and Marty, whose purpose is to detect hazards, out-of-stocks and more — and who reportedly has become quite popular with selfie-snapping shoppers.

In April, Marty the Robot debuted in a La Follette, Tenn., Food Lion store, where it clean-sweeps the store a dozen times daily to identify slip-and-fall hazards on the floor, to which it alerts associates and also warns nearby shoppers. It also scans shelves for out-of-stocks and ensures that shelf pricing is aligned with the front end registers. In the future, Marty's developer — Lexington, Ky.-based Badger Technologies — hopes to improve the technology to also check and report temperatures, allowing store managers to focus on other activities.



At Food Lion, Marty the Robot clean-sweeps the store a dozen times daily to identify slip-and-fall hazards on the floor, scan shelves for out-of-stocks and ensure shelf pricing is aligned with the front end registers.

Sporting the aforesaid googly eyes, a name tag, and a Shop & Earn ribbon, the robot has become popular with customers, some of whom come by the store with friends and family just to see it. Numerous postings and selfie photographs with Marty have also appeared on social media.

The La Follette location's robot isn't the only one being used by an Ahold Delhaize USA banner. At the time of Marty's debut, four Giant and Martin's stores in Pennsylvania were using similar robots, and the parent company had plans to roll out robots to all 171 Giant and Martin's stores by the year's end.

Also, Ahold Delhaize USA isn't the first food retailer to test such robots in stores: Last July, St. Louis-based grocer Schnuck Markets partnered with San Francisco-based automation solutions provider Simbe Robotics and Irvine, Calif.-based Advantage Solutions' digital technology division to begin piloting similar robots at three stores, where the devices scanned shelves over a six-week period three times a day to ensure proper stocking and product placement.



Kroger and Autonomous Delivery Vehicles

The Kroger Co. is piloting a delivery program that uses unmanned road vehicles to fulfill online grocery orders.

Partnering with Nuro, the Mountain View, Calif.-based developer of the world's first fully unmanned road vehicle, the Cincinnati-based grocer is working to make the convenience of grocery delivery accessible and affordable for customers everywhere. Through the innovative partnership, customers can place same-day delivery orders via Kroger's ClickList grocery ecommerce system

and Nuro's mobile app, which will be fulfilled by Nuro's fleet of on-road autonomous vehicles.

"We are incredibly excited about the potential of our innovative partnership with Nuro to bring the future of grocery delivery to customers today," said Yael Cosset, Kroger's chief digital officer, at the time that the partnership was revealed. "As part of Restock Kroger, we have already started to redefine the grocery customer experience and expand the coverage area for our anything, anytime and anywhere offering. Partnering with Nuro, a leading technology company, will create customer value by providing Americans access to fast and convenient delivery at a fair price."

The grocery ecommerce pilot marks the first application and deployment of Nuro's hardware and software. Its market, Scottsdale, Ariz., will begin receiving service in the fall.

"Unmanned delivery will be a game-changer for local commerce, and together with Kroger, we're thrilled to test this new delivery experience to bring grocery customers new levels of convenience and value," said Dave Ferguson, co-founder of Nuro, when the pilot was announced. "Our safe, reliable and affordable service, combined with Kroger's ubiquitous brand, is a powerful first step in our mission to accelerate the benefits of robotics for everyday life." PG

Leveraging Advantage's deep client relationships, the robot's computer-vision technology captured and analyzed a wide range of data on behalf of three leading global manufacturers, including an understanding of local market needs and how to optimize for the future; the root cause for the lack of product on shelf; visibility into share of shelf, price and promotion trends across categories; and more.

Moreover, Minneapolis-based Target Corp. performed a similar pilot in 2016, and last year, Walmart filed a patent for drone technology to be used in its stores for similar purposes.

Hy-Vee and Product Traceability

Midwestern grocer Hy-Vee is conducting a trial of a new solution to help automate farm-to-fork traceability of fresh produce coming to its stores.

Partnering with San Jose, Calif.-based software company Zest Labs, the retailer is using the Zest Fresh solution to make sure that it provides a vast assortment of high-quality natural, organic and locally sourced products — and also to ensure that customers understand the sources of the food they purchase. The solution is claimed to reduce grocers' waste from spoilage by more than 50 percent.

Zest Fresh uses the Internet of Things to autonomously track and report product freshness from harvest to store in real time, in its work with a premium supplier of seedless Holiday grapes. Leveraging what is said to be the industry's first dynamic freshness metric — the ZIPR Code — the solution can give West Des Moines, Iowa-based Hy-Vee traceability data and continuous real-time visibility of the remaining freshness capacity of the grapes.

"We are excited to work with Zest Labs to determine how Zest Fresh can help both monitor and improve freshness while providing complete traceability through the cold supply chain," said John Griesenbrock, Hy-Vee VP of produce and Health Markets, when the trial began. "With traceability support, we will become even more invested in bringing the freshest and highest-quality produce to our customers."

Partnering with Nuro, creator of the world's first fully unmanned road vehicle, Kroger is working to make the convenience of grocery delivery accessible and affordable for customers everywhere through the developer's solutions.