automated
RETAIL tracker

Farmer's Fridge On The Importance Of
Digital Upgrades

Amazon expands cashierless store model with Go Grocery

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WHAT'S INSIDE

The automated retail sector experienced double-digit sales gains in 2019 and is poised to reach $18 billion in value in the next three years. Certain sectors are showing especially strong improvements, with the kiosk market generating a record $11.9 billion in sales thanks to consumers' familiarity with self-service technology and cash payments' growing inconvenience. Cash remains king for millions around the globe, but more economies are embracing cashless transactions for benefits like their cost savings and transparency.

A recent PYMNTS report found that 78.1 percent of digital wallet users would rather make purchases through nontraditional, unattended means and enjoy using such offerings because they are faster (49.4 percent), have shorter lines (34.7 percent) and allow consumers to take their time when making purchases without having to talk to employees (33 percent). Such perks may soon be coming to vending machines that typically only take cash, too, as a San Francisco-based FinTech recently raised $70 million for a nationwide retrofit effort that will allow existing machines to accept credit cards.

Consumers' interests in frictionless shopping apply to brick-and-mortar stores, as well. Shoppers tend to want to get in and out of such stores as quickly as possible, boosting cashierless store models' popularity. Some retailers are even utilizing automated restocking solutions to keep shelves filled.

AROUND THE AUTOMATED RETAIL WORLD

eCommerce giant Amazon is among the companies tapping unattended operations to satisfy time-strapped customers. The company opened its first cashierless Amazon Go convenience shop in 2016 and is now upgrading the model, launching its first full-size, brick-and-mortar grocery store in Seattle's Capitol Hill District. Shoppers will have access to more products than can be found at regular Go stores, including items from Whole Foods and lower-priced items such as Kellogg's cereal.

Nike is recognizing it must pick up its pace if it wants to meet consumers' demands for quick delivery, announcing a partnership with smart logistics solutions provider Geek+ that will supply Nike with more than 200 smart robots from the provider's goods-to-person P series. The robots will cut down on manual labor and enable Nike to make same-day deliveries in Japan.

Automaker Ford is also looking at automation, expanding its digital kiosk installation project to more car dealerships after seeing positive results from a pilot program. Customers use the kiosks to check in, select the services they want and verify their identities by entering their phone numbers — all without having to rely on staff. The kiosks also allow users to mark how they want to be contacted for updates, streamlining their car dealership experiences.

For more on these stories and other recent automated retail headlines, check out the Tracker's News & Trends (p. 9) section.

TAPPING AUTOMATION TO BRING HEALTHY EATING TO VENDING MACHINES

Vending machines have long been staple providers of grab-and-go snacks, but the items for sale typically include candy, chips and other unhealthy options. Luke Saunders, founder and CEO of healthy vending machine company Farmers Fridge, leveraged the connectivity of internet of things (IoT) technology several years ago to develop self-service, smart vending machines that provide healthier options when consumers need quick meals or snacks. In this month's Feature Story (p. 6), Saunders explains why the company is upgrading its IoT infrastructure to support expansion as well as how a more robust digital system is necessary to generate the seamless experiences customers expect when placing orders with touchscreens.

5 FIVE FAST FACTS

48.6M
Number of consumers who would like to use unattended retail channels

$50B
Projected value of the cashierless retail market

$18B
Estimated value of the global automated retail market by 2023

39%
Share of shoppers who left stores without making purchases due to out-of-stock items

$300B
Estimated value of the global intelligent automation market by 2025

Farmer's Fridge On
The Importance Of
Digital Upgrades

Vending machines have come a long way from their origins as coin-operated appliances that dispense sodas or candy. Consumers can now purchase nearly anything from them — health and beauty products, electronics, clothing and even groceries — with their credit cards or mobile wallets.

Traditional vending is geared toward quick snack purchases, meaning items needed to be nonperishable for minimal upkeep and restocking. Chips, crackers, cookies and candy all fit the bill, leaving hungry consumers no ability to order healthier options. Fresh meal vending solutions provider Farmer's Fridge launched in 2013 to meet that need, using vending machines to sell fresh and healthy food at scale.

"I was looking for higher-quality food, and by that I mean fresh, unadulterated, no preservatives — basically high-quality calories at an affordable price," Luke Saunders, the company's founder and CEO, said in a recent interview with PYMNTS. "I had an interest in leveraging technology to make that possible."

The company sells items like salads in recyclable jars, avocado BLTs and pineapple coconut chia pudding through 400 IoT-connected fridges in major U.S. cities, including Chicago, Milwaukee, New York City and Philadelphia, and it plans to expand to additional locations. Enabling such sales required more than just swapping traditional vending machine products for healthier options, however. The concept required careful planning and execution to ensure fresh items could safely be sold in unattended machines without creating too much waste.

FOCUSING ON CUSTOMER SERVICE

Farmer's Fridge developed the technology that powers its smart machines in-house, Saunders explained. IoT- and AI-enabled infrastructure ensures that food items are kept at safe temperatures and restocked as necessary. The company recently began upgrading its digital infrastructure to accommodate the flood of data flowing in from an ever-expanding network of vending machines, suppliers and field operators.

"From the supply-chain side, I have to be able to manage a highly perishable inventory," he said. "Essentially, our business model is to fill the fridge and then go back and refill it, but we have to know what's in there [in real time to do that]."

Farmer's Fridge sources its items from local and regional suppliers, prepares them as needed in its commissary kitchen and delivers them in refrigerated vehicles to each location five days a week. Each product has a "donate by" date, and anything not purchased by that point is removed from the machine and donated to local food banks. Saunders explained that this system aims to improve inventory management, facilitate communication and boost productivity across the organization while also helping the company better understand how users are interacting with its vending fridges.

"We're [now] able to [answer questions like] has that customer been here before, have they purchased other items [and] what did they purchase?" he explained. "A typical restaurant chain knows that [it] sold a hundred pizzas … but they don't necessarily know who they sold them to — and we do."

Farmer's Fridge controls its menu and ingredients with algorithms that quickly capture data and combine the results with real-time analysis. Saunders said deep knowledge of customers' behaviors allows the company to alter its products as needed and offer personalized discounts.

"It allows you to be much more targeted in how you innovate and how you meet customers on what they want," he said. "We do adapt, taking that to the next level [and] using the user interface to gather information from customers on what they're looking for and then actually serving them up offers that are specific to what they've [bought] in the past, how they're navigating the screen or what time of day it is."

The robust centralized system provides data that points management to strategic locations for the fridges like hospitals, universities and convenience stores.

TARGETING CONVENIENCE

Farmer's Fridge has had to innovate its smart vending machines in ways that will meet customers' demands while also improving its bottom line. The company's original system stored data directly on its fridges, causing troubleshooting delays and communication bottlenecks while also preventing it from easily maintaining its menu, fixing broken fridges or updating inventory in real time. The company thus decided to upgrade its machines and identify elements that could be simplified and transferred to the cloud — a process that included menu and planogram changes and inventory data. Shifting those systems to create a more agile, scalable infrastructure has been the company's biggest area of improvement, Saunders said.

"Building a scalable data center infrastructure has been the focus of the last 12 months, and then being able to do that across every aspect of our business," he noted. "Looking at our customers, for example: What items did we recommend? How did that affect their loyalty?"

Farmer's Fridge expects its recently released app to improve customers' experiences as well, allowing them to view inventory for select fridges on their mobile devices, preorder and pick up their items when they reach the machines. This capability is only available for a small number of fridges right now, but Saunders expects a full rollout in the near future.

The Farmer's Fridge app also enables customers to use more than just credit cards to make purchases. The addition of another payment channel heightens the need to safeguard transactions, Saunders noted, but the firm built safety features into its terminals during design and development. All transactions go through its Payment

Card Industry (PCI)-compliant payment network, which uses a third-party authentication process to approve transactions.

"That was really the focus early on, to be able to be PCI-compliant and pass an audit," Saunders said. "We have quite a lot of partners and then, obviously as you grow, [you need] just more general security around customers' [personally identifiable information] and things like that. … Right now our focus is on … really meeting customers where they are versus being adrift about what that means from a format perspective."

Meeting customers where they are and providing the safe, secure and convenient shopping experiences they crave is important as automated retail becomes more prevalent. Keeping tabs on what consumers are buying and when — and giving them access to easy, digital payment methods — will ensure that providers in the space continue to differentiate themselves from their competitors.
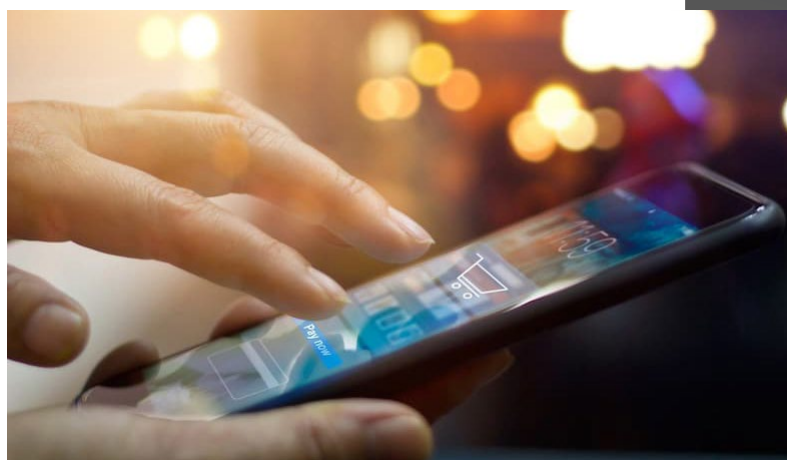
NEWS & TRENDS

Merchants embrace new store models

AUTOMATED RETAIL SPACE IS RIPE FOR MARKET GROWTH

American consumers are growing increasingly comfortable shopping for food and electronics without human aid. A recent report from PYMNTS found that the supply of cashierless channels, such as vending machines, self-service kiosks and even fully automated retail stores, lag significantly behind demand, however. Data in The Future Of Unattended Retail Report: Vending As The New Contextual Commerce showed that 48.6 million consumers would like to use unattended retail channels, including fully automated locations, yet only 14.1 million consumers actually made purchases at such vendors during the three months prior to the survey. This presents massive growth potential for firms.

Interest in using automated machines to shop varies depending on the product. Consumers are most comfortable buying health products through unattended retail, for instance, with eight out of 10 citing interest in such offerings. Beauty products were the second most popular product to purchase through these channels, followed by beauty supplies. The report also revealed that 49.4 percent of shoppers use unattended retail channels because of their speed and that 78.1 percent of these shoppers digital wallets.

AMAZON EXPANDS GO STORE MODEL TO LARGE-SCALE GROCERY STORE

Amazon has been a major cashierless retail driver, with consumer demand ramping up to justify their business strategy. The eCommerce giant, which opened its first cashierless Amazon Go store in 2016 and plans to have 3,000 such shops across the country by 2021, has wasted little time in upgrading the store model, opening its first Amazon Go Grocery location last month in Seattle's Capitol Hill district. The grocer does not have checkout lines or cashiers and offers products from Amazon's Whole Foods unit as well as lower-priced items such as Kellogg's cereal. It is also much larger than a typical Go store, at 10,400 square feet.

Amazon's technology allows customers to simply walk out with items they wish to purchase. Receipts are sent to their mobile apps and their on-file card is billed. Reuters recently reported that Amazon has inked deals with other merchants interested in using its "Just Walk Out" technology, and some estimates project that the cashierless retail market could grow to $50 billion.

7-ELEVEN TRIALS CASHIERLESS CONVENIENCE STORE CONCEPT

7-Eleven is jumping on the cashierless retail bandwagon with a new concept store model at its headquarters in Irving, Texas. The pilot uses its own proprietary technology to monitor inventory levels and process customer purchases without help from human associates. Customers who check in on their mobile app can enter the store and receive receipts upon exit, should they make a purchase.

It is unclear how long 7-Eleven will be testing the pilot program or if it will take the model nationwide. 7-Eleven is the latest in a series of other players looking to compete with Amazon Go, including retailer Walmart and grocery store chain Giant Eagle.

TESCO OPENS CASHLESS, SELF-SERVE LOCATION IN LONDON

British supermarket chain Tesco is also looking at cashierless stores and recently opened its first cashless store with a nearly cashierless, self-service checkout in central London. The location is designed for shoppers in a rush and accepts contactless, debit and credit cards as well as Apple Pay and Tesco Pay+ at its 14 different checkout points. Two of the checkout lanes are staffed specifically to handle restricted products like cigarettes and alcohol. This is Tesco's second cashless store in the country — the other is located at its headquarters in Welwyn Garden City, Hertfordshire.

Tesco's push into cashless retail was met with some concern, as such offerings leave millions of underbanked consumers out in the cold. The London location opened shortly after a study found that as many as 8 million United Kingdom consumers would not fare well in a cashless society.

eCommerce demand propels warehouse automation

NIKE DEPLOYS SMART ROBOTS FROM GEEK+ TO FACILITATE SAME-DAY DELIVERY IN JAPAN

Increased demand for speedy eCommerce shipping has fired up the need for automated, streamlined and upgraded warehouse operations and supply chains. Labor shortages and a desire to meet customers' needs is prompting sporting goods retailer Nike to leverage smart robots to help move products from warehouse shelves and out the door as quickly as possible. The company recently announced that it is adding advanced robotic solutions from smart logistics and artificial intelligence (AI) solutions provider Geek+ to its Chiba, Japan-based warehouse. Geek+ will supply Nike with more than 200 of its goods-to-person P series robots, which efficiently pick and carry products to warehouse workers, speeding up operations and allowing Nike to make same-day deliveries in Japan.

NORDSTROM PARTNERS WITH TOMPKINS ROBOTICS ON AUTOMATED SORTING SOLUTIONS

Major fashion retailer Nordstrom is also turning to robotics to satisfy the demand for rapid eCommerce delivery. The national department store chain recently worked with Tompkins Robotics to design parcel sorting systems for several of its distribution centers. Nordstrom will be using Tompkins' t-Sort autonomous mobile robots, which are intended for small to large distribution centers and can determine the shortest routes possible to perform tasks quickly and efficiently. The robots can handle delicate items as well as products that weigh up to 66 pounds, and they can sort goods based on shipping

order and destination. The scalable robotic system can also be fully integrated or removed without any disruption to warehouse operations.

ZEBRA TAKES STOCK OF INVENTORY MANAGEMENT WITH INTELLIGENT AUTOMATION

One common shopping disappointment occurs when consumers enter brick-and-mortar stores only to be met with out-of-stock inventory. Lincolnshire, Illinois-based Zebra Technologies recently introduced a subscription-based intelligent automation solution to prevent these upsetting situations and help merchants better manage inventory and labor. The SmartSight solution employs technologies such as machine learning (ML) and workflow automation to identify items that are not in stock, in the wrong location or those with pricing discrepancies. The collected information is relayed to staff for correction, significantly reducing out-of-stock incidences and minimizing price mislabeling. This leads to enhanced customer loyalty and increased average basket sizes, according to the company, which added that SmartSight can also smooth retailers' abilities to fulfill buy online, pickup in store (BOPIS) orders as well as buy online, deliver from store (BODFS) orders.

Mismanaged inventory also frustrates retail workers, according to a Zebra study that found that 43 percent of retail staff report shoppers' complaints about out-of-stock items as their top irritant. A lack of inventory prompted 39 percent of shoppers to leave stores without making purchases.

WARE TAKES INVENTORY AUTOMATION TO THE AIR

San Francisco, California-based technology startup Ware is taking its automated warehouse inventory system to the air. The company recently introduced its software in Skydio 2 drones, helping address the challenge of tracking and counting warehouse inventory as a cost-effective alternative when distribution centers are lacking workers. The fleet of drones capture images of every bin location in a warehouse, providing a visual audit history to staff who can then fix potential problems, according to chief technology officer and co-founder Joseph Moster.

The drones allow warehouses to check inventory every month, when most typically check biannually or quarterly, enabling companies to build large visual datasets. The $1.9-trillion warehouse industry is ripe for innovation, and the drone market could reach $7 billion by 2024, largely driven by commercial applications.

ABB AND COVARIANT TEAM UP ON AI-ENABLED WAREHOUSE ROBOTICS

The rise in online retail and demand for speedy fulfillment holds great potential for intelligent automation solutions to be developed and utilized. It may be difficult to program robots to handle the wide variety of products and complexities that come with logistics and sorting, however. Swiss industrial robots supplier ABB is partnering with Silicon Valley startup Covariant to offer AI-powered robotics solutions for autonomous warehouse fulfillment. The robots utilize AI to work alongside human employees and learn from the humans' actions. Active Ants, an eCommerce fulfillment services provider for web businesses in Utrecht, Netherlands, is the first company to deploy the solution.

ABB is among a number of providers looking to push the commercial appeal of AI-enabled robotic solutions. Growth estimates underscore the opportunity in this space, with the global intelligent automation market expected to reach $300 billion by 2025, growing at a compound annual growth rate (CAGR) of 8 percent.

Kiosks, vending machines get upgrades

PAYRANGE UPGRADES VENDING MACHINES FOR MOBILE PAYMENT ACCEPTANCE

Traditional cash and coin-only vending machines need serious upgrades before they can accept a range of digital payments. FinTech PayRange is taking aim at this challenge and recently raised $70 million to retrofit these legacy machines with terminals that would enable them to take mobile payments. The company's solution is a dongle-like device that, when installed into machines, allows consumers to make secure payments via Bluetooth-connected smartphones. PayRange is digitizing these machines at no upfront cost to retailers and owners, due to the expense involved, and the devices also enable features such as loyalty programs and discounts. Michael Kitchen, chief revenue officer of PayRange, noted that the company is signing up

10,000 machines a week and expects it will sell out of its initial supply of one million devices.

FORD ROLLS OUT DIGITAL KIOSKS AFTER POSITIVE PILOT PROGRAM

Automotive company Ford has decided to expand its installation of self-serve digital kiosks following a successful pilot program that started in the fall. Customers can use the machines to check in cars for regular maintenance, verify personal details, select preferred services and choose how they want to receive updates. The pilot program's seven participating dealers reported that the average customer was able to check in vehicles in just over two minutes — about one-quarter of the time it normally takes.

The service's goal is to help dealerships streamline vehicle intake for routine maintenance while freeing up staffers for more complex cases. Ford is also piloting outdoor kiosks for 24/7, year-round vehicle drop-off and pickup.

FUNKO DISPENSES VINYL FIGURINES FROM INTERACTIVE KIOSKS

Self-service kiosks are evolving into interactive entertainment machines, too, as retailers attempt to enhance users' experiences and appeal to younger consumers. Collectible vinyl figurine creator Funko is combining functionality and fun in its new touchscreen-enabled kiosk, which dispenses small character toys called Snapsies. The toys include a rock star unicorn named Jett and a hedgehog baker named Boe, and those who use the kiosks can see different videos from Funko Animation Studios. The company stated that the machines will make their retail store debut this fall at Target locations.

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