Connected Stores Promise Better Access to Information Through Automation

By Tim Rowland, CEO, Badger Technologies, a product division of Jabil

Predictions about the future of retail typically touch on the possibilities and pitfalls of what it will take to achieve true omni-channel convergence. The largest retailers in the world are all seeking ways to blend online and offline shopping experiences, which puts increased pressure on brick-and-mortar stores to be more automated and data driven.

For physical stores to thrive in the digital era, they must become better connected and close critical data gaps that impact operational efficiencies and customer satisfaction. The overriding challenge for retailers, however, is the cost and complexity of overhauling IT systems by linking in-store data with back-end systems at local, regional, and corporate levels.

Getting Connected with Autonomous Robots

Fortunately, there is good news. Over the past several years, multipurpose autonomous robots have become an increasingly common presence in stores. Nearly 500 autonomous robots are now working in the aisles of Ahold Delhaize USA brands Stop & Shop and Giant/Martin's locations performing storewide safety checks, alerting staff and shoppers to potential hazards, keeping aisles and floors safer and cleaner while improving overall risk management.

Autonomous robots serve as rolling IT infrastructures that can be put to use without alterations to a store's existing technology foundation. In addition to checking for hazards, robots collect inventory data by identifying missing, misplaced, or mispriced products. Companies like Nielsen send fleets of humans to stores to audit shelves. But sometimes it becomes impractical, so audits are reduced to quarterly or monthly schedules due to budget and time constraints.

With robots, audits can be done continuously to minimize holes on store shelves, while improving planogram compliance. Significant funds are spent on these premium placements, yet many end up out of compliance due to lack of consistent monitoring. The installation of sensors teamed with autonomous robots goes a long way to addressing this issue.

Additional opportunities exist for stores to integrate robotic and IoT technology to collect data about all aspects of operations—from monitoring temperatures in refrigerators and freezers to checking lighting and performing security details.

Data Gathering, Compiling, and Analyzing

Traditionally, retailers have relied on centralized data collection and monolithic retail management information systems that offer macro-level analysis with limited micro-level perspective. In many grocery environments, back-end systems provide a base-level report of everything that comes into the store, but often fall short when tracking inventory once it hits the shelves. The lack of shared visibility into inventory and point-of-sale data are major challenges within most existing Direct Store Delivery models.

What is ideal about robotic technology is the opportunity to plug into existing environments—with cameras, sensors, and Lidar—to capture a "shelf's eye view" of the entire store for a more granular and valuable view of a host of inventory and operational information. Instantaneous data capture feeds, dashboards and reports can be integrated with existing store systems while resulting analytics can illuminate individual, regional, seasonal, and corporate views for more accurate and meaningful business insights.

Better access to information through automation also reveals local and regional buying patterns, seasonal consumption trends, and demographic preferences. The key is mining data to gain broader insights into store operations and then translating that information to achieve a positive impact on the top and bottom line.

The Future Is 5G-Enabled Robots

Clearly, the increased collection of in-store retail data can strain existing Wi-Fi networks, which is why 5G is an important next step to helping ensure shared visibility across critical retail inventory, POS, and operational systems.

In 2019, Badger Technologies and AT&T announced a shared goal to bring 5G-enabled robots to retail environments. The move will accelerate retail automation using autonomous robots while giving retailers faster, more reliable access to actionable business insights which will improve store operations and customer service.

The partners are testing 5G connectivity with Badger Technologies robots in a multi-access edge computing environment. The mission is to show how 5G using millimeter wave spectrum and edge computing can help retailers gain from the lower latency and higher throughput needed to process vast amounts of data running concurrently with existing in-store network applications.

As in-store robots continue to prove their worth as well as garner confidence and acceptance from retailers and shoppers alike, they will continue to earn a coveted spot as the MVP in driving the transformation of connected stores.