Temporary RFID System Tracks Flow of Shoppers

A Canadian supermarket is piloting an RFID-based solution from Moxie Retail that collects location data regarding shopper behavior, to better plan displays and shelf layout, while two other retailers intend to pilot the technology later this year.

By Claire Swedberg

Tags: Asset Tracking, Retail

Apr 15, 2013—Following a 2012 pilot of a radio frequency identification-based solution to temporarily track customers' movements via tagged shopping carts moving through a Toronto supermarket, Moxie Retail is now preparing the solution's installation for two additional pilots with Canadian retailers this year. The technology was developed for Moxie in 2011 by the Academia RFID Centre of Excellence, and was piloted last year for 10 weeks by the Toronto retailer, funded by two consumer-product brand owners. The system has since been installed at another store owned and operated by the same retailer. Later this year, Moxie plans to install the technology to cycle through two stores for another national supermarket chain, as well as at 10 locations for a third retail company. The solution provider indicates that it does not have permission to name the retailers or the brands that funded the initial pilot.

Moxie provides performance measurements and other retail services for its clients worldwide, which comprise food manufacturers and retailers. The firm began looking into a solution to track consumers' locations within stores, in order to create a record of behavior specific to particular sections of a site's sales floor, and the products on display in each section, says Ken Roberts, Moxie Retail's marketing and business development senior VP. That consumer behavior data could be compared against the store's point-of-sale (POS) data indicating, for example, which displays attracted the most customer interest, the dwell time (that is, how long customers lingered at those displays) and which items were subsequently purchased.

To improve the system's ability to identify a shopping cart regardless of its orientation, three RFID tags were attached to the sides and front of each cart.

The company began seeking an automated method to collect data, based on requests from a retailer in Panama. "There weren't any metrics in place at the time to measure traffic and dwell time," explains Peter Townsend, Moxie's founder and senior VP of strategy and shopper insights. The Central American retailer, he adds, sought "a cost-effective way to track carts and baskets."

The company consulted with Academia RFID to learn how it could employ RFID technology to track where customers go while shopping, as well as where they pause and for how long. Moxie determined that a temporary RFID deployment would be the most affordable for its clients, with an infrastructure of readers that could be easily installed at one site, and then be removed and moved to another. It also chose to monitor consumer movements based on RFID tags on carts and shopping baskets, rather than on loyalty cards, thereby tracking only the locations of the baskets and carts, and not the shoppers themselves. In the future, however, Moxie may opt to provide a solution utilizing RFID-based loyalty cards, by which customers could receive information or discounts based on their detected interests in the store.


Moxie Retail's Peter Townsend

The RFID deployment that Moxie Retail tested at the Toronto store (designed by Academia RFID and installed by both companies) consisted of 25 Impinj Speedway Revolution four-port RFID readers, along with antenna hub multiplexers, with a total of 150 Motorola reader antennas mounted on or near product shelves and counters throughout the store. The interrogators captured the ID numbers encoded to tags affixed to carts and baskets within their vicinity, and forwarded that information to Moxie's RFID software via a Wi-Fi connection. MPI Label Systems incorporated Smartrac Short Dipole M5 EPC Gen 2 passive ultrahigh-frequency (UHF) RFID inlays into RFID tags made specifically for this application, and attached them to 450 metal-wire shopping carts and 400 plastic handbaskets. To provide protection and improve readability when attached to metal-wire carts, the inlays were encased in plastic and backed with foam. Three tags were attached to the sides and front of every shopping cart, in order to improve the system's ability to identify a cart regardless of its orientation. Similarly, two tags were fastened to each handbasket.

The store provided a layout of its 45,000-square-foot space, indicating which products were displayed at which locations. Academia RFID supplied Moxie Retail with RFID middleware that received and interpreted location data from each tag as it moved around the store, says Anthony Palermo, Academia RFID's business development director. Moxie Retail's software then analyzed the location data in comparison with the products in that area, to provide details to the retailer and the two brand owners about the products in front of which each cart or basket was located.

Once shoppers were ready to purchase their selected goods, staff members at the checkout counter keyed in the ID number on the shopping cart or basket, which was stored in the software and linked to the POS data so that the software could compare how long and how often shoppers paused at a specific location, as well as what the resulting sales consisted of.

The pilot was completed during a 10-week period, after which the technology was re-installed at a second site. The retailer now intends to return the system to the initial store, in suburban Toronto, during the coming weeks, in order to compare consumer behavior against data gained at the prior pilot, as the store displays have since been rearranged.
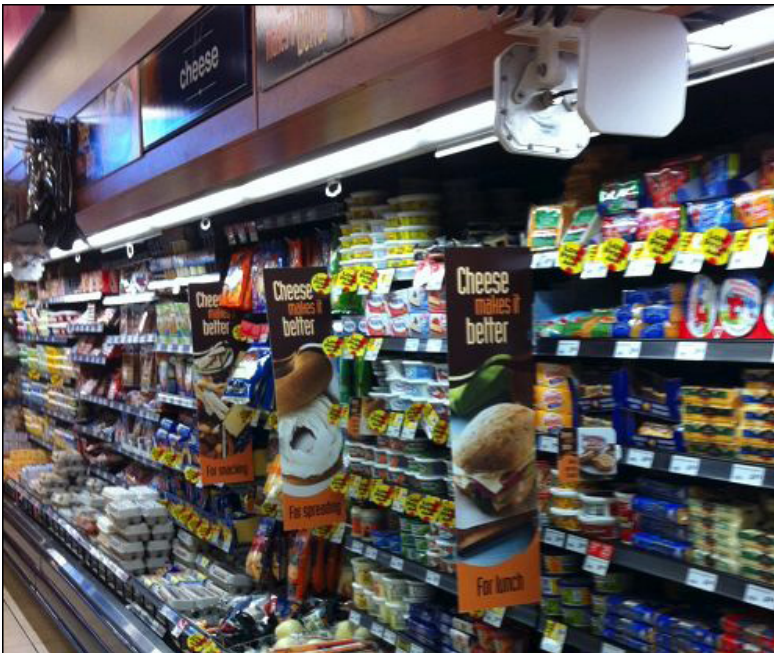
Motorola reader antennas were attached on or near the shelving throughout the supermarket.

By providing the solution as a temporary system that can travel from one store to another, the company enables retailers to

keep costs lower than if they installed the technology permanently at each store. According to Roberts, the installation at the pilot store required approximately three evenings, after hours, to complete.

Moxie Retail may opt to offer the technology to stores on a permanent basis for those that require it. There are some advantages to a long-term installation, the company reports. For instance, a store could utilize read data to receive alerts pertaining to customer traffic, and then use that information to forecast the need for additional personnel. For example, if 50 carts and baskets were put into motion during a short span of time, store management could be alerted to summon another cashier to cover the sales counters.

During the pilot, Roberts says, Moxie discovered that the constant reading of tags throughout the store led to more data than the company needed. "We were getting millions of reads," he states, "and we had to dial that back." This was accomplished by modifying the software to filter out excess reads.

Moxie Retail is presently in conversations with several major retailers throughout Canada to either trial or install the

technology, while the company also intends to market the solution worldwide. In addition, the firm is meeting with food manufacturers that can benefit from collecting data about their own product placement and subsequent purchases at stores. Roberts notes that the initial pilot was funded by two food brands interested in determining what data they can gain from deploying such a system.

Users can purchase either the hardware and software outright, or the service on a fee basis.

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