(intel®)

Intelligent Systems

Power at the Shelf:
Digital Technology Hits the Retail Bricks

By bringing digital technologies to the store shelf, traditional brick-and-mortar retailers can engage the senses, enhance customer experiences, and retain market share

In a recent Motorola Solutions retail survey, 74 percent of responders indicated that developing a more engaging in-store customer experience is going to be business critical in the next five years. Brick-and-mortar retailers can have an incredible advantage if they can create the right experience and product mix for their customers.[1]

— Paul Steinberg
SVP and CTO
Motorola Solutions

Introduction

In retail, the customer's experience at the store shelf is critical. From product placement to engaging displays to attractive pricing and promotions, the decision to buy—or not—often comes down to the experience at the shelf.

Shelf-level visual merchandising is one of several key retail factors that collectively deliver an inviting shopping experience, and it's arguably among the most essential. Done well, visually engaging shelf experiences appeal to the senses and put shoppers at ease, encouraging them to linger and buy more of the products retailers want them to.

More important than the top-line revenue bump, optimized shelf experiences can increase a retailer's bottom line by mitigating inventory distortion issues. These include lost sales due to out-of-stock products or expired goods, and decreased profit margins due to excessive discounting of overstocked or poor-selling merchandise.

Today, Intel and ecosystem solution providers are helping retailers bring the power of digital technology directly to the shelf with smart solutions that are driving new opportunities for engagement and sales.

The Shelf Means Business

In the wake of the digital age, many retailers are refocusing their attention on the physical store, seeking to clearly differentiate the brick-and-mortar experience from e-commerce in order to stay relevant.

The good news is that a high percentage of consumers continue to visit and purchase from physical stores including food, DIY products, and fashion according to a 2012 Capgemini study of 16,000 digital shoppers across 16 countries. Study respondents also said they were increasingly interested in using digital technologies during physical shopping, with 56 percent reporting that they were likely to spend more money at a physical store if they had used digital channels to research the product prior to purchase.[2]

Along gender lines, Capgemini found that women—who make the majority of food and fashion purchases—are more engaged with digital channels than men. They are also more interested in being offered visual aids in physical stores (e.g., promotions, 3D images, videos, and product comparisons) to help them choose the most suitable product. And in the purchase of electronics—where women are closing the gap with men—55 percent say they would like to receive personalized offers and recommendations through digital channels.[3]

Insights like these reinforce the importance of brick-and-mortar's strategic refocusing. By understanding customer attitudes and expectations, retailers have a very real opportunity to enhance the strengths of the physical store by adopting digital solutions and retail technologies. The store shelf is one of those strengths.

Sensory Immersion

The store shelf provides continual opportunities to visually, tactilely, and emotionally engage receptive shoppers and make a sale. It's among the most analyzed areas of retail. Myriad studies have been performed with the common goal of optimizing displays for a target audience and selling products.

With advances in digital technologies and hyper-connectivity, the virtual shelf has effectively crowded the traditional store shelf. This shift has left retailers scrambling to regain their foothold with consumers who seamlessly access all available channels.

But online competition does not necessarily mean obsolescence for physical stores. In fact, it opens new opportunities for engagement because physical shelves allow shoppers to use all five senses when interacting with products—sight, touch, smell, hearing, taste. Integrating digital technology innovations with traditional shelf interactions can open doors to entirely new dimensions of experience.

Benefits of Intelligent Shelf Solutions

Shelf-level visual merchandising solutions benefit retailers in notable ways, including:

Enhancing customer experiences

In the United States alone, a whopping 78 percent of the population accesses the Internet, and many use smartphones: 172 million smartphone subscriptions were in effect in 2012.[4]

By integrating digital technology innovations with physical store shelf displays, retailers can create a more memorable and valuable experience, increasing the chance that customers will not only make a purchase, but come back frequently and shop longer.

Reducing inventory distortion

Inventory distortion is a huge overhead issue. Defined as the cost of lost sales resulting from out-of-stock merchandise, plus the losses from overstocks that must be deeply discounted in order to sell, it is estimated to cost retailers a whopping USD 818 billion worldwide annually.[5] It can be particularly costly to grocers whose perishable products comprise nearly 25 percent of inventory.

New technologies are helping retailers reduce the effects of inventory distortion. Using a combination of connected systems such as digital signs, electronic shelf labels, mobile devices, and smart inventory tracking, retailers can optimize the shelf experience and reap rewards, including:

- Lifting sales of seasonal or slow-selling items by maximizing promotions, thereby minimizing losses from markdowns.

- Moving soon-to-expire products before they pass their sell-by date, reducing losses from perishables.

- Ensuring shelves are correctly stocked and optimal inventory is available when customers are ready to purchase.

- Identifying and promoting upsell and cross-sell opportunities by using real-time, anonymous analytics—such as the Intel® Audience Impression Metrics Suite (Intel® AIM Suite)—to understand the buying patterns of target audiences.

- Increasing the success of new product introductions by engaging customers with compelling information and promotions that encourage them to try something new.

Reducing operating costs

Retailers expend significant effort to print, check, and change price labels on store shelves and displays. Case in point, the average number of items carried by U.S. supermarkets is 38,000,[6] which makes maintaining accurate pricing time consuming and costly. By using intelligent shelf solutions, pricing can be dynamically updated on shelf labels, displays, and point-of-sale systems in real time, at one location or across several.

Shelf-Level Visual Merchandising in Action

Several retailers from around the world have implemented a range of shelf-level visual merchandising solutions. Here's a sampling.
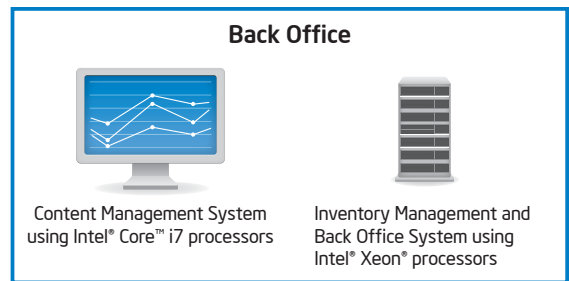
METRO GROUP* REAL Future Store

The fourth largest retailer in the world, together with Intel, implemented a shelf-label solution that captures shopper attention by playing eye-catching advertisements and animations as they look for products on store shelves. As

Store Shelf with Electronic Shelf Labels, Digital Sign, and Optical Sensor

Wired or Wireless

Back Office

Content Management System using Intel® Core™ i7 processors

Inventory Management and Back Office System using Intel® Xeon® processors

Point of Sale System

Figure 1. METRO GROUP uses digital signage and electronic shelf labels that are connected to back office systems.

shown in Figure 1, the solution is composed of end-cap displays, electronic shelf labels, and a content management system powered by an Intel® Core™ i7 processor, all connected to back-office systems with Intel® Xeon® processors. The shelf solution increases awareness of new products, encourages consumers to try new items, and effectively moves products that are nearing their sell-by dates. Anonymous viewer analytics are used to collect customer demographic information and dwell times that can be used to target promotions and measure marketing effectiveness.

Intel® Digital Signage End Cap

This proof-of-concept solution allows retailers to optimize prime store real estate while providing shoppers with a dynamic and engaging display that mimics the online experience. The screen displays a variety of products that can be found on in-store shelves. Customers can interact with the display using gestures to get more information including aisle location, demonstrations, reviews, and related products. Integration with smartphone apps enables consumers to receive special in-store promotions and build shopping lists. The end-cap solution is built on Intel® Core™ processor-based systems and uses Intel AIM Suite to anonymously collect viewer analytics.

Carnegie Mellon University Store

A robot named AndyVision (Figure 2) is a computer-vision system that automates the complex task of planogram compliance and mitigates two problems: lost sales due to out-of-stocks and shoppers putting products back on the wrong shelf or aisle. The robot uses a Microsoft Kinect* sensor and image-processing algorithms running on a low-power Intel® processor that is easier to implement than RFID tagging. AndyVision illustrates how cutting-edge retail technology can improve the store shelf experience, including reducing costly inventory distortion, optimizing operations, and increasing sales.

Toshiba Dynamic Store Merchandising

This sophisticated system helps grocers reduce loss and increase profit by allowing them to track real-time demand for perishable items, automatically adjust prices, and maximize promotions to move products quickly. The system uses a retailer's existing intelligence on customers, buying patterns, and product performance. The solution brings together many retail systems (Figure 3) that collaborate to optimize performance across all product categories. Results include increased sales, maximized margins, and reduced inventory distortion.

INTEL® TECHNOLOGIES THAT POWER THE SHELF

In today's dynamic retail environment, delivering sensory-immersive experiences at the shelf can help brick-and-mortar retailers differentiate themselves from the competition, resonate with consumers, and maintain relevance.

Creating scalable shelf-level solutions can include a wide range of components—hardware, software, middleware—and connected systems, with each implementation unique to the business need.

What remains consistent are the key Intel® technologies that power and support these solutions, enabling retailers to bring the store shelf to life and give today's customers what they want.

Processors. Intel® Core™ processors deliver top-of-the-line performance for visually and compute-intensive tasks, including high-definition digital signage and content management systems. Intel® Xeon® processors deliver the power and agility to process and analyze massive volumes of data in real time.

Analytics. Intel® Audience Impression Metrics Suite (Intel® AIM Suite) gives retailers and brands the power to know how shoppers are responding to visual messaging and how they move through the retail environment. Using anonymous viewer analytics technology, the Intel AIM Suite can determine viewers' gender, age range, and dwell times. The data can be used in real time to tailor on-screen content and measure campaign effectiveness.

Manageability. Remote management is enabled using Intel® vPro™ technology[7] and the functions provided by Intel® Active Management Technology, making it possible to remotely manage, monitor, and repair thousands of systems and devices, reducing headcount and eliminating costly service calls.

System Security. McAfee capabilities can help address the full range of internal and external threats including viruses and malware, content graffiti, identity and account theft, system compromise, data theft, and provisioning/updating.
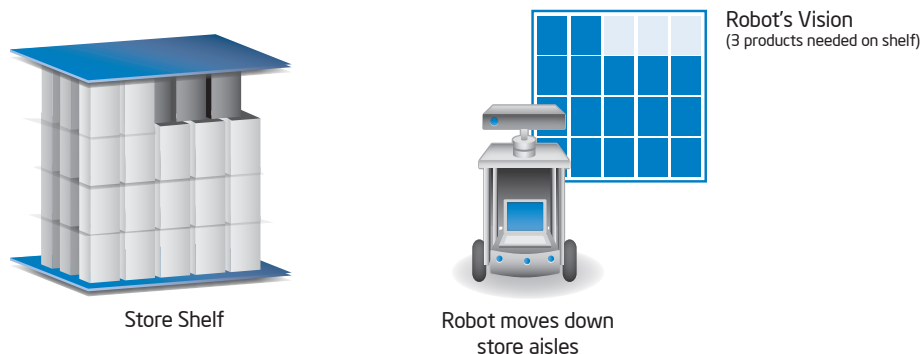
Robot's Vision
(3 products needed on shelf)

Store Shelf

Robot moves down store aisles

Figure 2. AndyVision at the Carnegie Mellon University Store, showing what the robot "sees" using image-processing technology.

Figure 3. Refrigerator case with digital end-cap signage and electronic shelf labels.

Conclusion

The digital age has disrupted in-store retailing and traditional stores must adapt to the new retail landscape or risk a quick trip into obscurity. It's essential for retailers to create integrated strategies that leverage the power of digital technologies to enhance the in-store experience. The store shelf is a prime target for creating immersive sensory experiences that can increase customer engagement and brand relevance. By taking a fresh and innovative approach to the store shelf experience, retailers can continue to add value and make consumers happy, both of which will help them maintain market share and relevance in today's multi-channel world.

For More Information

- Intelligent Dynamic Store Merchandising Solution Cuts Losses on Perishables and Raises Brand Awareness
- Intelligent Shelf Compliance Solution Minimizes Inventory Distortion
- Intelligent Shelf Label Solution Creates Brand Awareness
- Intel® Digital Signage End Cap Concept: Demonstration

For more information on Intel retail innovations, visit www.intel.com/retailsolutions.

[1] Hauss, Debbie. "14 Retail Executives Share Technology Predictions For 2013." Retail Touchpoints. December 2012. www.retailtouchpoints.com/in-store-insights/2137-14-retail-executives-share-technology-predictions-for-2013

[2] Capgemini. "Digital Shopper Relevancy." July 10, 2012. www.capgemini.com/sites/default/files/resource/pdf/Digital_Shopper_Relevancy__FULL_REPORT_.pdf

[3] Ibid.

[4] Meeker, Mary, and Liang Wu. "2012 Internet Trends." Kleiner Perkins Caufield Byers. December 2012. http://kpcb.com/insights/2012-internet-trends-update

[5] IHL Group Report: $818 Billion (USD) Lost Annually in Global Retail "Inventory Distortion." 2012. www.ihlservices.com/ihl/product_detail.cfm?page=Operations&ProductID=71

[6] Food Marketing Institute Research Resources, "Supermarket Facts – Industry Overview 2011-2012," www.fmi.org/research-resources/supermarket-facts

[7] Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software and IT environment. To learn more visit: www.intel.com/technology/vpro.