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Knowledge@Wharton-Wipro Future of Industry Series: Technology Innovation

Big Gains Await Retailers, Consumer Goods Makers in a Digitally Savvy, Analytics-driven World

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Retailers and consumer goods organizations are collaborating and finding new ways to collect and analyze data from consumers and shoppers and their processes to extract business intelligence that brings efficiencies to supply chains, operations, manufacturing and marketing. In this "Future of Industry" series white paper, produced jointly by Knowledge@Wharton and Wipro Technologies, Marshall L. Fisher , Wharton professor of operations and information management and Srini Pallia, Wipro's senior vice president and global head for retail, consumer goods, transportation and government business, explore challenges and opportunities ahead.

Fisher, in comments that appeared recently in a retail operations publication, traces the transformation of the retailing business to a 1995 experiment with a fashion apparel retailer in Philadelphia that had $1 billion in annual revenues. The retailer had asked Fisher to help with analyzing sales data to discern patterns that might improve forecasts. It wanted to set variables like the product assortment, inventory levels, price, and store staffing levels to maximize gross margin, subject to constraints such as limited budgets and store shelf space for buying and displaying inventory.

Fisher and his student researchers were surprised by two aspects: First, decision making at this retailer was almost completely based on human judgment. Second, the retailer collected point-of-sales data, but rarely looked at this data and certainly didn't use it to guide decision making. "For example, something as simple as using past history on the mix of sizes sold by the store to guide future decisions about how inventory should be allocated across sizes was not being done," Fisher writes in a forthcoming paper. "It seemed to us that retailing was on the cusp of transformational change driven by information technology improvements that were making more and better data available with which to understand consumers and shoppers and predict what they would buy."

Retailing has come a long way since then. Today's retailers are grappling with new challenges in understanding their digitally savvy shopper, including at an individual level, across a range of communication devices and channels like mobile phones and social media. Consumer goods companies that supply retailers need to determine the best locations for sourcing inputs and manufacturing, and their next growth markets as demand accelerates in emerging economies.

UNDERSTANDING THE DIGITAL IMMIGRANT

The new generation of consumers is made up of "digitally empowered value shoppers," says Pallia, who has spent 20 years in leadership and business development roles at his company. "They are fully prepared when they go to a store or shop online, and are a lot better informed than the average store associate. That creates a big challenge to retailers." It is more critical than ever before for retailers to have sufficient knowledge of the tastes and preferences of the consumer, and to tailor the behavior of store associates accordingly, he adds.

Consumer goods companies will find it less difficult than for retailers to retain the brand loyalties of the "digital immigrant," according to Pallia. "Brand loyalty will continue to hold sway in many categories, especially those brands that can build a sustained engagement with the audience. But retailers will find their consumers a lot more fickle today and in the future. At the root of that is the phenomenon of "show-rooming," where consumers and shoppers may check out products at one retailer's physical store but purchase them online from rival retailers.

Part of the problem also is that bricks-and-mortar stores may not have ready physical stocks of specific products that a consumer or shopper want. The retailer's challenge would be "to engage sufficiently with shoppers" that walk into their showrooms and make their purchases either at their stores or online on their website. The takeaways from show-rooming for retailers are two-fold, according to Pallia. "While they understand that this presents a challenge to them, it is also a significant opportunity." First, he points to market research predictions that by 2014, 17% of all consumer products will be bought online. That is still good news for bricks-and-mortar retailers because "it means a significant part of the purchases will still occur in stores."

Second, today's consumers and shoppers are looking for a seamless experience across channels. They may look up a product online and purchase it in a store and get it shipped to their home or pick it up from a store. They may, on occasion, want to return the product as well. Retailers need to provide shoppers with a consistent and differentiated shopping experience across multiple sales channels in order to attract and retain their patronage, Pallia explains. "Bricks-and-mortar, stores have the biggest advantage here because they can be with the customer across all these channels," he says.

Retailers around the globe are rapidly embracing technology to access and analyze more data and to better understand consumer behavior. Fisher's 1995 experiment with the Philadelphia retailer led to him set up an annual conference series in 1998 that focuses on how information technology could change the way retailers forecast demand and manage supply, and provides a forum where retailers share their best practices. The conferences are organized under the aegis of the Consortium for Operational Excellence in Retailing.

THE JOURNEY FROM ART TO SCIENCE

Fisher writes that research he has done with colleagues predicted in the early 1990s that retailing would follow in the footsteps of the investment world, where Wall Street firms shifted the basis of their decisions "from more art and human judgment than science, to more science than art." Their prediction has been more than validated since then with the growth and maturing of the organized retail industry.

More and more bricks-and-mortar retailers are trying to integrate their stores sales with online channels, Fisher writes. Social media also brings "large but unknown potential for them. He recalls an executive of an apparel manufacturing firm telling a supply chain conference about using

Google Correlate “to discern the attributes that appeared to explain the popularity of hot selling products.”

Retailers are looking at next-generation analytics to tackle show-rooming by better understanding customer behavior. In earlier days, they would study sales data at the end of the day or week for information on the types of products sold, and the price points to plan future inventory levels and promotions. “That is now passé,” says Pallia. Today’s retailer is using advanced analytics to understand not just which products digitally savvy shoppers and consumers look up and buy on their websites, and those of rivals, but also what other products they bought and the relationships between them. Such insights help them plan assortments and inventories to garner a bigger share of the customer’s purchase basket, Pallia adds.

Information technology tools are helping to generate a host of new data in addition to point-of-sale data, says Fisher. They use technology to build data on loyalty cards, responses to customer satisfaction surveys, traffic counters at store entrances, and transaction data from Internet sessions, including what consumers look at and what they buy, social media, in-store technology such as RFID (radio frequency identification tags) chips, video and digital shopping assistants.

The chief technology officer of a large grocery retailer recently demonstrated for Fisher a system that displays on a large screen the movement within a store of shoppers who elected to carry digital shopping assistants. “As we watched blinking lights corresponding to shoppers paused in front of a product shelf, I jokingly asked if he ever found himself cheering these shoppers on to buy something,” Fisher says. “He wryly replied ‘Oh, we do more than just cheer,’ and went on to describe their system for broadcasting timely messages to shoppers via their digital shopping assistant. Truly, space age retailing has arrived, and not only on the Internet, but within the walls of a grocery store.”

Business intelligence derived from advanced data analytics also flows back up supply chains to help achieve efficiencies. “Analytics is the biggest differentiator for the retailer,” says Pallia. “They can use it to maximize their revenue, and; they can leverage analytics from a cost optimization perspective.” By using advanced statistical models, they could study customer attrition trends, or the logical next product or service the consumer might buy, the response to past promotional campaigns and how they can tweak them to attract or retain consumers, and the tactical steps needed to take to ensure that when a consumer walks into at a store, they can increase the basket size. “And, you could do all this in a personalized way because you have information specific to that customer.”

Even retailers strapped for resources for advanced data analytics don’t want to be left behind. Many lack the capital or confidence in the economy to open new stores and are thus focused on increasing sales in their existing stores, says Fisher. As part of this effort, many have installed traffic counters to track the number of customers entering their stores. “This allows them to measure conversion rate -- the fraction of customers who enter the store that buy something,” he says. “While conversion is close to one for grocery retailers, it ranges from 20% to 50% for other retailers and varies considerably between stores.” Retailers need to focus their research on the factors that drive such conversion and what data they should collect to assess those, he adds.

In the consumer goods industry, data and analytics is increasingly being used in trade promotions, too. A typical company’s spend on trade promotions is 15-20% of its revenues. Analytics is being leveraged to manage and optimize trade promotions, to drive revenue growth, while optimizing trade spend.

COLLABORATIVE STRATEGIES AND THE WAY AHEAD

Retailers and consumer goods companies are also collaborating in more sophisticated ways than before. "In the past, it was all short-term and about how you shift inventory ownership from the manufacturer to the retailers in a wash-your-hands-off approach," says Pallia. Today, that plays out differently. One retailer recently told Pallia about how he invited 20 consumer goods companies to a conference to understand how they could collaborate better over data and creating visibility for that data across the entire value chain. The effort was to react faster, reduce inventory and also reduce the total cost of ownership across the value chain of suppliers, manufacturers, transporters, wholesalers, retailers and so forth, he explains. "There is a sense of urgency among retailers and consumer goods companies to get a holistic picture of the consumer and their buying behavior, and for that, they need to get their data right." They are also investing in technologies to make sense of a whole lot of "unstructured data" that is available from social media networks, he adds.

Such collaboration becomes more important as retailers sell across multiple channels and with multiple partners including banks, credit card companies and mobile phone service providers. In fact, Pallia says that multichannel or omni-channel retailing will be the big game changer, and that it will have a significant impact on supply chain infrastructure, manufacturing, operations and related issues. Mobility, cloud technology and social media are "the technology disrupters or enablers, depending on which side of the table you are," that can increase profitability and maximize your revenue, he adds.

ADVANCED TECHNOLOGY TOOLS

Cloud technology plays an important role as retailers and consumer goods companies try to manage the new "big data" loads. For companies with global operations, the cloud helps offer access to information from a central location, avoiding bottlenecks if systems are down in one or more country locations. Many companies have begun creating private clouds, public clouds and hybrid cloud platforms to ensure that information is seamless and accessible in real time across all the locations, says Pallia.

Cloud technology is also helping some companies optimize their infrastructure costs. Pallia notes one large U.S. retail client that had built elaborate technology infrastructure for a customer loyalty program. It saw peak loads in the holiday season, especially around Thanksgiving Day and Christmas, but it was under utilized in off-peak months. Now the retailer places that infrastructure on a public cloud, and uses it in a pay-per-use format. "The cost of infrastructure disappeared overnight, and the operating cost got variabalized," he says.

PRECISION RETAILING, "EACHES" AND NEW FRONTIERS

The granular level of customer data now available allows retailers to customize their offerings. In what is called "eaches" (customized for each customer) or precision retailing, retailers have prior information about customer needs and how best to reach out to them, says Pallia. For example, some consumer goods companies that cannot freely use conventional marketing channels are able to target specific customers with promotions through smartphones and tablets, he explains. Alongside that, consumer goods companies are merging their "swim lanes" or silos in sourcing, supply chain, manufacturing and marketing to make them one, using data analytics.

Large multinational retailers and consumer goods companies are finding huge untapped opportunities in emerging economies. India recently made it possible for foreign investors to invest in multi-brand retailing, paving the way for the global retailers to launch operations there. The size of that opportunity, however, depends on how many individual Indian states permit such investments. "As we peel the onion, things will get clearer," says Pallia. "As some states that allow FDI (foreign direct investment) in retail begin to prosper, neighboring states will try and adopt that. Consumer demand will also drive the push towards wider acceptance of FDI in organized retail."

Consumer goods companies are also tweaking strategies to fall in step with a "two-speed world" where demand growth is slower in mature and developed markets compared to emerging economies like India and China. The alcohol industry, for example, is witnessing "significant growth" from Africa and China, says Pallia. Alcoholic beverage makers are betting on Africa becoming their second-largest market (after the U.S.), and wine makers are setting up operations in China, with encouraging demand from that country's 350 million middle class consumers, he adds. "I'm not sure if that is a good thing or not for those countries, but that is the reality."

Marshall L. Fisher, Wharton professor of operations and information management shared his comments for this white paper from a foreword he wrote recently for a special publication on retail operations.

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