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Research Article

The Future of Retail: A Perspective on Emerging Technology and Store Formats

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Two West, Inc. is a leading retail communications agency based in the center of the states, Kansas City, MO. Our specialty? We drive deep retail engagement through emotional connections with the shopper – increasing consideration, conversion and trust.

Two West's work has been featured in national flagship stores; innovation centers; national big-box retailers like Target, Walmart, Best Buy, Home Depot and Lowes; and many other leading regional retailers.

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Platt Retail Institute (PRI) is an international consulting and research firm that focuses on the use of technology to impact the customer experience. In an omni-channel environment, PRI works with its clients to develop marketing strategies that build brands by integrating various customer-facing technologies. PRI clients include retailers, media companies, financial institutions, hardware and software companies, educational institutions, and other businesses. In addition to its global consulting expertise, PRI also publishes the quarterly *Journal of Retail Analytics*, the *North American Digital Signage Index*, and other pioneering industry research.

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I. Introduction and Background

Emerging customer-centric technologies are changing the nature of the retail industry. It is both difficult and complex to evaluate current technology options and track future trends. To aid in this process, this Research Article provides a historical perspective, details emerging technology trends, and advances retail store formats and technologies that retailers should be considering now and in the future.

Retailers are being driven to engage with customers differently due to technological innovations, and to create different experiences during that engagement, whether in a physical store, online, on a smartphone or tablet, by way of a call center, etc. This is because customers today access multiple channels to execute a purchase, leading to the requirement that all channels work seamlessly to support the brand and the experience. This trend started with the Internet, but is now being advanced in a very dramatic and rapid fashion due to mobile and other digital technologies. Customers, empowered with digital communication devices, are pressuring organizations to deliver compelling and innovative experiences to retain top-of-mind and share of wallet.

The buying process starts when a need is recognized, involves a search for product or service information, expands to a consideration of the purchase channel, and may result in a retail visit and purchase. During this process there are decisions to be made with the help and influence of technology. This may involve conversations with friends and family (often through social media), advertising (TV, print, radio, Internet, direct mail, etc.), and online research (e.g., checking prices at shopping sites like Price Grabber and/or reading product reviews on customer research sites like Consumer Reports). Any or all of these options may come into play during the shopper's pre-purchase phase. Once a product or service decision is made, the shopper has a broad range of options to select from to complete the purchase. In addition to visiting the brick-and-mortar store to buy the item, these include ordering online for delivery to home or office and ordering online for pick up in-store. The process does not end with the purchase. After the item is bought, there are additional opportunities for the retailer to interact with the buyer. These range from post-purchase surveys and customer returns to technical support and warranty service.

Disruptive technologies – including inventions that changed customer behavior, such as steam engines, telephones, and the Internet – are the pre-cursors to new business models, which smart business leaders will identify and react to – before their disruptive impact is felt generally in the economy and society. "Business leaders can't wait until evolving technologies are having these effects to determine which developments are truly big things. They need to understand how the competitive advantages on which they have based strategy might erode or be enhanced a decade from now by emerging technologies – how technologies might bring them new customers or force them to defend their existing bases or inspire them to invent new strategies."[1] In the past, technology changes in the retail industry were incremental, and the disruption caused by those changes was also incremental. Today, technology changes are more disruptive because they occur quickly and frequently. Successful retailers in this environment must embrace change.

It has been said, "The tumult of change facing retail today indicates that the retail survivors might not be the biggest or the strongest, but those that can most quickly adapt to the tidal wave of change."[2] The goal of this Research Article is to inform the reader about the disruptive changes occurring in the retail industry, and to help retailers prepare for and embrace evolving retail formats and technologies.

II. Historical Perspective

The retail industry has and will continue to evolve, albeit at an ever-accelerating rate. As the industrial revolution caused a shift in population from rural to urban areas, retailers changed the way they operated to serve the needs of customers. Yet the pace of change at that time was relatively slow and predictable. Today, the rapid pace of technological advancement is causing changes in the industry to occur at a much faster rate with much less certainty about the future. This makes the decision about which technologies to implement more complex, as the risks are much greater.

As Table 1 illustrates, retail in the U.S. changed very little in the first two centuries of the nation's existence. Over the past 15 years, retail has changed dramatically and it is reasonable to assume that this pace of change will continue to increase exponentially.

Table 1. Key Points in the History of Retail in the U.S.

1700s	General Stores offer one-stop shopping	Single-category stores			
1800s	1865: First chain store	1883: First mechanical cash register	1894: Sears catalog		
1900-1945	Frozen foods introduced	Plastic storage containers become available	1906: First electric cash register	1917: Self-service stores	
1945-1975	Rise of chain stores	Department and discount stores	1962: First Walmart store	1970s: PC-based POS systems	1970s: PC-based barcode readers
1975-1990	Big Box stores	1980s: UPC barcodes	Shopping malls, strip malls	1975: Walmart deploys computerized inventory control	1979: PC-based POS terminals
1990-2000	Consolidation of category stores	CRM/loyalty programs	Supercenters and warehouse clubs	1991: Walmart becomes largest U.S. retailer	1996: Walmart uses Internet as application platform
2000-2005	Rise of the retail giants	Private brands	Return to one-stop shopping (e.g., grocery products in drugstores)	2003: First major rollout of self-checkout	2004: Walmart uses RFID
2005-2014	Mass merchandisers; category killers, warehouse clubs, specialty chains, department stores	Online purchases	Store-within-a-store concept brings specialty retail to mass merchandisers	Social media sites	Online product reviews

Long before the days of supercenters and strip malls, there were general stores offering a limited product assortment to customers in small communities, supplemented by peddlers who roamed rural America selling their wares. The general store and the post office were the typical gathering

places in American towns in the 18th and 19th centuries. In fact, they still are in some rural communities. The Norman Rockwell view of people gathered around the potbelly stove in the corner of the general store, drinking coffee, and discussing what was going on in town was a realistic perspective on retail at that time in American history. The owner of the general store knew everyone in town and was quick to offer personalized service, suggesting a new grocery item that he started carrying or ordering a certain color fabric because he knew a customer was looking for it. Products were kept on shelves behind a counter or in a back room.

By the mid-19th century, divided cash drawers were common in small retail stores. In 1883, the mechanical cash register was first patented. It was the invention of James Ritty, a saloonkeeper, who ultimately sold the rights to his invention to James Patterson, founder of National Cash Register (NCR). The mechanical cash register had the advantage of keeping the cash drawer locked between sales and offering a way to total up the day's sales. Around the same time, the first pneumatic tubes were installed in a store to transport cash and documents from the point of sale to a secure accounting and storage area.

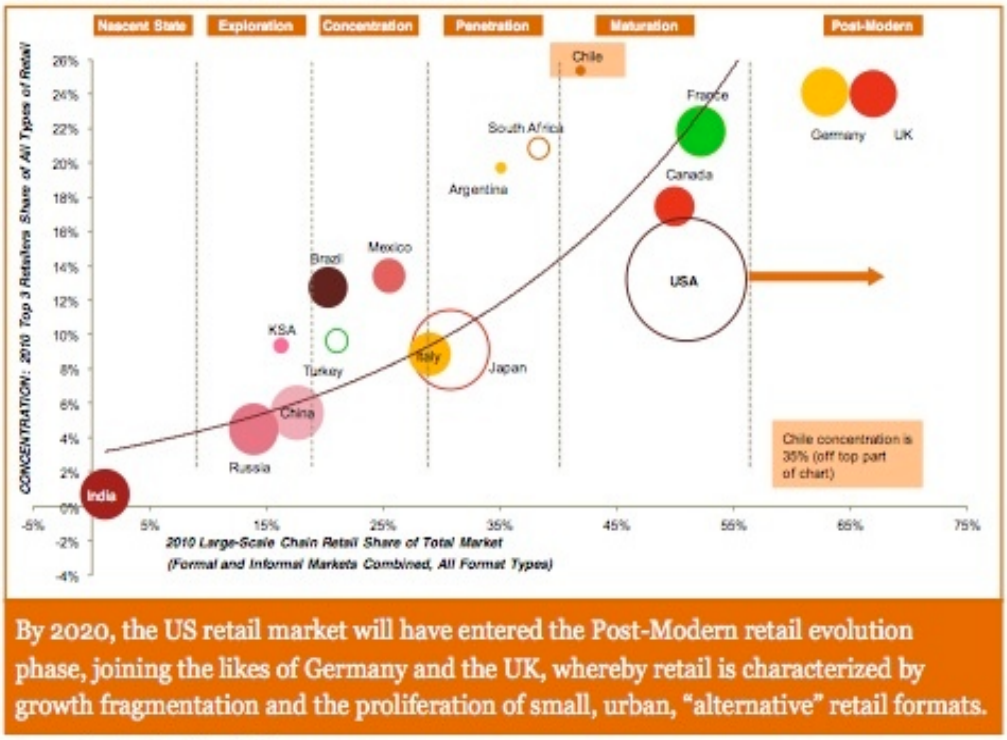
Toward the end of the 19th Century, mail order catalogs opened up a world of new products and ideas to shoppers. In 1894, Sears, Roebuck and Co. took advantage of extremely low postage rates to send out its first catalog, which it called the "Book of Bargains: A Money Saver for Everyone." The Sears general catalog was published for almost 100 years, finally succumbing to what Sears called "modern trends in retailing."

As towns grew into cities, there was a shift from general stores and small category-specific specialty shops with the arrival of department stores and "one-stop shopping." The rise of chain stores led to the decline of general stores. The Great Atlantic and Pacific Tea Company (which became known as A&P) is generally thought to be the first chain store in the U.S. Its origins were in New York City in 1865, but by 1880, there were A&P stores from the Mid-Atlantic to the Midwest and by 1900, A&P stores existed from coast-to-coast. The Industrial Era created larger and larger pools of workers who required goods and services, as towns and small cities expanded. This trend accelerated as the United States became involved in two world wars in the early part of the 20th Century. The world war eras continued the movement of Americans away from rural areas and into these growing cities to fuel the so-called "war machine." Once people had moved to "the big city," they stayed to work and shop.

Self-service did not come along until the beginning of the 20th Century, with a patent for a "self-serving store" issued in 1917. Aimed initially at independent grocery stores, customers were offered the opportunity to collect the items they wanted to buy and take them to a cashier to pay for them.[3]

Today, retail in the U.S. is evolving from a "maturation" stage to a "post-modern" stage, as compared to other major global retail sectors. (See Chart 1.) In countries such as Germany and the UK, which are already in the "post-modern" phase, retailers are seeing intensified competition among chains, limited square footage growth, and increasing pressure to maximize the productivity of existing retail space. In the U.S., there has been some consolidation among retailers, and some venerable brands have disappeared. As retail formats evolve, we will see "the dismantling of mass homogenization and scale assumptions that propelled two decades of U.S. retail growth and that has resulted in a highly fragmented retail landscape for shoppers."[4]

Chart 1. Retail Market Evolution Model.



Source: Kantar Retail Analysis, 2012

A good example that illustrates the increasing rate of retail technology advancement is the evolution of the cash register to a Point of Sale (POS) system. It was almost 90 years after the mechanical cash register was invented that electronic cash registers were introduced. Early computer-based systems were introduced in the 1970s that were tied to hefty mainframe computers and offered limited control over cash registers in a store. Just a decade later, PC-based POS systems followed. Today's POS systems provide retailers with a single point of coordination for a variety of front-end and back-end systems including cash management, work force planning, customer relationship management, and inventory control. In recent years, many retailers have added handheld devices that can perform a variety of functions such as swiping credit cards for payment and emailing receipts to customers, using these agile devices to replace or supplement the traditional POS terminal.

In parallel with improvements in technology applications, there has been significant improvement in retail market research. This discipline has advanced from mystery shoppers and exit interviews to current techniques including observational and ethnographic research, online surveys, virtually instantaneous social media comments, and anonymous analytics gathered by way of video cameras and mobile phones.

Other technologies that affect the customer experience and influence customer behavior include the rise of online shopping, showrooming, the use of social media for product reviews and instant feedback, access to price comparisons, and the integration of smartphones with other retail technologies, among many others.

In the next section of this Research Article, some of the major emerging trends in retail will be discussed, along with an analysis of how current technologies are having an impact on shoppers.

III. Emerging Trends

Retail technology investments have generally been focused on cost and price reduction. Using technology to assist with the selection of merchandise assortments based on the demographics of the population likely to visit a given store or a desire to appeal to specific customer segments was a later evolution. More recently, retailers have been looking at customer relationship and customer experience management. (See Table 2.) This marketing intelligence will lead to better methods that help retailers understand the shopper and deploy technologies that personalize or target customers with various messages.

Table 2. The Evolution of Marketing Intelligence in Retail Settings.

	Wave I	**Wave II**	**Wave III**
	Brand and category management	*Customer relationship management*	*Customer experience management*
Enabling technologies	UPC barcode scanning	Customer loyalty cards, credit/debit cards	Real-time customer tracking (RFID, GPS, video, clickstream, portable shopping devices)
Causal variables	Product assortment Shelf space Price Promotions Displays Feature advertising	*Wave I, plus:* Customer attributes (geodemographics) Purchase history Targeted promotion	*Wave II, plus:* Store layout Store atmosphere Navigational aids Product adjacencies Service levels Queues/crowding In-store events
Performance measures	Sales Market share Gross margin Sales/square foot Turn rate GMROII	Customer retention Customer loyalty Share of customer Lifetime value ROC curves	Store traffic Shopping path Aisle penetration Dwell time Product interaction Conversion rate

Source: Dr. Raymond R. Burke, *The Third Wave of Marketing Intelligence*.

As we examine the future of retail, it is important to consider the effect that technology will have on how customers buy. “Some people predicted the rise of digital commerce would mean the death of the store as we know it, but the truth is digital commerce is a set of functions that expands the stores’ role.”[5] The challenge for retailers will be to figure out the best strategies for integrating new technologies and adapting to how customers are changing the ways they interact with retailers.

In this section we discuss several emerging trends in the retail industry including:

- The impact of online sales.
- How technology is affecting the shopper’s path to purchase.
- The impact of showrooming and webrooming on retailers.
- The integration of technologies such as digital signage, mobile POS, and tablets, and how these are impacting customer engagement.
- The use of converged platforms and omni-channel marketing that offer a singular view of the customer.
- How Big Data is being used to customize the retail experience.

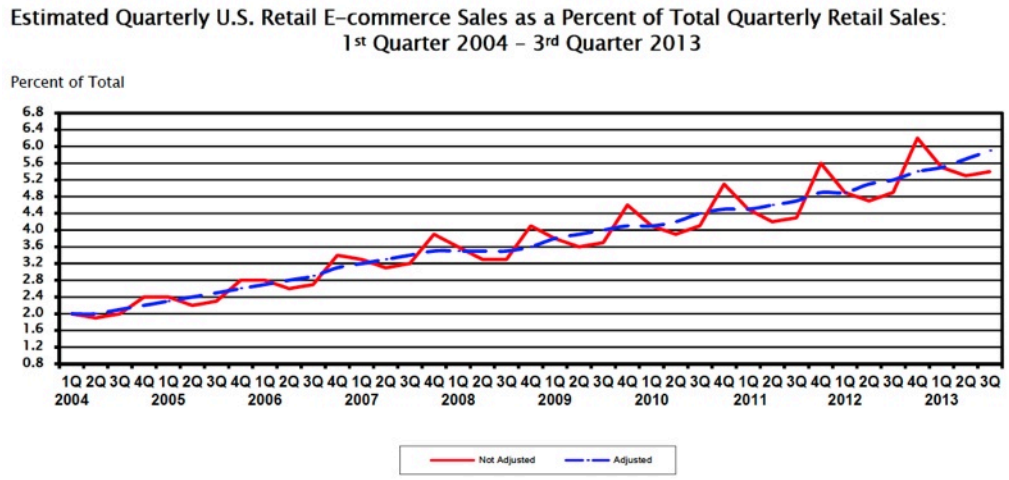
- The increasing connection of objects and systems through the use of cloud computing and the Internet of Things.

Online Sales Impact

Online sales, though growing, still account for a small portion of total retail sales. However, it is important to be mindful of the impact of online shopping behavior, such as less time being spent in stores and the increased utilization of online product research.

The proportion of online sales ranges, for example, from 15 percent in the UK to 9 percent in Germany to 2 percent in Italy.[6] Meanwhile, in the U.S., on a non-adjusted basis, the Department of Commerce estimates retail e-commerce sales for the third quarter of 2013 at about $61.4 billion, an increase of 2.1 percent from the second quarter of 2013, but still only about 5.4 percent of total retail sales. (See Chart 2.)

Chart 2. E-commerce Sales as a Percent of Total Retail Sales



Source: U.S. Census Bureau

Shopping behaviors are changing as more people have Internet access and smart devices, and retailers develop more sophisticated online shopping options. Many Americans are spending less time shopping in brick-and-mortar stores.[7] This is especially the case for women. (See Chart 3.)

Chart 3. Time Spent Shopping.

Source: IHS

The rise of the big box and "supercenter" stores – where it is possible to buy groceries, clothing, and household items; rent movies; pick up postage stamps; shop for alcoholic beverages; get the car tires rotated; and make a bank deposit – makes it easier and more efficient than ever to accomplish multiple tasks. At the same time, however, some of these tasks are being shifted from brick-and-mortar to online stores. (See Table 3 for some examples of traditional versus new shopping options.)

Table 3. Changing Shopping Behaviors.

Brick and Mortar Shopping	Online Shopping
Redbox	Netflix
Post Office	Stamps.com
Bank deposit at teller/ATM	Deposit via mobile app
Shoe Store	Zappos

Source: Platt Retail Institute

IHS reports that, "There is considerable anecdotal evidence that during the past several holiday seasons many shoppers are doing a hit-and-run – they get to the mall, go directly to the store they are looking for, buy what they want, and then head for the doors. Time spent browsing is vanishing."[8]

The 2013 *SheSpeaks/Lippe Taylor Women's Buying Behavior Index* reported that, when asked what method they use most to research products, 71 percent chose PC/laptop, 18 percent selected mobile/tablet, while only 6 percent prefer browsing in store. When asked their most frequent method of purchase, 47 percent use a computer, 45 percent shop in store, and 8 percent use their phone/tablet. Seventy percent say they use their phone or mobile device for shopping. Of those who do:

- 75 percent use it to find store locations and hours.
- 70 percent use a mobile device while in-store to look up and compare prices.
- 66 percent search for coupons.
- 34 percent make purchases on their mobile device.

"Online research is having a huge impact on the purchase funnel with close to 90 percent of women going online, either on computer or mobile device, to research products before buying," said Aliza Freud, CEO of SheSpeaks. "Capturing her attention online presents a huge opportunity for brands looking to influence her purchase decisions."[9]

Changes in the Path to Purchase

Many stimuli affect shoppers as they proceed along the path to making a purchase, and new technologies are having an increasing impact on this process. Retailers must better understand the journey by which shoppers come to buy a particular brand, product, or service. Did they decide before or after entering the store? Did they do research as they started their shopping process? How did they research their purchase? What are the media touch points that best map to each leverage point in the path-to-purchase process?

The concept of the path to purchase is not new. It can be described as a six-step process:

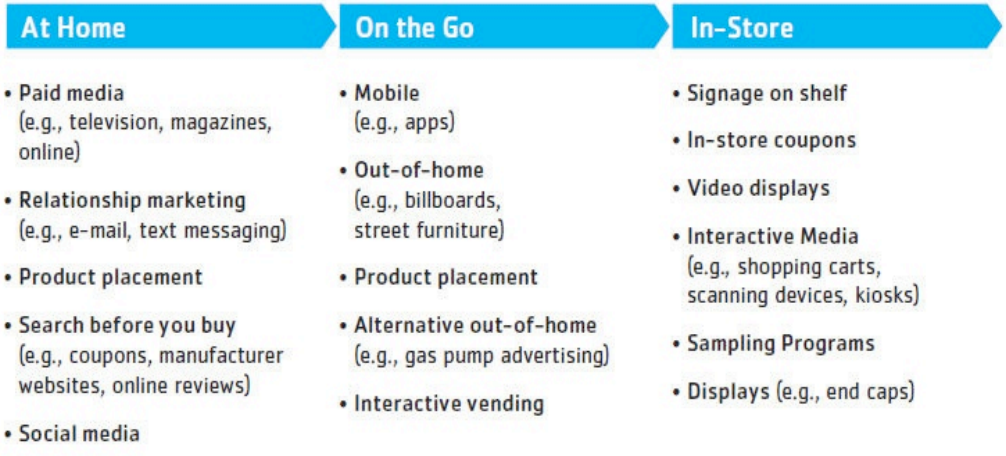
1. Recognize Need: The buying process is triggered when customers recognize that they have an unsatisfied need.
2. Information Search: Customers search for information about retailers or products to satisfy that need. The amount of information sought depends on the value gained versus the cost of searching. The Internet and mobile devices dramatically reduce the cost and time involved in searching for information.
3. Evaluate: The customer weighs the various attributes (performance, price, availability, etc.) and establishes what is most important. This part of the process may also involve technology-supported information gathering such as discussions with friends on social media, examining online reviews, searching the Web for the best price, etc.
4. Choose: With all of the information in-hand, the customer makes a decision about what to buy and where to buy it.
5. Purchase: The actual purchase may be completed in-store, online, or in a hybrid model such as an online purchase that is picked up at the physical store.
6. Post-purchase: Retailers may offer various options to improve brand and store loyalty such as a discount on a future purchase, follow-up email offers and promotions, or an incentive related to completing a survey about the purchase experience.

What has changed in the path to purchase process is the way retailers now communicate with customers. Today, the customer dictates how and in what form they desire to be exposed to information. This has resulted in both the challenge, and opportunity, to focus on targeted messaging aimed at the customer in various stages of the buying process. Also, the number of possible touch points has expanded exponentially, as have the ways to buy products/services. The challenge for retailers is to influence a purchase by matching product, person, and medium – and allocating their marketing budgets accordingly. With the emergence of digital technologies, customer media has shifted from a pure push model (i.e., TV, radio, print) to now embrace customer pull (i.e., Internet, mobile devices, etc.).

Customers expect that they will not be interrupted at any point in the path to purchase and that technology will facilitate the free flow of information and ease the shopping experience. If a customer begins a transaction with research online at home or by using a smartphone to search for the desired product, there should be nothing that stands in the way of ordering online and picking up in-store. If the online site or shopping app says the product is available in-store, there should not be an out-of-stock situation.

This shift in control has empowered the customer with unlimited sources of information. In this environment, understanding media consumption, rather than exposure, becomes the key. Media consumption considers what sources of information a customer consults, particularly in combination with other media, in the buying process. For example, customers may first learn about a product based on a tweet from a friend or a post on a social network. They then go online by way of a computer or smartphone to research the product, search for the product, and consult product reviews. Beyond that, offline word-of-mouth and media remain influencers, making for a complex multimedia experience along the path to purchase. (See Chart 4.)

Chart 4: Media Encountered Along the Path to Purchase.



Source: Booz & Company

Showrooming and Webrooming

The rising trend of examining products in a physical store and then buying them for a lower price online – now known as "showrooming" – has even helped change the English language. "Showrooming" was one of the runners-up in the Oxford Dictionaries Word of the Year considerations for 2013. Though it lost to "selfie," the editors of the Oxford Dictionaries said that there were just a few examples of use of the word before 2013 but it has become much more common in the past year. Webrooming (or "reverse showrooming," though not quite as widely used yet) is the practice of shopping online and then buying in-store.

Interestingly, there has also been a shift in how retailers address showrooming, to the point that there is less talk about how to "combat" showrooming and more about how to "embrace" the practice. One approach is to offer a price-matching strategy to encourage customers to complete the purchase in-store. Best Buy adopted a price-matching policy early in 2013 that includes both local retailers and major online competitors. Home Depot and several other big-box retailers now offer "shop online and pick up in-store" ads as you enter their stores.

Store-exclusive products are another approach retailers are using to remove the option to buy exactly the same item elsewhere. Other strategies include offering a high level of service after the sale; hosting special events for loyal customers; and engaging customers through social media and using it to inform them about special offers and promotions. For buyers who are motivated only by price, these may not have much effect, but others may be swayed by these offerings from favorite retailers.

The "buy local" movement also may have an effect. American Express jumped on this bandwagon in 2010, promoting the Saturday after Thanksgiving as "Small Business Saturday." The advertising campaign in support of this effort details the value of keeping sales revenue and tax dollars in the local community, supporting firefighters, schools, and charitable organizations. Though unlikely to have a significant influence on purchases of holiday gifts like flat-screen TVs and tablets, the idea of finding unique gifts at a local bookstore, jewelry or apparel store, or food purveyor is appealing to many buyers.

So far, the impact of showrooming is not as onerous as some retailers fear. The Pew Research Center's *Internet & American Life Project* examined shopper behavior during the 2012 holiday shopping season. Some key findings include:

- 58 percent of smartphone owners used their phones for recommendations, reviews, or price comparisons in a physical store.
    - 46 percent of cell owners used their phone while inside a store to ***call a friend or family member for advice*** about a purchase they were considering. (Up from 38 percent in 2011.)
    - 28 percent of cell owners used their phone while inside a store to ***look up reviews*** of a product to help decide if they should purchase it or not.
    - 27 percent of cell owners used their phone while inside a store to ***look up the price*** of a product, to see if they could get a better price elsewhere.
- 46 percent of "mobile price matchers" say that they ultimately purchased the product in that store – an 11-point increase from the 35 percent of such price matchers who said this in 2012.
- 12 percent wound up purchasing the product online versus 19 percent who did so in the 2012 survey.[10]

Stores still provide value to shoppers, and there are a number of reasons. Some people will not buy without first being able to pick up a product and get a feel for quality, color, and other attributes. Despite the proliferation of online reviews, some shoppers prefer face-to-face interaction with a knowledgeable sales person or a continuing relationship with a sales associate who is familiar with their preferences and shopping habits. They want to feel valued as a customer and have a high degree of confidence that they are getting the right product at a good price. The ability to walk into a physical store and walk out with product in-hand is instant gratification, but not necessary for all shoppers for all items. If the shopper is buying a bottle of wine to go with tonight's dinner, waiting for a case to be shipped from the winery is not acceptable. If the shopper is buying a new camera, showrooming might come into play with the shopper getting information from a sales person in-store, then shopping for the item online to get a lower price.

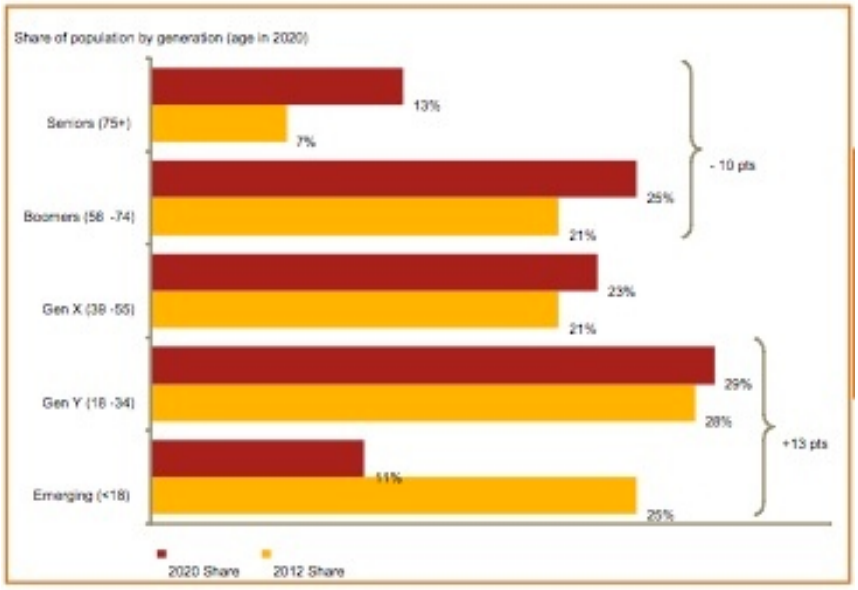
Customer Engagement

In some respects, technology has opened the door to a level of customer engagement that harkens back to the days of the general store when the shopkeeper knew all of his customers by name and had a good idea of what products they would be interested in buying. This section will address population and demographic changes that are affecting shopping behavior. We also look at a variety of technologies such as BYOD, digital signage, and mobile POS, among others, that are changing the ways that customers interact with retailers.

There are several ways that demographic differences are having an impact on retail today, including: differences between Baby Boomers and Millennials; changes in the minority/majority make-up of the U.S. population; and the gap between digital "haves" and "have nots."

The U.S. population will split between those who are over 50 and those under 30 into two distinct groups of shoppers with very different shopping behaviors. (See Chart 5.) Those who were unaffected or have recovered from the economic downturn and those who continue to struggle further complicate this differentiation. At one end of the spectrum are those who will continue to buy from upscale retailers (e.g., Nordstrom and Whole Foods), while at the other end are those shoppers who are extreme value hunters and are shopping at Dollar General and Walmart. These various groups of shoppers will make it very difficult for retailers to offer a "one-size-fits-all" shopping solution to disparate customer groups with differing expectations. We expect this situation will likely contribute to the development of alternative formats. One example might be the growth of smaller footprint neighborhood grocery stores in order to retain customer loyalty to the brand.[11]

Chart 5. Share of Population by Generation in 2020.

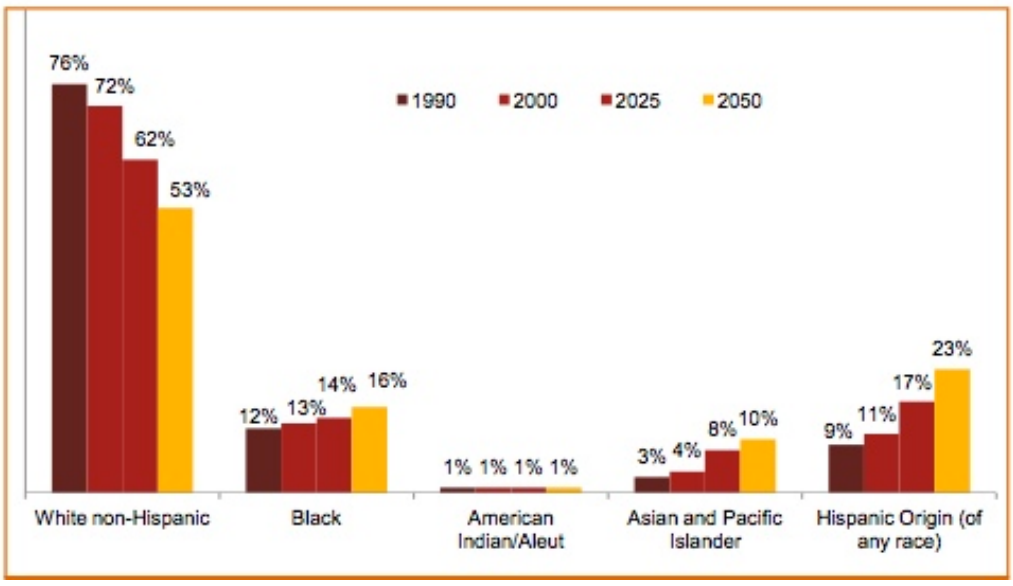


Source: Kantar Retail Analysis, 2012

The generations of Hispanic and Asian immigrant children born during the late 1990s and early 2000s will be grown adults by 2025 and will constitute 25 percent of the U.S. population.[12] (See Chart 6.) The growth of these population segments will encourage multicultural retailing with product offerings tied to variables related to ethnicity including holidays and other celebrations, food preferences, music, and language. Retailers already are learning that it is not as simple as having a "Hispanic foods section" in a supermarket since there are broad cultural differences among Hispanics, for

example, from Puerto Rico, when compared to those from Central or South America.

Chart 6. Percent of Population by Race 1990-2050



Source: U.S. Census Population Division 2011

The so-called "digital divide" between those who have access to a broad range of technologies and those who do not will continue to narrow. A 2013 study by the Pew Research Center found that, "approximately 70 percent of U.S. adults over the age of 18 have broadband access within their home. Alternatively, 10 percent of the respondents go without broadband access at home in favor of 3G and 4G LTE access on their smartphone. The remaining 20 percent don't utilize high speed Internet access at their home in any form."[13]

Internet-enabled devices are being widely adopted. In a short number of years, "Internet-enabled portable devices have gone from a luxury for a few to a way of life for more than 1 billion people who own smartphones and tablets. In the United States, approximately 30 percent of Web browsing and 40 percent of social media use is done on mobile devices; by 2015, wireless Web use is expected to exceed wired use."[14] This constant state of connectedness and widespread access to information leads to a population that is more "in the know" and "in the now," in both the physical and online senses. The proliferation of mobile apps and the more recent arrival of wearable tech such as Google glasses and smart watches propel users into a world that is changing day by day.

This notion of constant connectedness has changed the way retailers are interacting with customers. The advent of Bring Your Own Device (BYOD) has led retailers to engage customers through their mobile phones and tablets. This may be by way of a store-specific app, using NFC or QR codes that can be scanned on digital or static signs, activating information through RFID tags, etc.

The integration of technology in retail stores is a significant trend that has taken hold over the past decade. Early digital signs that showed basic product information and branding messages have morphed into more technologically advanced forms such as "smart" dressing rooms with interactive mirrors, displays that describe a product when a customer picks it up, touch-screen devices that allow a customer to see additional styles and colors of an RFID-tagged item, and so on. For technology-savvy customers, a retailer's failure to

incorporate various digital technologies results in a retail environment that is less engaging. Revenue could be negatively affected if competitors have adopted this emerging trend.

Retailers are increasing the use of mobile devices within their stores. Tablets may be part of a display, offering additional information about a product. Which light bulb do I need for my bathroom fixture? How would that sweater look with jeans? Is this laptop good for playing video games? Retail associates also may carry portable devices to provide rapid access to information that used to require either using the Point of Sale (POS) terminal or making a call to another store. Does this item come in a different color? Do you have it in stock? If it isn't in stock in this store, is there another store in the area that has it? How long will it take to get it shipped to my house?

Walk into an Apple store and discover that there is no cash wrap. The retail associate swipes your credit card on an iPhone and emails the receipt to you. You will be asked whether you need a shopping bag for your purchase.

Many retailers are still figuring out just how to incorporate mobile POS capabilities into their stores. If there is no cash wrap, where do you keep shopping bags and gift boxes? If there is no paper receipt, how does store security know that the customer has paid for the item before leaving the store?

The technological advances – digital signage, kiosks, mobile integration, mobile POS, tablets, etc. – are the foundation for a broader change in retail. Many high-end retailers continue to focus on the shopping experience, from the look and feel of the store design and fixtures to product selection to employee training to technology integration. Until now, it has all been about the brand and how customers feel about shopping in the store. Retailers must now redirect a significant portion of their energies to provide the same focus on the digital, mobile, integrated, unified customer experience.

Converged Platforms and Omni-Channel Marketing

In this section, we delineate the shift from multi-channel to omni-channel marketing and discuss how retailers are integrating various systems to achieve a unified customer experience, regardless of how the customer chooses to interact. We also take a look at how retailers are using technology to improve workforce and task management, including the proliferation of handheld devices for use by retail associates.

Multi-channel marketing is the use of various marketing channels to sell a product or service, including stores, websites, direct mail, catalog, and call center, mobile platforms, and social networks, to reach different and isolated target markets with different demands for service.[15]

In 2006, Professor Barton A. Weitz of the University of Florida and Mary Brett Whitfield of Retail Forward, detailed their thoughts on how retailers would need to address multi-channel marketing trends. At first, retailers just displayed available merchandise for sale on their websites. Thereafter, retailers started to adopt multi-channel strategies, with the requirements of various "features and services that enhance the customer's experience across channels. The most integrated multi-channel retailers offer:

- A liberal return policy where the store accepts products purchased online.
- Websites that feature the retailer's promotions and sales.
- Store receipts containing the URL for the retailer's website.
- Store associates that direct customers to the website for out-of-stock items.

- Customer ordering online for store pickup.
- Kiosks enabling customers to access the retailer's website.
- Websites offering inventory information (what merchandise is available in local stores).
- In-store kiosks allowing customers to order merchandise not carried in stores.
- Websites with the ability to prepare and print out a shopping list for a store visit.
- Websites offering store coupons and other promotions.
- Websites listing information about in-store events.
- Store associates who direct shoppers to the website for post-purchase information.
- Free shipping of product bought from the website but picked up at the store.
- The ability to pay cash in the store for products purchased from the website.
- Coupons for online purchases."[16]

Today, customers purchase products and services using multiple options, such as a company website, digital marketplace, catalog, and mobile channels in addition to the physical store. Empowered with various digital communication devices that enable these purchasing channels, customers are pressuring retailers to deliver a compelling and consistent shopping experience for their hard-earned dollars. To meet this customer expectation, many retailers are making the shift from multi-channel to omni-channel marketing (OCM). PRI defines omni-channel marketing as: "ensuring personalized, relevant, and meaningful communication across all marketing channels to yield a seamless and consistent shopping experience. The objective of an OCM approach is for all channels to be integrated operationally and to function together to reach and serve customers in a consistent, measured manner, regardless of the preferred purchase channel."[17]

While the factors leading retailers to adopt an OCM approach are self-evident, there are many challenges in its execution. Among these are that each retailer, with its unique management structure, information systems, and operating channels, needs to discover solutions that best fit its business. In addition, it is no small task to align internal organizations and change the functional aspects by which a company and all its employees perform to accommodate this new operating model. It is also a complex task to integrate the functions and systems required to form a singular customer view and communication strategy.

A variety of computer-based systems, that manage everything from supply chain and inventory to POS data and workforce scheduling, must be integrated in order to provide the retailer with the singular view they need in an omni-channel retail environment. These systems also support improved productivity as customer-focused analytics provide retailers with the ability to better meet customer needs. This could include: avoiding out-of-stock situations; ensuring an adequate number of sales associates are on-hand during peak store traffic periods; or the previously mentioned ability to customize the shopping experience for a loyal, repeat customer.

Karstadt Uses Technology to Expand Options for Customers

In the past, retailers maintained their customer base by offering a combination of a broad assortment of merchandise along with good pricing and customer service. With an increased online presence and in an omni-channel environment, retailers can have fewer items in the physical store, as long as they offer the same breadth of merchandise via alternative channels.

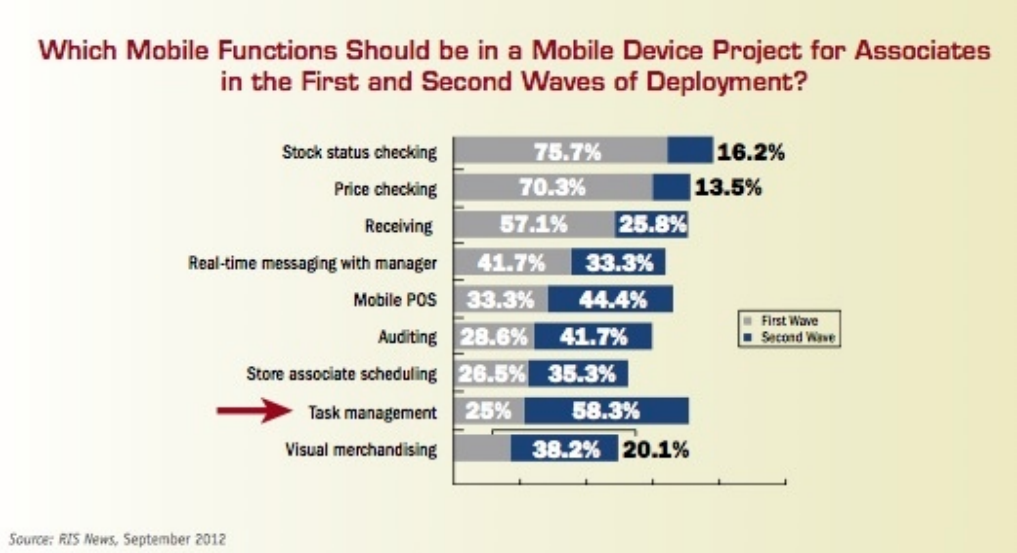
Karstadt, a large German retailer, piloted a concept that takes into account the advantages of online retailing, with the ability to have a large assortment of products without having to stock much inventory, and the advantages of in-store retailing, where sales associates can help customers make an informed decision. They use large interactive kiosks with images of the products and information about all of the relevant features, including videos, especially for their white goods (washers/dryers, dishwashers, refrigerators, etc.). This can be done without stocking all of the models and colors on the showroom floor. The kiosk offers the option of side-by-side product comparisons while knowledgeable sales associates talk the customers through the various options available based on the customer's selection criteria. The sales transaction can be completed at the kiosk, with arrangements made to ship the item to the customer's home. This has caused a significant change in the sales process for Karstadt and the stores in the pilot have seen that the same or greater level of sales can be achieved with about one-tenth of the floor space and smaller inventory levels.

There are several significant challenges to accomplishing these productivity improvements. "Retailers need to ensure that their business processes and analytical reporting catch up with the technology. There are tremendously powerful tools out there, but ultimately they have to be integrated into the retailer's identity, and what's efficient for their staff to execute. You now have access to an immense amount of information, from POS, CRM, RFID and social media, and retailers need to determine what's actionable within the store environment. Transforming that data into information is becoming the new threshold."[18]

The increased use of hand-held devices by retail associates is expected to help retailers improve productivity. For example, a retail manager may assign specific tasks to employees via mobile devices that track whether the tasks are being accomplished and how much time is being used in the process. If the retailer establishes standards for how long it should take to complete a specific action, this process can be used to track employee efficiency and also to elevate concerns to a store manager if a task is not completed or if it is taking significantly longer than it should. In most of these systems, employees have the ability to suspend completion of the task in order to work directly with a customer, e.g., answering a question or showing the customer where a specific product is located in the store.

"Retailers believe task management will be more important in the second wave of associate mobile device deployment, i.e., by 2015 and beyond."[19] (See Chart 7.)

Chart 7. Deployment of Mobile Functions for Retail Associates.



Customization

Retailers are striving to target messaging and marketing to their customers to create a unique, personalized shopping experience. The foundation for this customization is the attempt to harness a massive amount of data that is available to retailers and channel it to the benefit of both the retailers and their customers. In this section, we look at Big Data and analytics, and how retailers are using these tools to customize shopping.

In 2012, Doug Laney, who is generally credited with the first definition of "Big Data" in 2001, redefined the term as "high volume, high velocity, and/or high variety information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimization."[20] Essentially, Big Data describes an amount of information so vast and so complex that commonly used database management tools are incapable of processing it.

For retailers, these sets of data may include information from barcode and RFID systems, Point of Sale systems, finance, inventory control systems, etc. The challenge retailers face is to quickly and accurately evaluate the data in order to determine the best ways to get existing customers to spend more on products while also attracting new customers to the retailer's offerings.

"Some of these data sets are collected for a specific purpose, and some are collected as a result of the individual's passing through the wired world. Combined, this data provides a detailed view of behavior and predictive indicators. Access to Big Data, and the ability to synergistically use the information to make informed and actionable decisions, will become a norm for retailers and suppliers by 2020, based on the expanding use of data today."[21]

Retailers' analysis of Big Data "can be turned into insights and used to create customer demand, shopping cues, or retailer assortment maps. The patterns can also be used to minimize risk. For example, quick, automated pattern recognition around complaints due to a product failure will be detected, tracked, and fixed in a much timelier manner than what is typical today."[22]

Retailers will be more nimble and more flexible as they become more adept at using Big Data effectively. This has been described as: “The retailer of 2020, we believe, will have the ability to monitor and use data that tracks product transactions and changes in the entire supply chain, from manufacturer to customer. They will use this information to reduce costs and realize new revenue opportunities including those from fast-emerging trends. From a value-added-service point of view, this gives the shopper a clear view back to the factory floor to provide reassurance for quality, availability and ethical sourcing practices. Given the visibility into the process and the key decision points that are associated with costs (slow vs. fast shipping, distribution center vs. factory direct, standard package vs. special order), the customer can actively play a role in adjusting costs to individual needs and budgets.”[23]

It may be simpler to manipulate data related to e-commerce transactions, knowing such things as a given customer’s purchase history, click-through rates, brand preferences, etc., but that does not mean retailers should ignore the possibilities of using Big Data to improve the experience for customers in their brick-and-mortar locations. For certain types of purchases, such as clothing, there is no online substitute for feeling the fabric, trying on the item to see how it fits, and deciding whether it looks good.

In this situation, the use of data gives retail associates a means by which to make the shopping experience easier and more convenient for the customer. In some high-end apparel and department stores, retail associates carry tablets that give them quick access to information about shoppers such as previous purchases, style preferences, clothing sizes, and loyalty program status. “May I help you find something?” takes on an entirely new meaning when it can be as targeted as, “A new blouse just came in that would go beautifully with the suit you bought here last month and we have it in your size. Would you like to try it on?”

This is the sort of customization that emerging technology facilitates in the retail environment. “Data and analytics enable retailers to better understand customer profiles and preferences, and potentially predict future customer purchases. By examining and analyzing traffic patterns in stores, mining loyalty data, and monitoring consumers’ online and social media behaviors, retailers can dramatically enhance their connection to consumers.”[24]

Just as customers expect to have a seamless experience with a retailer across all channels, the retailer should have a singular view of the customer, no matter how the customer chooses to interact. Timely, accurate analysis of Big Data coupled with effective implementation will provide that view.

Connected Organizations

No longer confined by locally hosted software or a set amount of storage available in a company data warehouse, retailers are taking advantage of new technologies to connect their organizations in ways that were impossible just a few years ago. In this section, we will discuss how Software as a Service (SaaS), Cloud Computing, and the Internet of Things (also known as the Internet of Everything) are changing the retail industry.

The rising implementation of cloud computing in the past decade has simplified the use of various digital technologies in retail applications. Many digital signage content management systems have shifted in recent years from premises-based software to Software as a Service (SaaS), allowing increased efficiency, flexibility, and affordability. These same benefits apply to workforce management (WFM) software, inventory control systems, manufacturing and supply chain visibility, and customer-focused analytics.

It is projected that the retail cloud market will triple from $4.2 billion in 2011 to an estimated $15.1 billion in 2015.[25] Retailers will derive the greatest benefit from leveraging cloud computing capabilities in several areas including: channel operations; merchandising and marketing; supply chain management; and sales, service, and support.[26]

McKinsey's Disruptive Technology report characterizes the impact this way: 'With cloud technology, any computer application or service can be delivered over a network or the Internet, with minimal or no local software or processing power required. In order to do this, IT resources (such as computation and storage) are made available on an as-needed basis – when extra capacity is needed, it is seamlessly added, without requiring up-front investment in new hardware or programming. The cloud is enabling the explosive growth of Internet-based services, from search to streaming media to offline storage of personal data (photos, books, music), as well as the background processing capabilities that enable mobile Internet devices to do things like respond to spoken commands to ask for directions. The cloud can also improve the economics of IT for companies and governments, as well as provide greater flexibility and responsiveness. Finally, the cloud can enable entirely new business models, including all kinds of pay-as-you-go service models."[27]

Various technologies provide greater connections than previously possible. RFID is not new, but the technology is being used in innovative ways. RFID is an effective method to track the movement of pallets or containers, but at the level of individual products, there are issues with providing adequate power to keep the tag working. In the near future, experts expect tracking devices will be in use throughout the supply chain, from manufacturing to customer payment. It is predicted that "tracking tools will likely be embedded in most products and consumer smart devices by 2020."[28]

"The rise of geofencing and other location-based solutions capable of identifying individuals who are in a given area also opens up opportunities to personalize the store shopping experience. Either through a retailer's mobile app or via Wi-Fi tracking, high-value customers who have opted in can be provided with personalized attention when they enter the four walls of a brick-and-mortar store. These types of alerts can be added to a manager's dashboard via incorporation with WFM and CRM solutions."[29]

This customer personalization technology ties to what has come to be known as "The Internet of Things," a term that describes a wide variety of objects with sensors and actuators that allow them to communicate. Linked through networks, these objects can provide large amounts of data that can be analyzed and acted upon. Many of these objects were previously unconnected and it remains to be seen whether having a refrigerator that knows when you are out of eggs and sends a text to your phone to remind you to stop at the store, a car that gets to its destination without a driver, or a thermostat that monitors activity in the house and adjusts the temperature on its own are good things, or desired by customers.

Industry giants including Cisco, GE, IBM, and Intel have jumped on the Internet of Things bandwagon. Cisco released a study in October 2013, detailing how what it calls "the Internet of Everything" (IoE) will impact retailers in the future. Cisco's study suggests that retail has the largest opportunity to capture the value of IoE, with the assertion that "taking advantage of IoE offers an average retailer 12 percent higher profits by 2017."[30]

How to Work With the Internet of Everything

Cisco Consulting Services suggests five ways retailers could get started working with the IoE:

1. Tap into dark data assets in-store. By connecting previously unused (or "dark") data assets from [several] sources (such as video surveillance cameras, social media, the Internet, and customer's mobile signals) to traditional retail data sets (such as transaction histories), retailers can begin to predict new trends and empower employees to improve profitability. For example, real-time analysis of shopper traffic in the store can help retailers position their employees for faster customer service.

2. Build customer trust. When shopping, most consumers are willing to share personal information in exchange for better, more personal service. Almost half (49 percent) of consumers are comfortable with retailers collecting personal information when shopping online in exchange for more personalized recommendations and customer service. Retailers can deliver more personalized services both online and in-store through digital displays or mobile apps.

3. Gain more visibility into inventory. Today's best retailers enjoy the benefits of a transparent supply chain. Utilizing data-capture technologies such as RFID and sensors, materials and finished goods can be tracked from the source, to the factory, to the delivery truck, and ultimately to the store or warehouse. In this model, retailers can anticipate exceptions to business rules and respond quickly.

4. Drive higher levels of stock availability. In-stock performance is a key performance indicator. With automated stock management and shelf sensors, stores can keep track of on-hand availability and order stock when inventory falls below a certain level—without employee intervention.

5. Maximize staff productivity. Employees can share best practices, operational alerts and develop training and development tools from their mobile devices, while giving managers new insights into efficient ways to allocate sales personnel to drive profits. In addition, employees can provide real-time feedback on product and promotion performance.[31]

Verizon Wireless has taken a two-pronged approach to the Internet of Things. First, Verizon unveiled a new "destination store" design in the Mall of America in Minneapolis that showcases a variety of enabled devices, featuring various objects and apps that can connect both directly and indirectly via Verizon's network. At the same time, Verizon announced its Managed Certificate Services solution, a cloud-based platform intended to safeguard the security of an increasing number of connected devices and systems by authenticating "and securing data transmitted between these connections."[32]

Originally envisioned as something to be used in a home setting – with smart refrigerators talking to smartphones, for example – the Internet of Things will no doubt have an impact on retail stores as well. The corollary to the residential example is a smart sensor on a store shelf that detects when stock falls below a predetermined level and either notifies a store manager or automatically places an order to restock the item. The challenge for retailers is knowing how to manage the available information effectively to take advantage of what this interconnected system offers.

IV. The Store of the Future

"Prediction is very difficult, especially about the future."
–Niels Bohr, Dutch Physicist

The idea of customer purchases being limited to brick-and-mortar stores faded long ago. Digital technologies, such as the Internet and mobile devices, and evolving shopping channels – from pop-up stores to ordering groceries on a train platform by interacting with a video wall – have made it difficult to distinguish what is and is not a "store."

It has been estimated, for example, that by "2025, 30 to 50 percent of retail transactions (40 to 70 percent in advanced economies and 20 to 30 percent in developing economies) might take place online, with a potential economic impact of $100 billion to $400 billion per year."[33] Others are a bit more conservative, estimating that brick-and-mortar stores will still command more than 90 percent of all retail purchases through 2017.[34] While it may be difficult to project online sales, what is clear is that the role of the traditional store is evolving and that these shopping establishments will continue to remain a significant channel of retail commerce in the future.

The customers' desire to shop anytime anywhere is not only impacting retail adoption of various technologies, but also forcing retailers to adopt new store formats. That is, the blurring of retail formats, which had been well underway due to a cross-over in merchandise assortment, is also being accelerated by this change in customer shopping behavior.

Historically, U.S. retailers have underinvested in technology relative to other service businesses.[35] Further, as outlined in the Historical Perspective section, the retail industry's rate of technology adoption also has tended to be longer than some may realize. Yet the transformational impact that technology is having on the retail industry today, particularly as it relates to creating an omni-channel retailer, is causing retailers to implement technologies at an accelerating rate as the nature of stores changes.

As retailers investigate making technology investments, another consideration is whether these investments will create a long-term, sustainable business advantage. That is, once all members of a class of retailers, such as all surviving department stores, adopt omni-channel-related technologies, will the competitive advantages achieved by the early adopters be eroded?

It has long been debated whether technology investments produce a long-term, competitive advantage.[36] The general reasoning is that if one firm is successful in producing superior returns from a technology, competitors will seek to implement the same technology, and that competitive imitation eventually erodes most technology advantages. While this may be the case with certain components of omni-channel technology, such as the ability to order online for in-store pick-up, and ensuring uniformity of brand message and pricing across channels, it will not apply to all aspects of these technologies. This is because the mining and interpretation of data to generate successful marketing strategies and customer interactions cannot easily be replicated from one organization to another. Stated another way, it is not just the technology and the data produced, but the insights and responses that leverage this information. These functions will be dependent upon each retailer's individual skills in understanding customers more deeply and connecting with them more effectively than others to realize long-term advantages.

For purposes of this section, we focus on the more traditional concept of a store, which we define as a branded retail establishment with a brick-and-mortar physical location that is open to the public for the purpose of selling

goods and services.[37] As each retail purchase channel offers various strengths and weaknesses to shoppers, the concepts advanced here consider formats and technologies that leverage the advantages associated with a store, and those weaknesses that can be better addressed by the use of technology.

On the plus side, stores afford customers sensory advantages (touch, smell, taste, sight, and sound), the ability to try/experiment with products, and immediate gratification. Stores also can provide an enriching entertainment and social experience (i.e., a live fashion show). Finally, retail associates can provide meaningful personalized service. On the other hand, pure digital shopping channels are viewed as providing immediate access to more information (product availability, pricing, social reviews, etc.) than may be found inside a store.

To anticipate the customer technology interface within a store, one has to first imagine the possible formats that stores may take in the future. Retail format "refers to the structures for sequencing and organizing the selected retailing activities into coherent processes that fulfill the customer experience."[38] Within each retail vertical, various formats are available for a customer to shop, based upon their needs and preferences. For example, food can be purchased at a grocery, warehouse, convenience, or chain drug store. Customer interface refers to "the positioning of the store in terms of pricing, assortment, and overall design (e.g., whether the store should be organized as a convenience store, specialty store, or themed brand store), [as well as] the structure of the interface itself (e.g., kiosks, stores-within-a-store,"[39] etc.)

Traditionally in the U.S., retailers have generally deployed a uniform store format chain-wide. For example, Kohl's department stores are fairly uniform in their format nationwide. In the future, a specific retailer may adopt various formats, while ensuring a level of brand cohesiveness across these formats. And formats within each vertical will vary widely by retailer. That is, Kroger, for example, will deploy a variety of store formats within the grocery vertical.

Future Retail Formats

Some stores will serve purely as **drive-through pick-up locations**, as some shoppers will move away from large stock-up shopping trips to more targeted, time-efficient, needs-based trips. Sensors in the home, for example, will compile an inventory of all food and other consumable items on-hand. An out-of-stock list will be automatically transmitted to a store, along with the customer's daily schedule. The store then picks the merchandise, while tracking a customer's location, to determine the optimal pack and pick-up time. When ready, customers pull their vehicle into a drive-through bay at the store to have the items loaded for transport. In this example, no in-store visit or services are required, as this store will more closely resemble a drive-through warehouse. Some of these stores may also have small product/service selection areas, where customers may pull in their vehicles to choose certain items themselves, such as fruits and vegetables. Associates will also be on hand, armed with service, product, and customer insights, in the event the shopper needs assistance. Easy drop-off of unwanted web-purchased product will also be available, removing the inconvenience associated with returning such items.

Other stores will serve as **product showrooms** that enable the customer to interact with/try out products, as well as interact with sales associates and other customers (both physically and remotely). These stores will generally be smaller, as most of the retail space will be dedicated to highly interactive "try and use" areas, rather than merchandise display and storage. Sales associates will be customer and product/service experts, providing personalized service that encourages customers to seek out the store. In

addition, these stores will have technology, such 3D printers and body scanners, which enable customers to configure and personalize products to fit their needs on the spot.

Some stores will serve as **immersive experiential centers**, as technology will enable shoppers to control their shopping experience. These stores will be venues for collaboration and experiences that cannot be provided online. The retail environment will be more about the sensation of and context in which a product is to be used, rather than the product itself. Digital screens will line the walls of a store allowing for instantaneous environment changes and endless product selection. Gestural experience zones will also be present. Here the customer can not only experience the product, but also recreate the contextual surroundings in which that product is intended to be used. For example, a couple considering purchasing a new sofa can instantaneously replicate their living room to demonstrate how the sofa will look in that contextual setting. Virtually unlimited product assortment, colors, and customization options will be possible. Ongoing demonstrations, meetings, and other functions occurring in the store will continually be streamed to customer digital devices, where product stories and personal relationships will be further forged.

Brand stores will be created that focus more on promoting the brand than on selling merchandise. The purpose of these stores will be to communicate the brand's values, social and community involvement, to convey customer stories, as well as to provide product/service information and ordering. For example, Luxottica's (Lenscrafters, Pearle Vision, Sunglass Hut, etc.) brand stores of the future may provide a technology immersive experience more reminiscent of an interactive museum that communicates the company's involvement in OneSight, a nonprofit organization that provides eye care and eyewear in underserved communities worldwide.

Stores that offer **community services** as well as retail will provide services that local communities can no longer afford, and locate stores within or near those spaces. For example, the local library, which a community can no longer afford to fund, may be operated by a retailer, which also integrates digital technology and physical merchandise into the space. When one considers all the mothers and their kids who are present at the local library, this captive environment for mothers needing a break to shop or purchase fill-in products, such as pencils and pads, milk, etc. while at the library may be a viable business model. Mobile shopping vehicles parked in front of a retailer-supported community center, for example, may also provide value to the community, as well as the retailer.

Small, **specialty stores** will continue to fill certain niches, as well as evolve. For example, the corner butcher will continue to serve a vital function for customers desiring a high level of service and unique products not available at a chain supermarket. The movement toward locally grown/produced items may also compel a certain customer segment to shop at small, locally owned businesses. Highly targeted small format stores, such as the ribbon and shoelace store, offering an extensive merchandise selection within a narrow niche, may find an audience. In addition, time-pressed customers will continue to seek out small, convenient shopping formats.

Finally, not all of today's store formats will go the way of the dinosaur, as certain customer segments will prefer to shop at more **traditional stores**. Yet these store formats will continue to advance. Not only will newer technologies be introduced, but the formats also will be designed to appeal to specific customer segments, such as the older or Hispanic customer. For example, grocery stores may be designed especially for the elder customer, with a smaller, easier-to-shop layout. As well, the store will have a tailored

merchandise assortment, be staffed with associates who help the customer shop, and provide related health and wellness activities such as a gym, in-house doctor, nutritionist, etc. to attract and retain the loyalty of this shopper.

Within these various formats, emerging technologies that customers will interface with also will continue to mature. These include, among other things: advanced mobile device use with store and product interface; Big Data applications; mobile and integrated POS; cashless payment (mobile wallet); digital assistants; etc. Evolving technologies, such as sensors that enable the Internet of Things, will become prevalent.

Customer Interface Technology

Perhaps the most pervasive advances envisioned are related to an in-depth understanding of individual customers and their product/service desires, and the retailer's ability to be responsive to the individual customer's needs, which includes the ability to customize the product/service to that individual's desires. Customer insights, collaboration, and choice will be major trends. "We are moving from a company-and-product-centric view of value creation to one in which the customer's experience in the process plays a fundamental role."[40] This customer knowledge will come from demographic data, purchase histories, knowing where and how the customer lives, their response to prior communications, their personal product inventory, personal preferences, behavior patterns and trends, an understanding of individual influencers, etc., and the context in which the product/service will be used.

While each retail vertical and format will evolve differently, the following are some general abstractions regarding how retailers will interface with their customers:

1. Customer access to information will be unlimited. Today, it is the customer who undertakes the effort to search for product information. In the future, retailers will readily provide this information, but in a manner that cuts down the time the customer spends searching for this information. That is, armed with information about the needs and desires of that customer, as well as the context in which the product will be used, information and experiences will be provided to assist the customer in evaluating and choosing products. This customer-specific information will be distributed to customers as they explore the store and interact with their wearable computers, interactive shelf-edge devices, and/or the product itself.

2. Big Data will provide retailers with unlimited amounts of information about customers. Analytic tools will mine data such as loyalty programs, past purchases, demographic information, local conditions, and other information to create and deliver highly personalized messages that may appeal to a customer. Analytic understanding will advance later to include other information such as psychographics, emotional characteristics, and personal and family relationships. These Big Data tools will gauge customer influencers that, in turn, will be targeted (i.e., Betty needs a new work suit; let her know that Macy's has free alterations). Further advancements will provide insights into the unmet needs and desires the customer is seeking to satisfy, perhaps before the customer herself knows of her need, and will customize messages to address that need.

   Recognizing a need is the first step in the customer buying process. Perhaps a customer runs out of laundry detergent or has an upcoming vacation planned to a sunny locale. Such an event typically triggers the buying process. Retailers and Consumer Packaged Goods manufacturers attempt to stimulate need recognition through

advertising, emails, direct mail, and other external inducements. In the future, customers will be notified when they are running low on a product (and informed that the retailer can deliver it to their home or it can be picked up at the store). Knowing that the customer has a vacation planned, the retailer can communicate a tailored wardrobe to the customer based on past purchases, his or her clothing inventory, activities that he or she is likely to engage in when on vacation, etc.

3. Certain classes of merchandise will become less standardized and more customized to fit a specific customer's desires. Custom products can be available for pick-up by the customer when he or she walks into the store or reformulated on-the-spot (i.e., the scent of a shampoo or soap).
4. The concept of pricing will change. For a certain class of merchandise, customers will bid on products. Retailers will respond based on basic supply/demand factors. For other products, the amount of customer-desired customization might impact the price. For example, some customers may be willing to pay a premium for a product based on where it is grown or produced, special ingredients, and/or higher quality, whereas other customers will trade down to lower-cost products with none of those features to pay a lower price. And pricing in all channels will be uniform.
5. Products themselves will directly communicate with the customer, as merchandise on the shelf will be more interactive with the shopper. Packaging will actively show products in use and features and functionality will be directly communicated to a customer via digital screens on the product or transmitted to a smart device for further insights.
6. As discussed above, the Internet of Things refers to the use of sensors and data communications technology, such as RFID tags that are attached to merchandise, with the purpose of tracking and controlling related functions. To capture the value of these data will require sophisticated Big Data analytics capable of connecting the dots and using this information for the benefit of the customer.
7. Technologies that allow specific customers to be identified will be adopted and used actively. These include facial recognition cameras, biometric devices, mobile phone and app tracking devices, etc. Based on this information, store associates can render a highly personalized level of attention, as the customer's purchase history, preferences, physical appearance, etc. are made available.
8. Cash wraps, as we know them, will disappear as mobile POS and cashless payments are broadly adopted. Wait times will be virtually eliminated. Digital screens will be prevalent throughout the environment, and will become intelligent and communicate directly with customers. The voice and credibility of social media will be integrated into the store. Investments will be made aimed at increasing store associate knowledge and ability to interact with customers.

In the following section, we advance some possible retail formats and methods of customer interface technology in chain drug, mass merchandise, retail banking, and women's apparel stores that may exist in the future.

<u>Chain Drugstores</u>

Historically, chain drugstores have relied upon convenience items and prescription drugs to pull traffic into their stores. As mail order pharmacies and other retailers, such as supermarkets and mass merchandisers, have entered

the prescription drug business, chain drugstores have been forced to evolve. Newer formats have included larger stores that offer a wide assortment of food items, including fresh and prepared foods. Some also offer clinics where a nurse practitioner assists in rendering patient care.

The Walgreens flagship store in Washington, D.C., for example, incorporates multiple technologies to appeal to customers: a high-tech Coca-Cola dispenser that allows the buyer to mix his or her own beverage flavor; an ATM; a Redbox DVD-vending kiosk; digital sign-in for the Take Care Clinic; and, iPads for retail associates to assist with locating products and language translation capabilities. In addition to the now-typical selection of convenience food items, the store offers prepared foods, fresh produce, and a variety of cheeses.

In the future, a possible chain drugstore format will be more aligned with a health and wellness center that provides medical assistance, fills prescriptions and sells related products and meals, rather than stocking a broad range of merchandise. Different sections of the store will focus on addressing various illnesses, such as diabetes. Store associates will provide solutions that focus on customer health needs, and they will be highly trained. In addition to offering health and wellness advice that is focused on a particular ailment, other services may include senior counseling, areas for social gatherings, interactive diagnostic areas, and exercise facilities. Interactive screens will display and recommend personalized customer merchandise that is not stocked in the store, for delivery to the home or to the store for later pick-up.

Within the diabetes zone, for example, experts will give remote presentations on topics that will be displayed on digital screens. Armed with devices that contain detailed customer health information, store associates will work with individual customers to help manage their health needs, including arranging for doctor appointments. A dietician can recommend a special diet and remotely monitor the customer's progress, as well as suggest that the customer purchase diet-compliant meals in the store or order a meal plan for home delivery. Related glucose products can be purchased in the store, or each month the product can be sent directly to the customer. Patients with similar conditions also can gather at this future drugstore to share experiences and information.

Mass Merchandisers

Mass merchandisers will likely be organized along a tight hub-and-spoke configuration. At the center will be a distribution center (DC) that enables customers to drive through for quick pick up and returns. These DCs will also deliver merchandise to stores in both bulk for stocking and individual items for customer in-store pick-up. In addition, these DCs will offer same-day product delivery directly to customers' homes.

The stores that these DCs service will operate in various retail verticals and have differing formats. For example, these may include the Target-branded auto parts stores, grocery stores, and smaller general merchandise stores. This movement to smaller, more focused specialized stores is occurring because many of the products typically sold at a mass merchandiser can generally be acquired in multiple outlets, and the store emphasis will move from product and price to customer intimacy. The mass merchandisers' business objective will be to sell low-margin commodities, like dishwasher soap, from the DC, and higher value products, like an engine rebuild, in the smaller specialty stores. This will also enable the mass merchandisers to

leverage their bulk buying power and supply chain management expertise to effectively service the small stores.

Retail Banking

Retail banks, like other retailers, will adopt various formats and technology in the future. Some customers like walking into a bank, and branches will continue to exist for them, though Bank of America CEO Brian Moynihan recently told industry analysts that "the definition of a branch is changing from what you'd traditionally think." Moynihan also said that just 20 percent of banking transactions are conducted using physical paper checks, down from the 60 percent that were used in the early 2000s. U.S. banks such as Bank of America and JP Morgan Chase are investing heavily in technology with a focus on expanding mobile and online offerings in the future. In the U.K., a group of five banks "teamed up with Vocalink to produce a mobile payments and banking app that should work near seamlessly in buying online and – in the future – in stores, too." [41]

As a result, the bank branch's focus may change to become more of a financial education center, rather than being staffed by tellers who complete simple transactions, such as accepting deposits and cashing checks. Live and remote experts will be available to address customer issues. Personal relationships and community involvement will be central themes to keep customers coming to back to the branch. Notwithstanding, the number of retail banks is likely to shrink in the future due to the growth in online banking and mobile apps.

These customer relationships will be enhanced by data analytics that will generate customer insights so that needs can be understood and acted upon by a banker, perhaps before the customer even recognizes the need. For example, sensors may alert bank staff when an older car needs to be replaced and a car loan may be necessary. Or a customer's Internet activity may indicate that he is considering buying a vacation home and is in need of financial advice and a mortgage. Social media monitoring may yield important actionable information, such as an upcoming high school graduation, which can indicate that the customer may need a loan to fund the cost of college.

Apparel

Apparel stores will become highly interactive and personalized. As well, they will be much more narrowly defined, e.g., the women's tennis outfit store. A woman desiring to purchase a dress for an upcoming charity event, for example, can be instantly transformed via augmented reality into that environment to experience how she may look and feel when the day arrives. Different color dresses, fabrics, and styles will be instantly interchangeable. Sales associates will have detailed customer insights, and can recommend shoes the customer already owns to wear with the new dress or a new purse to buy. Make-up and hairstyle options also will be presented. The dress selected can then be purchased on the spot (or manufactured in the store) or delivered later.

Live and remote socialization – such as fashion shows, wine tastings, and other events – will occur and also play an important role. A women trying on dresses for a special event with the backdrop of the intended environment, as noted above, will have the option to invite her friends to view streaming video from the store to gauge their opinions.

V. Conclusion

"Retail stores will remain relevant as long as the need for instant gratification exists." – Paul Roth, AT&T Mobility

Some industry pundits are already suggesting that the term "omni-channel" is at best, overused, and at worst, irrelevant. One thing is certain. Retail customers in the future will have more options for shopping than ever before and technology will continue to expand the available options.

The future of retail will be about choice, consistency, and customization. Customers may want to shop online and pick up their purchases via a store drive-through or have them delivered to their homes via drones. They may choose to conduct all of their banking transactions via a mobile app and use a mobile wallet to pay for gas or groceries. The point is that customers will expect to have the option of making the choice of what works best for them and the retailer must be prepared to meet the customers' expectations.

However the customer chooses to interact with the retailer, there must be consistency across every available shopping channel. Business intelligence tools will be refined to perfect the shopping experience, whether it is an immersive, technology-supported visit to a retail store or an email from the pharmacy reminding the customer that it is time to refill a prescription. As technology-savvy millennials recover from the recession and gain buying power, they will increase pressure on retailers to offer a consistent experience, whenever, wherever, and however they choose to shop.

Recently, online giant Amazon said that it is so familiar with its customers that it can be ready for orders with "anticipatory shipping." Essentially, this means Amazon would use analytics to determine what a customer might want to order and move the potential item through distribution channels so that it is available for same-day delivery when the order is placed. As far-fetched as that may sound, and though Amazon may already be better at it than anyone else, other retailers in the future will certainly use Big Data and analytics to suggest merchandise based on previous purchases and make the purchase more attractive to customers through discounts and other special offers. This sort of customization also will influence future store design, with various technologies put in place to personalize a store visit for each shopper.

As we look back at the history of retail and the innovations that have shaped the shopping experience over the years, it is abundantly clear that the pace of change has increased exponentially. Widespread adoption of electronic cash registers, barcode scanning, and self-service checkout took place over decades. More contemporary technologies such as digital signage, mobile POS, and personalization via advanced data analytics are changing retail in a matter of months or years, rather than decades.

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