Disruption in Retail
How Technology and Data Are Transforming the World of Shopping

Acknowledgements

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Established in 2002 through a generous gift by Patty and Jay Baker, Wharton graduate of the class of 1956 and former President of Kohl's Corporation, the Baker Retailing Center is an interdisciplinary research center at the Wharton School. Its mission is to be a global leader in retail knowledge and education through cutting-edge academic research, academic-industry programs, student and alumni activities, and global initiatives. The Center's industry advisory board features leading retail executives from the U.S. and overseas.

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Retail in Flux
Ever-Evolving Shopping Experience in the Digital Age

By:
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> If you went to bed last night as an industrial company, you're going to wake up this morning as a software and analytics company.
> *–Jeff Immelt, CEO, GE*

> One of the things you learn operating in the technology industry is disruptions are occurring every day.
> *–Dick Costolo, Former CEO, Twitter*

As much as industrial companies and the tech industry are affected by rapid change and disruptions, the retail industry has been experiencing similar challenges. This is partly because technology has become such a crucial part of retail—not just for pure online retailers but retailers of any kind, size and location, and is constantly changing customer behavior. In fact, three of the largest online retailers in the world, namely Amazon, China's Alibaba, and Zalando, Europe's leading online clothing and shoe retailer, consider themselves—or have been called—tech companies that happen to be retailers.

Today, online and mobile channels are integral to all phases of the shopping process, including information search on products and prices, email and chat communication, social media, customer reviews, and transactions. "Smart" technology such as artificial intelligence (AI) applications, including chatbots, interactive robots, and smart mirrors in dressing rooms, as well as Internet of Things applications are making retail and shopping ever more sophisticated. The digital nature of these retail technologies generates a vast amount of customer data, which enables analytics to improve the customer experience, not just in the online retail universe but also in brick-and-mortar stores. Technology and data help to enhance the customer experience during the shopping process by providing convenience, efficiency, quality service, and personalized messages and product suggestions—all of which can foster an emotional connection to a retailer or brand.

The constantly growing technological capabilities have caused a change in shoppers' behavior and expectations, presenting both opportunities and challenges for retailers to meet more demanding customer needs and wants. As a result, retailers must reconsider the many functions of their business that require adjustment, including the design of the supply chain, marketing, payment methods, and customer engagement. The developments have become ever more rapid, especially in the last few years. Customers are increasingly more informed and connected—digitally, socially, and globally—, which makes them a sophisticated and complex audience to serve.

In addition to technology, online retail giant Amazon, whose business model is based on technology, has exerted so much impact on the entire industry that retailers are watching Amazon's every move to develop how-to-cope-with-Amazon strategies. Not only has Amazon cannibalized competitors' businesses, but its constant flow of groundbreaking innovations—from the Amazon Dash

Button to the Echo interactive voice system to testing drone delivery and the Amazon Go checkout-less store—has also increased customers' expectations regarding convenience, service, and experience.

A moment of disruption is where the conversation about disruption often begins, even though determining that moment is entirely hindsight.
–Steven Sinofsky, Former President, Microsoft Windows Division

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Our conference served as a platform to discuss the changes, as well as new opportunities and challenges. It was a forum to showcase academic work on new questions that have emerged in this disruptive environment as well as the strategies of innovative, cutting-edge retailers that are shaping the changes—through novel business models and a modified customer experience, also enabled by new technology and data.

Given the multitude of ongoing changes, our conference covered a variety of topics under the "disruption in retail" theme. For different perspectives, we invited both academic and industry speakers to share their work and insights on "disruptive" topics. Our line-up of distinguished speakers (see program and speaker list at the end of this report) addressed a range of subjects, including the following:

- the various developments and challenges at play, as well as factors to succeed in this new retail environment, including through brand authenticity, customer service and experience, and appropriate performance metrics;
- the incremental financial value that shoppers using a retailer's mobile app provide;
- how features of the shopping environment can foster desired shopper perceptions and behavior;
- how a retailer with a clear focus on customers like Nordstrom navigates the changing retail environment in a creative and agile way, by adapting both offline and digital customer interactions;
- how big data is instrumental for predicting customer preferences and behavior;
- the value of leveraging customer data to estimate the financial value of customers, considering a customer's acquisition and conversion cost as well as lifetime revenue, in order to make marketing decisions (e.g., new products, whether to issue a catalog, loyalty program design, allocate marketing budgets to customer acquisition channels);
- how digitally-native vertical brands such as Warby Parker and Bonobos are growing through offline stores, among other initiatives, and what distinguishes their business models, including the customer service approach, performance metrics, and elements of the company mission (e.g., social impact component), from traditional retailers;
- how novel consumer-facing technology—from new wristband-based payment systems authenticated by one's heartbeat to chatbots to interactive robots taking food orders—create new opportunities for retailers;
- the need to consider shoppers' perceptions and responses to new retail technology, also making sure shoppers understand and value the benefits;
- the varying impact of the different ways prices and products can be displayed (digital vs. traditional signage of prices; pictures vs. video to show product);
- the benefits of store-in-store concepts, which are growing in popularity in Asia and also the U.S., given their inherent alignment of manufacturers' and retailers' interests, giving brands more direct customer contact and control of their brands while reducing retailers' risk and increasing their flexibility;
- the value for an upscale retailer like Barneys of leveraging digital technology to provide a great shopping experience through personalized recommendations and tech-enabled convenience features in addition to unique product and a service culture emphasizing high-touch customer relationships;
- the need for thoughtful talent acquisition, development, and leadership programs, including through internal job rotations, as well as succession planning.

From the range of "disruption in retail" topics we selected the following ones to discuss in workgroups at the conference: customer experience, analytics, mobile, artificial intelligence (AI) in retail, and technology's impact on channel management. This report provides summaries of the discussions by the workgroups on these five topics, which consisted of academics and industry practitioners. Here is an overview of the five papers:

- **Customer experience and technology:** Enhanced customer expectations have been challenging retailers to elevate the customer experience by integrating technology into in-store and online channels in ways to make shopping more efficient, convenient, personalized, and delightful. The paper describes factors that impact customers' shopping experience in physical stores and online, including sensory, social, emotional aspects, as well as assortment, display, and curation. It also highlights examples of traditional brick-and-mortar retailers that have adopted digital technology to improve customers' in-store experience (e.g., Sephora's app) and online retailers that provide novel experiences for customers (e.g., online bra retailer Third Love using a new in-home self-measurement process for sizing) or enhance convenience and quality of life (e.g., Blue Apron which delivers meal kits, saving shopping and preparation time while minimizing food waste and overeating due to portion-sized meal kits). Finally, the paper points out how traditional retailers are incorporating technology (e.g., self-checkout, order and pay online and pick up in store) while online retailers add a physical presence, for example through showrooms.

- **Analytics:** While many companies have customer data, mostly enormous amounts, the challenge is its thoughtful analysis to create usable insights for business decisions. Using customer lifetime value (CLV), an estimated financial value of all transactions during the customer's active relationship with a company, can help to focus attention on a company's most valuable customers. This customer-centric concept can be used, for example, for customer segmentation based on customer lifetime value and to retarget high-value customers. Good CLV estimates depend on the quality of the estimation models. The one developed by Peter Fader is different from more traditional models, which commonly consider a firm's number of active and repeat active users, frequency of purchases, as well as the forward- and backward-looking repeat rates, in that it is based on a probabilistic, conditional approach that considers underlying factors that drive metrics such as recency, frequency, and monetary value of purchases.

- **Mobile:** Given the vast number of shoppers using a mobile device somewhere in the shopping process, including in stores, retailers are increasing their budget for mobile marketing accordingly. Mobile presents retailers with an additional marketing and sales channel, and thus new opportunities but also many new questions. The paper on mobile marketing outlines a range of those questions. They address aspects of the role and purpose of mobile marketing for a retailer or brand; customer empowerment through information and tools on a mobile phone; mobile marketing as a vehicle for brand building and for brands to stay relevant; factors related to the company such as investment decisions regarding mobile; attribution of sales and impact on the role of sales associates; and consideration of differences across product categories to tailor the experience and add value.

- **Artificial Intelligence (AI) in retail:** AI capabilities have greatly expanded in recent years, including for retail applications, ranging from conversational customer interactions through chatbots to product recommendations in e-commerce to robots that help improve in-store operations. Chatbots' integration into messaging apps, the use of which has been growing, has set them up for broad adoption. In retail, chatbots can currently assist with rather simple customer service requests, e.g., provide information on products and store locations, and send notifications about sales, re-stocked items, and special events. Besides chatbots, the paper describes other applications of AI in retail, including AI-based systems that utilize data about people's wearing patterns of clothing items from their digitally inventoried closets to recommend outfits; customized item recommender systems for online shopping; smart in-store technology to make back-office operations more efficient to ultimately improve customer experience; and robot-based inventory taking in stores to improve shelf replenishment processes and correct discrepancies between the actual shelf and planogram.

- **Technology's impact on channel management:** Technology has made omni-channel models common for both retailers that started with a traditional brick-and-mortar model and those that are digitally native. Operating multiple channels that complement each other in some way (e.g., marketing, information) and compete in others (e.g., making the sale) have posed new questions and challenges for retailers' channel management. The ones discussed in the report are as follows: the financial benefit of providing a seamless omni-channel experience (e.g., return on investment of a new app or of opening physical stores); designing sales attribution and commission systems that incentivize the sales team to provide the best customer experience rather than sabotage digital channels that are perceived as competition; the challenge of creating an intimate customer-brand interaction online, which staff that match the customer profile, technology (e.g., on-demand chats), and insightful customer data can facilitate; challenges and opportunities of personalized marketing; retailers' increasing data advantage and power given their direct customer interaction and ability to collect customer data across all brands they carry, which brand manufacturers don't have access to. ∎

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The Customer Experience and Lifetime Journey in Retailing
When and How Retailers Need to Embrace Technology Intelligently to Succeed

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R etail is a constantly evolving landscape. Approximately every few years or so a new disruption occurs, the newest being the rapid advancement and evolution of technologies that are shifting consumer expectations towards more efficient, personalized, and customized experiences. Retailers can no longer compete solely on metrics of brand name or price; instead, consumers value a more holistic approach that considers multiple needs in every interaction they have with the retailer.

As more consumers seek out the convenience of online shopping for a number of items traditionally bought in-store (e.g., everyday household items, luxury goods, clothing, etc.), retailers that have primarily focused on enhancing and curating the in-store experience need to adapt to these changing consumer expectations in ways that increase the ease of the consumer shopping experience. Today's consumers challenge traditional mass marketing categorization tactics; everyone wants their individual profile rather than broader demographic characteristics or categorizations to drive their interactions with retailers. Consumers grow more expectant that information presented to them has been chosen through some dynamic method (e.g., prior purchase history or stated preferences), rapidly taking the control of information into their hands from retailers. In tandem with this rising need for customization and personalization, the rise of technology has increased the number of avenues consumers have for finding information, searching for products, and choosing from whom and where to buy. This evolving landscape has consumers "calling the shots" in retailing and as such, has necessitated a call to better understand how retailers can successfully meet and exceed consumer expectations through the effective integration of technology to enhance in-store experiences and sensory replacements into online encounters. Accordingly, the goal of this white paper is to tackle challenges currently facing retailers that have arisen because of technological advancements. Importantly, we consider some aspects of the consumer experience and journey where we believe retailers (both traditional and digital natives) have the greatest chance of success.

The Changing Way Information is Released

With recent advances in technology, consumer expectations regarding the dissemination of brand information have drastically changed. Retailers are no longer fully able to control when, what, and how information regarding their brand is released, shifting power from retailers to consumers. As consumers have access to more information, brands and retailers need to incorporate novel methods of attracting consumers to shopping in their physical stores. Learning to adapt to technology and properly incorporate technology into an in-store experience or online shopping excursion need to be executed in a seamless fashion that still feels true to the brand—an extraordinarily difficult feat to achieve in many verticals.

Brands can no longer satisfy consumers with only broad or "impersonalized" information regarding their products, services, and consumers. Retailers need to more deeply understand who their consumers are, and using that information to appropriately connect to their target consumers.

Technology has on one hand enabled consumers to find more information in their search process. On the other hand, technology has also enabled retailers to more precisely reach out and connect to consumers who would most easily be influenced by different types of appeals and messages.

The Rise of Social Influencer Marketing

Marketing, in conjunction with the rise of personalization, customization, and technology, has seen a move away from mass marketing techniques towards more social influencer marketing. For brands to connect to consumers in more authentic ways, one tactic should be to choose the correct influencers to represent the brand. Considering the in-store shopping experience, this could mean having sales people who really embody the brand be the liaison between the retailer and consumer. Online however, this could be incorporating mini-celebrities (i.e., social influencers) through social media outlets like Instagram, Facebook, and Twitter to engage with products and services while espousing the positives to their fan base. Another option to build social influencers is "celebrity seeding," where firms strategically send celebrities free merchandise so that they will be photographed in public wearing or using the (gifted) products. In comparison to paying for explicit celebrity endorsements, celebrity seeding can achieve the same outcome at a fraction of the cost and can often be more effective because its candid nature suppresses the activation of persuasion knowledge (Friestad and Wright 1994) and makes it appear that the celebrity is sincerely interested in the brand (Samper et al. 2017). This also has implications for the way a brand communicates with the target. Elements in text that communicate meaning and emotion beyond the text, called textual paralanguage

> Indeed, one advantage that physical stores have over online competitors is their ability to provide shoppers with multisensory experiences.

(Luangrath, Peck and Barger 2017) such as emoticons and artifacts may enable customer service representatives to more deeply connect with their target consumers. This less formal communication may convey more emotion and a deeper relationship, but could also be too informal for some brands and for some target segments. Companies need to be cognizant of when and how to use textual paralanguage in their online communications.

Factors That Influence Consumers During In-Store Shopping Occasions

Sensory Factors in Retail: The way that consumers search and shop differs based on the outlet for exploration (i.e., offline versus online), thereby influencing consumer expectations. While an online retailer or online storefront may be best for certain types of consumers' shopping experiences (e.g., targeted search), in some instances, physical stores provide experiences that cannot be fully replicated in an online or technology-advanced situation (e.g., exploratory search, serendipitous finds, retail therapy). Indeed, one advantage that physical stores have over online competitors is their ability to provide shoppers with multisensory experiences—those that involve feeling the texture of a product, seeing how heavy it feels, trying it on—, all within an environment that has pleasant lighting, background noise, and scents. The physical retailer also has more control over the shopping journey, influencing which products are seen first (near the store's entrance), what the typical path through the store is, how products can be coordinated with other products (on mannequins or salespeople), etc. Whereas online shopping may often be more strategic and goal-driven (e.g., it is efficient to shop at Amazon for an obscure tool), much in-store shopping is more serendipitous in nature, involving the "thrill of the hunt" for many shoppers. The rising popularity of off-price outlets such as TJMaxx, Nordstrom Rack, etc. involves the hope of stumbling across one or more items that the shopper hadn't planned on buying, didn't know existed, but is delighted to have been presented with at a discounted price,

through his or her in-store hunting activity. The mood-enhancing benefits from shopping in stores (i.e., retail therapy) are likely muted in online settings due to the sheer physicality that in-store shopping offers—walking, looking, feeling, smelling, trying on, imagining wearing, observing other customers, etc. Retail therapy likely derives much of its therapeutic appeal from the sensorimotor activities involved in the shopping of physical store spaces. Thus, just as electronic books will likely never fully replace physical book reading, online shopping is growing at a rapid pace but likely will never fully replace physical shopping activity—unless truly significant developments in virtual reality enable online shopping to provide similar benefits.

When considering how retailers can impact the consumer buying process, retailers need to determine how to properly incorporate technology that allows consumers to have an appropriate experience while shopping, whether it be through an online or physical store. Retailers need to provide consumers with experiences that incorporate aspects of technology and atmosphere that both mesh with consumer expectations regarding their brand and product offerings. The way to enhance the experience for consumers is highly dependent on several factors such as the product category, the reason why consumers are shopping, and what the consumer values most in the buying process. Social and emotional influences are cornerstones of the retail experience and key drivers of consumer behavior both in-store and online.

Social in Retail. Social influence is important in both in-store and online retail contexts, and the ways in which others impact consumer behavior manifests in an increasing number of forms. Social influences include not only social groups and personal relationships but also diffuse social networks, social media influencers, and online reviews. Despite all residing under the "social" umbrella, these social influences can have quite different effects on behavior.

While in store, consumers typically encounter social others who shape their perceptions and ultimately their purchase decisions. Receiving flattering or encouraging comments from a skilled store associate or observing other shoppers choosing a product often serves to increase consumption.

Social and emotional influences are increasingly prevalent in the digital space.

However, social others can also serve to reduce consumption (Cavanaugh 2014; White and Argo 2011; White and Dahl 2006; 2007) or encourage variety-seeking (Levav and Zhu 2009). Moreover, the impact social others have in a retail context can change depending on their physical characteristics, such as body type (McFerran et al. 2010) or attractiveness level (Argo, Dahl, and Morales 2008), or even their role as a salesperson versus another shopper (Dahl, Argo, Morales 2012). A touch on the arm from a salesperson may induce compliance such as purchase (Hornik 1992), but some individuals are very uncomfortable with social touch (Webb and Peck 2015) so caution may be warranted.

Emotion in Retail. Emotion is evoked by a wide variety of retail tactics. While online, retailers are largely limited to audio-visual stimuli to evoke emotion. While in store, atmospherics, including ambient lighting, music, scents, and haptics are regularly used to create an environment conducive to consumption. Haptics, in particular, have been shown to be an important differentiator for consumers between the online and in-store shopping experience (Peck and Childers 2003a). Store environments can be used to calm or excite consumers or to encourage positive moods more generally, which are likely to increase positive evaluations and intentions (White and McFarland 2009). In addition, store environments could also evoke more complex feelings of love, pride, or nostalgia among consumers. To the extent that specific consumer emotions can shape different sensory perceptions (Cavanaugh, MacInnis, and Weiss 2015), and sensory perceptions such as touch can influence emotions (Peck and Wiggins 2006), retailers have additional tools at their disposal for influencing expectations, decisions, and experiences.

Historically, brick-and-mortar retailers have enjoyed a substantial advantage on these fronts. However, technological advances and creative multi-media executions have helped to close this gap. Social and emotional influences are increasingly prevalent in the digital space. Through well-designed websites and seamless integration with social media platforms (i.e., Instagram, Pinterest, Snapchat), a subset of retailers have begun to transform the online shopping experience by infusing it with social and emotional content that quickly moves consumers along the path to purchase.

Below, we discuss a few different competing needs that retailers try to satisfy in the online and in-store spaces.

As offline shopping is typically more exploratory and sensory than online shopping, there may be certain types of products and retailers who benefit disproportionately from an offline, physical presence. For example, some consumers like the thrill of the hunt or the joy of serendipitously finding the perfect outfit. Although similar aspects of this process

Interestingly, digital and social media may offer opportunities for a more sophisticated storytelling.

could be simulated in online settings, such as by using simulated store displays etc., the sheer physicality of the "hunt" may be difficult to replicate in a virtual manner. Further, consumers may enjoy product sampling and sensory experiences when shopping in product categories such as food, cosmetics, and fragrances.

One type of shopping that has been explored mostly in the offline, in-store domain, is the phenomenon of "retail therapy," where consumers shop when they are unhappy in order to improve their emotional state. Indeed, recent research has found that shopping does in fact reduce feelings of sadness (Rick, Pereira, and Burson 2014), but interestingly, it is not the products themselves that enhance their mood. Instead, shopping reduces sadness by giving individuals increased control over their environment. Because the feeling of sadness is linked with a sense that one has no control over the circumstances in one's life, by making choices that are inherent to the shopping process, consumers are able to restore a sense of personal control, thereby improving their emotional state as well. Shopping may also provide some individuals with physical exercise, which research clearly shows also helps to combat depression.

One way that in-store shopping influences consumers is through the presence of other people. When shopping in-store, there are sales associates, other people who may be accompanying or shopping with the consumer, as well as other customers. Benefiting in-store experiences are the social components of offline shopping experience. Research has shown that consumers are influenced by others (close and distant) when forming opinions and making purchase decisions (e.g., Chevalier and Mayzlin 2006; Godes and Mayzlin 2004; Liu 2006; Zhu and Zhang 2010). While there is a plethora of online user-generated-content (i.e., online reviews) that consumers may find extremely vital in their decision making, offline social factors have their own influences on consumers. For example, seeing a crowd of people navigating within a physical store may signal that the store is high quality or successful and worth shopping in. Additionally, with an in-person shopping experience, consumers can form more intimate connections with individuals who represent the retailer or share in shopping experiences with others that cannot be accomplished through online avenues despite technological attempts.

Another way that consumers make decisions is by utilizing their different senses, something that is changed when shopping in an offline versus online context. Certain types of products have been associated with sensory experiences (e.g., luxury, food; Kapferer and Bastien 2009; Krishna and Morrin 2008; Lageat, Czellar, and Laurent 2003). One notable difference is the inability to physically explore products through touch in an online environment. While many product attributes can be communicated through text or photos, haptic properties (where touch is important) such as softness, weight, temperature and pressure (Lederman and Klatzky 1987) can be more difficult to communicate online (Peck and Childers 2003a). For a product category that varies in a diagnostic way on one of these haptic attributes (for example, clothing), motivation to touch prior to purchase will be greater (Peck 2010). Besides product category differences, there is an individual difference in a person's need to touch products (Grohmann, Spangenberg and Sprott 2007, Peck and Childers 2003b). While people with a lower need for touch can be compensated for an inability to touch with, for example, a clear photo of a product, others become more frustrated and are less confident in their product judgments (Peck and Childers 2003b) when the ability to touch is absent. Also notable is that merely touching a product (compared to not touching) leads to a greater feeling of psychological ownership (Peck and Shu 2009) and a greater willingness to pay more for a product as well as increase unplanned purchases (Peck and Childers 2006). There is some evidence that imagining touch may be able to, at least partially, compensate some consumers while shopping online (Peck, Barger and Webb 2013). Moreover, technological advances in the haptic nature of devices may be able to partially compensate for lack of touch in online settings (e.g., buttons that vary in pressure, feel, etc.).

In addition, the notion of multisensory delight (i.e., smell of perfumes, sound of other consumers deliberating, touch of fabric, etc.) is intrinsically linked with certain retailers, products, or brands (e.g., Spence et al. 2014), which may lead some consumers to resist a total move to online shopping as certain touchpoints to the shopping experience would be missed. For some consumers, there is an additional benefit to physical stores in that the sensory atmospherics make a shopping experience more enjoyable, and it's this backlash from the sterility of online shopping that keeps certain types of retailers in business (e.g., physical book stores, record stores) despite there being larger, cheaper, and more efficient online shopping technology for these very products.

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It is notable that the existence of the Internet can intersect with offline consumer decisions in interesting ways. For example, in offline purchasing settings such as retail stores, consumers can encounter reminders that product information can be found on the Internet. Research suggests that such a reminder of online availability of information (called a 'cue-of-the-cloud') can impact consumer behavior in retail contexts (Bhargave, Mantanakis, and White 2016). This research finds that, under conditions of high information in retail contexts, a "cue-of-the-cloud" can enhance purchase intentions and choice behaviors. This occurs because such cues increase people's confidence in their ability to retain and access information they have seen in the store, which, in turn, leads to positive feelings about the purchase decision. There is also evidence that consumers who need to touch products may explore in the retail store, and ultimately purchase online (Peck 2010).

Despite these factors that may positively influence or impact consumers during the decision process from an in-store perspective, there are certain types of consumers and different types of product offerings that may be preferred in an online rather than offline, in-store environment. In addition, in some cases, the presence of other consumers and the fact that they may come in physical contact with the products an individual wants to purchase, may actually detract from the in-store shopping experience (Argo, Dahl, and Morales 2006). Moving forward, we discuss some instances where online shopping may be preferred or may be a better avenue for the consumer.

Factors That Influence Consumers During Online Shopping Occasions

Assortment and display. Consumers are shopping online and from their mobile devices at a rapidly growing rate. Even if consumers ultimately make the purchase in the store, the search may start on a mobile device. With the growing importance of the online interface, understanding how consumers use this interface becomes more important. For example, this change in behavior suggests that visual design decisions, both in how the assortment is depicted, as well as how individual items within the assortment are shown will be critical. Although certainly individual differences as well as motivational influences and marketing variables will affect decision making, there are two key aspects at the stimulus-level that will affect how consumers perceive an assortment (Kahn 2017): (1) which features of the assortment will capture consumers' attention, and (2) how easy it is to process the assortment.

For example with regard to consumer attention, we know that visual search is not random but is guided by the salience of objects, which in turn results from a combination of goal-directedness and stimulus-driven factors (Hutchinson, Lu and Weingarten 2016). While the top-down (i.e., goal-driven) motivations and marketing actions clearly matter, we also know that attention in and of itself is important and is strongly correlated with the brands identified to be in the consumers' consideration sets (Chandon et. al. 2009). Factors of an online assortment that have been shown to affect consumers' attention include visual salience effects (such as brightness, color, size, the number of facings) and the location of items within an online assortment (Kahn 2017). Relatedly, for touch, there is evidence of a visual preview model (Klatzky, Lederman, and Matula 1993) where vision provides a quick glance to direct haptic processing. In some instances, a clear visual can compensate for touch, while in others a clear vision leads to frustration regarding an inability to touch (Peck and Childers 2003a).

Maximizing the ease of processing of assortments online suggests three principles for online assortments: (1) assortments that are easy to process will be liked more, (2) assortments that are easier to process will result in higher perceived variety inferences, and (3) when assortments are very large and difficult to process, retailers need to provide tools or structure to facilitate cognitive processing to make large assortments less disfluent (Kahn 2017).

Curation. Another way retailers make assortments easier to process is to limit the number of options shown. This type of focused search could discourage consumers who like finding "out-of-the-norm" products, while it may be adored as the preferred manner of search by others. Previously, consumers could go to Blockbuster and explore every movie and show within a physical location to find their next video; today, online streaming services like Netflix only show a small curated portion of their offerings, intended to make search easier. While some customers may appreciate this shortened and simplified search process, is a focus on only this type of customer the best strategy for online retailing platforms? Although novices within a product domain may appreciate smaller assortments, experts are more likely to prefer choosing from wider and deeper product assortments. Typically, brands need to focus on more than one customer perspective to grow their audience, and thus there may be instances where minimizing the high-touch experience online may be better.

In an age where movie and television choices are curated based on past watching history (e.g., Netflix's "Since you watched…."), consumers may no longer feel the need to search outside of their curated lists and recommendations, dampening some of the fun of product exploration and joy of discovery. Moving forward, retailers should consider how

to account for these types of shopping pattern differences. In both the online and offline arenas, consumers have different perspectives and preferences for how they find products. Possibly offering customized curation technology as an opt-in option for a mobile app that aids offline shopping or an opt-in feature for how online content is showcased would allow consumers to feel an even greater sense of control as it's truly allowing them to co-create their experience with retailers which has been shown to improve customer loyalty and experience (e.g., Hoyer et al. 2010). Or, online marketers could track shoppers' behaviors and classify them as novice versus expert within specific product categories, and then adjust the product assortment accordingly (i.e., larger for more expert consumers).

When it comes to the social and emotional influences in shopping, as the move is towards retailers customizing and curating products further for consumers, expectations will continue to rise to meet the increased services. One concern moving forward is whether retailers may be shooting themselves in the foot with the constantly increasing service. This is something for retailers to consider when making investments into new technologies or experiential factors to ensure that the decisions they make are sustainable and in-line with their brand legacies, thereby minimizing the chance of consumers rapidly tiring of an innovation.

When To Focus On In-Store Technological Growth

Considering many traditional retailers have focused on their in-store atmosphere, we believe that an emphasis on enhancing in-store technology rather than just adapting separate online storefronts may be the best way to capitalize on their strengths. For example, Sephora used market research to determine that customers often use their smartphones when shopping in their brick-and-mortar stores to get outside information and opinions rather than ask sales associates. Therefore, to aid consumers who liked to search for additional information during the in-store shopping experience, Sephora created a mobile app that made the process easier (Mobile Strategies 360, 2016). The app provides consumers with the knowledge of a personal shopping assistant or a sales associate wherein it provides product recommendations, reviews, pricing information, and a simpler way to pay and go while in-store. Additionally, the app allows for customization by having features that show how different cosmetics would appear on a person's specific skin tone, decreasing risk in the purchase process. This is a key example of a retailer efficiently and intelligently adapting to the rise of technology by embracing that consumers not only have constant access to technology but that consumers will access and use additional

information regardless of the retailer's wants. When retailers engage in these types of dynamic tactics that focus on the holistic customer experience, they are more likely to have successful encounters (e.g., Verhoef et al. 2009).

Other types of in-store technological innovations may prove to be beneficial in addition to integration of mobile.

When the Online Experience Can Imitate or Improve Upon In-Store Experiences

In addition to traditional retailers needing to incorporate more technology and online offerings to compete, digital natives need to continually adapt not only their technological offerings but learn to compete with physical storefronts or an imitation of it online. While physical retailers may appear to have an advantage in some of the social, sensory, and emotional influences in shopping, digital natives have found new ways to compete (e.g., showrooms, specialized curations). One digital native, Third Love, an online bra retailer, has challenged the long-standing convention of the in-store measurement process by providing increased convenience and comfort to customers through their online storefront and sizing app (Elliott 2014; Tell 2016). Importantly, despite being an online retailer without a physical location, Third Love provides personalized advice and the opportunity to take precise measurements from the comfort of home, and it ships elegantly wrapped boxes with perfumed notes to bring back some of the lost sensory delight (i.e., reintroducing sensory touch points) and relationship-building typically associated with an in-store experience.

Aside from finding innovative ways to provide the benefits offered by physical stores (e.g., in-store measurement), digital natives can find unique opportunities to address consumer needs that are overlooked or are otherwise difficult to address in traditional physical store environments. For example, online meal delivery services such as Blue Apron and Hello Fresh have successfully competed with the sensory advantages provided by physical food retailers by offering a new benefit – the precise portion sizing of ingredients and meals (Knell 2016). In view of consumers' notorious inability to correctly manage the sizes of food portions and the serious implications that it has for food intake and waste (Ledikwe, Ello-Martin and Rolls 2005; Ordabayeva and Chandon 2013), digital services that relieve the burden of managing portions can have significant benefits for consumer health and sustainability.

These examples highlight how digital natives have incorporated some advantageous aspects of "offline" shopping for its consumers while staying true to their online brand identity even without incorporating a showroom. Digital natives may even develop digital showrooms to circumvent

Digital natives may even develop digital showrooms to circumvent the high cost associated with managing a physical showroom.

the high cost associated with managing a physical showroom. Recently, Google partnered with art museums to develop an online platform through which the public can browse high-resolution images of artworks housed in museums from around the world. Equipped with Google's Street View technology and gigapixel image-capturing capabilities, the website allows users to virtually "walk through" the museum's grand halls and galleries, and zoom in on a particular artwork to see detail that is difficult to catch even when one visits the museum physically. Digital natives may extend this idea of "digital galleries" to developing digital showrooms, which are conducive to a seamless transition between online browsing and online purchasing. Research shows that an interactive and vivid online museum experience can ironically satiate people and dissuade them from physically visiting the museum in the future (Deng, Unnava, and Lee 2016). This finding, however, suggests to digital natives that a brick-and-mortar showroom may not be necessary if the digital one is sufficiently sensorially compelling.

Another concern digital natives face is that of resistant consumers. While some companies manage to defy the odds (e.g., Bonobos, Warby Parker, Zappos) in that they attract a following to buy products online that traditionally have been products people want to try and engage with pre-purchase, it may still not be considered "normal" to buy clothing or glasses online. As these are categories that typically are very socially or sensory oriented, creating an environment where finding these products online is integral to the success of online platforms.

As paying for real estate is costly and may be too large a risk for digital natives that do not have enough disposable capital to create showrooms, incorporating tactics like Third Love's (i.e., building customer-brand relationships online) may be a more practical solution. In some ways, this model, while missing some sensory delight compared to physical in-store retailers, could be preferable as it allows cheaper and more convenient service to appease both consumers and retailers. However, in the case of larger established retailers, this may be one of the many viable solutions to decrease friction as discussed in the next section.

Merging In-Store and Online for a Frictionless Process

Creating a frictionless experience is essential to the consumer experience. Regardless of which type of storefront (i.e., offline or online) dominates for a retailer, understanding how to improve upon the consumer experience is necessary for success. Below, we highlight a number of tactics and suggestions (for both traditional retailers and digital natives) that could decrease the friction in the consumer buying process.

Creating a Model for Showrooms and Online Buying
For more traditional brick-and-mortar retailers, deciding on where to invest money in technology can seem like an abstract or even terrifying process. One suggestion that would help traditional brick-and-mortar stores compete with digital natives would be to adopt the idea of the experience store or showroom, a model that Tesla, Bonobos, and Warby Parker have pursued. This model allows retailers to decrease some of the square footage in the physical space they currently reside in while additionally providing a more frictionless process for consumers. With the implementation of these smaller, more experiential store showrooms, consumers can still reap the social (e.g., shopping with others, experience sales people) and experiential aspects of the in-store experience (e.g., touch and feel) that appeal to them. Additionally, with this type of storefront, consumers can feel the in-store experience while also getting the further benefits of online shopping such as buying and shipping online, which is a cheaper and more convenient process for the majority of consumers. This may not only be a win-win to consumers in that their experience is improved; in some cases, this may also benefit retailers who can save costs on rent due to smaller physical locations and other factors (e.g., fewer employees and physical locations, smaller storefronts, decreased returns).

Investing Money into In-Store Technology
Once a retailer has decided to invest in technology, deciding how to spend that budget and predicting the type of technology consumers will want to continue interacting with is daunting. In some types of product categories, throwing-back to the days before technology might mean that any investment in further tech may be poorly received. For example, luxury retailers may not want to replace any of the personalized, in-store experience of a salesperson with technology as that is a part of the consumer buying process of luxury that is valued. On the other hand, stores like CVS are further in-

> Digital natives may have a clearer grasp on how to utilize technology than most traditional legacy retailers, however, digital natives then face the issue of having to incorporate more "real-world" appeal.

corporating self-check-out kiosks and Starbucks lets customers order and pay in the mobile app, thus minimizing the need for consumers to interact with actual people due to scanners and tech integration.

We believe consumers, in shopping occasions calling for convenience, will continue to appreciate more novel and easily functioning technology (e.g., artificial intelligence or robot aid). In other cases, where there is a true social or emotional aspect to the shopping experience (e.g., more hedonic purchases or consumption experiences), there could be pushback from too much technological integration.

Creating Physical Spaces for Digital Natives
On the other end of the retailing spectrum, while traditional legacy stores are attempting to figure out the correct technologies to add to their current in-store and online experiences, digital natives are doing the opposite. Digital natives may have a clearer grasp on how to utilize technology than most traditional legacy retailers, however, digital natives then face the issue of having to incorporate more "real-world" appeal. We believe that in many ways, digital native retailers have essentially nailed down how to utilize technology to attract and retain consumers.

Unlike traditional brick-and-mortar stores, which need to learn how to advance digitally, retailers who started out with digital-first thinking need to add "real-world" experiences later. For example, to enhance its successful online business, Bonobos has "showrooms" where people can physically try on products before ordering for home delivery. With this type of business model, Bonobos can offer a larger variety of products online, enhance the ease of shopping and shipping for consumers, and successfully integrate in-store and online technologies to enhance the consumer experience. In this respect, we believe that many brick-and-mortar stores have a lot to learn from digital natives in terms of best utilizing physical retail space and technology integration.

Moving forward, we would suggest that digital natives that can afford doing so, continue to introduce physical showrooms or stores to increase their sales. This tactic is useful if possible as sales are likely to increase with an in-store experience due to "shopping around" behavior, social influences, and sensory delight, encouraging additional purchases. On the other side, we would encourage physical retailers to be smart about the integration and investment of technology (i.e., adding technology in ways that enhance rather than diminish brand-consumer relationships). As consumers are seeking novelty, incorporating newer types of technology in the physical store experience such as an interactive mobile apps, self-service kiosks, better shipping policies, or even virtual reality and artificial intelligence may be more successful at capturing consumers.

Making Decisions with the Next Disruption in Mind

As discussed in this white paper, disruptions in retail occur due to constantly evolving consumer expectations. With this knowledge that the next disruption may be within a few years, how should retailers react? Not all retailers are sure whether the investments to change marketing strategies are worth the effort considering how quickly disruptions occur. As disruptions are constantly occurring and changing, it may be unclear if industries truly believe playing technological catch up is worth the time, money, and effort before the next disruption occurs. Surveys have shown that many retailers are even in denial about technological disruption. One survey found that 45% of companies don't deem the subject worthy of discussion, approximately 33% engage in a wait-and-see approach, and 25% are proactive in trying to adapt (CMO.com, 2015). Critically, if retailers do not see the value of technological change and adaption, or if they believe that their efforts won't be fruitful, many may fall further behind.

However, retailers should be smart about their incorporation of technology or incorporation of physical space. As disruptions occur in 3-5-year cycles, it may make sense in some cases to take a "wait-and-see" approach. Consumers are novelty seeking so the currently late adopters to technology may benefit from trying to adopt "newer" technologies (e.g., artificial intelligence, virtual reality) rather than trying to incorporate mobile or kiosks to catch up with other competitors, unless those technologies clearly serve to address established consumer needs.

Additionally, for digital retailers, it may not make sense to rent real estate as the cycles of disruption are shorter than

leases. The question of whether physical spaces will continue to be worth the monetary investment is unknown. Possibly for certain industries physical space will continue to hold value (e.g., luxury), while in others (e.g., everyday household items), there may not be a demand for physical stores in the future.

Critically, when making investments either online or offline, we believe that to enhance the customer experience in the long run, retailers should focus on decreasing any friction points that exist in their systems (offline or online). Investments that are made to minimize friction or "pain points" are likely to be well received in the long term, help enhance retailer image, and aid consumers to have more

seamless and enjoyable relationships with retailers. Incorporating larger, societal and cultural trends into such calculations may help to decide which investments to make—for example if concerns about security rise, then highlighting aspects of the shopping experience that provide reassurances regarding such issues may be especially worthwhile (even though they are in different domains). As these are all positives regardless of the type of disruption occurring, we believe that investments that make the consumer decision making process more seamless (whether it is online, offline, or a combination of multiple outlets) will have staying power moving forward into the next disruption. ■

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Baker Retailing Center

Practical Applications for Predicting Customer Lifetime Value

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Not a new idea, customer centricity's (CC) use in business models is varied and broad, with significant implications. Customer-centric models examine a company's best customers and align a company's strategy to maximize its financial value to the firm. Customer Lifetime Value (CLV) drives customer centricity by predicting the total value a business will derive over the entire relationship with a customer. Traditional approaches involve developing regression models as a function of customers' past behavior as well as other customer profile measures. These estimates are periodic values that state CLV for a cohort of customers sharing a relevant acquisition characteristic over a certain set of time, e.g., 3 months, 12 months, 24 months, etc. Forecasts are made by fitting models given customer's pertinent information. CLV provides an alternative or true partner to traditional volume-oriented metrics. The power of CLV can be seen through customer acquisition--CLV does not change the goodness of a customer; it allows firms to better understand the characteristics of their best customers.

Peter Fader's work uses a probabilistic, conditional expectation CLV model that focuses more on the latent process that drives observable numbers, such as ones seen through RFM (recency, frequency, and monetary value) characteristics. Five common metrics used to build a model are a firm's number of active users, repeat active users, frequency of purchases, forward-looking repeat rate (retention rate), and backward-looking repeat rate (weakest metric). A simple way to investigate this model is to separate customers based on time of acquisition, for example, and segment these cohorts to see how they perform in the first half versus the second half. This reinforces a key part of the CLV model–it is conditional on how a customer has performed to make the best guess for what the customer will do in the future. Potential opportunities for application of CLV include customer segmentation by value to

> "It's fine to love all your customers. But shouldn't you love the profitable ones a little more than the rest?"
>
> *–Zodiac Inc. (zodiacmetrics.com)*

predict lifetime value for subgroups of individuals, retargeting firm's highest value customers, and strategic marketing.

Future Directions

The process of adopting customer centricity and customer lifetime value belies many issues and questions discussed in the workgroup. How firms communicate with each other as well as with their customers is worth further investigation when implementing CC/CLV. Ideas about who controls customer data, how firms access data, and when collaboration is useful for all related firms continue to drive conversations on implementation. Creating meaningful collaboration between

manufacturers and retailers, especially if we want CLV in the hands of people making products, is essential.

Particular issues arise depending on how established a firm is within the market. Start-ups and new companies increasingly have the technological capabilities to store and collect pertinent customer data, so the focus is on how to generate new and loyal customers in order to differentiate within their firm. Legacy companies with well-known marketing practices require focus on shifting certain core identities to align with important customer bases. For all firms, steps to customer centricity require incremental integration and building robust infrastructure to ensure useful models to track best customers. ■

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http://www.zodiacmetrics.com/blog/peter-fader/customer-triage-right-customers-right/

Videos on Customer Centricity (CC) and Customer Lifetime Value (CLV)

Customer Centricity and Why It Matters:
https://www.youtube.com/watch?v=eicCJ6jJxmI

Finding, and Rewarding, Your Best Customers:
https://www.youtube.com/watch?v=DZnEjmpnCTI

Managing the Value of Customer Relationships:
https://www.youtube.com/watch?v=uaTgaX7tVqU

Timing Regularity Helps to Better Predict Customer Activity:
https://www.youtube.com/watch?v=rLg_VAk-ZfA

Valuing the Customer:
https://www.youtube.com/watch?v=QHQo606fgxQ

Baker Retailing Center

Mobile 3.0: Mobile Marketing in the Retail Context

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T he penetration of mobile devices has reached unprecedented levels in recent years. There are close to two billion smartphone users in the world. By 2020, more than 70% of the world population will own a smartphone (Ericsson Mobility Report 2016).

Mobile devices play a unique role in influencing shoppers along and beyond their paths to purchase (Shankar

and Balasubramanian 2009). Terry Lundgren, Macy's CEO says, "shoppers are starting the journey with their phone, doing their research. Then they might buy in the store or they'll buy at Macys.com or Bloomingdales.com" (Peterson 2015). More than 80% of US shoppers use a mobile device to shop even within a store (Google M/A/R/C Study 2013). As a result, retailers are fast expanding their mobile marketing budgets; top CMOs in the US allocate up to 20% of their marketing budgets to their mobile strategy (Forrester 2016).

While mobile penetration posits new opportunities for retailers, it also engenders several new challenges. In the mobile era, how can retailers continue to be relevant for a fast evolving customer base of users who want anytime-anywhere instant access to high-quality information and service at their fingertips? What are the ways in which retailers can more efficiently and effectively serve customers in the new "omniverse"? How can retailers deliver consistent brand experiences seamlessly across all touchpoints in the way that their customers desire and appreciate? Finally, what are the internal and external shifts that a retail company must make happen for achieving these new pinnacles of the mobile 3.0 era?

This report summarizes the key challenges facing retailers in the mobile era, and offers a framework to explain these issues in light of evolving shopper journeys.

What is the Mobile 3.0 era?
The Mobile 3.0 era is characterized by a marked shift in priorities and perspectives for retailers, one that is re-aligned to the needs and preferences of individual customers. As a result

of the mobile age, a digitally native segment of customers has emerged. This group is already well-informed when they walk into a store or decide to make a purchase. The value-add to these customers will come from the retailer's (a) presence across touchpoints wherever and whenever they may be, and (b) provision of unique experiences created around brand stories and connections that are not off-the-shelf but uniquely suited to the customers.

The Mobile 3.0 era, hence, allows for a new segmentation of customers based on their level of empowerment in the purchase journey (how much do they already know) and their need for a high vs. low touch experience with the retailer (how much involvement or attention do they expect and want from the retailer).

Salient issues in the Mobile 3.0 era

The Mobile 3.0 era can be better examined along six salient issues. These are: the role and purpose of mobile, customer empowerment, brand relevance, company-level trade-offs, social influence, and product category factors. The key issues under each of the six themes are described in the following paragraphs and summarized in the Table 1. Further, a framework demonstrating the links among these various facets in the pre-, during- and post-purchase stages appears in Figure 1.

Role and purpose of mobile. Mobile plays a multi-faceted role. It acts as a channel and facilitator for communication, infor-

Figure 1: Mobile 3.0:
Mobile at the center of customer experience

> The variety of roles a mobile device plays at different stages of a shopper's purchase process – before, during, and after a purchase – gives rise to a complex set of questions for retailers.

mation-exchange and transactions (e.g., through m-commerce). It is also a medium for delivery and co-creation of unique personalized and interactive experiences (e.g., through apps). In the shopping journey, a mobile device also serves as a digital concierge.

The variety of roles a mobile device plays at different stages of a shopper's purchase process – before, during, and after a purchase – gives rise to a complex set of questions for retailers. How can mobile devices be leveraged as a value-add? What are the most efficient ways of engaging customers through mobile? How can mobile technologies be leveraged in retail stores, e.g., via m-payments and real-time coupons? What new retail models might emerge from leveraging mobile devices? How can retailers achieve the best customer-centric utilization of mobile technologies in stores? Are mobile apps a double-edged sword? What are their upsides and downsides? Should mobile be seen as a one-stop shop or leveraged for narrower and specific uses?

Customer Empowerment. The Mobile 3.0 era is characterized by the need for retailers to empower customers. Empowerment caters to the customers' feelings of entitlement. Mobile devices offer access to relevant and timely information from multiple sources, and place it in the hands of each user – to be accessed as and when they need. This creates a sense of control, characterized by the "I-want-what-I-want-when-I-want-it" attitudes among the users. Retailers today need to recognize this shift in consumer mindsets and embrace it by finding more ways to leverage technology to empower customers, who are increasingly more in control of their purchase processes. The
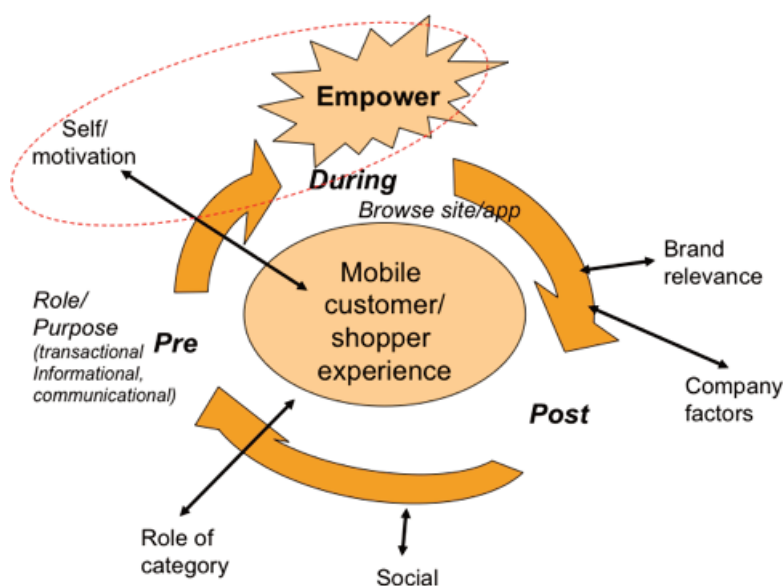
two key issues for empowerment are: How can mobile be leveraged for segmentation/ self-segmentation (e.g., customers who prefer low-touch vs. high-touch shopping experiences)? How are mobile- induced customers different in their psychology (e.g., feel more in control) and as a result, how are their shopping behaviors and paths different across channels?

Brand Relevance. The Mobile 3.0 era poses the threat of a myopic vision among retailers, who may start with technology-first and then work backwards to see what technology can help achieve for their brands. Instead, a broader view could be to position the brand at the center of the retailer's marketing strategies. This would mean first asking: What is the brand? What story is the brand telling? From there on, the Mobile 3.0 era requires retailers to leverage mobile in a way that helps to continually stay relevant as a brand. Retailers need to rethink how they view the relationship between their brand and mobile: Is it brand at the core and then mobile, or evolving brand image via mobile? What is the relevance of mobile for the brand? Again, run-of-the-mill strategies that work for one

Table 1: Salient Themes for Mobile Marketing in Retail

Theme	Key Questions	Examples
Role and Purpose	1. How can mobile be leveraged as a value-add? 2. What are the most efficient ways of engaging customers through mobile? 3. How can mobile technologies be leveraged in retail stores, e.g., via payments, coupons, user experience? 4. What new retail models might emerge from leveraging mobile? (futuristic perspective) 5. How can retailers achieve best customer-centric utilization of mobile technologies in stores? 6. Are apps a double-edged sword? What are their upsides and downsides? 7. Should mobile be seen as a one-stop shop or leveraged for narrower/ specific uses?	Total Wine & More in-store experience
Customer Empowerment	1. How can mobile be leveraged for segmentation/self-segmentation? (e.g., customers who prefer low-touch vs. high-touch shopping experiences) 2. How are mobile-induced customers different in their psychological perspectives (e.g., feel more in control) and as a result, how are their shopping behaviors and paths different across channels?	Carmax mobile-first strategy
Brand Relevance	1. What are the potential risks of brand devaluation by deal-oriented use of mobile? 2. What is the relevance of mobile for the brand? 3. To what extent is mobile/technology a signaling device? 4. What is the direction of relationship between brand and mobile – Is it brand at the core and then mobile, or evolving brand image via mobile?	Victoria's Secret Tesla, GEICO
Company Factors	1. What are the challenges posed by mobile for salesforce management? 2. Can mobile-based digital concierge replace or render salespersons obsolete, ineffective etc.? How does it disrupt their roles? (Novice vs. expert choice facilitation by mobile, augmented mobile service by sales associates) 3. What is mobile's role in the new "omniverse" era? 4. What new attribution challenges does mobile pose? 5. How should companies view the mobile website presence vs. app presence decisions? 6. What are the challenges of app overloads/app mall? 7. How should companies view mobile strategically – is it mobile technology-first or shopper needs-first?	Neiman Marcus, Wegmans groceries

Table continues on next page

Theme	Key Questions	Examples
Company Factors	8. What are the key financial trade-offs or implications of mobile, e.g., mobile-induced shake-ups in the cost structures? 9. What are other backend concerns, such as inventory management, in creating seamless frontend experiences?	Neiman Marcus, Wegmans groceries
Category Factors	1. How is the value-add of mobile different for different product categories? 2. How can the mobile experience be tailored to different categories?	Similarities and differences between banking and apparel retailing

brand may not be appropriate for another brand. As an example, a luxury brand might benefit from considering the potential risks of brand devaluation by deal-oriented use of mobile. Or a retailer in a traditional setting, such as a car insurance company, may want to consider to what extent their mobile presence acts as a signaling device (e.g., GEICO mobile app), and not necessarily a competitive advantage.

Increasingly, if consumers begin to get what they want from each other on socially connected networks that they can access anytime anywhere through their phones and then choose from a large variety of providers and platforms, it is not clear how an individual retailer can stay continually relevant and current, along and beyond the customers' purchase journey. In the Mobile 3.0 era, just giving standard off-the-shelf advice to customers, for example, may not be enough for the sales force and employees to stay relevant. They will need to leverage technology and go beyond it in adding value to the customer journey. Thus, the considerations for brand relevance are two-fold: First, is the mobile strategy consistent with the brand image and story? Second, how and to what extent might the brand evolve in response to the demands of the new mobile era?

Company Factors. There are no free lunches. A superior mobile strategy – one that is brand relevant and that empowers the customers – requires significant investments and resources. Appropriate cost-benefit analyses may be required for retailers to skillfully implement these strategies while ensuring optimal resource allocation and enough ancillary support for their success. Several moving components need to work together in managing the trade-offs associated with these decisions. At the corporate level, well-integrated backend inventory systems, sales force management practices, etc. are required for delivering a seamless customer experience while leveraging mobile.

A few key issues that retailers may find themselves facing at the corporate level are: What are the challenges posed by mobile for sales force management? Can mobile-based digital concierge replace or render salespersons obsolete or ineffective? How does it disrupt their roles (e.g., novice vs. expert choice facilitation by mobile and augmented mobile service by sales associates)? What new attribution challenges does mobile pose? How should companies view their mobile website presence vs. app presence decisions? How should companies view mobile strategically – is it mobile technology-first or shopper needs-first? What are the key financial trade-offs or implications of mobile, e.g., mobile-induced shake-ups in the cost structures? What are other backend concerns, such as inventory management, in creating seamless frontend experiences?

Category Factors. In the Mobile 3.0 era, one size does not fit all. A retailer like Victoria's Secret may face very different customer demands and expectations compared to Total Wine & More. Two key questions to ask are: How is the value-add of mobile different for different product categories? How can the mobile experience be tailored to different categories? Victoria's Secret, for instance, even within the same product category has two different mobile apps aimed at its different customer segments. The Victoria's Secret PINK line is targeted at younger women relative to their regular target markets. The retailer has an independent mobile app for the PINK line since it speaks to a different audience. This app often includes in-app games for engagement. Such category-specific and audience-specific approaches can help the brand be more relevant as well. Mobile display advertising campaigns are known to significantly increase consumers' favorable attitudes and purchase intentions for products that are higher involvement and utilitarian (Bart, Stephen, and Sarvary 2014). Further, branded mobile apps increase the shopper's net value of purchases by 24% (Narang and Shankar 2016).

Social Influence. One of the key features of the Mobile 3.0 era is an increased focus on connecting customers. Social messaging apps consume the greatest share of the overall digital time spent on mobile devices. It is not a rare sight for commuters on a train or people at a restaurant to be glued to their screens and talking to their "friends" via social messaging apps rather than to a person sitting next to them. The social side of mobile is a double-edged sword. On one hand, users are influenced by those they communicate with and often broadcast their lives to (e.g., via posting photos on Instagram or Pinterest) while on the other, they are increasingly becoming

mobile-addicts who prefer to talk to someone through their screen rather than someone physically present around them.

In this new social dynamic of the mobile-first world, retailers need to ask two specific questions: What is the role of mobile pre-purchase and in-store (via social proofing)? What are the potential risks of "mobile addiction"? These are complex questions because the definitions of "peer" group or "reference" groups are fuzzy and fast-evolving. Further, social proofing mechanisms are difficult to disentangle.

In conclusion, the Mobile 3.0 era offers unique opportunities and challenges for retailing. It calls for focused and well-integrated strategies that enable retailers to create a

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Artificial Intelligence (AI) in Retail

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T capabilities of Artificial Intelligence (AI) have greatly expanded in recent years, and they have been incorporated into a range of retail applications, ranging from conversational interactions with customers through chatbots in messaging apps and automated product recommendations in e-commerce to applications in offline settings to improve in-store operations.

The term conversational commerce has been used to refer to chat-based interactions between businesses and firms. Chatbots allow machine-based fulfillment of standardized tasks such as providing requested information or helping place an order. Their integration into messaging apps has set them up for broad adoption given the increasing use of mobile phones and messaging apps, making chatbots potentially disruptive in the mobile landscape.

Among other applications in retail, AI is used for product recommendations in e-commerce. AI is not just being used in online settings but also for improving in-store operations such as shelf replenishment and retrieval of product

from stockrooms. At this stage of AI's development, it is companies that are promoting AI usage since they see the opportunities rather than consumers proactively demanding it.

China has been a trendsetter in terms of mobile commerce in general and chatbot applications in particular. China's WeChat app incorporates chatbots that provide information requested by customers or that make product suggestions. Customers can also place orders via the chat interface. In the U.S., the leading messenger apps with support for chatbots are Facebook and Kik for personal communication and Slack for B2B communication. Many other messaging platforms are expected to support chatbots in the near future.

The "AI in Retail" workgroup discussed the history, research, applications of AI technology used by actual retail businesses, and challenges of AI in retail settings.

History of AI

AI is actually not a new idea, as Kartik Hosanagar, John C. Hower Professor of Technology & Digital Business and Professor of Marketing at the Wharton School, explained by providing historical background. The term "artificial intelligence" was coined in 1956 when John McCarthy, a mathematics professor at Dartmouth College, proposed a summer research project for a select group of invited academics to clarify and develop ideas about thinking machines. Herbert Simon, who was later a winner of a Nobel Prize in Economics and Turing award in Computer Science, was one of the participants.

Chatbots are considered to have great potential given their capacity for scalable automation. Most are not intelligent learning systems though.

Despite the early excitement around AI and some early wins, the field was initially unsuccessful in getting machines to learn. The emphasis shifted towards expert systems, which involved providing as much knowledge as possible to machines. While expert systems did well, they still struggled when they encountered a situation outside their knowledge base. Machine learning made a big comeback in the past decade, driven by the massive availability of data and the recent success of deep learning techniques that seek to emulate the human brain. Deep learning involves simple yes/no validations--but millions of them due to the complexities of language and communication--and thus was found to be similar to video games and able to run on the same GPUs (graphics processing units). Today, most smartphones house the GPUs (and connectivity to cloud servers) required to run deep learning networks in real time. This recent success of machine learning has made driverless cars, conversational interfaces like Alexa and many other innovations feasible.

Conversational commerce through chatbots

Chatbots are computer-based systems that conduct text- or audio-based dialogs, mimicking a human conversation. In retail, they are mainly used for customer service interactions such as information requests or to assist placing orders or making reservations. Chatbots are either based on a set of programmed rules and responses, i.e. they scan for keywords and then retrieve the appropriate response from a database, or they use machine learning to generate progressively more sophisticated responses as they learn from previous conversations.

Rohan Deuskar, the co-founder and CEO of Stylitics, a retail technology and data company, provided the following insights on conversational commerce and chatbots in retail. Consumers can use chatbots without having to download a specific app, which is an important facilitator of user adoption considering the gradual decline of app downloads and the increasing usage numbers of the leading four messaging apps which have surpassed those of the leading four social networks.

Chatbots are considered to have great potential given their capacity for scalable automation. Most are not intelligent learning systems though. In fact, most of the current chatbots use simple structures modeled after "phone trees," i.e. they give responses or further options based on the input

they received, which is why they are primarily used as customer service mechanisms today.

By using chatbots, which are fairly easy, fast, and cheap to build, brands and retail companies can engage with customers in places where they spend their online time while automating and scaling tasks that have traditionally required humans. Plus, chatbots allow adding a human touch by incorporating emoticons, for example, and consumers can use chatbots without having to download anything or log into a system.

According to Rohan, 150,000+ bots are live today which is about the same number as the number of apps in the iOS App Store in 2010, the store's third year. Facebook Messenger has 45,000 bot developer accounts. The evolving ecosystem will make it increasingly easy for companies to launch chatbots easily and quickly on websites, apps, and messaging platforms.

At this nascent stage, chatbots don't operate across platforms, and the race is on for a "chatbot mega hit" in Western countries that will catch on with consumers at large scale. The global region leading chatbot usage is Asia, followed by the U.S. and the rest of the world.

Common types of chatbots include chatbots that provide information such as available flights, flight delays, and boarding passes; serve as a kind of shopping assistant by helping discover items; assist with transactions such as ordering a ride or buying a specified item online; and inspire and entertain users by sharing styling tips or providing information about celebrities' outfits and where to buy them.

Stylitics has worked with publisher Hearst and a group of fashion retailers on this kind of inspirational chatbot. It plugged its AI Stylist service into an experimental Celebstyle chatbot for a "concierge bot for fashion." It generated 450,000 messages in the first week and was featured in Kik's bot store.

Other examples of using chatbots in retail are to help customers find items or information (e.g., outfits store location, return policy, order history, brand, manufacturing background of a product, current collection); send notifications about sales, collaborations, bestselling and re-stocked items, and special events; and giving customers an opportunity to ask for help in the shopping process without needing to engage a store associate, stylist, or tech support person.

If retailers are considering using chatbots, Rohan suggests thinking about what the objective is of using a chatbot

(e.g., sales, engagement, awareness, recognition, or just learning for the company); what customers' main benefit is supposed to be (e.g., convenience, information, entertainment, discovery); who the target audience is since it will impact the platform to be on; and whether to partner with an outside expert or build the chatbot internally.

Open questions for research include whether any specific use cases work better for certain demographics; what kinds of situations or triggers make consumers want to talk with a chatbot and return to it; how changes in the tone, flow, and wording impacts engagement; and whether there is a halo effect from the chatbot for the brand (e.g., fewer negative app reviews, lower return rate).

Other applications of AI in retail
Besides chatbots and conversational commerce, the group discussed select applications of AI in retail, namely AI for 1) leveraging data about people's digitally inventoried closets ("virtual closets") and wearing patterns to make recommendations to end consumers for complementary apparel items and new outfits while giving apparel manufacturers input for their assortment strategy based on people's wearing patterns; 2) recommending items online during a customer's shopping journey; 3) using smart technology in stores to improve customer experience through elements that customers interact with directly and to improve back-office operations that affect customer experience; 4) robot-based inventory taking in stores to improve shelf replenishment processes and correct discrepancies between actual shelf usage and planograms.

The following describes these applications in more detail.

1. Customized outfit recommendations by Stylitics
The above-mentioned Stylitics "AI Stylist" can create thousands of personalized outfit recommendations from different brands, with price tags for the entire outfit attached, in minutes—vastly faster than humans could and potentially better

> Therefore, such AI-based support in the shopping process can create new opportunities and value for both retailers and consumers.

than the current product recommendation engines used by retailers today, due to the quality of learning and pattern recognition of AI deep learning networks. The recommendations are comparable in quality to those of human stylists; consumers don't perceive the difference. Therefore, such AI-based support in the shopping process can create new opportunities and value for both retailers and consumers, regardless of the delivery channel (website, email, or chatbot, for example). Currently this is used by retailers to display styling suggestions to customers online across thousands of their products, a scale that human stylists could not manage in a cost-effective way. Customer preferences get fed back into the system rapidly to reflect emerging trends in the next set of recommendations, faster and more accurately than a merchant could.

2. Measuring the overall value of recommendations for a retailer considering substitution effects
Research by Anuj Kumar, Assistant Professor at the University of Florida, and Kartik Hosanagar, Professor of Technology, Digital Business and Marketing at the Wharton School, investigates the impact of using recommendation systems in online retail.

The research uses data from a nine-week long field experiment on a women's fashion retailer's website. The study measures page views and sales of products as a result of product recommendations that were shown in response to a customer viewing a specific product's website. The products were part of an online assortment, and recommendations were given for related products based on the history of co-views and co-purchases of items by the customer base. The recommendation system has both positive and negative effects on a product's customer views: it directs traffic both to a product's website from related products' pages and away to related products' pages.

The experiment was conducted with a randomly selected test group, whose members were exposed to product recommendations, and a randomly selected control group, whose members weren't exposed to recommendations. 5,000 randomly chosen products were included in the analysis. The results were determined as the difference between the purchase value and page views by the control and test groups, respectively. The difference accounts for any naturally known product relations, as represented by the control group members' behavior, which wasn't influenced by any recommendations by the retailer.

The calculated overall value of the recommendation system considers the change in sales of both the focal product and related products, accounting for the fact that recommendations can take away business from the originally considered product.

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Recommendations were generally found to increase total daily sales of the focal and related products. However, further analysis shows that recommendations have a different effect depending on whether a product is at the center or at the edge of a network of products. For example, a dress might be at the center of a product network if it has a variety of complementary products such as matching apparel items and accessories, while a unique type of shoe might not be a natural match with many other items and therefore has fewer connections within the network.

Products at the center of product networks were found to benefit from recommendations on related products' sites, providing even higher sales to the central, well-connected products whereas products on the edges of a product network suffered sales losses from being substituted by more central products. In other words, when a product recommendation system was in place, a central role in a product network was rewarded with even higher sales—at the expense of products at the periphery of the product network.

Thus, recommendation systems seem to help central products most but can negatively impact less connected ones. Ultimately, recommending less connected products can increase the value of better-connected products even more given that those focal products are chosen more over time while the less connected products are losing out.

Practical experience with recommender systems seems to be consistent with the findings of this study. Strategies to reduce the cannibalization effect include showing recommendations only after a customer has added a product to their shopping cart and recommending complementary instead of substitute products. To optimize their recommendation engine, retail companies need to understand the cannibalization and incremental business generated by recommendations. For example, on Amazon 35% of shoppers' choices originate from recommendations while on Netflix the share is 80% (??) and the question is how much incremental value the recommendations generate.

3. Using smart technology in stores to improve customer experience

Healey Cypher, CEO and Co-Founder of Oak Labs, sees a future of retail that is software defined - one that enhances customer experience and inspires human interaction. He considers physical and digital channels complementary parts of a connected, holistic experience and suggests placing a higher value on capturing in-store data using similar methodologies as collecting online data. In fact, Healey suggests that the experience in a bricks-and-mortar store and online can and should mirror each other, pointing out the uncanny similarities between of e-commerce and bricks-and-mortar con-

> In other words, when a product recommendation system was in place, a central role in a product network was rewarded with even higher sales—at the expense of products at the periphery of the product network.

version funnels: the homepage is a store's entryway, product pages are visual merchandising, the digital shopping cart is the online version of items taken to the fitting room, checkout is the cash wrap, and email follow-ups are a physical store's clienteling.

Technology should also keep business objectives in mind like the Oak Mirror, an interactive mirror from Oak Labs, does. It was invented to help increase the fitting room conversion rate of two-thirds, which is a significant opportunity considering that the fitting room stage indicates a shopper's advanced interest in buying. The traditional fitting room experience is a big pain point for customers for various reasons, and if lines are too long many shoppers walk away before even trying on the clothing.

Oak's smart fitting room mirror uses RFID tags and provides an interactive, immersive experience. Shoppers are empowered to change the fitting room lighting, request items in a different size or color, ask for suggestions of complementary products, and check out. 84% of shoppers engage with the smart mirror across gender and age groups. Those shoppers that do engage with the mirror are spending on average 59% more. Almost all shoppers change the lighting, and the light changes make up a quarter of all interactions with the mirror. Generally, women are more recommendation-oriented than men and use this smart mirror feature. For men, size and fit matter most.

In addition to smart in-store technology that customers interact with directly, technology can help improve back-office operations to make the customer experience better. For example, Oak's second product, the Oak Stockroom app, enables store associates to check stock with their mobile devices and request items from the stockroom that the customer is interested in. The stockroom staff will receive these requests on a screen located in the back of house and will be directed

to the item's location in the stockroom. This system has helped to reduce the retrieval & delivery time from an average time of more than six minutes to about one-and-a-half minutes. The software also supports replenishment tasks, sending requests to replenish items purchased or missing from the floor to the same screen.

To entice store associates and shoppers to use new technologies, Oak has found it helpful to give them "quick wins" by not only making the technology easy and appealing to use but also by gently enticing them to interact with it. For example, the original setting of the fitting room lighting invites staff and shoppers to explore how to change the brightness for a quick win upfront.

4. Robot-based surveying of store shelves

Jonas Cleveland, CEO and CTO of COSY Cognitive Operational Systems, explained how COSY's technology uses robotic vision and artificial intelligence to automate and improve retail store shelf accuracy and replenishment.

Starting from the premise that store shelf inaccuracy leads to lost sales through stock-outs and discrepancies between the planogram and actual shelf, COSY helps to discover store shelf inaccuracies and generates restocking and shelf change plans to match planograms.

Traditionally, store shelves have been checked manually. However, the manual process has shortcomings: It is infrequently done due to the cost of manual counting and error-prone, which can produce inaccurate counts and lead to lost sales.

COSY automates store shelf surveying by using robots that roam stores after store hours. Sophisticated image recognition technology, which has a high product recognition rate of 93%, scans store shelves and converts the visual data to reports for inventory and replenishment management so store managers know which shelves need to be restocked or changed. Research by P&G has shown that a 10% change in planogram compliance can result in 1% improvement of out-of-stocks and thus reduce lost sales.

Walgreens and other retailers are rolling out the COSY technology to their stores to perform shelf surveying. COSY is working on connecting the shelf data with foot traffic data to help retailers understand conversions better and, in a next step, help optimize the layout of stores and placement of product categories and items.

AI's challenges and limitations

Considering chatbots' state of development, currently the best usage of chatbots is for customer service, information requests about products and services, and simple transactional tasks. As long as customer requests are relatively simple, chatbots' programmed algorithms can handle them well and in some cases better—think of simple requests like meal preferences for a flight—and potentially faster than humans, which helps save resources. In retail and fashion specifically, chatbots have not shown a promising use case outside of customer service. Product discovery and styling are still too impersonal and "bot-like" experiences—not at the level of experience that customers have become accustomed too in ecommerce, mobile apps, and so forth.

The group felt that, as of today, chatbots are better suited for after-purchase services as opposed to customer support during the discovery phase when an AI-based dialog to learn customers' preferences can be clunky.

The use of chatbots is not without risk. The ever-increasing use of digital technology bears the risk to commoditize services and dehumanize the experience, which the customer might not value, especially when it becomes annoying to the customer because the machine doesn't recognize what the customer is saying due to the limited programmed vocabulary or the customer's accent. Other industries like financial services have struggled with this issue.

A potential solution could be a "progressive chatbot" where a human takes over from the machine once the interaction becomes more complex and requires more intricate understanding and handling. Ideally, it shouldn't be obvious to the customer that they are interacting with a machine but it should feel natural.

Regarding the wider adoption of AI technologies in retail, crucial questions are whether and when the many traditional retailers will adopt AI-based technologies and what some of the killer applications might be. While the group expects Artificial Intelligence to play a major role in retail, the likely diffusion of the technology will not be an overnight exercise. In Ernest Hemingway's The Sun Also Rises, someone asks Mike Campbell how he went bankrupt. "Gradually, and then suddenly," is his response. That phrase might well characterize AI's diffusion in retail as retailers conduct multiple experiments and the technology tips once a killer application is identified. ■

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Perspectives on the Impact of Technology on Channel Management

This paper is based on the discussions by a workgroup on the "Impact of Technology on Channel Design and Management" at the "Disruption in Retail" conference organized by the Wharton School's Baker Retailing Center (October 6th-7th, 2016, New York). The contributors to the workgroup were the following:

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Zoe Qiao, Senior Associate Director, Penn Wharton China Center
Leslie Revitt, Strategy and Innovation, Macy's
Susan Teplitz, Senior Managing Director, The Lansco Corporation
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Emily Wang, Assistant Buyer, Coach
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Introduction

Marketing today is intricately integrated with technology and, in addition to advertising and communications, is ever more concerned with logistics and operations throughout the entire chain of production. The digital era has marked a transition towards consumer-focused enterprises in which power has shifted from manufacturers and distributers to end consumers. Customers today have greater opportunities of choice and more access to information, hence triggering an increasingly competitive landscape for retail brands and manufacturers. The concept of omni-channel retailing has gained great popularity and more often than not, organizations seek to integrate a seamless omni-channel experience into their business models.

Interestingly, retailers are approaching providing an omni-channel experience through different directions, as per the two major retailing models today: Traditional brick-and-mortar companies, which have historically pursued a conventional sales model of physical retail outlets, and digitally-native companies, the fast-growing category of firms that primarily use the web for its interactions and transactions. Brick-and-mortar stores have been integrating digital technologies, and digitally-native brands are opening physical stores.

The group discussed the impact of technology on channel design and management through both the brick-and-mortar and the digitally-native perspectives, and explored the implications of recent trends in retailing, particularly with regards to downstream customers' cross-channel behavior, the retailer's own employees and upstream manufacturers. The group discussed the following broad topics:
• Returns of providing an omni-channel experience for consumers
• Attributing sales and compensating associates in an omni-channel world
• How to enable online teams to connect with consumers
• Pros and cons of technology-enabled personalization
• Impact of technology on the power of retailers relative to manufacturers

For instance, if a customer interacts with an in-store service representative but then makes the purchase online, how should the commission of the representative be determined?

The topics discussed provide comprehensive, but not exhaustive coverage of various issues related to the impact of technology on channel management, and reflect the interests, backgrounds and expertise of the companies and individuals represented. The following provides a summary of these discussions.

Returns of Providing an Omni-Channel Experience for Consumers

Most brick-and-mortar retailers are undergoing a digitization process to cater to consumers who are increasingly taking a "digital first" approach, i.e., starting their purchase process from a digital channel. However, throughout the conference, leading digitally-native retailers shared how they have added some form of brick-and-mortar presence, including showrooms or flagship stores. This is the case for Birchbox, a digitally-native start-up headquartered in New York that ships five beauty trial products to their clients in a "monthly box." The company now has a flagship store in SoHo where clients have the opportunity to choose the products for their monthly box, explore the latest trends in beauty, and receive beauty services (hair and styling) by appointment. Other retailers, such as Warby Parker and Bonobos, whose C-level executives were speakers at the conference, are also expanding their brick-and-mortar footprint to connect with consumers. The main takeaway is that retailers want to connect with consumers through multiple channels that consumers use. It is also important to project the same image for the retailer through all touch points so that consumers receive a seamless experience.

However, managers at large retail companies appear increasingly concerned that after making an investment in the integration of digital channels for customers, or after the launch of new apps and online platforms, sales and returns are not commensurate with the investment and are not happening as quickly as expected. On the other hand, smaller and nimbler retailers have had positive experiences with omni-channel expansions. In Birchbox's case, for example, a store in SoHo translates into a considerable increase in costs but it can ultimately become a source of new revenue streams that perhaps cannot be captured through digital-only formats, as

well as a differentiating factor for the brand, as it offers a tangible customer experience that arguably surpasses that of the online customer experience. The latter is particularly relevant in a context in which it is virtually impossible to compete with retail and delivery giants like Amazon, UPS or FedEx in terms of speed of delivery and inventory management, which urges other retailers to find alternative differentiating features.

Attributing Sales and Compensating Associates in an Omni-Channel World

Retailers face the challenge of ensuring that employees not only accept newly-developed technologies but further regard them as a means to operate more efficiently, provide better customer service, and jointly help drive the organization forward.

In the context of the large investments that companies are making to incorporate more channels into their business models, Neil Hoyne, head of customer analytics at Google and one of the conference speakers, brought up the idea that there is an increasing number of interactions in a growing number of channels that customers have with a brand before actually purchasing a product. (This applies to both brick-and-mortar and digitally-native stores.) Hence, the real challenge becomes identifying which of these interactions are most valuable and through which particular channels they are occurring. In other words, a key question for the retailer becomes how to attribute a purchase to the different channels involved in order to compensate associates when customers use multiple channels in the course of the purchasing process. This is a very complex problem to solve and the answer to it has major implications.

For instance, if a customer interacts with an in-store service representative but then makes the purchase online, how should the commission of the representative be determined? As an anecdote, a leading retailer (to remain unnamed), due to the growing demand for technological adoption, introduced a self-service kiosk system for in-store checkouts. Using these kiosks, customers could purchase products in the store either through the traditional interaction with a store associate or by self-checkout at the kiosks. Store managers soon re-

> And yet today in the world of retail it seems like technology is more of a facilitating agent to achieve intimate interpersonal connections.

alized that employees would often unplug these machines to try to redirect those customer purchases to the traditional process because the kiosk system took away employees' sales commissions. In effect, the retailer faced a competitive conflict between its channels, as it unintentionally didn't make both customer journeys—through traditional sales representatives and through the kiosk—compatible and mutually beneficial; instead, employees found themselves competing against the system to try to capture sales.

Best Buy was also discussed as a case in which the company began struggling to motivate employees when the compensation scheme for associates was changed from commission-based to a fixed salary to prevent the aforementioned competition among the different channels. However, Best Buy customers began experiencing a decrease in their in-store service experience—without direct rewards accruing to them, employees had little motivation to provide the best service possible to clients because it made no difference in their salary level.

As shown above, retailers need to incentivize employees to adopt and promote a multi-channel/omni-channel customer experience without them feeling their job or salary level is at risk. The solution to this competition across channels within a retailer eventually lies in the compensation structure informed by sales attribution models—something that achieves a fair reward scheme without undermining the incentives to provide the appropriate level of customer service.

Another issue regarding associate compensation and motivation of employees caused by the growing trend towards digitalization that companies are now facing is a growing talent mismatch at all levels of the organization. That is, we now have machines that are excelling at completing jobs previously performed by individuals; and yet, for some areas that still rely on human involvement to be fulfilled, talent gaps are emerging. However, there is an opportunity here as well—as machines can be used to do mundane inward-facing logistics and operations jobs, store associates can be devoted to enhancing outward-facing customer service.

How to Enable the "Online Team" to Connect with Consumers

In traditional retailing, employees often start their career in the store, completing and managing multiple inward- and outward-facing tasks such as managing inventory as well as interacting with customers. In today's context, as online retailing becomes increasingly prevalent and a significant amount of the work has moved to the technology-based back-end, a significant fraction of the employees do not directly manage stores or interact with consumers. This steals them of experience that is important to make decisions about aspects such as merchandising, product assortment and pricing (or handling automated and semi-automated systems that make these decisions).

Therefore, an important question to consider in the context of the employee-technology relation is staff associates' engagement and its impact on consumer experience. A key question is how to motivate and train employees of the online component of retail operations to create "intimate" client-brand interactions via digital platforms, which online-focused retailers often seek to provide.

On the flip side, the positive aspect of this is that technology itself can be a facilitator of relationship formation. The traditional premise has been that technology is an obstacle that impairs true human interaction and limits exchange of a real dialogue. And yet today in the world of retail it seems like technology is more of a facilitating agent to achieve intimate interpersonal connections. Everything from call centers to "chat" contact with customers on the webpage now requires a response that is tailored to the precise need of the customer, and thus employees must be responsive to customers' concerns, questions, and needs.

In fact, certain technology-savvy customers may actually prefer digital channels of interactions with the company compared to physical channels. For instance, many tech-adept users perceive the interaction through digital technology as less invasive while being clearer and more personal, and deal with such interactions more intuitively than the average user. They are more comfortable, for example, with chat interactions than other customers that would prefer to call the company.

Effective use of data on customers can also help employees understand customers better. Birchbox's merchandising point of differentiation is the fact that the customer service staff truly understands the company's mission and is able to engage with the customer. One of Birchbox's strengths is that it is leveraging technology and data science as the means to get in contact with both merchandisers and marketers to run and develop models that assist in planning and optimizing the overall operations of the retailer, including to send samples to

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clients and determine inventory needs of the merchandise. What is interesting is that with data science, Birchbox has been able to address some weaknesses in the industry—such as slow growth and low degree of personalization—by leveraging data to find matches between certain brand personalities (Brand DNAs) and consumer profiles. By doing so, Birchbox generates a personalized digital experience that is constantly being updated based on consumer preferences and ratings of the products customers receive, and this helps Birchbox's employees to understand the customer better.

Overall, the group's recommended solution for this challenge is to use the firm's archetypal customer profiles to hire employees. That is, if employees identify with the company's brand and its products or services, they will likely be able to establish impactful, persuasive relations with potential customers that increase the probability of purchase and strengthen customer loyalty. Furthermore, using data on customers can aid in developing a deep understanding of customer characteristics.

Pros and Cons of Technology-Enabled Personalization

Personalization in this context is discussed in relation to customization of marketing and the establishment of brand-customer relations through customer-centric communication strategies. While personalization is a way of being customer-focused and can yield benefits, based on recent experience of the contributors, it is often a challenge for brands to satisfy the demands of extreme customization that meet customer expectations while keeping costs down.

Nowadays, customers have a broad range of choice for fundamentally any purchase they want to make. And for any product they are interested in, chances are there is a brand that sells it and, if not, a brand that can make it on demand. But to what extent does this customer power help the business? Most of the times it is a double-edged sword because the promise of extreme personalization will generate incredibly high expectations on the customer side. Hence as businesses navigate this era of extreme customization, most managers wonder how to strike a balance.

A key driver of this personalization trend boils down to the marketing process itself. The digital era enables firms to leverage existing data to not only meet customers' needs in the right time and the right place, but further predict customers' needs before they happen. The physical and virtual environments are more interconnected than ever before, and actions taken in one of them are likely to have repercussion in

the other. As mentioned before, big data and (increasingly) the Internet of Things are becoming part of the equation for predicting, meeting and exceeding customer expectations. Firms today look to customize not only the product delivered to the client but further every interaction that the customer has with the brand.

Impact of Technology on the Power of Retailers Relative to Manufacturers

Digital opportunities have impacted the retailer-manufacturer relationship and, in the experience of the practitioners in the group, have caused a shift of power in favor of retailers in recent years. This has happened because retailers are getting increasingly better at collecting and understanding consumer data, to which manufacturers only have partial access. For instance, on a retailer's website, consumers may shop across multiple brands. Advances in technology have allowed such behavior to be increasingly captured, and this information, which provides unprecedented insights into consumers' preferences, resides only with the retailers that offer multiple brands and not with manufacturers producing and selling particular brands even if they have their own sales channels.

Conclusion

The workgroup discussed a number of important issues related to the impact of technology on channel management. The group noted the convergence of retailing formats that started from different channels—mostly traditional channels first but also some digital natives—towards adopting both channels, i.e., omni-channel retailing. The issues and solutions therefore centered around the challenges that appear when managing multiple channels that are complements in the purchase journey (i.e., a consumer can use multiple channels to obtain information before making a purchase) but are substitutes in the final outcome (i.e., consumers make the final purchase either online or offline) have to be managed simultaneously. The group also discussed that technology-enabled personalization can be a double-edged sword—it can help to improve customer experience and increase retailer power relative to the upstream suppliers, but given existing technologies high consumer expectations on the effectiveness of personalization cannot always be met. As technology reshapes retailing yet again, companies continue to experiment with different ways to leverage new technologies and benefit from the opportunities created. ■

"Disruption In Retail" Conference

Organized by the Wharton School's Baker Retailing Center
Rubin Museum of Art, New York, NY

DAY 1—Thursday, October 6, 2016

7:45-8:30 am: **Breakfast**

8:30-8:40 am: **Welcome**
Jay H. Baker, *Former President & Director, Kohl's Corporation, and Chairman of the Board, Jay H. Baker Retailing Center, Wharton School* Barbara Kahn, *Patty and Jay H. Baker Professor; Professor of Marketing; Director, Jay H. Baker Retailing Center, Wharton School*

Disruption in Retail
8:45-9:05 am: **Perspective on "Disruption in Retail"**
Pierre-Yves Roussel, *Chairman and Chief Executive Officer, LVMH Fashion Group*

Changing Customer Experience
9:10-9:30 am: **Leveraging Omnichannel Shopping through Mobile**
Venkatesh (Venky) Shankar, *Professor of Marketing & Coleman Chair in Marketing, Director of Research, Center for Retailing Studies, Mays Business School, Texas A&M University*

9:35-9:55 am: **Healthy Retailing by Design**
Brian Wansink, *John S. Dyson Professor of Marketing and Director, Food & Brand Lab, Cornell University*

10:00-10:40 am: **Changing Customer Experience**
Blake Nordstrom, *Co-President, Nordstrom*
Mike Koppel, *Chief Financial Officer, Nordstrom*

                        Presentation followed by a fireside chat moderated by
Thomas S. Robertson, *Former Dean; Joshua J. Harris Professor of Marketing; Executive Director, Wharton-INSEAD Alliance, Wharton School*

10:40-11:05 am: **Break**

Analytics/Customer Lifetime Value (CLV)
11:05-11:25 am: **Big Data and Predictive Analytics in Retail**
Praveen Kopalle, *Signal Companies' Professor of Management, Associate Dean for the MBA Program, Tuck School of Business at Dartmouth*

11:30-11:50 am: **Customer Valuation: The Time is Now!**
Peter Fader, *Frances and Pei-Yuan Chia Professor, Professor of Marketing, Wharton School*

11:55am-12:15 pm: **Opportunities of Customer Valuation in a Digital World**
Neil Hoyne, *Head of Customer Analytics, Google*

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12:15-1:15 pm:	**Lunch**

Digitally Native Retailers Reinventing Retail

1:20-2:00 pm: **Digitally Native Retailers Reinventing Retail**

Dave Gilboa, *Co-Founder and Co-Chief Executive Officer, Warby Parker*
Andy Dunn, *Chief Executive Officer, Bonobos*

Fireside chat moderated by
Barbara Kahn, *Patty and Jay H. Baker Professor; Professor of Marketing; Director, Jay H. Baker Retailing Center, Wharton School*

New Retail Technology

2:05-2:25 pm: **Impact of Technology on the Future of Retail**

Garry Lyons, *Chief Innovation Officer, MasterCard*

2:30-2:50 pm: **Shopper-Facing Retail Technology: An Adoption Decision Framework**

Jeffrey Inman, *Albert Wesley Frey Professor of Marketing, Professor of Business Administration, Associate Dean for Research and Faculty, University of Pittsburgh*

2:50-3:10 pm: **Break**

Shopper Response to Price Presentation

3:15-3:35 pm: **Price Presentation Effects: Evidence From the Field**

Dhruv Grewal, *Toyota Chair of Commerce and Electronic Business, Professor of Marketing, Babson College*

New Distribution Models

3:40-4:00 pm: **Store in Store**

Kinshuk Jerath, *Class of 1967 Associate Professor of Business, Columbia University*

4:05-4:25 pm: **Delivering What Customers Really Want**

Daniella Vitale, *Chief Operating Officer, Barneys New York*

Implications & Conclusion

4:30-4:50 pm: **Implications for Leadership and Talent Management**

Ken Hicks, *Former Chief Executive Officer, President, and Executive Chairman, Foot Locker*

4:55-5:10 pm: **Wrap-Up & Closing Remarks**

Barbara Kahn, *Patty and Jay H. Baker Professor; Professor of Marketing; Director, Jay H. Baker Retailing Center, Wharton School*

5:15 pm: **Reception at Freds @ Barneys**

DAY 2—Friday, October 7, 2016

7:45-8:30 am: Breakfast

8:30 am-12:00 pm: Workgroup Discussions
We will form workgroups based on interest in select topics relating to the "disruption in retail" conference theme. The goals of the workgroups are to:
- discuss the current thinking, work, challenges, etc. on the group's focus topic,
- generate ideas for future research, and
- outline a white paper addressing the above points (to be written after the conference).

Each group will have a workgroup chair guiding the discussion. The groups are as follows:

Group 1: Customer Journey and Experience
Barbara Kahn, *Patty and Jay H. Baker Professor, Professor of Marketing, and Director, Baker Retailing Center, Wharton School*
Lisa Cavanaugh, *Assistant Professor of Marketing, USC Marshall School of Business*

Group 2: Analytics/Customer Lifetime Value (CLV)
Peter Fader, *Frances and Pei-Yuan Chia Professor, Professor of Marketing, Wharton School*

Group 3: Mobile Marketing in the Retail Context
Venky Shankar, *Professor of Marketing & Coleman Chair in Marketing, Director of Research, Center for Retailing Studies, Mays Business School, Texas A&M University*
Dhruv Grewal, *Toyota Chair of Commerce and Electronic Business, Professor of Marketing, Babson College*

Group 4: Artifical Intelligence (AI) in Retail
Kartik Hosanagar, *John C. Hower Professor of Technology & Digital Business, Professor of Marketing, Wharton School*

Group 5: Impact of Technology on Channel Design/Management
Kinshuk Jerath, *Associate Professor of Marketing, Columbia Business School*

12:00-12.45 pm: Group presentations

12:45 pm: Closing lunch

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Speakers and Workgroup Chairs

Jay H. Baker, *Former President & Director, Kohl's Corporation, and Chairman of the Board, Jay H. Baker Retailing Center, Wharton School*

Lisa Cavanaugh, *Assistant Professor of Marketing, USC Marshall School of Business*

Andy Dunn, *Chief Executive Officer, Bonobos*

Peter Fader, *Frances and Pei-Yuan Chia Professor, Professor of Marketing, Wharton School*

Dave Gilboa, *Co-Founder and Co-Chief Executive Officer, Warby Parker*

Dhruv Grewal, *Toyota Chair of Commerce and Electronic Business, Professor of Marketing, Babson College*

Ken Hicks, *Former Chief Executive Officer, President, and Executive Chairman, Foot Locker*

Neil Hoyne, *Head of Customer Analytics, Google*

Kartik Hosanagar, *John C. Hower Professor of Technology & Digital Business, Professor of Marketing, Wharton School*

Jeffrey Inman, *Albert Wesley Frey Professor of Marketing, Professor of Business Administration, Associate Dean for Research and Faculty, University of Pittsburgh*

Kinshuk Jerath, Class of 1967 Associate Professor of Business, Columbia University

Barbara Kahn, *Patty and Jay H. Baker Professor, Professor of Marketing, and Director, Baker Retailing Center, Wharton School*

Praveen Kopalle, *Signal Companies' Professor of Management, Associate Dean for the MBA Program, Tuck School of Business at Dartmouth*

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Daniella Vitale, *Chief Executive Officer, Barneys New York*

Brian Wansink, *John S. Dyson Professor of Marketing and Director, Food & Brand Lab, Cornell University*

Participating Universities

Arizona State University

Babson College

Boston College

Columbia Business School

Cornell University

Georgetown University

Hakon Swenson Research Foundation/ Stockholm School of Economics

Harvard Business School

Kellogg School of Management

Mays Business School, Texas A&M University

National University of Singapore

Ohio State University

Simon Fraser University

Temple University

Texas A&M University

The University of Tennessee

The Wharton School, University of Pennsylvania

Tuck School of Business at Dartmouth

University of Arkansas

University of British Columbia

University of Florida

University of Illinois at Urbana-Champaign

University of Miami

University of Minnesota

University of Missouri

University of Pittsburgh

University of Toronto

University of Washington

University of Wisconsin-Madison

USC Marshall School of Business

WU Vienna University of Economics and Business

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Participating Companies

Alice + Olivia

Alliance Bernstein (AB)

American Apparel

Barneys New York

Birchbox

Bloomingdale's

Bonobos

BRG

Buckingham Capital Management

ChargeItSpot

Christian Lacroix Snc

Coach, Inc.

COSY - Cognitive Operational Systems

Cowen & Co.

Dagne Dover

Elite SEM Inc

Escada of the Americas

Estee Lauder Companies, Inc

Foot Locker

Google

Haddad Brands

HSN

Kahn Lucas

Kirk Palmer

Lafayette 148 New York

Loeb Associates Inc.

LVMH Fashion Group

M Booth

MAC Cosmetics

Mack Capital

Mayc's

MasterCard

Michael Kors

Nechleba LLC

NIC+ZOE

Nordstrom

Novel Holdings Limited

Numberly

OMsignal

Palladin Consumer Retail Partners, LLC

Perry Ellis International

point of origin consumer intelligence

Quidsi

Ralph Lauren

Rebecca Minkoff

Red & Blue Ventures

Refinery29

Rent the Runway

Sephora

Spring

Stylitics

Sun Capital Partners

Supergoop!

The Estee Lauder Companies

The Lansco Corporation

Total Wine & More

Warby Parker

WS Development

Yumi Kim