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Changing the game to compete: Innovations in the fashion retail industry from the disruptive business model

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Abstract Unprecedented competition and emergent technologies have posed a challenge to many traditional retailers in recent years. Yet within this competitive environment, emerging innovative business models have thrived and successfully disrupted the industry. We analyze the nature of disruptive business-model innovations and the ways they disrupt the fashion retail industry. To that end, we examine three disruptors in the industry: born-digital brands, AI-enabled demand forecasting and product design, and collaborative consumption. After introducing the concept of disruptive business-model innovation, we discuss the three disruptors' effects on the fashion industry. We find that all of these models keenly answer fundamental needs unmet by current business models, such as offering quality products at a competitive price, curated services, and sustainable consumption. At the same time, all three disruptors suggest effective operation models for handling demand uncertainty, inventory management, and timely responses to the market, all of which are inherent issues for current push supply chains and forecast-based, inventory-driven systems. Based on this analysis, we discuss important implications for both academics and industry practitioners.

1. Changing the game

Many traditional retailers employ a forecast-based, inventory-driven push-supply-chain system (Christopher, Lowson, & Peck, 2004). This approach often results in huge gaps between forecasted and

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actual consumer demand, which can lead to heavy markdowns and excess inventory that erode retailers' profits. The markdown ratio is relatively high for fashion retailers, for which demand uncertainty is inherent owing to seasonal and fashion changes, and factors of size and personal preference (Jin, Chang, Matthews, & Gupta, 2011). A study by Bain & Co. estimated that the industry average markdown ratio is approximately 50% (Sull & Turconi, 2008), and the average forced end-of-season markdown is 10%-25% (Fisher, 1997).

As evinced by many recent store closures and bankruptcies, such traditional retailers' business models appear to be unsustainable. In 2017 alone, more than 300 retailers filed for bankruptcy, an increase of 31% from 2016 (Isidore, 2017), and about 9,450 stores closed, an increase of 53% from 2008. In contrast, emerging innovative business models thrive in this same competitive environment, disrupting the industry. The key to any successful business model's innovation is to focus on the way a company generates value (i.e., value creation) and how it captures some of this value as profit (i.e., value capture; Chesbrough, 2007). Therefore, it is important to understand how the emerging cases develop successful models for value creation and value capture.

Most research on disruptive business-model innovation is purely conceptual (e.g., Chesbrough, 2007, 2010; Markides, 2006) and in case-study format. Previous case studies focused on particular companies[1] or industries.[2] Such studies therefore provide a limited understanding of how innovative business models in *retail* disrupt the industry. Each industry has its own ecosystem and market gaps and thus requires different business-model innovations tailored to its unique environment.

The purpose of this study is to analyze how business-model innovations have disrupted the fashion retail industry. Innovative business models in the fashion industry deserve attention because they can help brands and retailers better deal with the gnawing problem of demand uncertainty. Through an extensive review of the literature on this topic, we identified the following three disruptors in the fashion retail sector: born-digital start-ups, demand forecasting and product design enabled through artificial intelligence (AI), and collaborative consumption. These business models disrupt the industry by redefining what an existing product or service is and how it is provided to the customer rather than by discovering new products or services.

Of the two types of disruptive innovations—business-model innovation and radical-product innovation (Markides, 2006)—business-model innovation is the focus of this study. Innovations in products (e.g., athletic shoes made with 3-D printing technology) or services (e.g., virtual fitting rooms) are therefore beyond the scope of this study. Our findings show that harnessing digital technologies and the elements of the fourth industrial revolution are necessary but not sufficient for developing successful business models. The key is in how effectively each model addresses unmet consumer needs and manages demand uncertainty. Based on this analysis and discovery, this study provides important implications for both academics and practitioners. While this study focuses on the fashion retail sector, its findings can be applied to other retail industries, as any retail sector faces the same challenge: meeting unpredictable consumer demands. We begin by delving into the concept of business-model innovations that disrupt existing business models. We then refer to specific cases as we discuss how each of the three disruptors affects the fashion industry.

2. What constitutes a disruptive business-model innovation?

The common definition of innovation is the development of new products, production processes, business practices, or forms of organization. Innovation can be an outcome, a process, or a mindset (Kahn, 2018). Innovation can be incremental, radical, or disruptive. Unlike incremental innovation, disruptive innovation challenges the status quo and radically reshapes supply and demand (Assink, 2006).

According to Christensen (1997), who coined the term 'disruptive innovation' and popularized the theory, disruptors successfully target overlooked segments by offering 'good-enough' products with attributes more suitable to these markets, and typically at lower prices. Because their reach initially does not extend to mainstream consumers, the leading incumbents have little incentive to respond to them. As the disruptors begin to capture a considerable market share, the leading incumbents start to find them threatening and see

[1] For example, Xerox (Chesbrough & Rosenbloom, 2002), Airbnb (Guttentag, 2015), and Nespresso (Matzler, Bailom, Friedrich von den Eichen, & Kohler, 2013).

[2] For example, the drug industry (Sabatier, Craig-Kennard, & Mangematin, 2012), the dietary industry (Sosna, Trevinyo-Rodríguez, & Velamuri, 2010), and logistics services (Chapman, Soosay, & Kandampully, 2003).

the need to react. Eventually, the disruptors penetrate the mainstream market by upgrading their products to meet the demands of the mainstream customers while still maintaining the competitive advantage that drove their early success. The emergence of downloadable digital media in the 1990s is a good example. Initially, this low-end disruption method relied on peer-to-peer file-sharing technology, but later on it totally disrupted the sales of physical, high-cost CDs. In essence, the disruptive-innovation theory describes how companies may falter if they disregard the upward encroachment of a disruptive product or service that offers alternative benefits (Christensen, 1997, 2006).

Christensen's initial theory of disruption was formulated in the context of technological innovations but later became broader in scope to include product and business-model innovations. Later, Christensen, Raynor, and McDonald (2015) used the iPhone and Netflix as examples of disruptive innovations and explained that Apple's success is made possible not merely due to product improvements but also because of new business models: "By building a facilitated network connecting application developers with phone users, Apple changed the game" (Christensen et al., 2015, p. 50). There are different types of disruptive innovations: disruptive technological innovations, disruptive business-model innovations, and disruptive product innovations, all of which are fundamentally different from each other (Markides, 2006).

Business-model innovation is different from other types of innovation in that it creates value by making changes to an organization's value propositions and to its underlying operating model. A value proposition specifically addresses what a firm is offering and to whom. The possible explicit choices include target segments, product or service offerings, and revenue models. In contrast, the operating model deals with how the offering can be delivered profitably. This can be achieved by reconfiguring the value chain, cost model, and organizational structure (see Lindgardt, Reeves, Stalk, & Deimler, 2009). Business-model innovation entails changing the operating model to deliver new value propositions that are not emphasized by the established competitors (Markides, 2006). Unlike other disruptive innovations, business-model innovations do not require new technologies or brand-new markets, yet they can be disruptive enough to change the game in an industry due to their unique value propositions and operating models (Girotra & Netessine, 2014).

As seen in the aforementioned examples, business-model innovations are different from technological innovations (Markides, 2006). An important difference between the two is that disruptive business-model innovations often grow significantly enough to be noticed by the established companies but do not entirely supplant the establishment, as digital media supplanted music CDs. That is, a business-model innovation can coexist with traditional companies instead of completely replacing them. An example of this would be low-cost airlines, such as Southwest or JetBlue, that offer an alternative to traditional airlines like Delta without completely taking the traditional airlines out of the market.

Various disruptive innovations "arise in different ways, have different competitive effects, and require different responses from incumbents" (Markides, 2006, p. 19), so they require multiple strategic approaches (Christensen et al., 2015). Therefore, for incumbent companies, parting from the old business model entirely and adopting the new one is neither the only nor the best way to respond to business-model innovations. After we review in the next section how three disruptors in fashion retail are changing the industry—and especially how they handle demand uncertainty—we will suggest possible ways incumbent companies can effectively respond to disruptive business models.

3. Three disruptors in the fashion industry

In this section, we explain how three disruptors profitably create value for their customers and set new norms for the retail industry, especially in handling demand uncertainty.

3.1. Disruptor #1: Born-digital start-ups

A growing number of start-ups are now born digital, selling directly to consumers without intermediaries. Without the middlemen, these brands can keep costs down and offer high-quality products at more affordable prices than traditional retailers. Examples of born-digital start-ups in the fashion industry include Bonobos, a men's clothing retailer, and Warby Parker, an eyewear retailer.

3.1.1. Bonobos

Founded online in 2007 by two graduates from Stanford University, Bonobos has grown into one of

the largest men's apparel brands in the U.S. It partnered with Nordstrom to sell its clothing both offline and online, and it was acquired by Walmart in 2017. Bobonos started online but later added offline stores called Guideshops, which are in essence showrooms. Instead of carrying merchandise for sale, Guideshops provide customers with one-on-one complimentary styling services, such as finding the right styles and sizes among 280 variations of pants, 230 variations of casual shirts, and 200 variations of dress shirts. Once a customer decides on a purchase, Bonobos staff place an order online because the brand does not keep inventory at their physical stores. Consumers make payments at the store but need to wait a few days until their orders are delivered home, just as if they had shopped online.

3.1.2. Warby Parker

Warby Parker was started as an online business in 2010 by a team from the Venture Initiation Program of the Wharton School at the University of Pennsylvania. Since then, Warby Parker has disrupted the $28 billion eyeglass market long dominated by Luxottica. Based in Milan, Luxottica not only produces eyewear brands such as Ray-Ban, Oakley, and Oliver but also sells eyeglasses in 150 countries via a retail network of about 9,100 stores (Luxottica, n.d.). The company also manufactures for many luxury brands, such as Versace, Prada, Burberry, and Chanel (Swanson, 2014). Without competition, the price for glasses is invariably and unjustifiably high, with frames alone averaging $231 (Lazarus, 2019). One of Warby Parker's founders once went months without a pair of eyeglasses because he was shocked at the cost to replace a pair he had lost (Eng, 2019). Warby Parker challenged the status quo—the high cost of eyeglasses—by offering stylish and high-quality prescription eyewear and sunglasses for between $95 and $145. It is able to offer quality products at a much lower price point by designing glasses in-house and selling directly to customers online. As of September 2018, the company generates $250 million in sales annually and is valued at $1.75 billion (Sherman, 2018). One major hurdle to selling eyeglasses online is customers' inability to try on the frames. To solve this issue, the company sends five pairs of eyeglasses that customers can try for a week at no cost. By doing so, Warby Parker effectively combines the convenience of shopping online and the advantages of shopping offline, as customers can try on products without incurring additional costs such as return shipping fees. Like Bonobos, Warby Parker later opened offline stores. As of September 2018, Warby Parker has more than 80 stores in the U.S. and Canada. Like Bonobos, Warby Parker does not carry inventory to sell at offline stores; consumers try on different pairs of glasses and receive style assistance at offline stores, and their orders are delivered to their homes like online orders.

3.1.3. Value propositions, operating model, and implications for demand uncertainty

Born-digital start-ups Bonobos and Warby Parker disrupt the fashion retail industry by offering new value propositions not emphasized by the established competitors: they offer quality products at lower prices, complimentary in-store styling services, a greater variety of styles, and free trials at home and at their offline stores. Their operating model is also innovative in that both operate offline stores as showrooms for their products. This showroom concept effectively addresses the challenges associated with inventory management and demand uncertainty. Showrooms function as interactive catalogs: they carry the minimum number of items necessary for customers to see the available styles and to find the right size. Keeping a minimum inventory at physical stores allows for efficient inventory management. Traditional retail stores with fully stocked inventories need an accurate prediction of local demand. The role of merchandising is important because the more errors in local demand forecasting, the more excess inventory and forced markdowns there will be. In contrast, this problem does not apply to showrooms. The showroom concept not only eliminates the needs for accurate demand forecasting and for forced markdown but also saves operational expenses. Showrooms require fewer salespeople and less floor space than traditional retail stores. In addition, because customers can examine products and find the right size in person, returns are much less likely to occur. In short, showrooms retain the advantages of traditional retail stores, such as opportunities for upselling and cross-selling, while minimizing the costs associated with operating offline stores (Hodson, Perrigo, & Hardman, 2017) and the need to carry a wide range of inventory, which often results in unsold inventory that erodes profit.

3.2. Disruptor #2: AI-enabled demand forecasting and product design

When consumer demand changes constantly, as it does in the fashion industry, to accurately forecast demands, companies should conduct demand forecasting closer to the time of selling (Jin et al., 2011). But under the push supply chain, traditional

fashion retailers typically finish design and production far in advance of the season, so the forecast often deviates considerably from the actual demand. To minimize excess inventory or missed sales that result from inaccurate forecasting, many fashion retailers have been looking for ways to shorten the lead time. One rising solution is the use of artificial intelligence (AI) in demand forecasting and product design, as seen in the cases of Stitch Fix and Amazon.

3.2.1. Stitch Fix

Founded in 2011, Stitch Fix is an online subscription and personal styling service. Once customers share their size, style, and price preferences, Stitch Fix sends customers five curated items comprised of products from existing brands, as well as products from in-house labels. If the customer decides to keep all five items, the customer receives 25% off the total cost of the items. Although human stylists finalize the selections, the curation process heavily relies on big-data analytics. Data are pooled from various sources for accuracy. In addition to the preference profiles, the company also looks at photographic and textual data, such as Pinterest boards linked to customers' profiles, and written feedback and request notes. For repeat customers, purchase histories and feedback on fit also inform the curation process. Data analytics drives other aspects of the company's business as well: with the help of over 85 data scientists, algorithms guide logistics, inventory management and procurement, demand estimates, and even product design (Sonsev, 2018). As part of demand forecasting, the company tries to determine where customers are in their buying cycle by considering the specific circumstances of each customer. Stitch Fix first creates a store of data by keeping track of every touch point with customers, such as every item sent, every piece of feedback, and every referral. The company then extracts insights from these data, such as whether there have been any changes in a customer's state, and tailors communication and services to each customer's needs at that particular moment, all of which minimize errors in demand forecasting and contribute to customer satisfaction and retention.

3.2.2. Amazon

Amazon has been investing in AI-enabled demand forecasting and product design. It invested in procuring a patent in 2017 for an automated on-demand clothing factory designed to manufacture custom-made garments as soon as customers place orders. The entire process of apparel production—from printing textiles and cutting patterns to sewing—is automated with minimal human supervision. Cameras monitor the cutting process, and a robotic arm places all the pieces onto a conveyor belt that leads to a sewing station, where another machine sews the pieces together. The final products are then examined at a quality-control station to be packaged and shipped to customers (Armstrong, 2017; Wingfield & Courturier, 2017). In addition, Amazon has been investing in machine-learning algorithms that can assess how fashionable an outfit is and create new designs based on current trends. Even with state-of-the-art deep-learning technology, assessing how stylish an item is requires large amounts of labeled data and human feedback on the aesthetics of fashion items. Amazon researchers found a way to accomplish this task with a relatively small subset of labels and developed an algorithm that can learn from images of fashion items and subsequently generate similar yet new styles (Knight, 2017). With the recent investment in AI and on-demand clothing factories, coupled with in-house brands, Amazon may truly transform the fashion industry in terms of design, production, and retail. It is anticipated that Amazon's sales in fashion categories are expected to grow to $62 billion by 2021, surpassing T.J. Maxx and Macy's, thus making Amazon the biggest seller of apparel and footwear in the U.S. (Boyle, 2017).

3.2.3. Value propositions, operating model, and implications for demand uncertainty

As shown in the cases of Stitch Fix and Amazon above, AI enables fashion companies to offer consumers unique value propositions that were largely impossible to incumbent companies: highly personalized styling services and accurate product design more closely aligned with consumer demands. By using AI, Stitch Fix not only offers highly personalized styling services that suit consumers' tastes and preferences but also creates new products by combining design attributes from existing styles based on consumer feedback. Their algorithm assesses how well a given set of attributes is likely to satisfy their target consumers, and then it churns out sets of attributes with the highest possibility of becoming bestsellers.

The operating model used by Stitch Fix requires neither the development of a new collection for each season for unknown buyers nor the need to eliminate unsold inventories after each season, which naturally reduces the major concerns of inventory management in the traditional apparel business model. In addition, by creating styles in-house that best match the most up-to-date

consumer preferences, Stitch Fix is able to minimize returns, achieve higher sell-through, and further reduce errors in demand forecasting, all of which drive profits.

In turn, Amazon's on-demand clothing factory could completely obviate the need for inventory management because products are manufactured only after an order is placed. Coupled with the aforementioned algorithm, the on-demand factory can substantially reduce demand uncertainty because a real-time analysis of current trends, design, and production would render the forecasting of demand in advance of the season unnecessary.

3.3. Disruptor #3: Collaborative consumption

The final disruptor we will discuss is collaborative consumption (CC), which is a consumption mode characterized by "traditional sharing, bartering, lending, trading, renting, gifting, and swapping" via a digital medium (Sterling, 2010). CC has appeared in a number of sectors, from transportation (e.g., Uber, Lyft, RelayRides, Freecycle) and hospitality (e.g., Airbnb, Couchsurfing) to office rentals (e.g., Desksurfing, OpenDesks).

CC is expected to grow steadily in the fashion industry. Rent the Runway has amassed 6 million customers and $100 million in revenue (Henry, 2017), and the offline and online apparel resale market, an $18 billion industry in 2017, is expected to grow to a $33 billion one by 2021 (thredUP, 2017). In the fashion industry, there are two modes of CC exchange. One allows access to ownership through renting and lending merchandised products on a short-term or subscription basis (i.e., rental-service platforms). The other transfers ownership through swapping, donating, and purchasing used goods (i.e., peer-to-peer platforms; Hamari, Sjöklint, & Ukkonen, 2016). Typically, rental-service platforms are B2C, while peer-to-peer platforms are C2C.

3.3.1. Rental-service platforms

Rental-service platforms lend products for a specified term (multiple days to several months, depending on the product category) or on a monthly subscription basis. For example, Rent the Runway offers three different rental options: customers can pay per rental garment, subscribe to a monthly service offering up to four rentals, or subscribe to unlimited rentals. The rental-service platform appeals to customers because it enables them to access items they otherwise could not afford. A number of rental-service platforms originating from different countries have proliferated. Some focus on special categories, such as plus-size apparel, maternity wear, or luxury goods. A few offer high levels of personalization enabled by big-data algorithms. For example, Le Tote curates items for customers based on order history, customer preferences, local weather forecasts, and sizing differentials across brands.

3.3.2. Peer-to-peer platforms

Peer-to-peer platforms can be classified into two groups: seller merchandise and company merchandise. The former provides platforms for sellers, mostly consumers, who offer their pre-owned goods. Tradesy and Poshmark belong to this category. In the latter case, the companies conduct the actual merchandising, acting as consignment platforms: Companies set the price, post photographs, merchandise, and then handle the transactions on behalf of the sellers. Renting is also possible through peer-to-peer platforms like Style Lend in the U.S. and Rentez-Vous in the U.K. Peer-to-peer platforms make profits from the commission fees on each item sold. Table 1 presents examples of these two types.

3.3.3. Value propositions, operating model, and implications for demand uncertainty

We predict that the growing popularity of CC may disrupt the industry, as it pushes a once fringe consumption pattern into the mainstream. The value proposition of the CC business model is that it offers consumers a variety of items at lower prices with flexible and sustainable options (i.e., renting, swapping, or buying used items), which many incumbent fashion retailers do not. In terms of its operating model, CC is able to profitably deliver its value propositions because most CC companies (except those in the rental business) do not own products, so they have no excess inventory and thus no need for inventory management. For companies in the rental business, excess inventory is still less of an issue because they limit the stock they receive for each style in the first place. They do not have to get rid of items from past seasons like typical fashion brands do, because their goal is to offer a wide variety of styles for consumers to choose from, not to offer new items every season. They also have a convenient way to reduce inventory by selling products at a discounted price.

Demand uncertainty and excess inventory are less of a problem, if a problem at all, for CC companies, whether they are a rental business like Rent the Runway, a consignment business like The RealReal, or a platform business like Poshmark.

Table 1. Two types of collaborative consumption models in fashion, with examples

Type	Rental-Service Platforms (access over ownership, B2C)		Peer-to-Peer Platforms (transfer of ownership, C2C)	
How	Renting and lending		Swapping, donating, buying, and reselling used goods	
Examples	No personalization • Rent the Runway: clothing, accessories • Eleven James: luxury watches • Bag Borrow or Steal: designer handbags	Personalization • Le Tote: clothing, accessories • Rocksbox: contemporary jewelry • Switch: designer jewelry	Sellers merchandise • Tradsey: clothing, accessories • Poshmark: clothing, accessories	Companies merchandise • Crown & Caliber: luxury watches • TheRealReal: luxury goods • thredUP: clothing, accessories

Because they do not design and manufacture products themselves, they have no need for accurate demand forecasting—although merchandising does play a role, particularly for companies in the rental business.

4. Conclusions and implications

We have analyzed three areas of disruptive business-model innovation in the fashion retail industry: born-digital start-ups, AI-enabled demand forecasting and product design, and collaborative consumption. Each disruptor has great potential to influence key players in the industry by challenging long-held assumptions in current business models via their specific value-creation and value-capture models. The companies we've examined create value for their consumers and deliver that value profitably in ways that are considerably different from those of traditional retailers. They all keenly address growing consumer needs that have remained unmet by prevailing business models—offering quality products at competitive prices, one-on-one style services, and sustainable consumption—all of which are important trends that have received a great deal of attention from both the media and the academy (Todeschini, Cortimiglia, Callegaro-de-Menezes, & Ghezzi, 2017).

At the same time, all three cases demonstrate effective operation models for addressing the following problems inherent in the current push-supply-chain- and forecast-based, inventory-driven system: demand forecasting, inventory control, and timely response to the market. For born-digital start-ups, operating offline stores as showrooms requires minimal inventory for customers to see available styles and sizes, so inventory management and unsold items are less of an issue. AI improves the accuracy of demand forecasting, thereby minimizing excess inventory. Rental, consignment, and platform business models in collaborative consumption require little or no demand forecasting and entail minimal or no risk of excess inventory. Table 2 summarizes the three disruptors and how each effectively handles the demand uncertainty and inventory-management problems. The three innovative business models we've highlighted disrupt the fashion industry by addressing unmet needs and effectively managing inventory. In fact, all three disruptors largely eliminate the need for handling unsold items after a season because their models are not based on developing new items for each season.

Table 2. Summary of three disruptors and their ways of handling demand uncertainty and inventory management

Disruptive Business-Model Innovation	How to handle demand uncertainty and inventory management
Disruptor #1: Born-digital start-ups	
• Sells directly to consumers • Offers high-quality products at competitive prices • Complimentary one-on-one style service • Free trials at home and at its offline stores (e.g., Bonobos, Warby Parker)	• Started online and offline stores to serve as showrooms. Their purpose is not selling like traditional retailers. • Offline stores carry the minimum necessary inventory for customers to see available styles and sizes. Therefore, they have no need for accurate demand forecasting for each season. • In the showroom, consumers just place an order, so there is no need to carry inventories or mark down unsold items.
Disruptor #2: AI-enabled design and forecasting	
• Offers highly personalized styling services based on machine-enabled algorithms • Creates new designs with AI • Forecasts demand with AI (e.g., Stitch Fix, Amazon)	• Stitch Fix's AI-enabled online subscriptions and personal styling service and Amazon's on-demand clothing factory require neither a development of collections for each season for unknown buyers nor the need to eliminate unsold inventories after a season, which naturally reduce the major concerns of inventory management. • AI reduces errors in demand forecasting. • AI-enabled real-time analysis of current trends, design, and production makes forecasting demand in advance of the season unnecessary.
Disruptor #3: Collaborative Consumption	
• Offers consumers a variety of items at lower prices with flexible and sustainable options (i.e., renting, swapping, or buying used items) • Provides peer-to-peer platforms for swapping and reselling used goods (e.g., Rent the Runway, thredUP, Tradsey, Poshmark)	• Most CC companies (except rental) do not own products and have no need for inventory management. • Rental companies do not need to get rid of past seasons' inventory, because their goal is to offer a wide variety of styles for consumers to choose from, not to offer new items every season.

Disruptive innovation theory holds that incumbent companies may fade when they disregard the benefits of disruptive business models. Even though the effects of disruptive businesses may not seem immediately pervasive, they can quickly become mainstream (Christensen, 1997, 2006). The disruptive effects of the three cases explored here may be analogous to those of Airbnb and Uber. When Airbnb and Uber were introduced in 2008 and 2009, respectively, people did not anticipate the extent to which each model would change the landscapes of the transportation and hospitality industries. Now, both companies have become major players in their respective industries and have eroded the profits of companies operating with traditional business models. Learning from the cases of Airbnb and Uber, incumbent fashion retailers should be aware of the benefits of disruptive business models and start establishing responses to their disruptions in order to avoid decline.

There are three ways a traditional retailer can respond to disruptors. The first option is not to adopt the innovation but to invest in their existing business to enhance their core competitive advantage. This requires a thorough analysis of whether or not the new innovation is detracting from their customer base. For example, when online investment options such as E-Trade emerged and gained popularity, Edward Jones found that its customers were different from those using E-Trade and thus invested more into opening new branch offices across the nation to provide greater access to face-to-face service. But if the three disruptors we examined are taking traditional fashion

retailers' core customers away, then deciding not to adopt their innovations would be risky.

The traditional retailer's second option is to abandon their existing business practices and adopt the innovation with the goal of scaling it up to capture the growing market, if it has the assets and competencies to do so. Charles Schwab, for example, did not start an online brokerage firm but still achieved success by scaling its business up to reach the mass market. Similarly, in response to born-digital start-ups' showroom concept that neatly eliminates the long-standing dilemmas of inventory management and demand uncertainty, the incumbent fashion retailer could convert its existing offline stores into showrooms. While born-digital start-ups originated the concept of using offline stores as showrooms, the incumbent could take the idea and completely change the mass-market retail scene. But the incumbent company should conduct a thorough cost-benefit analysis to determine whether it can actually profit from adopting the new model entirely. Otherwise, it could risk undermining its existing businesses and strategies in case the new business model requires value chains that conflict with its existing ones (Markides, 2006).

Third, the incumbent could adopt the innovation while keeping their existing business, which is the most popular option (Charitou & Markides, 2003). Business-model innovations require a business structure that is often incompatible with the old way of doing business. Consequently, simultaneously operating two incompatible business models may be cost-prohibitive and pose various conflicts that are not easily reconcilable (Markides, 2006). Therefore, companies need to decide to what degree they will adopt the innovative business models and how they will structure them within their companies.

One possibility is to test new business models under a different store format, just as Nordstrom opened Nordstrom Local in Los Angeles in 2017 to test the no-inventory store concept (Thomas, 2018). Another possible way of adopting a new business model is to acquire a start-up and operate it as a separate unit, as when Nordstrom acquired the styling-service start-up Trunk Club in 2014, when Estée Lauder acquired the born-digital make-up company BECCA in 2016 (Hudson, Kim, & Moultin, 2018), or when Walmart acquired the born-digital start-up Bonobos in 2017 (De La Merced, 2017). Companies can also adopt a new business model within their operating model and thus test out its potential. Some traditional retailers, such as Ann Taylor, are already reacting to collaborative consumption by offering rental services in addition to their current business models (Lieber, 2017).

In choosing among the three possible responses to disruptors listed above, a company first needs to assess its *ability* and *motivation* to respond. The ability to respond is determined by factors including the company's resources, capabilities, and how much its traditional business method conflicts with the new practice. The company's motivation to respond is determined by factors such as the growth rate of the new business, the likelihood of losing existing customers to the new business, and the extent to which the traditional and the new business share assets and competencies (Charitou & Markides, 2003). To be specific, companies need to prioritize their resources if a choice can effectively handle the current challenges. For example, all three disruptors base their business models on a combination of existing technologies: digital devices, social media, and key elements of the fourth industrial revolution (e.g., big-data analytics, AI, robotics). Born-digital start-ups and collaborative-consumption business models maximize the benefits of digital communications and social media. The AI-enabled demand forecasting and product design used by Stitch Fix and Amazon epitomize what the fourth industrial revolution can bring to the fashion industry. But rather than blindly adopting technologies that require huge resource commitments, traditional fashion retailers first need to identify the extent to which these technologies can resolve their current challenges of inventory management and demand uncertainty. Only then should they carefully consider testing out one product line or one segment with AI-enabled design and forecasting and on-demand manufacturing.

All in all, given that the retail environment is radically evolving, retailers need to continuously monitor whether they are blindly accepting assumptions about current business models and whether business-model innovations can actually address and exploit untapped market opportunities. In doing so, traditional fashion retailers need to compare innovative business models with their own to determine ways to further differentiate themselves or ways to imitate or adopt the new practices to the extent allowed by the retailers' assets and motivations.

We have demonstrated how each disruptor effectively resolves the dilemmas inherent in the fashion business. Our findings are an important addition to the fashion-retail literature because they address disruptive business-model innovations in the fashion-retail industry, which have received limited attention. But our work is

not without limitations. Our analysis of current sources was largely limited to three disruptive areas occurring in the U.S. Because the degrees to which different countries adopt digital and social media may differ drastically, the inclusion of cases involving other countries would deepen our understanding of these trends. While most business-model innovations addressed in this study can apply to other industries, we recommend that more research be done on other industries that face different fundamental challenges. This would help to achieve a broader and deeper understanding of how business-model innovations may disrupt those industries.

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