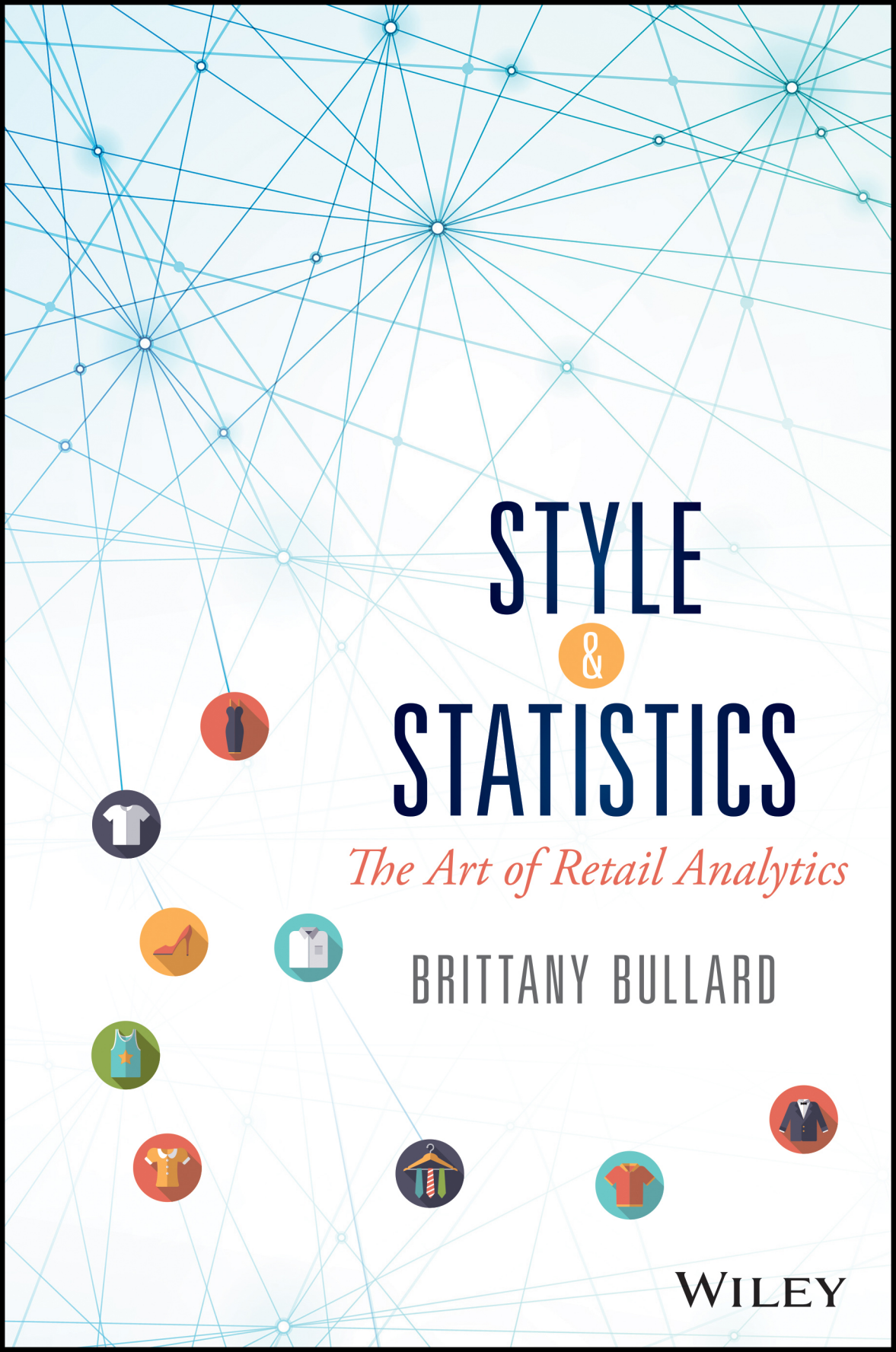
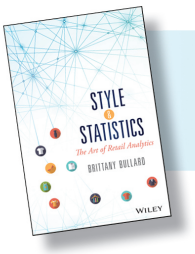


STYLE & STATISTICS

The Art of Retail Analytics

BRITTANY BULLARD

WILEY



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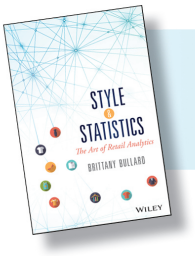


CHAPTER 1

The Changing Face of Retail

The Internet completely transformed the retail industry and the way we think about shopping. Retail changed from walking through a store to a click of a button while sitting on your couch in your yoga pants. The growth of mobile and technology has also revolutionized the industry.

The first online retail site was created in 1979. Michael Aldrich connected a television to a computer that processed transactions in real time using a telephone. He called it Videotex. This was even before the World Wide Web. Tim Berners-Lee created the first World Wide Web server in 1990. The first retail site was a book retailer, www.books.com. In 1994, a secure port was developed for online transactions. This meant that customers were able to purchase items online through a relatively safe process, avoiding fraud and identity theft. It was by no means 100% secure, but it was better than previous attempts. Still, people were somewhat skeptical about making purchases online.

Amazon and eBay quickly followed in 1995. I remember surfing for designer items on eBay in my younger years. I had somewhat of an obsession with Nancy Kerrigan during my childhood. My first eBay/online purchase was a Nancy Kerrigan refrigerator magnet. When it arrived, I discovered that it was literally a cut-out of Nancy Kerrigan from a magazine article, laminated, with a magnet glued to the back.

That was the risk you faced during eBay's early years of bidding on items. Then eBay transformed into more structure and reliability. A "buy" option was also implemented, rather than waiting to be outbid or win. I'm not going to lie: I enjoyed the rush of the bidding process and the not knowing what you were going to receive in the mail. This might have been due to my age, but it created great memories.

Amazon was also one of the first e-retailers that only sold online. It has now grown to be the largest e-commerce retailer and recently opened a physical store location. Amazon started out selling books and has now grown to sell clothing, electronics, home goods, and even food. Amazon Prime offers free two-day shipping, which has attracted a vast audience. Amazon has also started same-day delivery in select major cities with a new program called AmazonFresh. Amazon's latest technological move is the dash button, a small button that can stick to any surface and connects to a customer's Amazon

Prime account and Wi-Fi. When the button is pressed, it sends an order to Amazon. These dash buttons are available for brands such as Cottonelle, Clorox, Dasani, Red Bull, Tide, and many more common household products. If a customer notices she is running low on toilet paper, a simple click of the dash button generates an order, and a box of toilet paper is delivered to her door in two days. Amazon is becoming the king of e-commerce in today's market and will reach 19% of market share by 2020, making Amazon the largest retailer in the world.

The evolving technologies have changed not only the way we think of shopping but also our expectations. "Millennials" is a term used to describe people who were born between the years 1982 and 2004. This generation has predominantly grown up during the age of technology. A millennial's first job was after the BlackBerry and Internet were invented. Technology is a known way of life to them. The millennials are a technology-savvy generation. Education has incorporated technology as a staple in their development. Therefore, millennials have much higher expectations from retailers.

I myself am a millennial. I remember the launch of AOL; online dating when it was in the form of chatrooms; and MTV when it was actually videos with my boy Carson Daly, and you were not cool if you didn't have a cell phone in middle school. These expectations are even greater for the younger spectrum of millennials.

We check our phone on average 45 times per day and spend 3.2 hours on our mobile devices. Social media is a large part of a millennial's life. Social media is the means by which we communicate and stay informed with what is going on in the news. The first social media sites were Myspace in 2003 and Facebook in 2004. Myspace is an online community that slowly lost popularity over the years. It is still around but has become more of an avenue for musicians. Facebook started as a social community only for individuals with a university e-mail address. It slowly evolved to include community colleges and eventually opened to the public, moving from exclusively college students to everyone and their grandmother.

In 2014, Facebook had 1.23 billion monthly active users. As Facebook grew, so did other social sites, such as Instagram, which is a site where individuals share pictures. This site came on the scene in 2010.

In 2014, Instagram had 300 million active members. Twitter came on the scene in 2006 with the concept of leveraging Facebook's statuses and through it emerged the infamous hashtags. Hashtags are now a part of the millennial English language. A hashtag is a word or phrase that describes a topic, an event, or a person. These words or phrases begin with a hash or pound mark.

For example, #ThrowbackThursday is a hashtag used on social sites every Thursday where individuals post old pictures of themselves. Hashtags are used for searching on Twitter and Instagram. I have a good friend who has a weird obsession with cats. I think we all know a few of these people. She frequently searches #cats, so the content on her homepage has been tailored to show things of interest to her, such as cats. Tagging your picture with the #cats description will increase the likelihood that your picture will show up on her page and she will like it. Liking is a whole other concept. On any social site, people are able to click "Like" on your picture. It is almost a personal mission to try to get the most likes. Timing is involved in this as well. A millennial typically will not post his or her best pictures on a Saturday night at 10 pm because that's when everyone is out. If you post your best pictures with a large number of hashtags on a Monday around 4 pm when the workday is nearly over, your "like" factor will skyrocket.

Snapchat started in September 2011 and has evolved to be the second-most used social media app among millennials. Snapchat is a mobile app that allows you to take pictures, selfies, or videos and send them to select individuals or post to "your story." The kicker is that if you send the pictures or videos to an individual, the picture expires after 10 seconds, and only one replay is allowed per day. This app also enables users to send text messages that disappear after they have been read. If someone takes a screenshot of the picture, the app will actually tell the sender. This is of great appeal to any young millennials who do not want to leave a trail.

It is important to understand these different social media apps and how they work to best target and understand customers. Social media is a growing platform for retailers to reach their target audience. When it comes to social media sites, millennials start using these sites first, and then they slowly grow to reach the masses. This is why it is so important to understand millennials. There is a lot of hype in the market

that if people are only focusing on millennials, then they are thinking that there are only jellyfish in the ocean. But the truth is, millennials lead the pack in expectations of retailers' technological capabilities and social presence. Once millennials' expectations come to fruition in the mainstream market, they tend to become the expectations of all generations. #Trendsetters is the hashtag that would describe this phenomenon. Social media began as a millennial fad but is now an all-generation fad. As a result, social media has become a critical element to reaching customers of all ages.

Social media sites also have influence on retailer websites. Take, for example, the app Tinder. Tinder is a dating app where people create a profile with information about themselves as well as a couple of pictures. If you are not interested in a profile that appears, you swipe to the right. If you swipe to the left, then you are interested and the app shows additional profiles of individuals who you may be interested in. If you would like to see more pictures of the person, then you swipe up and down to move through pictures. If you swipe to the left and the other person swipes to the left, then you both are able to communicate with each other through messaging. This is ideal in the social dating world because it reduces the number of people who you are not interested in messaging you. I only know all of this from a friend, of course, and you may be wondering what in the world this has to do with retail. I don't blame you. This style of app is actually influencing the way retailers change the design of their mobile sites. The best websites, software, and processes are ones that tie to how an individual is accustomed to performing a task or workflow.

Forever 21 is a fashion retailer geared toward millennials. The company has redesigned its mobile app to reflect this same type of style. You swipe to the left to see additional products, and you swipe up and down to see more pictures of the product in different angles. It's genius. It is all about creating a process that already ties to someone's habits. That is how you create a great customer experience. Ease of use and customer experience help drive customers to purchase as well as create strong customer loyalty.

"Channel" is a term retailers use to describe the mechanism through which customers shop and retailers connect with the customers. These

channels include in-store, online, catalog, call center, mobile apps, social media, and so forth. Omnichannel is the means by which retailers and consumers engage with each other across touchpoints through one seamless customer experience. There is truly a plethora of touchpoints, including in-store, website, mobile site, mobile apps, Snapchat, Twitter, Pinterest, Instagram, Facebook, YouTube, and Amazon. The digital landscape also describes the mix of channels.

Due to the increase in channels, retailers are adjusting their business processes and technology to support omnichannel initiatives. Some retailers have separate buying teams for e-commerce versus in-store. In general, retailers are moving away from having separate buying teams to enhance the seamless transition between the channels. If two people are buying for swimwear, for example, it becomes much more difficult to have a cohesive message between in-store and online.

The increase in omnichannel shopping brings its own challenges for retailers. As e-commerce sales continue to grow, store volume declines. We call physical store locations "brick and mortar." Controlling inventory is one of the top challenges. Declining volume in brick-and-mortar locations results in less of a need for inventory to maintain productivity and profitability.

However, studies have shown that customers still enjoy shopping in these locations. They may walk through a store and then purchase via their mobile phone a couple hours later. This behavior is called showrooming. Showrooming brings large complexities to retailers. Maintaining inventory levels as well as staffing to support an increase in traffic but a decline in sales is a challenge. As e-commerce sales started to increase, retailers invested in fulfillment centers, large distribution centers that fulfill online, catalog, and call center orders.

In the last couple of years, since the rise of showrooming, retailers are transitioning to in-store fulfillment. In-store fulfillment supports presentations for customers walking through the stores and supports the staffing for these brick-and-mortar locations. Of course, there are still challenges with this type of approach. Mainly, shipping costs can become a large burden as multiple items in a customer's order may come from different locations. In-store fulfillment from multiple store

locations can also have a negative impact on customer experience because the customer is getting 20 boxes in the mail, all at different times. For example, the customer's top may come from store 1, the skirt may come from store 2, and the associated accessories may come from store 3. This creates additional shipping fees for the retailer because the customer only paid one shipping fee, but the retailer had to ship three separate boxes.

To solve this problem, optimization has become a critical piece in the equation. Typically, legacy fulfillment mechanisms were driven by business rules. Business rules are a lot of "if . . . then" statements. Optimization, however, is the selection of the best available scenario, which takes into account multiple factors. In this example, these factors may be the locations that have the largest amount of items in the purchase order, the geographic distance to the shipping address, the amount of inventory of each item within the order, and the like.

An additional challenge that has arisen since the explosion of e-commerce and mobile is the competition. Customers have information at their fingertips. They can find any and all information, including competitor product availability, competitor pricing, and even coupons! Let's face it, who hasn't Googled or looked on Amazon before making a large purchase? Customers are able to check pricing in the middle of retail locations. There is even a "shopping" filter on Google. Couponing has become a hobby in recent years along with thousands of coupon sites and apps. In order to stay in the game, competitor pricing is a key element when thinking about pricing strategies for digital channels.

The third challenge with the rise in e-commerce and the digital landscape is marketing and personalization. E-mail has been flooded in recent years with offers upon offers. Whether it's a percentage off, extra off on clearance, or free shipping, inboxes are being flooded with offers, relevant or not. Offers via apps are also a key strategy. But all of these interaction points with the customer add more complexity to the marketing efforts. We discuss the topic of pricing and marketing efforts in more detail in Chapters 5 and 6.

With these added complexities come large amounts of data. Retail data can be sales, product inventory, e-mail offers, customer

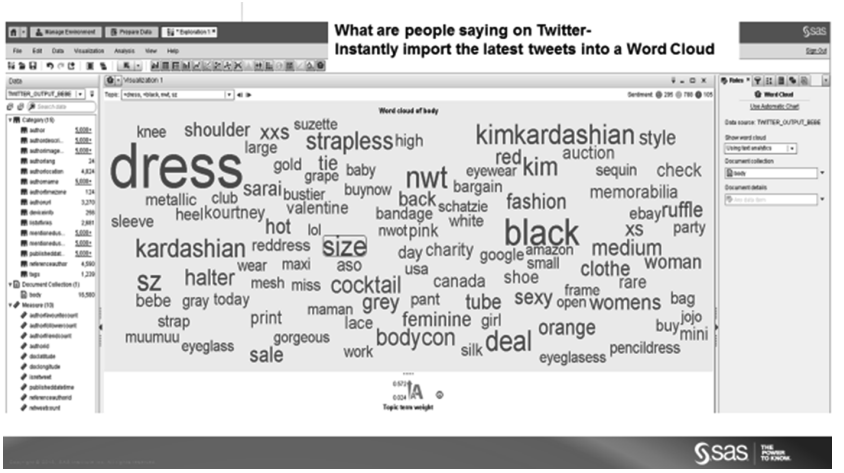
information, competitor pricing, product descriptions, social media, and much more. Combined, this is described as big data, or large sets of data that are leveraged to make better business decisions. There has been a lot of buzz and hype about the term "big data" in the last couple of years.

Big data can be described in two ways: structured data and unstructured data. Different types of data can support different initiatives within retail.

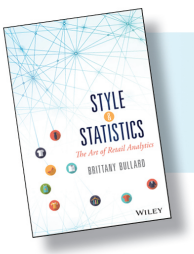
In order to leverage the insights gained through analytics successfully, structured versus unstructured data in retail is a key topic to understand. Structured data is data that sits in a database, a file, or a spreadsheet. It is generally organized and formatted. In retail, this data can be point-of-sale data, inventory, product hierarchies, and so on. Unstructured data does not have a specific format. It can be customer reviews, tweets, pictures, and even hashtags.

Now that you know what structured versus unstructured data in retail is, let's talk about how to use it. Customer reviews are a great way to understand why a certain product is or isn't working. Word clouds are tools to visualize large amounts of customer reviews. Finding keywords that are used frequently can give insight into product features. For example, if "fits small" is frequently used, then the retailer can be proactive by adding this to the product description or above the size selection. This will reduce customer returns and money lost on shipping fees.

Unstructured data can also be studied for sentiment analysis. This gives insight into whether the customer's response is positive, negative, or neutral. A great example of this is being able to analyze customers' Twitter responses. Let's say you post a tweet with products you are thinking about buying for your spring line, including a sketch of the design along with a descriptive hashtag such as the brand and the item name. Leveraging advanced technologies, the retailer is able to obtain customer responses related to the hashtag from Twitter and analyze the responses for sentiment analysis. This analysis enables retailers to understand customers' responses before the retailer even buys the product. This technique can also be utilized in season and give merchants insight into areas of opportunity or risk so that they can best manage their business.



As you can probably tell from reading this chapter, the changing retail environment has made it critical to understand analytics for more detailed analysis of business decisions. Complexities in e-commerce and the digital landscape and new challenges from omnichannel strategies and the world of big data have led to advanced analytics becoming an integral part of retail. In the following chapters, we are going to walk through applications of analytics within the retail environment, including assortment management, pricing decisions, marketing strategies, store operations, and cybersecurity.



About the Author

Brittany Bullard is a Solutions and Analytical Consultant in the Retail and Consumer Packaged Goods Practice at SAS Institute. Bullard focuses on retailers' strategic problems and identifies the challenges they face in an evolving industry. Her role allows her to apply her knowledge of advanced analytics to solve the most pressing issues and position SAS's customers for success.

Bullard brings to her team a decade of experience in the retail industry and a fresh millennial perspective on the customer and user experience. Versed in retail forecasting and omnichannel analytics, she serves as a member of the Strategic Retail Analytics team at SAS and on the Global Retail Community of Industry Leaders as the representative for the United States.

Originally a chemistry and math fiend, Bullard found the application of analytics in retail a perfect union of her strengths and passions. She now works to educate others on how they can drive innovation and develop professionally by leveraging the power of analytics.

Prior to joining SAS, Bullard acted as the manager of Forecasting, Allocation, and Replenishment at Beall's Inc. Her leadership of the implementation and management of retail analytics at Beall's connected Bullard to the SAS retail team. Bullard collaborates on the design of retail-focused solutions and the SAS Assortment Management portfolio, which was recognized as a leader in the Forrester Wave in 2014 and the Gartner Magic Quadrant in 2014, 2015, and 2016.