ABSTRACT

WILLIAMS, J’DEN B. The Online Purchasing Behavior of Millennial Segmentations. (Under the direction of Dr. Lori Rothenberg).

Consumer satisfaction has been defined by personalization, thus making customer expectations the center of e-commerce challenges (Roytman, 2019; Thomas, 2018). Consumer segmentation has become priority to make marketing more precise (Sharma, 2017). There is a limited amount of academic literature that explores the differences in consumer behavior within generations. This study will help fill that gap by exploring the purchase behaviors of younger and older Millennials, also known as Generation Y, in the United States.

Data collected by comScore, a company that captures web based behaviors, were used to address the following research objectives: 1. To determine the conversion rate among online retailers and Millennials cohorts; 2. To classify consumers based on patterns in online purchasing behavior and demographic variables. A standard conversion equation was used to calculate the conversion rates for research objective one. The “N-1” chi-squared methods was used to compare conversion rates. Hierarchical clustering was used to analyze the data for research objective two. Purchasing behavior variables captured in this secondary data are basket total, duration at site (minutes), total number of pages viewed per session, and time of activity. The demographic variables comScore captured are census region, education level, household income, and racial background. These variables were assessed on the following five online retail formats; Big Box, Department, Discount, Marketplace, and Specialty. At least one retailer was included in each format. After 337,295 browsing sessions were completed by Millennials ages 18-34, a sample size of 1,623 purchases were evaluated.
Younger Millennials (ages 18-24) made 556 purchases and older Millennials (ages 25-34) made 1,067 purchases.

The findings showed that younger and older Millennials differed in their conversion rates but were not clearly distinguishable when analyzing purchasing behavior and demographic variables jointly. In regard to research objective 1, there was a statistically significant difference in overall conversion rate between younger Millennials and older Millennials with older Millennials having the higher rate indicating that older Millennials made more purchases per viewing session. There was a statistically significant difference in the conversion rates between younger and older Millennials on Discount and Specialty formats with younger Millennials having the higher conversion rate on Department stores, while older Millennials had the highest conversion rate on the Specialty format. In research objective 2, 12 hierarchical clusters were found.
The Online Purchasing Behavior of Millennial Segmentations

by
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DEDICATION

To my loved ones who came before me.

❤
BIOGRAPHY

J’den Williams was born in Raleigh, North Carolina in 1994, growing up in Wendell and Wake Forest, North Carolina. J’den is the daughter of Sherod and Latricia Holloway, and the older sister to the very special Jayde Holloway. In the Spring of 2016, she graduated from the College of Textiles at North Carolina State University with a Bachelor of Science in Fashion and Textile Management. Throughout these undergraduate years J’den was an athlete of the Women’s Track and Field team, a College of Textiles Student Ambassador, a member of Delta Sigma Theta Sorority, Incorporated, and worked part-time at Plato’s Closet in Cary.

Following graduation, she began a Summer internship with Build-A-Bear in Merchandising. J’den later relocated to the St. Louis, Missouri area as a full-time employee for the company as an Associate eCommerce Activation Specialist in September of 2016. In the Fall of 2017, J’den returned to Raleigh, North Carolina to pursue a Master of Science in Textiles at North Carolina State University. J’den was fortunate to be the Graduate Teaching Assistant for two undergraduate Fashion and Textile Management classes, Introduction to Textile Brand Management and Marketing and Textile Brand Communications and Promotions, for Dr. Delisia Matthews. She also served as a Graduate Assistant to Student Involvement in the Division of Academic and Student Affairs to assist with programming and advised committees of the University Activities Board student organization. During this time, J’den also maintained a part-time retail occupation at Papyrus. As a graduate student, J’den’s concentration was Retail and Brand Management. Following graduation in May 2019, J’den will continue her education at the College of Textiles in the Doctor of
Philosophy in Textile Technology Management program with an anticipated graduation date of December 2020.
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CHAPTER 1 | INTRODUCTION

Background

In 1898 the purchasing funnel was created by E. St. Elmo Lewis to describe the steps consumers take in the buying process (Yardley, 2016). It helped marketers understand how they could guide their consumers through a successful purchasing journey. The funnel depicts how consumers transition through four steps: awareness, consideration, conversion and evaluation. These steps form a linear path. Over time the process has been modified to include things such as modern technologies (Yardley, 2016). Mobile technology, social media, and search algorithms continuously being updated reshapes how consumers interact with brands and retailers (Channel Advisor, 2017).

Consumers have adjusted to moving seamlessly through online platforms and physical brick and mortar stores (Bandaranayake, 2017). Channel Advisor (2017) noted that the purchasing process actually begins at a stage of inspiration, much earlier than awareness. Outside influences from social media, watching TV, or casual conversations can all inspire and take place prior to consumers being aware of specific brands and retailers (Channel Advisor, 2017). PowerReviews shared in their 2016 study that shoppers are starting their purchasing process through four main channels; Amazon, search engines, brand and retail sites, and other e-commerce marketplaces. A website owner that allows third-party companies to sell their products to consumers is considered a marketplace (Hendricks, n.d.). The interconnected internet, social media, and multidevice media consumption have created a purchasing path that is driven by consumers instead of marketers (Yardley, 2016). It is important to understand the convoluted path of the purchasing process in order to reach consumers and thus positively impact one’s revenue (Yu, 2017).
By knowing the consumers’ frustrations at each stage of the purchasing process, companies can address those pain points to reduce lost sales and maximize revenue (Lang, 2018). Over $350 billion in e-commerce sales have been reached in the United States each year, with a projected annual sales growth of 15 percent (Lo, Frankowski, & Leskovec, 2016). The industry must become acclimated to the new nonlinear purchasing path. In order to maintain a competitive advantage, companies must adjust their integrated marketing communications (IMC) to be aligned with omni-channel marketing tactics. Finding micro-moments – where consumers make contact with advertisements, messaging, a website, or any other cornerstone – is a strategy of marketers to capitalize on these points of engagements (Yu, 2017). Both scholars and practitioners have agreed that an overall consumer experience is a multidimensional construct that involves individual contacts between the company and the consumer through a collection of these touch points throughout multiple phases of a consumer’s decision process or purchase journey (Schmitt, 1999; Schmitt, 2003; Puccinelli et al., 2009; Verhoef et al., 2009).

Sometimes consumers desire a satisfying experience rather than an actual product (Lemon & Verhoef, 2016). Preferred forms of touch points by specific consumer segments has been a considered topic (Konus, Verhoef, & Neslin, 2008). Using generational values to target generational groups with appropriate products and promotional message is an effective multigenerational marketing strategy (Fromm & Garton, 2013). Millennials is the generational group that acts as the leading indicator of large scale changes in future consumer behavior (Barton, Koslow, & Beauchamp, 2014). Millennials, not Generation X or Baby Boomers, are influencing and accelerating shifts in consumer attitudes, brand perceptions and preferences, and spending habits (Barton, Koslow, & Beauchamp, 2014). Large firms such as Amazon and Google have created executive roles to emphasize the importance of touch points and micro-
moments with titles such as chief customer experience officer, customer experience vice
president, or customer experience manager (Lemon & Verhoef, 2016). Marketers who have a
better understanding of what their specific consumer segments’ purchasing journey looks like
can create and alter content at valuable micro-moments – or touch points – that will best serve
their consumers (Yu, 2017).

**Purpose of Study**

The purpose of this study was to compare the purchasing behaviors of younger
Millennials and older Millennials in the United States in terms of their engagement with retailer
websites. Due to what is now a fragmented purchasing path, there is a need to examine the
purchasing process by generational sub-cohorts and various retail formats in order to yield more
successful sales results. This research will assist marketers within differing retail formats to
begin comprehending how Millennials are moving through the purchasing process, where they
have the opportunity to engage with them, and when. This information will help marketers assist
Millennials on their purchasing journey, in hopes that they will convert them into successful
purchasers, leading to repeat purchases.

**Limitations**

The study had the following limitations:

- Secondary data were used, having been collected by comScore, a commercial
  company interested in web based behaviors.
- This was an exploratory study, limiting the power of any inferences.
- The data collected were limited to households that opted-in to participate via one
device and cannot be linked to an individual consumer. Data do not include the
possibility for households to use more than one device while capturing purchasing behaviors.

- comScore determined which variables were captured in the dataset along with binomial responses which could impact the results of the research.
- Two retailers were selected for each retail format, with the exception of the category “Discount” which had one representative due to a lack of sessions for other discount retailers, limiting the dataset.

**E-commerce Definitions**

*Clickstream Analysis* is the aggregate data of website activity collected by web server log files to analyze one’s clickstream including which pages website visitors are visiting, the order in which pages are viewed, how long it takes for each page to load, how users arrive at a page and where they go from there, products that are added or removed from carts, cart abandonment, and more (Rouse, 2016).

*Conversion Rate* helps quantify the effectiveness of an e-commerce site by evaluating the number of site visitors divided by the number that take the desired specific action (example: turning a site visitor into a consumer) (Rouse & Haughn, 2017).

*Machine Identifier* is a unique number assigned to each household in the random sample of 1+ million US internet users providing data to the comScore Web Behavior database. It is used to capture browsing and buying behavior.

*Session Identifier* is a unique number assigned to each session of web browsing or page viewings. If a transaction took place during a session, the transaction information was provided for that session.
Thesis Structure

Chapter Two will present a review of previous studies on the Millennial generation and their role in the retail industry, the development of the generational theory and how it is being applied to marketing strategies, and e-commerce and the evolution of technological platform. Chapter Three will present the sampling method, measures, and data analysis procedures. Chapter Four will provide the results for each research objective. Chapter Five will include a holistic conclusion of the study, discussion of the findings and its implications for practitioners and scholars, limitations of the study, and future research recommendations.
CHAPTER 2 | LITERATURE REVIEW

Millennial Generation

A common approach for a marketer to define their target audience is to use a certain age range. It is worth studying to see if this traditional approach remains the most suitable one. Today, the largest generation exceeding Baby Boomers by four million, are the Millennials – also known as Generation Y. This generational segment represents a population of eighty million people who will have the greatest consumer spending power, and soon will become the leaders of business organizations (Weber, 2015). Immigrants will increase this population to one hundred million in the future (Stephens, 2009). Millennials are the most ethnically diverse age group as close to forty percent of the generation are non-white or Latino (Stephens, 2009).

In 2015, the generation accounted for the largest share of the labor market and was more highly educated than previous generations (Buckley, Viechnicki, & Barua, 2015). Social and economic changes along with everyday technological integration are a result of this distinct group of individuals (Moreno, Lafuente, Carreón, & Moreno, 2017). Although there are a variety of age ranges used to define this generation, all of the ranges include the birthdate timeframe of 1980 to 2000 (Rainer & Rainer, 2011; Lee & Kotler, 2015). Therefore, Millennials are entering their prime years of twenties and thirties, starting careers, raising kids, and living in their own homes (Donnelly & Scaff, 2013). Minorities have been considered the trend setters in the Millennial generation and the cultural tendencies of non-white families are reflected in the core traits of this generation (Stephens, 2009). Displaying traditional values, this cohort is interested in good health, higher education, and tends to have more disposable income compared to prior generations (Dunne & Lusch, 2007). However, the post-recession era has left these individuals with greater financial constraints and higher unemployment (Moreno, Lafuente, Carreón, &
Moreno, 2017). Similar to the researchers at the Integrated Innovation Institute (III) at Carnegie Mellon University, other researchers are beginning to create segmentations within the Millennial generation (Integrated Innovation Institute, n.d.). Basing their segmentation on values and behaviors of this demographic the III was able to derive six segments: careful balance, caught in constraints, fine future, me & me, motivating relationships, and novelty adopters (Integrated Innovation Institute, n.d.). Careful balance appeared to be the leading sector for Millennials living in the United States, 50.3 percent being females, 49.7 percent males, and a fairly even distribution across the ages 18-34, with characteristics such as being detail-oriented planners and achievers, and the ability to balance family, friends, and career (Integrated Innovation Institute, n.d.).

Millennials are considered trailblazers for older and younger generations, by making personalization and experiences important (Schultz, 2015). Generation Y’s necessity to personalize increases their desires of distinctive brands that give them a platform of self-expression (Valentine & Powers, 2013). They want a wide variety of product range and a customization of services and goods to select from (Sethi, Kaur, & Wadera, 2018). This generation is also referred to as the digital natives, a term coined by Marc Prensky in his article Digital Natives, Digital Immigrants Part 1 (2001). Digital natives describe those who have grown up with technology, living a life of instant global communication (Prensky, 2001; Barbagallo, 2003).

As the Millennial generation represents a large proportion of the United States’ population, their segments purchasing power has become attractive target as they have an overpowering influence on clothing sales (Sullivan & J. Hyun, 2016). This generation had a four percent apparel growth rate in 2017, the highest out of all other generations which translates into
$2 billion in incremental sales (The NPD Group, Inc. / Consumer Tracking Service, 2018). They have more liberal spending patterns compared to any other generation along with the fact that they are accustomed to their parent’s spending large sums of money for their well-being (Carpenter & Moore, 2005). In 2001 Millennials spent $172 billion which displays the effort of parents to give their children the best of both needs and wants (Stephens, 2009).

Prior to the recession, this age group spent their lives in prosperity (Barbagallo, 2003). Presently, the aggregate spending for Generation Y is expected to increase by 25 percent as they enter into their peak spending years (Morgan Stanley Wealth Management, 2014). Their annual spending is expected to grow to $1.4 trillion in 2020 representing thirty percent of total retail sales (Donnelly & Scaff, 2013). Generation Y was predicted to represent fifty percent of global consumption in 2017 (Orozpe, 2014). Within Generation Y, college students represented approximately $69 billion in discretionary spending on an annual basis in 2010 (Wong, 2010).

The purchasing power of college students and their engagement with technology will be a large factor in determining whether online retailers will succeed long term (Hanford, 2005).

Technology and the state at which it continues to evolve is shaping how Millennials purchase. They are altering their own shopping behaviors and the parents of this generation are following in their steps as they become more and more adapted to technology (Donnelly & Scaff, 2013). Constant connectivity exposing their tastes, preferences, wants and needs via technology provides information on what is attractive to the generation (Moreno, Lafuente, Carreón, & Moreno, 2017). They utilize the internet to conduct thorough research for offers ultimately allowing them to shop efficiently with an expectation of fast transactions (Harris, Stiles, & Durocher, 2011).
In 2016, 54 percent of purchases were made online by Millennials, a three percent increase from the previous year (Blumenthal, 2016). Spending more than six hours a week to shop online, 76 percent of Millennials have shopped at large retailer websites, 48 percent on marketplaces, 46 percent on independent websites or boutiques, and 29 percent on category-specific online stores (Wallace, 2017). Conventional media has become a thing of the past as interactive media is perceived as functional and enjoyable (Rahman, 2015).

Based upon how internet search engines list online retailer sites, Millennials perform their shopping by giving precedence to the first company listed or the companies within the first page of the search results (Harris, Stiles, & Durocher, 2011). This group participates in competitive shopping which leads them to prefer conglomerate shopping for comparison purposes (Harris, Stiles, & Durocher, 2011). Offering discounts for purchasing multiples, multi-items, or products that are offered with the initial product sought also attracts this generation (Harris, Stiles, & Durocher, 2011).

The rapid responses Generation Y is accustomed to receiving from technological advancements have shaped their expectations in many aspects of life. The need for instant gratification has impacted the purchasing decision of these individuals, especially regarding the delivery methods and estimated shipment arrivals of their packages (Harris, Stiles, & Durocher, 2011). The e-commerce industry will grow as their discretionary income increases and as they repeatedly visit websites that have competitive pricing and good shipping rates (Moreno, Lafuente, Carreón, & Moreno, 2017; Smith, 2011).

The immense number of price promotions creates a lack of loyalty to a brand. Instead, Millennials look for brands that will allow them to express themselves, their personality, lifestyle, social and community values (Moreno, Lafuente, Carreón, & Moreno, 2017). Unlike
any other generation this generation is impacting the economy with unprecedented influence (Harris, Stiles, & Durocher, 2011). The quick yet continuous change in Millennial consumption is a direct correlate to the necessary evolution of consumer segmentation (The NPD Group, Inc. / Consumer Tracking Service, 2018). The Millennials’ power in size of population, online consumption, and spending power makes them a popular group to study as they are an attractive target market for the consumer industries (Smith, 2011).

**Generational Theory**

Characteristics of generations are generally applied to a range of ages that are greater than a decade. Generation theories may help reveal similarities and differences in shopping habits for individuals within those large age ranges. The origin of generational theory can be traced back to as early as 1952. At this time Karl Mannheim, a sociologist, discussed in his written work, *The Problem of Generations*, the influence major historical and social events have on those individuals who had to experience it (Mannheim, 1952). He emphasized the importance of generations being shaped by significant social factors (Ting et. al, 2017). Later, a generation cohort concept was framed to describe how a group of people are homogenous, not solely based on age but more importantly through their commonality in similar shared experiences during their formative years (Ryder, 1965). From there the generational theory was further expounded upon by Neil Howe and Williams Strauss in 1991 to describe the history of the United States (Ting et. al, 2017). Their theory indicated that the social cycle would repeat itself every four generations (Strauss & Howe, 1991). These generational groups would share three criteria: age, location in history, beliefs and behaviors (Strauss & Howe, 1991). Each generation’s shared experiences during their lifetime such as important historical events and social changes would affect their attitudes, beliefs and values, setting them apart from other cohorts (Strauss & Howe,
1991). Examples of these events could be impactful public figures like Martin Luther King Jr., or traumatic war times. The creation of generations helped form the idea that individuals in a certain age group will tend to have a common set of beliefs, attitudes, values and behaviors. For instance, Millennials have been shaped by terrorism and technology (Moss, 2016). These major historical and societal occurrences contribute to the sameness in values, beliefs, and lifestyles helping to differentiate one generation cohort from another. In 1997 Inglehart stated economic changes, major social movements, along with historical events that take place during the pre-adult years are where generational values manifest (Inglehart, 1997).

Along with the technology advancements and the evolution of advertising, generational cohort analysis offers insight and guidance to marketers on how to effectively reach their target market who share similar values (Ting et. al, 2017). Understanding the generational reaction to price, product quality, and attitudes regarding the shopping experience can benefit the fashion and apparel industry (Moore & Carpenter, 2008). Studies have shown generational cohorts have different purchase behaviors, specifically in the areas of fashion, travel and tourism, and more (Pentecost & Andrews, 2010; Beldona, 2005). It is also suggested that generational cohorts experience homogenous digital behavior patterns as well as retail channels for clothing purchases (Sullivan & J. Hyun, 2016).

Compared to other generations, Millennials are less likely to pay attention to the quality of apparel goods (Moore & Carpenter, 2008). The Millennial generation displays the highest degree of shopping enjoyment in comparison to previous generations (Moore & Carpenter, 2008). Millennials also prefer to access digital content between 8pm and 12am whereas Boomers are consuming their content between 5am and 12pm (Morrison, 2015). The preferred device by which content is consumed also differs by generation. Boomers and Generation X favors
desktops and laptops while Millennials use their smartphones (Morrison, 2015). Additional studies have highlighted how the pattern of consumption varies over one’s life cycle (Bleichrodt & Quiggin, 1999; Bodie et al, 2004). The generational cohort studies have given marketers the ability to associate purchasing motivations with the demographic variable, age (Parment, 2011). Compared to Generation X and Baby Boomers, Generation Y are more likely to use online coupons (Moore, 2012). According to Bacon, Millennials are the best target market for many companies, but not all of them (2018).

Delivering a good experience to heterogeneous, dynamic segments has become an operational challenge for firms (Lemon & Verhoef, 2016). Simply using demographic variables alone will not help firms identify their generational audience, such as Generation Y, as they are typically not a uniform market (Culclasure, 2016). The difference in needs, mindsets, core values, culture, locations, life stages, and preferences requires greater marketing efforts (Buxton, n.d.; Jankowski, 2018). Customized strategies towards segmented preferences will decrease the likelihood of that target market shrugging off your advertisement (Smith, n.d.). It is necessary to have knowledge of underlying conversion motivations for segments of the Millennial population in which a firm is targeting (Smith, n.d.). In an effort to understand Millennials on a smaller scale to frame an effective marketing strategy, the implementation of the Values, Attitudes, and Lifestyles (VAL) model is crucial (Culclasure, 2016). VALs, a classification system of psychological types, was based upon frameworks developed by sociologist David Riesman and the creator of the Maslow’s hierarchy of needs, psychologist Abraham Maslow (Yankelovich & Meer, 2006). This psychographics tool was adopted by advertising departments and agencies for segmentation and was proven to be an effective method for brand reinforcement and positioning (Yankelovich & Meer, 2006). A common error in marketing is targeting the Millennial
generation instead of in the Millennial generation (Smith, n.d.). Further examination into this topic has provided data to support the development of sub-cohorts within the Generation Y cohort, segmenting younger Millennials from older Millennials (Debevec, Schewe, Madden, & Diamond, 2013). Older Millennials are approaching their mid-thirties while the younger Millennials are just approaching their early twenties (Landis, 2016). Older Millennials grew up prior to the rise of social media and were affected by the global market crash leaving them to become more conservative with their finances (Dane, 2017). Smartphones and social media were present during the growth of younger Millennials, but they have also experienced global financial crisis (Dane, 2017). While younger Millennials witnessed family and friends’ parents get laid off during their high school and college years, they have always been aware of the uncertainty that lie within the global and capital markets while they racked up more student loan debt than any other generation (Dane, 2017). The NPD Group divides the generations into two segments by ages 18 to 24 and 25 to 34 and MediaKix defines the two segments by ages 22 to 29 and 30 to 37 (MediaKix Team, 2018; The NPD Group, Inc., n.d.). When analyzing how the two segments differ when shopping for apparel, younger Millennials like shopping in specialty stores giving up 3.2 percent share of their finances to this retail channel whereas older Millennials are only contributing 2.1 percent of their finances to this format (The NPD Group, Inc., n.d.). Millennials of all ages spend more at department stores than the rest of the adult population however, younger Millennials are more likely than older Millennials to shop at department stores (The NPD Group, Inc., n.d.). Older Millennials are more likely to participate in loyalty programs and 46 percent of older Millennials, compared to 38 percent of younger Millennials, are tech-reliant, downloading retailers’ apps and utilizing them to seek product information or comparison shop (The NPD Group, Inc., n.d.). Sixty-two percent of younger Millennials versus
51 percent of older Millennials are more likely to browse and shop in-store, but they are less likely to browse online and buy in-store or browse in-store and buy online compared to older Millennials (The NPD Group, Inc., n.d.). Millennials between 25 and 34 years old and heading a household have an annual average spending of $49,547 compared to Millennials under the age of 25 who are spending an average annual amount of $32,179 (MediaKix Team, 2018). Older Millennials are more willing to work overtime unlike younger Millennials who prefer industries with regular work hours (MediaKix Team, 2018). The ability of manufacturers and retailers to keep up with the rapid changes in and evolution of each Millennials segment’s preferences will affect the future of the apparel business (The NPD Group, Inc. / Consumer Tracking Service, 2018).

**E-Commerce**

Technology, specifically the ability to shop online, has shaped how consumers shop today. Enhanced technological features on websites that monitor these behaviors generate actionable insights for those trying to reach their consumers through what is now “clutter”. Electronic commerce, or e-commerce, defines business transactions that take place over an electronic medium such as the internet in order to buy or sell items (“eCommerce Overview,” 2016). This structure has brought shopping home to the consumers (Ergin & Akbay, 2008). E-Commerce emerged to reduce search cost for both buyers and sellers, becoming an apparatus for price discovery, and enabling competition in the digital market (Bakos, 2001). The five stages of the purchase decision process are the following: (a) problem recognition, (b) information search, (c) evaluation of alternatives, (d) purchase decision, (e) post purchase behavior (Kotler & Keller, 2012). Although the purchase decision stage has continued to remain the same throughout constant technological innovation, the journey to execute all of those stages has not as consumers
transition back and forth between online and brick and mortar retailers (KMPG, n.d.). A major shift in economic change due to the e-commerce growth is the competitiveness amongst brick and mortar and online sales (Borenstein & Saloner, 2001).

Brick and mortar apparel sales still represent approximately more than three-quarters of annual industry dollars although in-store sales have declined (The NPD Group, Inc. / Consumer Tracking Service, 2018). Understanding factors in the online environment that have an impact on consumer flow experience is very important (Sina & Wu, 2018). An online experience will dictate whether the online navigation will convert to a successful purchase transaction (Zhou, Dai, & Zhang, 2007). Site merchandisers have the responsibility to ensure that the right products are presented in the right way, at the right time and price, in the right combination to encourage web visitors to make a purchase (Cassidy, 2016). Consumers are more likely to make apparel purchases online if they start with strong intentions to search for those items online (Xu & Paulins, 2005).

Product variety can influence consumers’ purchase decisions, company profitability, and increase revenues by 11 percent (Sethi, Kaur, & Wadera, 2018). Websites containing a variety of category-level pages could receive a larger number of browsing visits due to consumers having easy access to comparable items which improves the shopping efficiency. In addition, larger assortments have the ability to meet individual needs (Sethi, Kaur, & Wadera, 2018).

The effectiveness of an e-commerce site is determined by the number of site visitors divided by the number that take the desired specific action such as purchasing a product (Rouse & Haughn, 2017). The average e-commerce conversion rates range from one to three percent (Davis, 2018). The average e-commerce conversion rate for the fashion clothing and accessories industry is 1.01 percent (Udiljak, 2018). In the beginning of Q3 2018 this industry reached a 1.40
percent conversion rate during the month of July (Davis, 2018; Ogonowski, 2018). In 2010 a forecast was developed projecting that 162 million people would conduct online research while only 133 million would convert to being online purchasers (Puwalski, 2011). In 2015, online shopping carts increased by 26 percent from the previous year and 15 percent of the shoppers used their mobile devices to add items to their shopping cart (Berthiaume, 2015).

Studies have shown that predicting store format choice can be done using various demographic characteristics. One study in particular showed that household size, level of education, and income, all influence a consumers’ store format choice (Fox, Montgomery, & Lodish, 2004). Websites are becoming aligned with their respective brick and mortar stores by incorporating a seamless adventure due to consumers’ desire to experience traditional store features online (Tractinsky & Lowengart, 2007). Donnelly and Scaff (2013) identified six elements that together provide a seamless retail adventure. Two of the six elements, consistent cross-channel experience and personalized interactions, have been addressed in the industry while the others, connected shopping, options of flexible fulfillment, integrated merchandising, and enriched services that makes all the overall experience of shopping meet or exceed the needs of consumers, continue to remain fully untapped (Donnelly & Scaff, 2013). The inability for consumers to engage in experiences with items such as clothing also pose a challenge to websites (Tractinsky & Lowengart, 2007).

The average amount of clothing purchased online in 2013 was 22 percent more than the average online purchases in any other product category (Jackson, 2015). Sixty-seven percent of Generation Y uses computers on a regular basis with a projection that this specific age demographic will spend $1.3 billion online annually (Carpenter & Moore, 2005). Due to the Millennial’s exposure to high levels of technology, retailers are tasked with anticipating changes
in demand and providing the most updated technological innovations in a cost-efficient manner (Textor, 2008). The evolution of new retail formats such as marketplaces have come from consumers’ need for convenience (Carpenter & Moore, 2005).

Some online retailers are matching products to their consumers on an individual basis based upon any information they share (Weathers, Sharma, & Wood, 2007). Individualized shopping experiences may also emerge as retailers allow consumers to control what their online experience is like through personalization (Lee & Park, 2009). Marketing return on investment could increase by five to eight times through personalization with a corresponding increase in sales of ten percent or more (Liebowitz, 2013). Creating personalization, such as offers, is formed using the data gathered through tracking consumers’ shopping behavior which includes their browsing and transactions (Akter & Wamba, 2016).

Mobile applications and their connectivity to online shopping is beginning to make impactful contributions to the e-commerce retail industry sales. Twitter established its ‘buy’ button in 2014, followed by Facebook’s partnership with Shopify to provide their users the ability to post and sell their product on Facebook Pages (Small, 2018). Forty percent of Twitter’s users stated that they have purchased something as a direct result of an influencer’s tweet (Walker-Ford, 2018). Recommendations people gain from social media influences their purchasing by 23 percent. Close to 25 percent of business owners utilize the Facebook Pages e-commerce platform to sell products (Arnold, 2018). Towards the end of the first quarter in 2018, Pinterest and Instagram launched their very own click-to-buy options that take you to an external e-commerce platform to complete your purchase (Small, 2018). In 2017 there was a 24 percent increase in sales, reaching $6.5 billion, from social shopping compared to the previous year (Gilliland, 2018). Small (2018) forecasted that social channels’ buying capabilities will evolve to
become in-app purchases. In 2018 mobile e-commerce sales are expected to make up 63.5 percent of total e-commerce sales with a global revenue projection of $669 billion in sales (Walker-Ford, 2018).

Technology including social networking, the internet, and mobile devices is creating and capturing big data which in turn is becoming a resourceful powerful tool in e-commerce (Kauffman, R. J., Srivastava, J., & Vayghan, J., 2012). The increase in potential consumer touch points with a reduced amount of control of the experience requires firms to integrate multiple business functions such as information technology, logistics, marketing, service operations, as well as external partners to assist in delivering positive consumer experiences (Lemon & Verhoef, 2016). Big data was first used to supply personalized or customized services and products (Koutsabasis et al., 2008). Credit card firms used big data to execute offers of customized products within milliseconds (Davenport, Barth, & Bean, 2012). Big data assisted e-commerce in the effort to increase conversion rates and identify the most effective ways to turn a onetime consumer into a repeat purchaser (Miller, 2012; Jao, 2013). Data that can be captured from websites include orders, baskets, visits, referring links, keywords, and social data (Akter & Wamba, 2016). These click-stream data can aid management in making strategic and beneficial decisions (Akter & Wamba, 2016). The click-stream data that can measure marketing and merchandising efforts are derived from associated data such as an IP address, timestamp, URL, status, number of transferred bytes, user agent, and cookie data (Lee, Podlaseck, Schonberg, & Hoch, 2001). Examining click-stream data provides insight on who is visiting your site, how they landed on the site, which pages they viewed, how long they stayed on each page, and more (Wilson, 2010). These navigational paths each consumer takes contribute to big data, giving management the opportunity to learn more about its consumers (Wilson, 2004). Prospective and
returning consumers’ reactions to e-commerce marketing offers can be evaluated by click-stream data as well (Wilson, 2010). Visiting rates, retrieved through click-stream data, can indicate the inclination to buy at an e-commerce site (Moe & Fader, 2004). The same data that are gathered from navigational paths of consumers also gives management the ability to predict consumer preferences and tastes (Akter & Wamba, 2016). Tracking the experience at consumer touch points provides marketers insight on how an experience can be enriched for the consumer throughout the consumer decision-making process (Lemon & Verhoef, 2016). Although big data can be of great use to the apparel industry and each retailer within it, ensuring the privacy of the data accumulated, storing the data securely, and meeting the government regulations can pose several challenges as the expense to do all of these continues to increase as the data grows (Spilotro, 2016).
CHAPTER 3 | METHODOLOGY

Research Objectives

In order to understand what the Millennial purchasing behavior looks like when buying apparel products online, the following research objectives were defined:

i. Research Objective 1 (RO1): To determine the conversion rate among online retailers and Millennial cohorts.
   a. Compare conversion rates for Big Box, Department, Discount, Marketplace, and Specialty retailers.
   b. Compare the conversion rates of younger Millennials (ages 18-24) and older Millennials (ages 25-34).

ii. Research Objective 2 (RO2): To classify consumers based on patterns in online purchasing behavior and demographic variables.

Purchasing behavior variables were basket total, duration at site (minutes), total number of pages viewed per session, and time of activity. Demographic variables were census region, education level, household income, and racial background (see Table 1).
Table 1

Demographic Variables Key

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Demographic Variables</th>
<th>Demographic Variables</th>
<th>Demographic Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Census Region</strong></td>
<td><strong>Education Level</strong></td>
<td><strong>Household Income</strong></td>
<td><strong>Racial Background</strong></td>
</tr>
<tr>
<td>1 = Northeast</td>
<td>0 = Less Than High School Diploma</td>
<td>1 = Less than 15K</td>
<td>1 = White</td>
</tr>
<tr>
<td>2 = North Central</td>
<td>1 = High School Diploma or Equivalent</td>
<td>2 = 15K to 24,999K</td>
<td>2 = Black</td>
</tr>
<tr>
<td>3 = South</td>
<td>2 = Some College but No Degree</td>
<td>3 = 25K to 34,999K</td>
<td>3 = Asian</td>
</tr>
<tr>
<td>4 = West</td>
<td>3 = Associate Degree</td>
<td>4 = 35K to 49,999K</td>
<td>5 = Other</td>
</tr>
<tr>
<td></td>
<td>4 = Bachelor's Degree</td>
<td>5 = 50K to 74,999K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = Graduate Degree</td>
<td>6 = 75K to 99,999K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>99 = Missing</td>
<td>7 = 100K +</td>
<td></td>
</tr>
</tbody>
</table>

**Sampling Method**

A random sample of more than one million US internet users was used. Their browsing and purchasing behavior was captured and stored in the comScore Web Behavior Database. comScore is a recognized global leader in capturing cross-platform measurements of audiences, advertising, and consumer behavior (“About,” n.d.).

Purchasing behavior was evaluated in completed purchasing sessions. A purchase session is when the unique machine identifier purchases an apparel product during a browsing session. Two unique identifiers, machine ID and session ID, were used to collect the data that were analyzed in this study. The demographic variables of census region, education level, household income, and racial background were all identified by using the machine ID. The session ID was used to identify the purchasing behavior data which included the duration at a site in minutes,
total number of pages viewed per session, basket total, and time of activity. The session ID was also linked with the domain names for the retail stores that were strategically selected for study. Nine retail stores were separated into five categories: Big Box, Department, Discount, Marketplace, and Specialty. Each retail format category contained two retail stores except for discount due to a lack of data available. The sample size for this research included a total of 1,623 purchasing sessions completed by Millennials, ages 18-34. The purchasing sessions were further examined by dissecting the Millennials into generational cohorts, younger Millennials ages 18-24 and older Millennials ages 25-34. Younger Millennials accounted for 556 of the purchase sessions while older Millennials accounted for 1,067 sessions.

**Measures**

*Research Objective 1*

For every retail format there were three conversion rates generated. One was for all Millennials, a second for young Millennials and a third for older Millennials. To analyze the differences between each retail format and how the conversion rated changed when evaluating the sub-cohorts, the following formula was used:

\[
\text{Number of Purchase Sessions} / \text{Total Number of Sessions} \times 100 = \text{Conversion Rate}
\]

*Research Objective 2*

Hierarchical clustering, a multivariate technique was used to categorize consumers into homogenous groups based on patterns in online purchasing behavior and demographic variables. This statistical analysis was executed in JMP, a software created in 1989 by SAS (Klimberg & McCullough, 2016; “Software,” n.d.). Hierarchical clustering was used since this was a small data set. Ward’s method was used to be consistent with other academic literature in the textile industry (Su, Gargeya, & Richter, 2005).
Data Analysis

Research Objective 1

The conversion rates were calculated using the formula described in the measures section above. The conversion rates were statistically tested using an “N-1” Chi-squared test to compare the conversion rates of younger and older millennials. The conversion rates were treated as proportions, the number of browsing sessions constituted the sample size and a p-value less than 0.05 was considered statistically significant (Altman, Machin, Bryant, & Gardner, 2000).

Research Objective 2

The dendrogram generated from JMP determined that the number of clusters to analyze for this study should be 12. For further review the means for each cluster and the r-squared values were used. Cluster means helped describe each continuous variable and a frequency distribution was used to identify the number of younger and older Millennials in each cluster.
CHAPTER 4 | RESULTS

Sample Description

The sample was composed of purchasers between ages 18-34. Two cohorts were formed: younger (18-24 years old) and older Millennial (25-34 years old). Summing across both cohorts, Millennials experienced a total of 337,295 browsing sessions, but only completed 1,623 purchases (see Table 2). From September to December 2014, there was 1,158 Millennial households that made a purchase on at least one of the nine retail sites. Of those 1,158 households, 460 were younger Millennials and 698 were older Millennials. Marketplace included two very large online retailers, which had the highest number of transactions (1,005) followed by Specialty (301), Department (157), Big Box (108), and Discount (52).

Table 2

Purchase Sessions by Retail Format

<table>
<thead>
<tr>
<th>Retailer Format</th>
<th>Total Number of Browsing Sessions</th>
<th>Number of Sessions with Purchases</th>
<th>Number of Households with Purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Box</td>
<td>18,840</td>
<td>48</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>32,434</td>
<td>60</td>
<td>29 YM</td>
</tr>
<tr>
<td>Department</td>
<td>4,847</td>
<td>87</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>8,063</td>
<td>70</td>
<td>50 YM</td>
</tr>
<tr>
<td>Discount</td>
<td>7,482</td>
<td>52</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7 YM</td>
</tr>
<tr>
<td>Marketplace</td>
<td>151,828</td>
<td>595</td>
<td>710</td>
</tr>
<tr>
<td></td>
<td>96,489</td>
<td>410</td>
<td>298 YM</td>
</tr>
<tr>
<td>Specialty</td>
<td>7,511</td>
<td>137</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>9,801</td>
<td>164</td>
<td>76 YM</td>
</tr>
</tbody>
</table>
Research Objective 1

Conversion rates were determined for each retail format and each sub-cohort. The conversion rate by generational cohort ranged from 0.44 percent to 0.51 percent (see Table 3). Both generational cohorts combined had a 0.48 percent conversion rate with younger Millennials at 0.44 percent and older Millennials at 0.51 percent. There was a statistically significant difference in the conversion rates for younger and older Millennials (chi-square = 8.07, df = 1, p-value = 0.0045).

Table 3

Conversion Rates by Generational Cohort

<table>
<thead>
<tr>
<th>Millennial Segment</th>
<th>Total Number of Browsing Sessions</th>
<th>Total Number of Sessions with Purchases</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Millennials</td>
<td>337,295</td>
<td>1,623</td>
<td>0.48</td>
</tr>
<tr>
<td>Younger Millennials</td>
<td>127,444</td>
<td>556</td>
<td>0.44</td>
</tr>
<tr>
<td>Older Millennials</td>
<td>209,744</td>
<td>1,067</td>
<td>0.51</td>
</tr>
</tbody>
</table>

The conversion rates by retail format ranged from 0.16 percent to 2.18 percent (see Tables 4-6). Overall, Millennials have the highest conversion rate (1.74) for the Specialty retail format (see Table 4). Younger Millennials had the highest conversion rate (1.29) for the Department format followed by Specialty (1.25), Marketplace (0.38), Discount (0.37), and Big Box (0.16) (see Table 5). Older Millennials had the highest conversion rate for Specialty (2.18) followed by Department (1.18), Discount (0.81), Marketplace (0.42), and Big Box (0.24) (see Table 6). Comparing younger and older Millennials by retail format yielded statistically significant results for discount (chi-square = 3.97, df = 1, p-value = 0.0464) and specialty (chi-square = 21.88, df = 1, p-value < 0.0001).
Table 4

*Conversion Rates by Retail Format for All Millennials*

<table>
<thead>
<tr>
<th>Retail Format</th>
<th>Total Number of Browsing Sessions</th>
<th>Total Number of Sessions with Purchases</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Box</td>
<td>51,274</td>
<td>108</td>
<td>0.21</td>
</tr>
<tr>
<td>Department</td>
<td>12,910</td>
<td>157</td>
<td>1.22</td>
</tr>
<tr>
<td>Discount</td>
<td>7,482</td>
<td>52</td>
<td>0.70</td>
</tr>
<tr>
<td>Marketplace</td>
<td>248,317</td>
<td>1,005</td>
<td>0.40</td>
</tr>
<tr>
<td>Specialty</td>
<td>17,312</td>
<td>301</td>
<td>1.74</td>
</tr>
</tbody>
</table>

Table 5

*Conversion Rates by Retail Format for Younger Millennials*

<table>
<thead>
<tr>
<th>Retail Format</th>
<th>Total Number of Browsing Sessions</th>
<th>Total Number of Sessions with Purchases</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Box</td>
<td>18,221</td>
<td>30</td>
<td>0.16</td>
</tr>
<tr>
<td>Department</td>
<td>4,588</td>
<td>59</td>
<td>1.29</td>
</tr>
<tr>
<td>Discount</td>
<td>1,906</td>
<td>7</td>
<td>0.37</td>
</tr>
<tr>
<td>Marketplace</td>
<td>94,489</td>
<td>357</td>
<td>0.38</td>
</tr>
<tr>
<td>Specialty</td>
<td>8,240</td>
<td>103</td>
<td>1.25</td>
</tr>
</tbody>
</table>
Table 6

Conversion Rates by Retail Format for Older Millennials

<table>
<thead>
<tr>
<th>Retail Format</th>
<th>Total Number of Browsing Sessions</th>
<th>Total Number of Sessions with Purchases</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Box</td>
<td>33,053</td>
<td>78</td>
<td>0.24</td>
</tr>
<tr>
<td>Department</td>
<td>8,317</td>
<td>98</td>
<td>1.18</td>
</tr>
<tr>
<td>Discount</td>
<td>5,576</td>
<td>45</td>
<td>0.81</td>
</tr>
<tr>
<td>Marketplace</td>
<td>153,726</td>
<td>648</td>
<td>0.42</td>
</tr>
<tr>
<td>Specialty</td>
<td>9,072</td>
<td>198</td>
<td>2.18</td>
</tr>
</tbody>
</table>

Research Objective 2

After examining the dendrogram, twelve hierarchical clusters were selected. Every cluster except for the fifth had a majority of older Millennials within their cluster (see Table 7). A summary of the cluster means was examined (see Table 8). Frequency distributions were used to examine the demographics within clusters when necessary (see Appendix A).

**Cluster one: Lower income shoppers** included Millennials with smaller basket totals and 101 purchases on Marketplace.

**Cluster two: Older White Millennial shoppers from all regions** included 43 younger Millennials, 132 older Millennials, and 114 purchases on a Marketplace website.

**Cluster three: Southerners with Associate’s degree** included 19 younger Millennials and 21 older Millennials.

**Cluster four: White and Other Millennial shoppers** had 21 purchases on a Marketplace website and 20 on a Department website.
Cluster five: **Highest basket total shoppers** had two households that had some college but no degree, three households that had an Associate’s degree, and four households that had a Bachelor’s degree. This cluster included five younger Millennials and three older Millennials.

Cluster six: **Southerners with some college but no degree** contained 92 younger Millennials and 199 older Millennials.

Cluster seven: **6 P.M. to 12 A.M. shoppers** on Marketplace contained 74 younger Millennials and 151 older Millennials.

Cluster eight: **Northeastern and Western shoppers** contained 25 younger Millennials and 61 older Millennials. Thirty-nine purchases were made on a Marketplace website and 25 were made on a Specialty website.

Cluster nine: **Middle to upper class income shoppers** contained shoppers with a Bachelor’s degree and the highest average household income ($75,000 to $99,999).

Cluster ten: **Others with some college** contained shoppers with no degree or an Associate’s degree. In this cluster was nine households from the Northeast region, 13 from the North Central region, 20 from the South, and 28 from the West. There was 19 White households, 13 Black, 7 Asian, and 31 Others.

Cluster eleven: **4 P.M. to 12 A.M. shoppers** contained Others and White shoppers, 26 younger Millennials and 30 older Millennials that made 40 purchases on a Marketplace website.

Cluster twelve: **Longest shoppers** contained shoppers who spent the longest time on Specialty and Marketplace formats. This cluster contained the highest mean for duration at site and total number of pages viewed per session. The mean for duration at site in cluster 12 was 114.89 minutes and 131.93 pages for total number of pages viewed per session. There was three
purchases made on an online Big Box retail format, two on Department, two on Discount, 28 on Marketplace, and 21 on Specialty.

Marketplace and Specialty formats had the most purchases in these 12 clusters combined (see Table 7). Marketplace led with 754 online purchases. Following Marketplace, Specialty had a total of 245 online purchases. Department had 118 online purchases, Big Box had 90, and Discount had 35.
### Table 7

**Descriptions of the Hierarchical Clusters**

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Millennial Cohorts</th>
<th>Retail Format Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Lower Income</td>
<td>60 YM</td>
<td>83 OM</td>
</tr>
<tr>
<td><strong>2</strong> Older Whites from All Regions</td>
<td>43 YM</td>
<td>132 OM</td>
</tr>
<tr>
<td><strong>3</strong> Southerners with Associate’s Degree</td>
<td>19 YM</td>
<td>21 OM</td>
</tr>
<tr>
<td><strong>4</strong> White and Others</td>
<td>16 YM</td>
<td>36 OM</td>
</tr>
<tr>
<td><strong>5</strong> Highest Basket Total</td>
<td>5 YM</td>
<td>3 OM</td>
</tr>
<tr>
<td><strong>6</strong> Southerners with Some College</td>
<td>92 YM</td>
<td>199 OM</td>
</tr>
<tr>
<td><strong>7</strong> 6 P.M. to 12 A.M.</td>
<td>74 YM</td>
<td>151 OM</td>
</tr>
<tr>
<td><strong>8</strong> NE and W Shoppers</td>
<td>25 YM</td>
<td>61 OM</td>
</tr>
<tr>
<td><strong>9</strong> Middle to Upper Class</td>
<td>12 YM</td>
<td>28 OM</td>
</tr>
<tr>
<td><strong>10</strong> Others with Some College</td>
<td>27 YM</td>
<td>43 OM</td>
</tr>
<tr>
<td><strong>11</strong> 4 P.M. to 12 A.M.</td>
<td>26 YM</td>
<td>30 OM</td>
</tr>
<tr>
<td><strong>12</strong> Longest Shoppers</td>
<td>17 YM</td>
<td>39 OM</td>
</tr>
<tr>
<td>Cluster</td>
<td>Count</td>
<td>Basket Total</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>1</td>
<td>143</td>
<td>32.5</td>
</tr>
<tr>
<td>2</td>
<td>175</td>
<td>41.8</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>174.7</td>
</tr>
<tr>
<td>4</td>
<td>52</td>
<td>190.6</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>543.9</td>
</tr>
<tr>
<td>6</td>
<td>291</td>
<td>46.7</td>
</tr>
<tr>
<td>7</td>
<td>225</td>
<td>39.2</td>
</tr>
<tr>
<td>8</td>
<td>86</td>
<td>52.9</td>
</tr>
<tr>
<td>9</td>
<td>40</td>
<td>58.9</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
<td>48.4</td>
</tr>
<tr>
<td>11</td>
<td>56</td>
<td>33.6</td>
</tr>
<tr>
<td>12</td>
<td>56</td>
<td>51.8</td>
</tr>
</tbody>
</table>
A constellation plot for the 12 clusters demonstrated that the individual clusters form four larger clusters (see Figure 1). Clusters one and two are both driven by White Marketplace shoppers, viewing approximately 22 pages per session between 12:00 A.M. and 12:00 P.M. Clusters three, four, and five are driven by Marketplace and Department shoppers. Clusters six and seven have in common shoppers that are older Southern White Millennials that have some college but no degree. Clusters 8 – 12 are Marketplace shoppers with low basket totals.

Figure 1. Constellation Plot for Hierarchical Clusters
CHAPTER 5 | CONCLUSIONS, DISCUSSION, LIMITATIONS & FUTURE RESEARCH

Conclusions

*Research Objective One*

The findings for RO1 indicate a conversion rate range of 0.16 percent to 1.25 percent for younger Millennials and 0.24 to 2.18 percent for older Millennials (see Figure 2). The Department store conversion rate was consistent with the fashion clothing and accessories industry average conversion rate (Davis, 2018; Ogonowski, 2018; Udiljak, 2018). However, the conversion rates for the other retail formats were either greater or less than the industry average.

![Conversion Rate Comparison](image)

*Figure 2. Conversion rate comparison by retail format and millennial segments*

Although no published industry conversion rates for generation cohorts were located, these results were still important because they established benchmarks for future...
comparisons. There was a statistically significant difference in overall conversion rate between younger Millennials and older Millennials with older Millennials having the higher rate. This indicates that older Millennials made more purchases per viewing session.

There was a statistically significant difference in the conversion rates between younger and older Millennials on Discount and Specialty formats. Younger Millennials had the higher conversion rate on Department stores, while older Millennials had the highest conversion rate on the Specialty format.

Research Objective Two

The findings for RO2 indicate that consumers can be categorized based on patterns in online purchasing behavior and demographic variables. The current study found demographics and buying behaviors described the sample of consumers, but generational cohort did not contribute to the homogeneity. There were only a few instances where the generational cohort contributed to a clearer definition of a cluster. Cluster five is the only grouping that had more younger Millennials than older Millennials. The results are different from the past research that found generational cohorts with homogenous digital behavior patterns (Sullivan & J. Hyun, 2016).

Discussion

The findings from this study holistically suggest that the purchasing behavior differs between generational cohorts, specifically younger Millennials and older Millennials. The purchasing behavior of these two Millennial segments is also different for various retail formats. Overall, older Millennials have a higher conversion rate in comparison to younger Millennials. This could be due to a growing preference for this segment to purchase online as
younger Millennials prefer to make apparel purchases in store. Older Millennials also have a larger discretionary income for spending when compared to younger Millennials.

In relation to retail formats, both Millennial cohorts exhibit the highest conversion rates for department and specialty store sites. The higher rates for department formats may be due to the large variety of product offerings and price ranges the individuals can choose from. For specialty, the product selection this format offers provides Millennials a website they can browse for specific products.

The time spent on Department store websites and the number of pages viewed during each session are higher for older Millennials while younger Millennials spend more time and view more pages on Specialty stores websites. However, the conversion rate for younger Millennials is higher for Department stores and the conversion rate for older Millennials is higher for Specialty stores. This could imply that department stores are the initial go to for older Millennials and Specialty stores are for younger Millennials, but after browsing these webpages they find better luck on the opposite retail format. Along with demographic variables, purchasing behaviors are useful to predict retail format choices for generational cohorts.

**Limitations**

As shared in chapter one, there were several limitations identified. From a methodological perspective, the use of secondary data, small sample sizes for retail formats, households that only opted-in to participate, and household rather than individual level data could influence the results. Also, the sample size for the current study was not large enough
to permit validation of the clusters. Finally, the variables included in this particular dataset are not sufficient to describe all actions transpired prior to reaching the purchasing stage.

**Future Research**

The overall goal of this study was to analyze the Millennials’ purchase behavior when buying apparel products online. Browsing and shopping has become an omnichannel experience ending with digital payment methods rather than a streamlined process on one e-commerce site. This prohibited the identification of accurate purchasing behavior between older and younger Millennials amongst various retail formats. However, there is evidence that younger and older Millennials’ behavior differs when consuming products. Marketers are having to personalize their content to provide individualized experiences, while prioritizing mobile devices and multi-platform marketing strategies in order to reach Millennials effectively (Forbes Coaches Council, 2017; Kessler, 2016; “The Psychology of Successful Marketing to Millennials,” 2016).

Due to the current Millennial marketing trend, the methodological approach for academic research will need to shift towards online tracking. Cookies, digital identifiers, are more commonly used in the advertising industry. This method tracks consumers’ behavior and the content these individuals are exposed to. Cookies are beginning to diminish in value as they only represent a small portion of consumer behavior due to the clearing of cookies and privacy options on browsers (Moked, 2017). Connecting a unique identifier such as a mobile phone number or an email address to analyze behavior at the consumer level rather than their unreliable cookies will counteract the decrease in value (Moked, 2017). This particular methodology will yield applicable results from a credible dataset for the
practitioners. These results suggest further research into segmented target markets and the difference in which these consumers conduct both their browsing and purchasing processes. This information will help merchandisers and marketers curate personalized content throughout pertinent micro-moments and valuable associations can be developed between purchasing motivations and demographic variables.
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APPENDIX

A. Frequency Distribution for Variables

<table>
<thead>
<tr>
<th>Cluster Four</th>
<th>Cluster Five</th>
<th>Cluster Six</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basket Total</strong></td>
<td><strong>Education Level</strong></td>
<td><strong>Time of Activity</strong></td>
</tr>
<tr>
<td>Maximum: $438.94</td>
<td>Some College but No Degree</td>
<td>Maximum: 11:58:51 PM</td>
</tr>
<tr>
<td>75% Quartile: $241.92</td>
<td>Bachelor's Degree</td>
<td>75% Quartile: 9:21:23 PM</td>
</tr>
<tr>
<td>Median: $180.94</td>
<td>Associate Degree</td>
<td>Median: 6:45:34 PM</td>
</tr>
<tr>
<td>25% Quartile: $130.60</td>
<td></td>
<td>25% Quartile: 3:45:58 PM</td>
</tr>
<tr>
<td>Minimum: $41.17</td>
<td>Total: 8</td>
<td>Minimum: 9:04:38 AM</td>
</tr>
<tr>
<td>Mean: $190.56</td>
<td>Prob</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate</td>
<td>2</td>
<td>0.25</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>4</td>
<td>0.50</td>
</tr>
<tr>
<td>Some College</td>
<td>2</td>
<td>0.25</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>1.00</td>
</tr>
</tbody>
</table>
## Retail Format

<table>
<thead>
<tr>
<th>Retail Format</th>
<th>Count</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Box</td>
<td>3</td>
<td>0.05</td>
</tr>
<tr>
<td>Department</td>
<td>2</td>
<td>0.36</td>
</tr>
<tr>
<td>Discount</td>
<td>2</td>
<td>0.36</td>
</tr>
<tr>
<td>Marketplace</td>
<td>28</td>
<td>0.50</td>
</tr>
<tr>
<td>Specialty</td>
<td>21</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>56</strong></td>
<td><strong>1.00</strong></td>
</tr>
</tbody>
</table>

## Total Number of Pages Viewed Per Session

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>274</td>
</tr>
<tr>
<td>75% Quartile</td>
<td>152.75</td>
</tr>
<tr>
<td>Median</td>
<td>122.5</td>
</tr>
<tr>
<td>25% Quartile</td>
<td>99</td>
</tr>
<tr>
<td>Minimum</td>
<td>64</td>
</tr>
<tr>
<td>Mean</td>
<td>131.93</td>
</tr>
</tbody>
</table>

## Duration at a Site (Minutes)

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>250</td>
</tr>
<tr>
<td>75% Quartile</td>
<td>137.75</td>
</tr>
<tr>
<td>Median</td>
<td>118.5</td>
</tr>
<tr>
<td>25% Quartile</td>
<td>88</td>
</tr>
<tr>
<td>Minimum</td>
<td>31</td>
</tr>
<tr>
<td>Mean</td>
<td>114.89</td>
</tr>
</tbody>
</table>