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Consumer Experiences, the Key to Surviving in an Omni-channel Environment: Use of Virtual Technology

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ABSTRACT

With increasing demand of consumers for better shopping experiences and an increased number of online retailers, it is important for Omni-channel retailers to adopt and utilize several virtual technologies, which can support and complement their retailing practices. To strategically manage these technologies, it is imperative to analyze several specific cases, which utilize virtual technologies to align and implement multiple technologies in effective and efficient ways, and to make synergy among those technologies. The purpose of this paper is two-fold. First, to examine how Omni-channel retailers utilize and manage several virtual technologies, which are virtual/augmented reality, virtual fitting rooms and fashion shows, and virtual salespeople, to provide satisfactory online shopping experience by overcoming problems online environments fundamentally have. Second, to provide practical implications to brick-and-mortar retailers, who have recently ventured into online retailing, in their management of various types of channels simultaneously using technologies like the Internet of Things and Kiosks. Through the review and analysis of several cases, this paper provides managerial implications for practitioners to utilize virtual technologies in ways that can actually add value to consumer experiences and urge them to take a mixed approach toward virtual technology.

Keywords: Omni channel, Virtual technology, consumer experience, consumer engagement

1. Introduction

Online retail channels continue to increase and gain power within the retail industry (McCoy & Deena, 2011). Retailers that operate solely online have tried to exploit profits by being the first to move into this new environment, and brick-and-mortar retailers have also started to utilize online channels. Today, retailers are utilizing both online and offline channels adopting an integrated multi-channel approach, referred to as an Omni-channel. This is taking place in the realms of both sales and marketing in an effort to increase engagement with customers (Hansen & Sia, 2015).

In the online retail environment, consumers can enjoy broader and deeper product assortments, lower prices, convenient shopping experiences, and available detailed product information compared with the traditional brick-and-mortar retail environment. Simultaneously, the emergence of online commerce, also known as E-commerce, with digital

innovation can provide several benefits to firms. Because firms gained the ability to have better and broader accessibility to consumers through E-commerce, they could enjoy market expansion with increased sales. In addition, firms can develop a deeper comprehension about consumer demand through E-communication, which can, in turn, enhance consumer experience (Choi & Shen, 2017; Lu, 2017; Noble et al., 2005).

Hence, the importance of utilizing an Omni-channel marketing strategy is widely acknowledged and accepted as it has tremendous potential for developing competitive advantages. For these reasons, brick-and-mortar retailers are working to expand their influence into online retailing markets to compete with an increased number of purely online retailers and aid in their survival (Lu, 2017). The competition has become fierce and the importance of adoption and managing several virtual technologies to meet the needs of a more diversified consumer base in the dynamic retail industry. Virtual technologies are those technologies that enable the function of an object or resources simulated or emulated in software identical to that of the corresponding physically realized object. These technologies have tremendous potential to increase competitive advantages for these retailers because of their capability to improve overall retail performance (Mathias, 2017).

Digital technological development has brought about significant changes in the retail environment resulting in changing strategies and management practices of fashion firms that were traditionally only part of the brick and mortar marketing channel. Traditional retail strategies have been to incorporate the new online channels after the e-commerce explosion in response to fierce competition between online and offline retailers and even between online and offline units in the same company (Delhi, 2017). Rust and Lemon (2001) described these changes as increased interactivity between consumers and firms, opportunities for personalization and customized service, and the importance of implementing appropriate retail strategies to satisfy continuously changing consumers' expectations was specifically emphasized. In this dynamic environment, firms must continually update and incorporate new technology, to gain the competitive advantage and attract consumers, proposing more competitive advantages to consumers.

Omni-channel consumers have started to show differential shopping behaviors when compared to the traditional shopping style. According to Lu (2017), Omni-channel consumers typically utilize multiple channels (both online and offline), for a single purchase, and purchase products after carefully evaluating several retailers. These consumers are eager to spend time evaluating, experiencing, and purchasing products by looking for information in several channels simultaneously; they switch channels and touch points interchangeably (Lu, 2017; Verhoef et al., 2017). As a result, today's consumers have variation in their shopping behavior and in Omni-channel environments, they use various resources to increase their shopping value and satisfy evolving needs (Dahlhoff, 2017).

In this context, retailers should find ways to provide a superior consumer experience as it has the ability to create a point of differentiation in the competitive retailing industry (Dhruv et al., 2009). The consumer experience is a central issue in the retail industry as the importance of pleasure and emotion is realized (Holbrook & Hirschman, 1982). Schmitt (1999, 2003) defined consumer experience as "a process, which starts from interaction between consumer and firms triggering other interactions and personal reactions." Because the consumer experience involves rational, emotional, sensorial, physical, and spiritual responses (Schmitt, 2003; Schmitt, 1999; Verhoef et al., 2009), the interaction between consumers and firms should be effectively managed. According to Hoffman and Novak (1996), consumers pursue hedonic value compared to utilitarian value in the online retail environment. Contextual factors are the most important factors that enhance consumer experience (Dahlhoff, 2017). Therefore, retailers should focus on

improving controllable factors such as the service interface, atmosphere, price, assortment, and multiple channels to provide a more hedonic and pleasant experience to consumers (Verhoef et al., 2009). Because virtual technologies simulate physical goods and services in a three-dimensional, interactive, and realistic way, by incorporating them into the shopping experience, there is tremendous potential to increase benefits for both consumers and retailers (Jin, 2009; Moon et al., 2013). Some studies found a positive effect of virtual technologies on consumer experience and engagement. Roggeveen et al. (2016 & 2015) found visual cues utilizing digital and virtual technologies or dynamic messages are crucial to increase the level of customer engagement in both online and offline retail environments. Therefore, firms that utilize at least one online channel have to realize the significance of improving consumers' shopping experience by aligning and balancing virtual technologies between each channel to prevent internal cannibalization and by adding complementary technological features to the retail outlet (Bassett, 2017).

Also, it is important to provide targeted information that is of unique value to consumers to increase customer engagement by connecting with the consumers. To achieve this management objective, technology could be utilized for implementation because innovation from new technology can positively influence the consumer shopping experience (Dhruv et al., 2017; Verhoef et al., 2009). As consumers purchase more when they enjoy their shopping experience, new technology can benefit both retailers and consumers, increasing overall profitability of the business (Inman & Nikolova, 2017; Kim & Kim, 2008).

However, new technology should be carefully evaluated and examined because there are both positive (Pantano & Naccarato, 2010) and negative aspects (Verhoef et al., 2009) that new technologies can bring to retailers and consumers. A key consideration to evaluate is the technological capability to respond to both consumers' preferences and retailers' needs and expectations (Pantano & Viassones, 2014; Renko & Druzijannic, 2014).

With consumers demanding better shopping experiences and an increasing number of online retailers, it is important for Omni-channel retailers to adopt and utilize several virtual technologies to support and complement their retailing practices. To strategically manage these technologies, it is imperative to review and analyze several specific cases, which utilize virtual technologies to align and implement multiple technologies in effective and efficient ways and to achieve synergy. The purpose of this paper is to identify methods to successfully manage several virtual technologies in the Omni-channel environment that will enhance competitiveness in the market and provide practical implication to practitioners by presenting which management approach will result in the desired outcome. To implement this, the paper first reviews the way Omni-channel retailers utilize and manage several virtual technologies including virtual/augmented reality, virtual fitting rooms and fashion shows, and virtual salespeople to provide satisfactory online shopping experiences. Second, this paper identifies ways to manage different types of channels simultaneously using technologies like IoT (Internet of Things) and Kiosks, which are frequently utilized by brick-and-mortar retailers.

2. Literature review

Retailers are making significant investments in technology and emphasizing e-commerce to meet the expectations of digital consumers. They are also hoping this will give them a strong competitive advantage in today's volatile retail environment. According to O'Shea (2017), "Walmart, one of the retail giants, spent more than $10.5 billion on digital information technology in 2015, being one of the world's biggest technology spenders." Considering the increasing importance of adopting and utilizing technology for retailers to be successful in the market, new technologies should be fully understood. Deloitte (2016)

noted virtual/augmented reality, artificial intelligence, internet of things, and robot/drones/driverless vehicles as newly emerging technologies in the retail industry. In this paper, cases and issues that come from the alignment of those technologies between each channel will be explained in an attempt to provide a satisfactory shopping experience to consumers and to create a synergy between multiple channels.

In addition, because consumers show differential consumption behavior in Omni-channel environments, the AISAS (Attention, Interest, Search, Action, Share) model developed by Dentsu will be used to explain how these new technologies can align and play complementary roles with new consumption behavior of Omni-channel consumers. In the AISAS model, consumers do not necessarily move through each of five traditional stages, which are attention, interest, search, action, and share, and consumers may skip or repeat a stage. (Sugiyama & Andree, 2011). Thus, it can explain diversified behavior patterns between Omni-channel consumers and traditional consumers, who only use one specific type of retail format either online or offline. In this model, the importance of providing a seamless customer experience and providing a consistent brand experience to consumers is emphasized (Sugiyama & Andree, 2011). Therefore, the new technologies will be explained focusing on how they can enhance the overall customer experience in an Omni-channel environment (Raindance Consulting, 2016).

2.1. Virtual reality (VR) and augmented reality (AR)

2.1.1. Virtual reality (VR)

Virtual reality (VR) is formed using computer technology by creating a simulated environment (Bardi, 2016). According to Statista (2017), the number of VR users is expected to reach 171 million by 2018. Because of its ability to include consumers inside a fully immersive computer virtual environment (Jackson, 2015), there are increasing needs for implementing VR. Generation Z, currently aged between 13 and 17 years old, have access to $44 billion in buying power and have indicated that they are ready to adopt VR because they are experience-driven consumers (Yong, 2017; Tirico, 2017). Specifically, 80% of generation Z consumers answered that they are more likely to visit stores that offer entertainment, and among that 80%, 80% said they are eager to visit stores offering VR technology (J. Walter Thompson Intelligence, 2016). Many retail firms started to incorporate this technology into their retail practices to meet the increasing consumer demand, increased favorable attitude toward VR implementation, and it's potential to enhance the consumer experience. Some VR tools and devices currently used in the market include Oculus™, Rift™, HTC Vive™, Playstation VR, Samsung Gear VR, and Google Daydream View™. In addition, a simpler version of VR, practical for small-to-medium sized firms, can be achieved by using a low-cost software solution like Google Cardboard™ and View Master ™ VR (Bardi, 2016).

The major differential benefit VR provides compared to a traditional interface is its ability to place consumers inside an experience through immersion into three-dimensional virtual environments. This enables interaction and the stimulation of more sensory functions (Jackson, 2015). By placing consumers into the virtual world, consumers can enjoy a variety of experiences including a product trial and entertainment. Thus, VR can enhance shopping experiences, which will contribute to better customer engagement. In the case of online retailers, VR provides an opportunity to overcome inherent problems including its inability to provide actual touch points and product trials to consumers. Brick-and-mortar retailers can also enhance the customer experience by making shopping fun and providing better tools to experience brands. Even more, VR can provide unlimited digital inventories compared to expensive and limited traditional retail spaces, which help offline retailers, overcome problems of inventory management (Sandlund, 2016). Arthur

(2016) noted that an appealing physical store creates more experiential spaces, like a theater, by which they can provide entertainment, intriguing emotion, and bring catalog and spaces to life. VR can facilitate retailer-consumer interaction and increase customer engagement by creating a more attractive retail space. As a result, sales can increase as the consumer confidence to purchase is increased because they have been placed in an immersive digital environment (Arthur, 2016).

However, there are some issues associated with utilizing VR. First, consumers can recognize the gap between what they expect, based on their VR experience, and what they actually get as it is in a precarious initial stage of the adoption cycle. The expectation of VR performance might be significantly exaggerated. Specifically, the inflated expectation as a result of the VR experience is prevalent in the market, and there are risks of failure and collapse if not successfully commercialized and utilized (Garner, 2017). Next, VR could be effective in telling a story and providing an exciting experience for a brand, but it does not necessarily result in a better buying experience for consumers (Sandlund, 2016). By understanding consumers' attitude and perception toward VR and appropriately placing this technology into retail platforms, retailers may fill the gaps between what consumers expect and what they actually receive. Furthermore, retailers should find ways to connect an entertaining experience with an attractive buying experience by integrating shopping attributes into the VR and not to merely provide a meaningless fun experience to consumers. The key is to provide an entertaining experience associated with a product or brand.

Several Omni-channel retailers have initiated using VR to provide a seamless customer experience. VR was widely and partially adopted by car dealerships and the real estate industry in the early stage because visual cues are critical to the consumers in these industries (Bardi, 2017). However, as VR is in an initial testing stage in the general retail industry and therefore, only a few companies have introduced VR to their consumers. Representatively, Alibaba, one of the retail giants in Asia, launched a VR store called 'Buy+ ™.' This VR store allows shoppers to wander throughout the VR store with unlimited inventories; enabling purchases through mobile devices (Bardi, 2017). E-bay teamed with an Australian retailer, Myer, to provide a VR department store to consumers in the Australian market. Amazon.com is putting more resources into VR to provide extra benefits to Prime shoppers. In addition, some companies have started to use VR looking to engage more consumers inside their brick-and-mortar retail spaces. In the case of The North Face, they created VR experiences inside their offline retail space to create a fully-immersive outdoor experience (Sandlund, 2016). This VR experience allows consumers to test products and can stimulate their motivation to use products by putting them inside adventurous outdoor situations. However, the primary purpose of offering VR was to increase marketing effects rather than selling effects in this case. A more practical example is a VR showroom Ashley Furniture offered in 2017. This VR experience enabled consumers to test products in virtual spaces, which was impossible in traditional retail spaces because of its heavy and large product characteristic (Bardi, 2017). A similar VR application was made at Canadian Tire. Canadian Tire recently built a digitally enabled store featuring more than 100 interactive screens, where consumers can do everything from testing out new tires using a VR driving simulator, to redesigning their back patio on a large touchscreen and then viewing the new look in VR using an Oculus Rift headset. By facilitating the VR experience, this company increased interaction with consumers potentially achieving better insight into consumer demand by collecting valuable data about how consumers shop. In other words, this feedback information can provide a better understanding of consumer demand to the retail level (Sandlund, 2016).

Likewise, through VR experiences consumers face more touch points in their

overall shopping journey and develop a deeper connection with products and brands. Because consumers can utilize VR throughout the buying and decision-making process, and consumption behavior can occur in any stage stimulated by visuals and entertaining experiences, VR should be placed in the most appropriate stage of the decision-making process based on the demand of the target consumers and what retailers want to achieve by using VR. Moreover, retailers should put efforts in integrating VR into overall shopping experiences by providing consistent brand experiences among actual and virtual environments. Some opportunities exist in the mobile phone-based VR platforms (Garner, 2017). Because most consumers use mobile devices, it can help stabilize VR technology in the retail industry by providing benefits such as ease of use, lower cost, and a wider range of applications.

2.1.2. Augmented reality (AR)

Augmented reality (AR) uses computer technology to impose computer-generated virtual images into a view of the real world using an intermediary device (Bardi, 2016; Jackson, 2015). It brings virtual and artificial objects into a real environment. Hence, the major difference between VR and AR is its ability to immerse users into a virtual world not just showing overlaid virtual images. AR has been widely utilized in the gaming industry. Pokémon Go is a popular game that effectively utilized AR by collaborating with Google maps. However, AR's functionality goes far beyond simple games, and it is applied in the retail industry. Some companies have used AR to apply visual overlays, which allow consumers to redecorate their actual home without physically applying products, enabling consumers to enjoy fun experiences that can also be convenient (Garner, 2017). Many retailers have begun making considerable investments in the underlying technologies relevant to AR and embracing the potential posed by increasing AR applicability to retail. These technologies include depth-sensing camera lenses and physical environmental mapping systems (Garner, 2017). With the increasing use of smartphones and tablets, which are intermediary devices that can be used to access AR, this technology has the potential to be widely adopted by consumers. Newly developed solutions including Microsoft's Hololens™, Google's Tango™ platform, and Google Glass™ are alternatives to current AR Apps or programs, which can be used by mobile intermediary devices (Bardi, 2016). These technologies enable consumers to use AR to instantly send messages, check Facebook postings, and help to find the best route to a designated place (Garner, 2017). Thus, consumers can enjoy better shopping experience by taking advantages of a new type of information display and convenience presented by AR.

In many cases, AR has been used in the home improvement industry. Lowe's and IKEA put AR into practice to provide a better shopping experience to consumers, expecting an increase of consumer engagement in this new reality (Arthur, 2016: Westfield). In case of Lowe's Holoroom™, it successfully offered complete design and visualization of home improvement products placing those products in a real environment with virtual images (Sandlund, 2016). However, the scope of AR application should be broadened to provide actual design and visualization solutions to consumers. IKEA was comparatively successful in utilizing AR because IKEA effectively managed all touch points they owned including the application (App), catalog, product assortment to provide a complementary experience to consumers (Dahlhoff, 2017). Specifically, IKEA provided an AR App for furniture selection by working with Apple's AR Kit Technology™ and Ios11. It helped consumers visualize and arrange products of interest in their home by taking a picture of the targeted space (Lunden, 2017). Then, consumers could place the pre-selected products into their actual space. These AR systems provide convenience to consumers because they simulate an overall outlook of the room without actually purchasing or moving furniture into the space. This is also

a type of entertainment as some consumers enjoy the experiences of virtually re-arranging furniture in a specific space. This positive and fun experience was able to be shared with other consumers throughout all consumption behavior stages. In conclusion, AR can empower consumers by enhancing the pre-purchase and purchase stages with the ability to shop for, locate and buy the right product for their home. Sharing their experience could enhance and stimulate other consumers' buying behavior (Dahlhoff, 2017). IKEA, by aligning and managing distinct experiences from different touch points, significantly improved overall consumer shopping experiences.

Likewise, consumers can have more confidence in their buying decision because AR can create a convincing and interactive world (Jackson, 2015). Unlike VR, consumers can bring and enjoy a personalized and unique experience of physical stores to the AR by capturing an actual visual image of the place they want to test, so both online and offline retailers can benefit from utilizing AR (Arthur, 2016; Sandlund, 2016). For example, online retailers can overcome a problem of online retailing, which is the inability to test products in the pre-purchase stage. This can help decrease product returns. Also, offline retailers can provide better options for consumers to choose from by increasing convenience and offering hassle-free experiences. Hence, AR can add value to consumers in their shopping journey. However, retailers should keep abreast of changes that arise from AR in all technological, industry, and consumer perspectives, because the speed of innovation is drastically fast, posing difficulties in adapting and managing AR technology (Arthur, 2016).

Considering its ability to improve and enhance shopping experiences, retailers should realize opportunities posed by VR and AR. VR/AR-enabled experiences can enhance the consumer experience by suggesting new ways to compare and visualize products and to interact with retailers (Sandlund, 2016). Also, retailers should understand the nature of mixed commerce presented by the Omni-channel environment. VR/AR related experiences can empower retailers by providing in-depth information about consumer behavior with continuous feedback. Also, it can benefit consumers by giving more confidence in purchases with more realistic virtual information compared to traditional online retailing. The key to successfully implement this new immersive technology in mixed commerce lies in the management of gaps between inspiration and purchase that consumers perceive. These gaps should be minimized in an Omni-channel environment by arranging and presenting this technology in an appropriate time and space to provide a seamless experience. By providing a seamless and consistent user experience throughout channels, it can largely benefit consumers with increasing engagement.

2.2. Virtual fitting rooms (VFR) and virtual fashion shows (VFS)

Virtual fitting rooms and virtual fashion shows are ways to simulate the trying-on of a product. Virtual fitting rooms provide a virtual experience similar to video game version of a fitting room. According to Gültepe and Güdükbay (2014), the virtual fitting room is a technology that provides a virtual product trial experience. Virtual fitting rooms generally utilize augmented technology, and more advanced virtual fitting room programs, present the fashion items either on a video of the consumer or on a virtual avatar reflecting the consumers' body characteristics. Virtual fashion shows are produced with a technology that can transform the runway experience with virtual reality technology giving a full picture of the event, from backstage to the front row (Codina, 2015; Reddy, 2016). It enables the creation of a fashion show without seating charts, traffic jam, late-arriving models, and any bothersome situations (Codina, 2015). What makes these virtual fitting rooms and virtual fashion shows unique is their ability to connect virtual product trials to an actual purchase at the end (Kramer, 2011).

To implement virtual fitting rooms and virtual fashion shows, computer graphic (CG) technology is required to match a real body and a simulated body. However, it is more difficult to implement this technology for virtual fashion shows because the motion of the virtual model must be synchronized with an actual model rather than merely scanning the visual body shape or mimicking the simple motion of an actual model into a virtual model (Okada et al., 2006). Thus, it is important for virtual fitting rooms and fashion shows to improve their synchronization capability. The more realistic virtual fitting rooms and fashion shows become, the more consumers can enjoy a better shopping experience.

2.2.1 Virtual fitting rooms (VFR)

The demand for virtual fitting room (VFR) technology rose from an inherent problem common to online retailers, the consumers' inability to try products on before making purchases. Consumers wanted to see how a product would look on them - even in an online environment. Demand was also driven in the brick-and-mortar environment as consumers found it inconvenient to ask salespeople every time they wanted a different size or style.

VFR technology can benefit retailers as it can inspire consumers to purchase more because it started to mimic even an emotional experience that brick-and-mortar shopping can provide through actual fittings and interaction (Kramer, 2011). This new technology presents the potential to offer many of the same benefits which only traditional retailers and shopping activities provided in the past.

However, there are challenges for utilizing VFR technology. First, as VFR is in the preliminary stage of utilization, retailers would need to invest in the development of better technology to reflect accurate sizes and body shapes of consumers. Second, and a more uncertain problem, lies in consumer responses. Because it is in the early stages of adoption, consumers may perceive risks in utilizing virtual fitting rooms partly because they are unfamiliar with virtual simulation and they are reluctant to talk about personal body shapes to salespeople (Kramer, 2011). These perceived risks are of concern, as the most important factor for successful technology implementation is a consumer reaction toward new technologies. Therefore, retailers should effectively communicate the usefulness of VFR technology to increase their comfort level when using this.

Despite these challenges, several retailers have implemented the VFR technology in an effort to meet consumer demand and provide a better experience throughout the various channels. De Beers provided a tool which enables consumers to try-on their products virtually (Lee, 2017). In addition, an effective virtual fitting system, Fits-me™, was developed by Heikki Haldre and adopted by several apparel retail chains including Otto and Hawes & Curtis (Kramer, 2011). The advantage of this tool was its ability to build a database of individual human body metrics which connected to an online system. Then, these data are used to form a robotic mannequin, which is a simulated virtual version of the physical body form. Consumers can select from multiple channels without barriers imposed by a specific channel type. Fits-me™ is also convenient as it can be used in both brick-and-mortar and online stores as it simulates the fitting room experience. In brick-and-mortar stores, it can assist consumers in selecting a product off the rack without having to physically try it on. In online stores, it virtually allows consumers to see what the product would look like on their body shape and size without having the product in hand. Specifically, consumers can see robotic mannequins developed to resemble their body shapes on a screen and can see how a product fits their body, including how it drapes. Thus, they can feel more confident when they make an online purchase and can enjoy a simulated try-on experience offline in stores without having to call salespeople into more private spaces. Moreover, retailers can enjoy lower labor cost because fewer salespeople are required to assist customers in the fitting room areas of brick-and-mortar stores. In the case of online channels, fewer salespeople may also be required as they can

expect fewer customer query departments for online retailers. Another example of VFR which uses a more complicated technology is EZ face™. It is a virtual mirror, but it utilizes several technologies simultaneously. EZ face™ is a cosmetic kiosk that enables people to virtually try on makeup (Kramer, 2011). By using this system, consumers can experiment with various cosmetic products without having to clean their faces each time. Because this system effectively captures physical characteristics of the individual face through a video camera, consumers can psychologically sense the physical relationship between products and their faces even if the face is virtually simulated onto the screen. Regardless of the type of channel, VFR technology commonly added value to both consumers and retailers. Consumer shopping experiences were pleasant and enhanced, resulting in the potential for increased sales and return visits. Adopting this technology, retailers can reduce the number of salespeople required in the fitting room area or necessary to answer quires.

2.2.2. Virtual fashion shows (VFS)

The demand for virtual fashion shows (VFS) arose because of the unsustainable nature of current fashion shows. With the number of shows and events in a limited about of time, buyers, journalists, celebrities, socialites, and even influential bloggers did not have the resources to attend every fashion show in which they had interest. To address this situation, they selectively choose to attend only a few fashion shows. Lack of attendance, or the failure of influential people in the industry to attend the shows, can pose problems for the show's sponsors, as the goal is to attract many buyers, press, celebrity, and socialites to their fashion shows. The more these people participate fashion shows, the more fashion firms can increase visibility, raise product awareness, drive consumer demand, and increase orders resulting in a positive impression on consumers (Sykes, 2015). Thus, VFS can be a breakthrough technology providing ways to maximize exposure to as many associates relevant to fashion shows.

One of the advantages VFS offers is its ability to provide additional information about models and products which is not possible in the actual fashion show setting (Anderton, 2017). Traditional fashion shows also lack the ability for attendees to see a full view of products from all perspectives as they were limited to a view from one location. By providing multiple perspectives of models and products (i.e., views from backstage, front, side), consumers can now fully evaluate and experience products without changing seats and stances.

To successfully improve the consumer experience using VFS technology, several issues should be understood and addressed by retailers. Because VFS is highly dependent on the tools to simulate and reflect the motions and physical characteristics, it requires advanced technology to make real-time processing synchronizing the motions between a real model and CG model (Okada et al., 2006). Motions of a CG model in real-time should match with the motions of a real person, while a CG model wears products differently from the actual clothes of a real model. Current techniques have limitations because they require markers or sensors attached to a person. Better commercial human motion capture systems, which have real-time estimation capability, are on demand to fully transfer motions and physical characteristics (Okada et al., 2006). The investment can be very high for retailers, and currently there is no data to support that the return will be large enough to compensate for the investment. (Kramer, 2011).

Several fashion brands and retailers have used VFS technology including Coach, Superbright, Nolcha, Alibaba, and JC Penny. Coach presented its virtual fashion show in several offline and online outlets including Simon Malls, Facebook, YouTube, and VR networking formats like Within Jaunt VR, Samsung VR, and Oculus on February 17, 2017 (Lockwood, 2017). This VFS offered multiple views ranging from backstage to the front stage view with a preview of a new collection to engage consumers by providing a pleasant and unique experience. Superbright provided VFS featuring similar

views, which regular fashion shows generally present to consumers including attractive models and well-designed outfits (Anderton, 2017). However, this show was presented using AR with a marker-based system to synchronize the models and products to three-dimensional virtual spaces. To access this VFS, consumers used mobile devices and iPads with a downloaded App to receive full views and additional information about the models and products. Nolcha partnered with the YouCam Makeup App and used AR and internet live streaming to create a VFS that provided multiple views and ways to virtually experiment with products (BusinessWire, 2017; Hills, 2017). All these trials were made by collaborating with technology-based firms like IMG. These partnerships were critical because the fashion brands lack the ability to implement virtual technologies. However, Alibaba, a major Chinese e-commerce conglomerate, acquired a technology firm that can effectively provide virtual shopping experiences to consumers. In 2016, Alibaba launched Buy+™, which is a program that enables consumers to browse products through a VR headset showing virtual models showcasing products during a VFS (Wang, 2016). Considering the complex nature of a VFS, integrating several technologies like a kiosk and AR into a program, there are a vast number of possibilities to improve the consumer experience by connecting and aligning several types of virtual technologies and creating synergies among them.

A Social Virtual World (SVW) provides an opportunity to provide better and complementary shopping experiences to consumers because there is the potential to provide a virtual fashion show using an avatar. A SVW, which is a type of social media platform, is "a three dimensional, immersive, multi-user virtual environment wherein participants interact through avatars, which are virtual representatives of themselves, for various purposes" (Zhou et al., 2011). SVWs have shown tremendous potential to fashion firms as it can be a place to showcase their products to a variety of consumers with the ability to emulate the real world (Moon et al., 2013). According to Snider (2012), almost $2.3billion was spent on purchasing furniture, homes, and clothing by virtual buyers in SVWs for their avatars. Because consumers increasingly use a SVW and because it has tremendous market potential, several retailers have started to use SVWs to present their products to target consumers. JC Penny collaborated with Stardoll, which is a SVW for fashion-minded teen girls. This program enables the target market, teen girls, to decorate their virtual homes and personalized avatars by making virtual purchases. Results showed that the program gave hedonic experiences to consumers by providing ways to mix-and-match their virtual products, which can be a fun experience; and by providing satisfactory quality because the virtual fashion has the same design features that can be found in the actual stores (JC Penny Company Inc, 2011). Furthermore, consumers can bring these hedonic experiences into reality if they are satisfied with the virtual fashion presented in SVWs increasing brand awareness and purchase intention (JC Penny Company Inc, 2011). A clothing company, Diesel, partnered with Sims 3 to create a similar experience for their target market by providing virtual fashion that has the same outlook as their real collection (Wester, 2016). These companies excelled at realizing the effectiveness of using new types of social media by introducing innovative approaches to the way consumers shop. Utilization of SVWs was quite successful because SVW is one of the places that can effectively introduce a line of products for target consumers and has a track record of brand-building success (JC Penny Company Inc, 2011). Hence, SVWs could be leveraged as a platform where VFS can be implemented. Because SVWs have potential to effectively provide a unique brand experience to consumers by offering hedonic and entertaining experiences, overall the consumer experiences can be improved resulting in the formation of a favorable attitude toward actual brands. Moreover, SVW can be beneficial to retailers by providing information about the sales pattern

because specific virtual fashion can be purchased more frequently than others. The marketing effect can be significant considering SVWs are one of the social media platforms, where the word-of-mouth effect is tremendous. Social interaction and sharing activities about virtual fashion brands can frequently occur among SVW users if they are satisfied with the purchases (Bitter & Sonja, 2016).

2.3. Virtual salespeople

According to Eastin et al. (2011), "a virtual salesperson is an employee avatar of the virtual store that supports virtual consumers by providing product information and recommending products." The range of automation varies, but currently many parts of virtual salespeople are controlled by real human beings (Eastin et al., 2011). However, development of humanized digital technology provides a technological foundation to develop personalized AI-based salespeople, which have human characteristics (Garner, 2017). Salespeople can significantly influence consumer's brand preference more than any other touch points through communication (Macdonald et al., 2012). It is important to understand the impact of managing touch points in virtual spaces, and retailers should consider utilizing virtual salespeople for effective management. Considering most retailers are not technology-centered companies, retailers should also look for partners who can help them with appropriate technological tools and capabilities (O'Shea, 2017).

Some traditional methods used to facilitate interaction between online salespeople and consumers include instant messaging (IM), a type of online chat providing real-time text-based communication, and voice over internet protocol (VoIP), a type of technology that enables voice communication. However, the processes of these methods are largely controlled by actual human beings in most cases, resulting in high labor costs (O'Shea, 2017; Eastin et al., 2011). In some cases, automatic communication occurs without human efforts; however, this is generally not sufficient to satisfy current consumer needs because it lacks in the depth of interaction of human characteristics and a social presence (O'Shea, 2017). Social presence, referred to as the sense of being with others, is important for overall perception in a mediated shopping environment like SVWs because it can positively influence consumer experiences by presenting a feeling of co-presence (Moon et al., 2013). Similarly, Holzwarth et al. (2006) found the positive influence of social presence from a virtual avatar on brand attitude, satisfaction with the retailer, and purchase intention. As consumers favorably appraise in-depth interaction with a human-like avatar, many retailers have begun to use sophisticated artificial intelligence (AI) as a part of their virtual salespeople programming. Sophisticated AI has the ability to facilitate an effective interaction between virtual salespeople and consumers in an efficient manner. Because AI is used to include human characters into a virtual world, consumers will form positive attitudes toward brands if virtual salespeople can successfully implement a social presence into the virtual space (Moon et al., 2013). According to Arthur (2016), 70 percent of U.S. millennials said they would appreciate a brand or retailer using AI technology showing more interesting products, and showed an optimistic attitude toward brands using AI. It is because of its ability to accurately predict what they want through sophisticated communication. Another way to facilitate effective interaction between consumers and virtual salespeople is through Social Virtual Worlds (SVWs), which is a type of social media. According to KZero (2012), "approximately 1.9 billion people registered on more than 300 SVWs globally." Because of its tremendous growth potential, several retailers have focused on this new type of social media. Moon et al. (2013) found that SVWs are virtual spaces that emulate the real world, and it is a place where consumers can socialize, learn, travel, and shop. SVWs can be utilized as a new form of retailing space using an avatar as a new type of virtual salesperson (Moon et al., 2013). Because avatars can provide a social

presence to consumers inside the virtual world, it can be an effective tool to communicate with consumers resulting in a positive experience.

One of the major benefits that can be accomplished by implementing virtual salespeople is the ability to provide personal and convenient experiences to consumers with communication of comparative quality to that occurring in brick-and-mortar stores (Wiggers, 2017). Because consumers struggle with information overload, it is important to provide a machine-processing system which can alleviate information overload by filtering information and automating tasks (Miller, 2016). One of the ways to give filtered and personalized information in retail spaces is by providing virtual salespeople that utilizing AI; this results in the ability to help consumers understand meaningful information among growing amounts of data. In addition, by utilizing virtual salespeople, consumers can experience more fine-tuned interaction and eventually can be much comfortable with processing additional pieces of data (Miller, 2016). Because consumers can get more personal information targeted to their own needs with AI-based virtual salespeople, they can improve shopping experiences and consequentially overall their engagement with the retailer or brand increases (Moon et al., 2013). Increased communication between salespeople and consumers can drive sales growth by increasing the level of engagement (Wiggers, 2017).

However, there is a need to fully develop underlying technologies like AI because virtual salespeople cannot cover the wide variety of questions consumers ask (Miller, 2016). More sophisticated human characteristics are required to emotionally communicated with consumers to improve consumer experiences. Therefore, it is important to give a human appearance and personality to the virtual salesperson with the ability to understand all aspects of communication to respond appropriately (Moon et al., 2013). As virtual salespeople utilization is currently in the preliminary stage, it is recommended that retailers find ways to develop personal and emotional communication by evaluating new technology to exploit opportunities possible through the use of virtual salespeople. Moreover, because virtual salespeople can be placed in any point of shopping stages for communication, retailers should understand consumer needs in each of the distinct stages and work to integrate those experiences into one pleasant experience by adding humanized features. One of the important tasks of the virtual salesperson is to provide consistent and seamless shopping experiences to consumers through humanized interaction (Wiggers, 2017).

There are some cases which currently utilize AI assistants to answer consumer queries and to communicate with consumers. Representatively, Siri in iPhone, Cortana in Microsoft, and Alexa in Amazon's Echo can communicate with consumers by answering inquiries using AI. Specifically, these systems can make suggestions, search product locations or information, and track availability (Moon et al., 2013). Compared to other AI assistants, Amazon's Alexa shows extra features. This AI can do more than simply answer questions. Specifically, Alexa can reorder products by conversation because it allows voice-generated purchases. LG is working to incorporate Amazon’s AI technology effectively into their appliances including a refrigerator or television improving the consumer experience (O’Shea, 2017).

Today, many fashion companies have begun to utilize AI as a part of their virtual salespeople program. Macy's On Call is one f example that works as an AI assistant in the apparel retail industry. It is a new mobile web tool powered by IBM, which enables consumers to ask questions in natural languages and receive customized responses to their questions. This service is in the piloting stage for implementation (IBM News, 2016). In the case of The North Face, they have developed a tool called ‘Fluid expert personal shopper℠’ using IBM's Watson cognitive computing technology to enhance consumer experiences by enabling an intuitive searching (Arthur, 2016). Levi

Strauss & Co. provided a tool to communicate with virtual stylist in-depth using AI-powered Chatbot. This program helps consumers compare styles, find sizes, and pick the jeans. Then, a virtual stylist recommends products that suit consumers' preferences by analyzing and tracking the purchase history (Wiggers, 2017; O'Shea, 2017). The degree to which humanized characters are utilized inside AI varies greatly with respect to the firm's intention to use, and ability to implement, technology. For instance, tech-savvy companies like Amazon.com also make trials utilizing AI throughout an overall supply chain and not limited to virtual salespeople. Amazon.com is also trying to use AI in drone delivery systems and to place AI robots in distribution centers to augment existing options (Van Doom et al., 2017).

2.4.1. Internet of things (IoT)

Internet of things (IoT) is one of the social networking technologies that can connect a variety of ordinary devices ranging from cameras to refrigerators through the internet (Garner, 2017). According to Bandyopadhyay and Sen (2011), "IoT is a concept, which can bring new forms of communication between people and things and between things themselves by embedding short-range mobile transceivers into a wide array of additional gadgets and general items." In other words, machine-to-machine commerce has begun as a result of technological innovation (Dhruv et al., 2017). Now, machines can control other machines, and those machines can communicate independently without human efforts. Thanks to the rapid development of mobile technology including Apps and devices like the smartphone, IoT technology is beginning to be utilized in almost every aspect of our lives with the maximized potential. Because mobile Apps with smartphones can enhance the ability to connect with consumers, it allows retailers to meet the ever-changing consumer needs with less effort (Dhruv et al., 2017; Inman & Nikolova, 2017). Consumers can enjoy the convenience provided by IoT technology with improved experiences in retail spaces because of its ability to process consumer demand in a fast and interactive manner. IoT technology has been implemented in a range of products from relatively inexpensive home automation tools, like Smart home and Smart appliances, to more expensive items like Smart mirror in retail spaces. For retailers, Smart mirror, which is one of IoT solutions, has the potential to provide better shopping experiences to consumers because when using Smart mirror consumers can save time and have a more comfortable and privacy-protective environment (Sugar, 2017). It allows consumers to request items in different sizes, browse different styles and provides a variety of purchase options with a touchscreen. This results in consumers having a convenient shopping experience while eliminating cumbersome procedures (Sugar, 2017). Hence, Omni-channel retailers utilizing both online and offline formats, should consider implementing IoT technology to provide better shopping experiences through connecting devices and systems used in each stage of the shopping process. Also, brick-and-mortar retailers can utilize IoT related services including Smart shopping cart, interactive displays and mirrors, and Smart kiosks inside their retail spaces to compete with rapidly growing online retailers by giving comparative shopping experiences to consumers (Hearle, 2016). Some opportunities also exist for purely online retailers as newly developed e-commerce and social media purchasing channels require non-enterprise technology like IoT (Binns, 2010).

Major benefits presented by IoT stem from its ability to connect millions of products and communicate wirelessly (Bardi, 2017). This fundamental interactive characteristic can satisfy consumers' needs for connection with linking everyday physical objects (Bardi, 2017). Because increases in touch points with better interactivity generally can contribute to better consumer experiences, implementation is imperative for Omni-channel retailers, which have to manage several channels in optimized ways. Specifically, IoT can be

very helpful in forming brand awareness and loyalty, as IoT can facilitate effective and efficient communication between retailers and consumers (Jih, 2007; McCoy & Deena, 2011; Thought-Leadership, 2011). Referring to Bandyopadhyay & Sen (2011), IoT is an effective tool to manage brand-consumer relationships and even relationships between products themselves. Also, it can satisfy consumers' needs for simple and digitized shopping processes (McCoy & Deena, 2011).

However, consumers can be reluctant to utilize IoT because of the privacy risk concerns. Because IoT is fully managed and controlled through the internet, security problems and risky situations could exist if someone tries to invade and steal private information that is entered into interconnected gadgets (Ahmed, 2017). Thus, retailers should prepare a thorough security framework to protect the consumers' privacy, and ensure consumer safety when using IoT. It is important to monitor the IoT tools and system continuously to find errors and prevent cyber-attacks from a third party.

Specific cases within the fashion, textile, apparel, and retail sector, which utilize IoT, range from simple interactive products to complex systems; there is the utilization of multiple technologies to fully satisfy consumer needs. Several fashion firms launched products utilizing IoT including Ralph Lauren's Smart shirt, Nike's Smart sportswear with fuel bands. Another example is Kate Spade's Everpurse, which is a smartphone-charging handbag using Smart pocket™, a docking technology (Arthur, 2016). These examples are some of the simplest forms of IoT applications, which connect a mobile gadget with consumer goods. More complicated forms can be found in Cloud Robotics, which utilizes both AI and IoT. By allowing each robot to share data and then analyze it using AI systems of other robots interconnected through Cloud, additional tasks with optimized abilities could more effectively implement (Bardi, 2017). Also, Fabletics implemented a collaborative application tool to provide better shopping experiences. This tool connects offline and online channels using 'Omni-cart.' Using Omni-cart, consumers can save products they have tried on in brick-and-mortar stores and have an interest in into the cart, and this information is automatically connected to their online personal account (Women's Clothing-US, 2017). It presents an opportunity for Omni-channel retailers to connect distinct channels and transfer information about affiliated products. In other cases, several fashion companies introduced new types of fitting rooms using the Smart mirror with virtual technology. Macy's renovated traditional fitting room in the women's area utilizing high-tech devices including smartphones and tablets at their flagship store in New York for testing (Devitt & Hill, 2015; Gross, 2010). These tablets provide ways to try on and replace items without having to leave the fitting room making it a more pleasant and hassle-free experience. As a result of its implementation, consumers spent more time browsing products throughout the store and less time trying products on. This technology also increased the ease of locating items to purchase, and ultimately increased purchase intention (Devitt & Hill, 2015). Rebecca Minkoff also used the Smart mirror technology in fitting rooms and realized an increase in sales as the consumer experiences were improved (Arthur, 2016). Lastly, Marie Claire used Oak Labs Smart Mirror in their pop-up concept store and partnered with Mastercard. This mirror showed a virtual outfit of the products consumers chose and recommended complementary products including accessories to complete outfits (Doupnik, 2017). Likewise, the actual application of IoT technology was accomplished by coupling multiple technologies like AI and virtual technology. It is important for retailers to consider utilizing other technologies that can add extra value for consumers. In summary, interchangeability and synergy can be achieved by utilizing and coupling IoT with other virtual technologies resulting in a streamlining of business processes, enhancing sales opportunities, and improving services (Korzeniowski, 2017).

2.5. Kiosks

A kiosk is "a small, stand-alone booth typically placed in high-traffic areas for business purposes," and has the ability to provide additional information and can be applied in a variety of topics including education, commerce, and entertainment (Orencia, 2017). According to Gupta (2017), "The interactive kiosk market is expected to be valued at $30.53 billion by 2023, at a compound annual growth rate of 5.69% between 2017 and 2023." Increasing the level of technological immersion and development of techniques to integrate digital technology and physical spaces have altered the way consumers communicate. These consumers who seek personalized experiences were empowered by new technology, and kiosks became the central issue in the retail industry to reflect these technological changes into the business environment (Frank Meyer Inc., 2017). Considering their growth and capability, it is essential for retailers to utilize kiosks in their retail spaces. For brick-and-mortar retailers, kiosks can be a breakthrough to compete with the purely online retailers and it establishes advantages in a competitive retail market. In the retail industry, placing a well-designed tablet kiosk inside retail spaces is one of the most popular ways to utilize a self-serve kiosk because it brings consumers into the whole new interactive environment with increasing involvement (Armoilo, 2014). Some other types of kiosks involve touch-screen kiosks, internet kiosks, and photo kiosks (Orencia, 2017). In addition, several specific tools with appropriate functions have been developed to effectively serve consumers. For example, Thirdshelf™ was developed to showcase products and to boost cross-selling by effectively presenting products. Beehive™ was developed to enable the management of interaction with consumers from distant locations. ShoppinPal™ helped to simplify checkout processes and consumer rewarding processes by providing an effective point-of-sales system, which can connect payment kiosks with an e-commerce system (Armoilo, 2014). Because of the variety of tools retailers can adopt, they should carefully examine which touch points are the most crucial part of their retailing practices with regard to their target customer characteristics. Retailers should then select and combine technologies that can effectively provide benefits to the targeted consumers.

Many reasons for utilizing kiosks exist, but fundamental advantages include their ability to provide unique and interactive retail experiences in various types of spaces like shopping malls, transportation hubs (i.e., the metro, airports), campuses and other high traffic areas (Sandlund, 2016). For consumers, its portability, intuitive touch interface, and simplicity can maximize positive shopping experiences (Armoilo, 2014). For retailers, kiosks can be a low-cost solution to engage consumers without asking consumers to visit an actual retail store (Sandlund, 2016). Thus, kiosks can benefit consumers by improving shopping experiences. Kiosks can also benefit retailers by broadening their consumer base by engaging consumers who were unable to be accessed before because they can attract consumers who heavily seek hedonic experiences (Olea, 2013). In addition, it can increase efficiency by reducing labor costs because kiosks can do a partial role of store associates (Olea, 2013).

Despite a number of advantages kiosks can provide, there are some challenges in implementing them into retail spaces. According to Skeldon (2017), “66 percent of consumers answered that they have not experienced kiosks in retail environments." In other words, the majority of consumers reported that they had not experienced kiosks and this problem hinders them from fully perceiving the benefits of kiosks. To improve this lack of experience, retailers should make efforts to promote the effectiveness of using kiosks to consumers; potentially increasing usage rates, so they truly recognize the positive attributes of this shopping option. However, some challenges exist for retailers. Because of the high initial costs and regular maintenance costs, careful consideration of the total cost is critical when determining if profits will be realized when kiosks are installed. In addition, retailers will need to

provide strong security systems to prevent cyber-crime incidents as consumer information inserted into kiosks can be invaded by such an incident (Gupta, 2017).

One of the companies successfully utilizing kiosks is TUI, a tour-booking company. TUI has installed kiosks in almost all sections of their retail spaces. For example, large screens were attached on their storefronts to display interesting contents stimulating interests and exciting consumers. This display does not show specific product information such as prices, but the intent was to entertain consumers by conveying how exciting new tour experiences could be. Inside the store, touch-screen kiosks functioning as an interactive map, were provided for consumers to help them locate specific tours they are interested in. This search can then be shared with their friends using the kiosks features. Consumers can find detailed information about goods and services using a variety of media including videos and personal reviews. Because of the interactive nature of kiosks, they can also make recommendations based on the consumers' interests by analyzing the search pattern of consumers (Allen, 2016). Likewise, kiosks successfully serve multifaceted consumer demands from information-seeking needs to entertainment needs. TUI's kiosks were also very effective in providing fun and seamless experiences to consumers. They integrated and arranged several types of kiosks according to the distinct needs presented in each stage of consumer journey in retail spaces based on the inherent characteristics of the tour business. Kiosks in TUI's retail spaces truly integrated digital and physical channels by making the correct resources in the right places delivering enhanced consumer experiences. Fashion companies like Rebecca Minkoff and TOMS, have successfully utilized kiosks integrating them with eBay's Connected Glass™. This mixed commerce kiosk solution can perform similar functions like that used by TUI. Consumers can search products using a touchscreen kiosk at virtual storefronts and these also allow for a direct purchase to be made. It can serve many functions required to aid the consumers' decision-making process from the information seeking process to purchases by placing consumers within the kiosk experiences. In addition, consumers' touch history is traceable and the specific consumer data can be used by retailers to analyze the pattern of shopping and purchasing behaviors. Additional features of this kiosk include a Kinect camera, which can be used to determine the degree of consumer engagement and the level of interaction. This camera system tracks the number of consumers who simply walk by the displays versus those who actually came up to the displays. The information provides more detailed insights to retailers about consumer attitudes toward kiosks and the level of kiosk utilization (Sandlund, 2016). Kiosks have shown the potential to engage more consumers by placing them in the kiosk experience and by placing kiosks in appropriate spaces to serve consumers' unique demands.

3. Conclusion

This review and discussion of technologies, existing and newly emerging, in the retail industry, was presented to bring awareness to their importance and their potential as they are being used in the Omni-channel retail environments. In channel-rich environments, unique Omni-channel capabilities derive from effective management of breakthrough technologies can be significant driving forces for consumer engagement. The virtual technologies identified here, virtual reality, augmented reality, virtual fashion shows, virtual fitting rooms, and virtual salespeople, have been shown to improve consumers' shopping experiences because they offered entertainment and convenience when effectively managed and appropriately placed in multiple virtual technologies in retail environments. Also, internet of things and kiosks, which are associated technologies with virtual technologies, have shown potential to improve consumer experiences through utilizing and integrating

multiple virtual technologies into an innovative system or devices.

The evaluation of benefits and challenges each virtual technology poses to retailers and consumers, and in-depth analysis of actual cases, discussed here, emphasizes how virtual technologies can play the key role in improving consumer experiences. All virtual technologies presented here enhanced and stimulated non-sequential and diversified consumption behaviors because consumers could experience additional information or entertainment at any point using extra touch points in their overall shopping journey. Also, those virtual technologies can provide seamless experiences to consumers by putting those technologies into effect in the right places for the right purpose and by connecting and utilizing multiple complementary virtual technologies.

Virtual technologies have the potential to improve both consumer experiences and business profitability through their ability to evoke consumers' emotional responses and favorable attitudes. For traditional brick-and-mortar retailers, which have initiated the use of online retail-channels, virtual technology studies showed tremendous potential to increase consumer engagement. By synchronizing the physical and the digital channels, these retailers can effectively provide seamless Omni-channel experiences that purely online retailers cannot provide. It is important to manage consistency between two distinct online and offline channels utilizing virtual technologies because it can also draw consumers to physical stores if this newly added online channel can provide complementary experiences. In addition, for any type of retailer utilizing both online and offline channels, creating a unique and interactive retail structure between channels in a synergistic way using virtual technologies will be beneficial.

Throughout this analysis, a number of successful cases were identified in the retail industry. Each technology enhanced consumer experiences by improving touch points that consumers face in their shopping journey. Retailers understood that consumer experiences, improved by increased engagement, are critical to be successful and survive in the competitive retail industry. However, most of the cases indicate that the level of utilization is still in the preliminary stage. Retailers realized the necessity to find ways to effectively implement these technologies because of its potential to significantly improve consumer experiences. To exploit advantages of virtual technology, retailers should effectively choose and manage an appropriate virtual technology in a way that can actually add value to consumers by placing those at the right point in the shopping journey. Some ways to further utilize virtual technologies is to integrate multiple associated technologies. In Mixed and hybrid forms of virtual technology were frequently found and in most of the cases, they showed successful outcomes (e.g., IoT, Kiosk). Without digital integration from all innovative virtual technologies, it is difficult to move a retail business forward because some of the technologies are interconnected in the developmental process and share moderately similar features. Hence, it is important to fully understand available options in technological mixes to deliver unique and satisfying experiences to consumers. This mixed approach can begin through the use of artificial intelligence where consumer data is collected and interpreted in a way that will provide additional convenience to consumers during their shopping experience. Furthermore, the internet of things can then assist consumers allowing them to utilize everything around, from a simple product to interactive machines. Finally, augmented reality can give consumers a tool to project themselves in a virtual world using mobiles devices.

By utilizing appropriate technologies in each channel with the mixed approach, consumers may enjoy better shopping experiences despite limitations specific types of channels pose when utilizing virtual technologies. The key is to provide consistent shopping experiences across channels even if different mixes of technologies are used in each channel.

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