AUTOMATION IN RETAIL: MODERN WAYS OF CUSTOMER ENGAGEMENT

Ruchita Pangriya

Assistant Professor

Kumaun University

LSM Government PG College, Pithoragarh

Uttarakhand, India

rpangriya6@gmail.com

Dr. Aditi Priya Singh

Associate Professor

ISBR Business School, Bangalore,

Karnataka, India

aditi.psingh@gmail.com

Abstract

Customer engagement has been rated as the top priority for all businesses. Technology has changed the way by which companies engage customers. Automation is one of the advancements that has dramatically stepped forward in the manner humans have interaction with businesses. The objective of this article is to explore, exemplify, and unfold the modern and innovative ways of engaging customers with the help of automation. This paper takes a qualitative approach to explore customer engagement with the help of automation in modern retail. Major scientific databases, online sources, reports, magazines, newspaper articles were

searched to identify prior work on automation in retail and customer engagement. The finding explicates customer engagement possibilities through retail automation. Further, it described and exemplified the ways through which automation is changing the way of customer engagement. The forecast for the retail automation market and future possibilities were also discussed.

Keywords: Retail, Retailing, Customer engagement, Automation, Artificial intelligence, Virtual reality, Beacon, Social Wi-Fi.

Introduction

Customer engagement is the emotional connection between a customer and a brand. Highly engaged customers buy more, promote more, and demonstrate more loyalty. Research shows that contribution from a fully engaged customer represents 23% more revenue than average (Aberdeen Customer Engagement Report, 2014). Customer retention is 14% higher among the companies applying big data and analytics to deal with the customer. In the past, the best way to engage with customers was through conventional mediums such as television and radio. However, in the age of mobile technology and social media, brands now have more choices than ever to reach out to their potential customers. There is no specific customer engagement method that works for every company across all industries. Major brands use everything from amusing, responsive social media agents to personalized discounts and offerings to inspire loyalty and affection in their customers.

Technology has changed the way by which B2B or B2C companies work to engage customers. Automation is one of the advancements that has dramatically stepped forward in the manner humans have interaction with diverse industries. Today's retailers are focusing more on in-store automation to get an edge over the competitors and engaging the customer more effectively. There is no doubt on the point that customer engagement leads to customer loyalty. This highlights the requirement for continuous thinking regarding the best possible ways for companies to engage with their customers. Not only the unique and best possible ways for engagement but also, to make the strategies that can't be copied easily. The objective of this paper is to discuss various innovative automation techniques that companies are using to better engage with their customers. For this purpose, the author

discussed various examples and explained how different companies are working on this strategy and increasing their revenues. We also discussed the development of retail automation over time and discussed future possibilities. This paper will be useful for the researchers, scholars, and strategy makers by educating them and presenting the new tools and means of customer engagements.

Literature Review

Automation in retail

Automation in retail has grown much quicker than most people recognize. Automation drives to reduce labor costs. Management now realizes to replace people with machinery wherever possible. Retailers have embraced several technologies to interact with their customers. Retail automation describes the process of using technology to automate retail experience. Initially, retailers were using automation to reduce costs and improve efficiency. As automation is becoming more mature it is opening new ways of doing business, increasing the decision making, and improving customer engagement (Chao, Cheung, Haller, & Lee, 2019). The development of technology in retail can be seen from broadcasting to in-store digital to in-store digital broadcasting to narrowcasting (Grewal, Noble, Roggeveen, & Nordfalt, 2020). Among these four phases, broadcasting referred to traditional display and advertisement in local flyers while in-store digital referred to digital display on end caps and in the product section. The in-store digital broadcasting was all about digital messages broadcast across the store and narrow casting referred to targeted messages using advanced technology like Artificial Intelligence.

The future of retailing is classified into five categories. These categories are technology and tools for decision making, visual display and merchandise, consumption and engagement, big data collection and usage, and analytics and profitability (Grewal, Roggeveen, & Nordfält, 2017). According to a study, half of the retail activities can be automated with the help of the current technologies (Manyika, et al., 2017). Today retailers are using automation to perform a process which relies on existing data sets like supply chain planning, demand forecasting, customer intelligence, marketing, advertising, campaign planning, store operations, pricing and promotions (Chao, Cheung, Haller, & Lee, 2019; Jaucot, Ackx, Loutas,

Martens, Vanhout, & Billiet, 2017).

Automation is found to be useful for both online and offline retailers. Marketing automation allows a retail business to obtain online and offline data, integrate it to obtain and convert it through cross channel engagement (Singh, 2018). Despite having numerous benefits, few articles have discussed errors arise due to automation. One such study discussed automated product recommender systems and erroneous recommendations (Marchand & Marx, 2020). Those erroneous recommendations pose a potential threat as it affects customers trust, satisfaction, and loyalty towards the retailer. Some researchers discussed the challenges of automation in terms of architectural constraints, well- established customer processes, and customer expectations regarding privacy and convenience which impose limits on system design (Hauser, Günther, Flath, & Thiesse, 2019).

Customer Engagement

Before 2005, the concept of customer engagement or brand engagement was very less prevalent among academic marketing and literature (Brodie, Hollebeek, Jurić, & Ilić, 2011). In 2006 the Advertising Research Foundation gave the first definition of customer engagement as "turning on a prospect to a brand idea enhanced by the surrounding context" (Wang, 2006). 2006 onwards research accelerated related to this topic. Some scholars defined customer engagement as a psychological process that derives customer loyalty (Bowden, 2009), whereas some defined it as a psychological state (Hollebeek, 2011). A research article by Hollebeek defines customer engagement as three-dimensional concepts of cognitive, passion (emotional), and activation (behavioral). Further, she explained it as a customer's cognitive, emotional and behavioral investment in specific brand interactions (Hollebeek L., 2011), which was supported by various other studies by Dessart et al., 2015, Brodie et al. 2011, 2013, Phillips and Mc Quarrie, 2010. At the same time, many other researchers presented different perspectives and dimensions of customer engagement. Dwivedi and Cheung et al. defined other dimensions of customer engagements as vigor, dedication, and absorption (Dwivedi, 2015; Cheung, Lee, & Jin, 2011). Identification, enthusiasm, attention, absorption, and interaction were other dimensions that emerged out of some other study (So, King, & Sparks, 2012).

Few authors defined customer engagement as a motivational drive towards a firm or a brand, which is beyond the purchase (Van Doorn, et al., 2010). Doorn et al. in their study on consumer engagement defined this concept as a "behaviors go beyond transactions, and maybe specifically defined as a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers" (Doorn, et al., 2010). In 2014 Beckers and his fellow researchers combined both the older concepts and defined customer engagement as a social psychological process prompting a psychological state that motivates client engagement behaviors (Beckers, Risselada, & Verhoef, 2014).

Customer engagement was found to have a significant impact on customer loyalty. A study on tourism brands indicates that brand loyalty strengthened with customer engagement which is beyond the service encounter (So, King, & Sparks, 2012). Traditionally the customer loyalty derived by customers' judgment, product quality, the value received, and overall satisfaction. After controlling for the effects of the traditional influences i.e. value, quality, and satisfaction judgments, brand engagement has a strong direct impact on loyalty (Dwivedi, 2015). The most important benefit of customer engagement is loyalty. The loyal customer works as an advocate for your brand. They spread positive word of mouth, do repeated purchases, and give positive testimonials about business administrations and products.

Customer engagement was listed as a topmost research priority by The Marketing Science Institute (MSI) in the year 2006. This institution well predicted the rapidly changing communication technology and globalization of markets and they found the need for an emotional connection with customers through innovation and design (Karunakaran & Raveendran, 2018). With the emergence of web 2.0, the concept of customer engagement became more popular among researchers.

The credit for the popularity of this topic goes to websites like Facebook, LinkedIn, MySpace, wikis, blogs, Twitter, YouTube, etc. (Sashi, 2012). The interactive nature of these websites gave a different platform to the buyer and seller relation. Customer engagement is essential for concerning inspiring customers. It's conjointly encouraging customers to participate in the retailers' activities. Retailers should interact with

customers when they are willing to engage, and provides them space when they aren't ready to interact (Seng, 2018). In today's fast-changing technological world retail has junction rectifier to a serious revamp within the sector globally. Modern retailers are holding advance data analytics, social media matrices, clickstream behavior, and different psychological feature techniques like a chatbot, machine learning, etc. to urge purchase behavior (Gangwar, Ranjan, & Patel, 2019; Jenkins, 2019). At present traditional and augmenting research strategies conjointly getting used to grasp the customers' journey and encourage them to purchase.

The scope of customer engagement is enormous but till now very limited academic studies discussed its practical implications. The concept was discussed with the tourism, retail, and real estate and marketing sector. Despite the prior discussion, work on customer engagement was limited to the variable determination and model development. It will be useful to discuss the implementation aspect of customer engagement with real-life examples. Further, it would be useful to know how automation helps to engage customers and turn them into a loyal one.

Methodology

This paper adopted two different approaches to identify relevant information. Major scientific databases were searched at first to identify prior work on automation in retail and customer engagement. We conducted a search on JSTOR, ProQuest, ScienceDirect, Google Scholar, Research gate, IEEE Xplore, SpringerLink using a combination of keywords, namely, "automation", "retail, retailing", "automation in retail", "customer engagement", and "customer engagement through automation". A total of 57 articles were selected primarily based on the abstract. After reading the full article many were dropped as they were focused on the operational side. The selected papers were included in the literature review.

In the second stage various online sources, websites, magazines, newspaper articles were evaluated to recognize the automation in the retail sector and its benefit for customer engagement. We searched on Google to find out the relevant data for the retail automation market size. About 37 reports on retail automation were selected and 11 were dropped because of the similarity of work. Allied Market Research, Markets and Markets, Verified Market Research, Market Data Forecast, KVB Research, Industry

ARC, grand view research, etc. were few online sources from where the reports collected for the secondary data. In those sources reports on the retail automation forecast were available for different years. Those all reports were paid, but the preview of reports was available. Because of the limited financial resources, we got access to the preview of all reports and got the forecast data from different reports for different years. Although the forecast was done by the different research agencies, the forecast values were almost nearby.

From these reports we got the secondary data on the retail automation market and market share of different countries. Total of 36 research papers, 5 conference papers, 7 books, 32 reports (21 on retail automation market and 6 on types of retail automation), 5 magazine/newsletters, and 23 websites were used to extract information for this article.

Automation in Retail: Ways to Engage Customers

Technology has been the contender for driving customer engagement and experience in retail. Apart from understanding customers' insights through advanced data analytics, rising technologies like Artificial Intelligence (AI), Augmented Reality (AR) and Virtual Reality (VR), bots and drones, beacons, Internet of Things (IoT), cloud-platforms, etc. are enhancing customers' engagement over ever.

Some retailers are fast to adopt new options and technologies that may improve customers' retention, engagement, and experience. Retailers are actively trying to find ways to implement customer engagement technologies in their stores. Here are a few major changes which are already visible now and expected to grow shortly with the support of advancement in technology. This is expected to improve drastically the way customers get engaged.

Artificial Intelligence (AI) Assistants

The term Artificial intelligence was coined by John McCarthy in 1995; define it as "the science and engineering of making intelligent machines." There are three main divisions of AI - neural networks, machine learning, and deep learning (Sraders, 2019). A neural network is a series of the algorithm, inspired by the human brain and designed to recognized patterns (Nicholson, 2019). Machine learning generally makes use of

statistics and data to assist improve machine function while deep learning computes multi-layer neural networks for more advanced learning (Sraders, 2019). AI has numerous applications in various fields and modern retail is not untouched from this. AI will soon be the major technique behind modern retail. A report by Capgemini confirms 28 % of retailers have already implemented AI in their operations (Capgemini, 2018). According to a report of Global market insights by 2024, the use of AI technologies in retail is expected to exceed $8 billion (Bhutani & Wadhwani, 2018).

Artificial intelligence can serve retailers with smart recommendation engines, automate most processes, replace human labor for particular tasks, predict demand, and by doing these things increase overall productivity and revenue (Kok, Boers, Kosters, Putten, & Poel, 2009; Kilani, Hamida, & Hamam, 2018). Not every employee in a retail store has talent and data to suggest outfits to shoppers and in parallel, lots of customers choose to not be disturbed by store employees (Davenport, DalleMule, & Lucker, 2011).

The AI can help customers for better search results and provide better solutions for their search. As an example, personal recommendations (Davenport, Guha, Grewal, & Bressgott, 2020) and visual search (P., 2018). In visual search, customers are encouraged to upload photos of stuff they like and find identical or similar products while browsing within the shop. AI advancements app then show or suggest similar things that AI Technology recommends for the client he may have an interest in. Cortexica, a London based AI company, has developed image recognition technology that guarantees 95% accuracy. John Lewis has used this technology for its iPad app. They realize a similar feature has received 90% feedback from customers (P., 2018).

McDonald's, an American fast-food company is implementing AI through its drive-thru menus, which will regularly update based on traffic congestion, weather condition, and time of the day. They are also working on the data captured from self-serve kiosks and the McDonald's app so that they can suggest additional items to the customers based on picked items (Tiffany, 2019).

Artificial intelligence has created a potential voice search for merchandise (Asling, 2017). Several distinguished brands like Costco, Kohl's, Target, Tesco, and Walmart use either Google or Amazon AI

technology or smart devices to serve customers with an easy and quick search (P., 2018). Juniper Research estimated a huge growth in the use of voice assistants. They have estimated that there will be 8 billion digital voice assistants in use by 2023, up from the 2.5 billion at the end of 2018. The voice assistants in the future will be more advanced and easier to use, where the customer may interact with their voice (Juniper, 2018).

Chatbots are an added application of AI within the retail. Chatbots are programmed robots that interact with clients and simulate human communication through Artificial Intelligence. According to a chatbot magazine "A chance to get in contact with your clients is a significant way for your business to grow. Chatbots help to handle interactions with customers for e-commerce companies and simulate the shopping that buyers get in a retail store" (Itsquiz, 2017).Chatbots facilitate retailers to give excellent customer service, facilitate customers to realize things on the website, advise those regarding new collections, and suggest them attire similar to that they have already chosen or liked in the past. Brands like H&M, Tommy Hilfiger, eBay, Burberry, etc. have introduced chatbot which allows customers to see, share, purchase products, track orders, get style advice, latest fashion, etc. (Retail insight network, 2018).

The Robotization of stores is another application of AI. It helps in cost saving by reducing the staff in-store and shorting the billing lines. The scope of robotization is for in-store assistance as well as for store operations (Boyd, 2019). Lowe's home improvement retailer introduced the LoweBot in its store in San Francisco in the year 2016, to help customer to find the products which they are looking for. Customers can interact with the robot by voice or touch screen. The robot can answer some customer service questions as well as perform real-time inventory tracking. Robotization also helps in tracking inventories. In the year 2016, discount store Target tested a robot called Tally, to check the inventory on shelves (Underwood, 2019). Best Buy; consumer electronics retailer introduces Chloe a robotic arm. Chloe can move quickly and pick out customer's requests from rows of approximately 15,000 DVDs, CDs, video games, and tech accessories in just half-second (Kumar, 2015).

Amazon Go Convenience stores by Amazon retail in the United States feature the most advanced technology in terms of retail automation.

These checkout-free stores use AI technology with a combination of computer-based equipment's vision, sensor fusion, and Deep learning. This technology provides a hassle-free experience to customers. To use this, customers need to use Amazon Go App and its QR scanning technology. Customers choose products that they want, scan code, and leave the store without encountering any cash counter. Cash counters & their long queues are obsolete with Amazon Go's Just Walk Out Technology. The selected items get added in the customer's cart and he is billed for the same with payment deduction from Amazon account (Amazon, 2020).

Customer brands across trade segments like food and beverage, apparel and footwear, fast-moving goods and packaged goods, skin and personal care, etc. are progressively engrossed on differentiating from the competition by giving more than just the product. The standard of the searching expertise has increased a lot in recent years and is not only limited to the just search experience but also focuses on personalization of the buyer's choice. Retailers, both offline and online, are currently providing customized solutions to the customers (Okoli, 2017).

Retailers are working on personalization and trying to offer personalized advertising and customized products to customers. Companies are using online and offline data of the customer to provide a high level of personalization (Britt, 2019). For example, shoe and accessory brand M. Gemi personalizes in-store visits by giving associates access to customer profiles, including past online and offline purchases. Another example, Nike displays a "Welcome to the Nike App" for new users in the inbox. It tells shoppers that they can continue to expect tailored products and experiences which get more personalized as they use the app, thanks to the application of advanced machine learning features. Another example of personalization is Victoria's Secret. Once Victoria's Secret customers install their application, they start receiving the latest information on new arrivals or sales promotions through push notifications (Forte, 2017).

Augmented Reality (AR)

Augmented reality (AR)is a concept of human-computer interaction in which image, sound, and text imposed over the real visuals and to create a virtual experience (Dix, Finlay, Abowd, & Beale, 2004). A study by Deloitte shows that most of the companies are already experienced with AR

technology to improve the customer experience (Deloitte, 2019). The global AR market is expected to be $75 billion by 2023 (Seal, 2020).

Although augmented reality (AR) Fitting Room is a new technology it is openly and seamlessly adopted by retailers across the globe. The virtual fitting rooms could be of great help for busy shoppers as customers will attempt manifold attire, realize the correct outfit, and an accessory that completely matches it. Most importantly all this can be done during a matter of few minutes (Pijak, 2018). Virtual fitting rooms work by superimposing the clothing, shoes, or even optical, onto a live feed of the customer (Shaikh, Shinde, Singh, Chandra, & Khan, 2014). It tracks the movement of the client; therefore, it seems like they're truly sporting it (Azuma, 1997). This allows the client to check if they would just like the covering while not even attempting it on. The customer can browse many things with a 360-degree view to see which ones they would most like to try on (Flavián, Ibáñez-Sánchez, & Orús, 2019).

Another application of AR is In-Store Mirrors. Cosmetics brand Charlotte Tilbury is using Magic Mirrors in their stores. To experience this technology and its benefits, customers need to visit the shop and sit in front of the mirror. The mirror with the help of AR technology scan the face and shoppers would then see their face with ten of the brand's iconic looks in less thana minute time without physically wearing any makeup (Charlotte, 2018).

The mobile AR shopping apps are other relatively recent phenomena. In the furniture and beauty segment, retail mobile AR technology has already been established. Retailers like Decore Matters, IKEA Place, Macy, L'Oreal Paris, etc. are few examples who are using AR apps to boost customer engagement and sales. MAR shopping apps add experiential value to customers and increase customer satisfaction and loyalty which leads to further possible outcomes (Dacko, 2017). The use of mobile AR apps also helps in customer engagement and its well established that the high mobile AR shopping users spread positive word of mouth about the retailer (Eyüboğlu, 2011).

Beacons

Beacons are small pieces of hardware that uses radio signals to nearby devices. The broadcasted radio signals sent by beacons can be

received by smart devices like mobile phones (Yao, Huang, & Wang, 2019; Triantafyllou, Koutsokera, Stavrou, & Griva, 2017). Beacons have compatibility with mobile devices; it can be used to improve user experience and connectivity. Beacons area key conceptual component of the internet of things (Danova, 2015). The global beacon technology market is expected to grow at 45.5% during 2019-2024 to reach $ 10.2 billion by 2024 (ReportLinker, 2019). The scope of beacon technology is not only limited to the retail sector but also used by banks, real state, education sector, healthcare & many others.

Beacon technology can be used to send discounts, promotions, upcoming events, or other reminders to customers when they're in-store. This technology can collect valuable customer data, promotes better user engagement, integrate online and offline buying, track customer movement inside the store, help customers to find out a way inside the store (Bonnie, 2019). Beacon technology helps to understand footfall patterns, access, and exit data, amount of time spent, visited locations, heatmaps, trends, repeat visits, and purchase history all in real-time. Beacons help drive up customer engagement, construct loyalty solutions, growth efficiencies, and capture actionable client insights (Prasad, 2018).

Brands such as Macy's, McDonald's, Auchan, Walmart, Lord &Taylor, Regent Street stores, etc. are making a mark with their proximity marketing campaign via beacons. Macy an upscale American department store chain used a beacon powered mobile game in the 2015 thanksgiving season. They sent push notifications by their proximity to beacon placed throughout 700 stores national wide. This strategy encouraged customers to participate in the "Black Friday Walk in and Win" game, with a chance to win $1 million in Macy's gift codes and other prizes. This campaign helped Macy to successfully drive foot traffic and expands its reach (Bonnie, 2019). McDonald's in Istanbul leveraged a new proximity marketing strategy via beacon at its 15 cafes to promote a new line of coffee-flavored beverages. They used a popular app called Shopping Genie, to target customers while they were around the premises of a local McDonald Café. Through this app, they sent mobile coupons, which prompted customers to purchase a coffee and receive a beverage from the new drink line for free. This campaign

helped McDonald's achieve a 20% conversion rate with 30% of users who received the promotion (Mittal, 2019).

Auchan retail hypermarket is using beacon technology since 2016 in Ukraine for navigating the customers in its massive 31,000 sq feet retail store. The retailer sends push messages to in-store customers for the promotion of products and navigates them as they move about the store (Mittal, 2019). Lyng by Storcenter shopping mall in Denmark launches a beacon-based treasure hunt game for kids. This is the best way to keep kids entertained and engaged while their parents shopped. They used an app "GeoTrail GO" to set up an indoor treasure hunt with indoor maps and holiday-themed games. This beacon treasure hunt gave parents a bit more time and space to shop and allowed business owners to experience a boost in revenue (Adarsh, 2019).

Social Wi-Fi

Using a Smartphone to access the Wi-Fi at a retail location is not a new concept. Any retailer can easily share the Wi-Fi password to the customer. The benefits of providing free Wi-Fi to customers provide a competitive advantage (Yusop, Tiong, Aji, & Kasiran, 2011), increase loyalty and satisfaction (Cobanoglu, Bilgihan, Nusair, & berezina, 2012; Reyes-Menendez, Palos-Sanchez, Saura, & Martin-Velicia, 2018). With the help of free Wi-Fi, we can even track the customer movement inside the retail store (Sapiezynski, Stopczynski, Gatej, & Lehmann, 2015). But the concept of social Wi-Fi is more advanced than just providing free Wi- Fi access.

Now a day's retailers are setting up their network with a splash page. To access the store Wi-Fi, customers need to login through their social media account. Signing in through social media account is known as social Wi- Fi. No password is required to connect with the hotspot. By signing through the social media account customers provides access to their demographic reach (Santos, 2017). Retailers can access information about their customers, their names, contact information, likes, etc. This helps retailers to effectively target and retarget customers and their social networks (Wheeldon, 2014).

Changes in Retail Automation Over Time

Retail automation has started back in 1970 with the introduction of

elevators in malls which gave a new mean to the shopping and changed how people could interact with stores. Air-conditioning was another automation which made shopping a comfortable experience in hot summers. There is no doubt that the story of retail automation started with elevators and air-conditioning. In the year 1973 a pack of Wrigley's chewing gum in a Marsh supermarket in Troy, Ohio, was the first retail product sold using a barcode scanner (Barcoding, 2020). In the 90s, with the start of online shopping automation in retail achieved a new height, which is visible until today. In the year 1994 Amazon came into existence as a delivery service for a very small catalog of products. With the starting of online retail, the automation in the payment also started. Online payments are a form of automation since a payment gateway does the activity of collecting money and processing a transaction.

By 2000, some retailers were quick enough to automate several aspects of their business and improve their overall efficiencies. Those retailers chose ERP (Enterprise retail planning) which was moved ahead with its basic functions like accounting to being able to connect all aspects of a business, retail included. With time other software came in the market like SaaS and APIs. ERP got competition with SaaS products which were hosted on the cloud platform. Retail APIs (application program interface) include catalog, product search, order submissions, inventory, and recommendations, in addition to a multitude of retail-specific business lines.

A different era of automation started with the development of AI, VR, IoT. Different retailers have been using them in a different capability. The uses of these technologies in retail automation were discussed earlier in this paper. Smart devices like RFID tags, sensors, beacons, cameras, etc., feed information like product location and description automatically into systems. This information is then used for data analytics and predictive insights that help in decision making.

Before 1970	1970-1999	2000-2020	Future Retail
1. Elevators 2. Air conditioners	1. Barcodes 2. Online retail 3. Catalog 4. Auto payments 5. QRcodes	1. ERP, SaaS 2. APIs 3. AI, VR,IoT 4. Self-checkouts 5. Smart cameras 6. Sensors, RFID tags 7. Data analytics 8. Chatbots 9. Virtual mirrors 10. Beacon	1. Conversational commerce technologies 2. Voicetechnology 3. Robots 4. Dronedelivery 5. Heatmaps 6. Virtualmalls 7. Agumented shopping

Figure 1. Development of retail automation

In the coming decade, we can see the peak of retail automation, as the customer might get extra control and personalization of choices. Retail will further evolve with the emergence of new technology. The future of retail will be closer to the human decision-making process. With the help of conversational commercial technology like voice assistance, echo products, sensors, heatmaps the retailers will be able to read the consumers' minds. The massive use of robots and drones will change the way consumers being served. Very soon we can experience the virtual shopping malls in which consumers can navigate virtually in the shopping mall through 3 D technology. It could be quite similar to the AR video games. More developed use of augmented shopping we can see in the future where AR could be used for indoor navigation and its integration with AI and VR. The overall retail experience will become more handy, easy, exciting, and inspirational as in line with the consumer's converting needs.

Retail Automation Across the Globe

Market size forecast for retail automation has done in various reports over time. A report of Allied market research valued the size of retail automated market $11.24 billion in the year 2018. The report forecasted the value of retail automated market $23.58 billion by the year 2026. According to the report, the retail automated market will grow at a CAGR (Compound annual growth rate) of 9.6% (Korad, Sinnarkar, & Baul, 2019). A similar kind of projection has been done by various market research companies for different years. The data from various reports is presented in table 1. The growth of retail automation market size and forecast in various reports is represented in figure 2.

Table 1. *Retail Automation Market and CAGR Forecast*

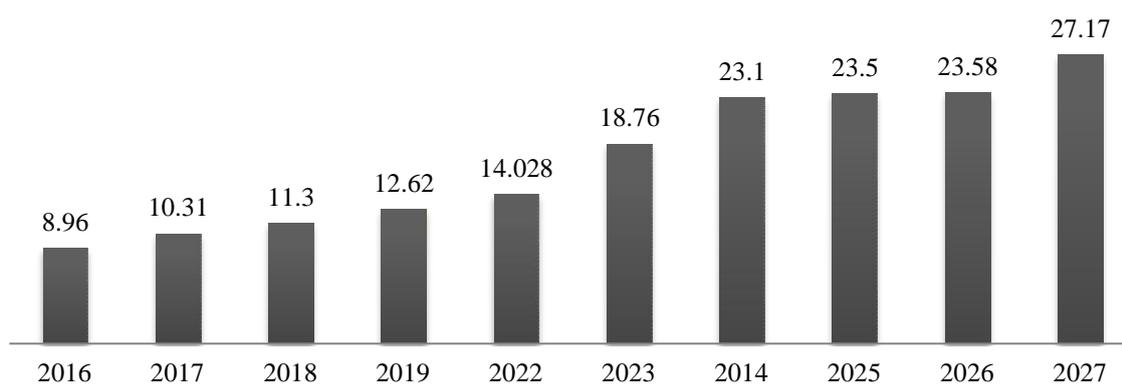| S. No.	Base Year	Retail Automation Market (USD Billion)	Forecast Year	Retail Automation Market (USD Billion)	CAGR (%)
1	2016	8.96	2024	23.1	12.3
2	2017	10.31	2023	18.76	10.49
3	2018	11.3	2025	23.5	11
4	2019	12.62	2027	27.17	10.85

Source: Secondary data

Figure 2. Retail Automation Market Forecast (USD Billion)

Various regions have shown different market growth in retail automation. The global retail automation market is dominated by North America (45%), followed by Asia Pacific (30%), Europe (20%), and the rest of the word share is 5% (Reports and Reports, 2020). The distribution of the retail automation market share is represented in figure 3.
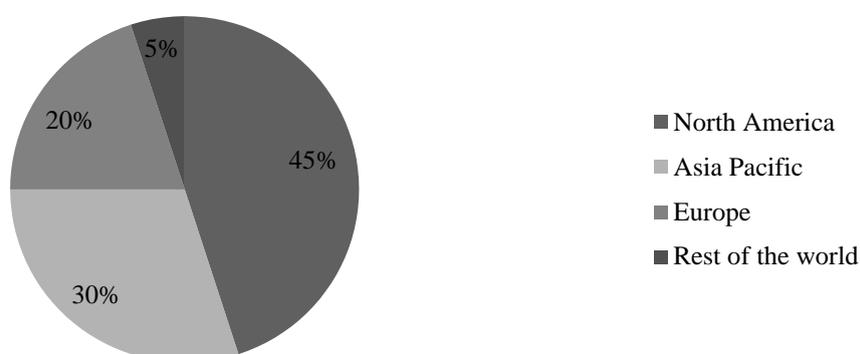

Figure 3. Global Retail Automation Market share

North America holds the maximum market share in retail automation and it is forecasted to grow with 10.2% CAGR from the period 2017 to 2023. The share of the US is at the top in the North America retail automation

market and expected to grow with a CAGR of 9.7 % for the forecast period of 2017-2023. The forecast CAGR for the Canadian share of the retail automation market for the year 2017-2023 is 13% and Mexico is 12% (KBVResearch, 2017).

KBV research forecast market growth of 13.8% CAGR for the period 2017-2023 for the Asia Pacific retail automation market. According to the report China, Japan and India will be at the top in terms of market share for the forecast period 2017-2023. China will grow at a CAGR 10% and would continue dominance over the Asian market. Japan with CAGR 16.8% and India with CAGR 18.4% will follow China. The retail automation market growth forecast for Europe is 10.7% CAGR for the period 2017-2023 (KBV Research, 2017).

The above data present a clear picture of the market potential in varied segments across the countries. The tremendous potential offered within the rising economies and speedy adoption of retail automation product has considerably contributed to the enlargement of the retail automation market, globally. The speedy adoption of self-automated technologies among retail end-users similar to supermarkets, hypermarkets, and single item stores have considerably contributed to the requirement for retail automation.

Conclusion

The focus of retail has shifted from selling products to engaging customers and selling experiences. Customer engagement affords retailers with user-generated content (UGC) like testimonials, videos, images, and blog posts. In marketing, it facilitates brands to enhance the ROI of advertising campaigns, nurture brand loyalty, and grow customer referral. Automation has changed the way the retail business model works. It will continue to reshape retail business models in terms of the value chain, creating an organization with fewer layers and a better trained and trusted workforce empowered by real-time data and analytics. The winner in the sector will be those who understand these implications and act quickly to address them.

In conclusion, more modern technologies will affect how shoppers pick out channels, pick products and services, and make purchases in the coming years. The world of online and offline retail is converging very fast.

Knowing what is unique and what is comparable in these two worlds, as well as how new technologies are going to affect both is an area of research. Innovations are likely to help customers' engagement, make the right decisions, feel much less time pressure, or even increase their self- assurance and pleasure with their decisions. Retailers, in turn, want to embrace these new and emerging technologies to make their customers even greater engaged, while additionally making their lives simpler. Finding ways to achieve this stays a crucial region of inquiry, worthy of continued exploration.

References

Adarsh, M. (2019, June 18). *11 Incredible beacon use cases from 2017 every marketer should know in 2018.* Retrieved February 25, 2020, from beaconstac: https://blog.beaconstac.com/2017/12/11-incredible-beacon-use-cases-from-2017-every-marketer-should-know-before-2018/

Amazon. (2019). *Amazon Go.* Retrieved February 19, 2020, from Amazon: https://www.amazon.com/b?ie=UTF8&node=16008589011

Asling, D. (2017). *19 Powerful Ways To Use Artificial Intelligence In eCommerce.* Retrieved January 31, 2020, from Linnworks: https://blog.linnworks.com/artificial-intelligence-in-ecommerce

Azuma, R. T. (1997). A Survey of Augmented Reality. *Presence: Teleoperators and Virtual Environments, 6* (4), 355-385.

Barcoding. (2020). *The history of Barcodes.* Retrieved 2020, from https://www.barcoding.com/: https://www.barcoding.com/resources/barcoding-basics/the-history-of-barcodes/

Beckers, S. F., Risselada, H., & Verhoef, P. C. (2014). Customer engagement: A new frontier in customer value management. In R. T. Rust, & M. I. Huang, *Handbook of service marketing research* (pp. 97-120). Northampton: Edward Elgar Publishing.

Bhutani, A., & Wadhwani, P. (2018). *Artificial Intelligence (AI) in Retail Market Size By Component, By Technology, By Application, Industry Analysis Report, Regional Outlook, Growth Potential, Competitive Market*

Share & Forecast, 2018 - 2024. Global Market Insights.

Bonnie, E. (2019, October 9). *Beacon Marketing 101: How Today's Top Retail Brands Attract Customers with Proximity Marketing*. Retrieved February 24, 2020, from clevertap: https://clevertap.com/blog/beacon-marketing/

Bowden, J. L. (2009). The Process of Customer Engagement: A Conceptual Framework. *Journal of Marketing Theory and Practice, 17* (1), 63-74.

Boyd, C. (2019, August 29). *How Retail Robots Are Revolutionising the Shopping Experience*. Retrieved February 19, 2020, from The Startup: https://medium.com/swlh/how-retail-robots-are-revolutionising-the-shopping-experience-39bffcf911d8

Britt, P. (2019, April 25). *Stitching Together Online and Offline Customer Data.* Retrieved February 20, 2020, from CMS Wire: https://www.cmswire.com/customer-experience/stitching-together-online-and-offline-customer-data/

Brodie, R. J., Hollebeek, L. D., Jurić, B., & Ilić, A. (2011). Customer Engagement: Conceptual Domain, Fundamental Propositions, and Implications for Research. *Journal of Service Research, 14* (3), 252-271.

Capgemini. (2018, December 17). *AI in Retail Report*. Retrieved February 18, 2020, from Capgemini: https://www.capgemini.com/fi-en/news/ai-in-retail-report/#

Chao, G., Cheung, J., Haller, K., & Lee, J. (2019). *The coming AI revolution in retail and consumer products*. New York, United States of America: IBM Corporation.

Charlotte. (2018, May 18). *The Magic Mirror in Store*. Retrieved February 20, 2020, from charlottetilbury: https://www.charlottetilbury.com/uk/blog/2018/05/charlotte-tilbury-magic-mirror/

Chatbots in retail: nine companies using AI to improve customer experience. (2018, August 21). Retrieved February 18, 2020, from Retail Insight: https://www.retail-insight-network.com/features/chatbots-in-retail-

ai-experience/

Cheung, C. M., Lee, M. K., & Jin, X.-L. (2011). Customer Engagement in an Online Social Platform: A Conceptual Model and Scale Development. *Thirty Second International Conference on Information Systems*, (pp. 1- 10). Shanghai.

Cobanoglu, C., Bilgihan, A., Nusair, K. K., & berezina, K. (2012). The Impact of Wi-Fi Service in Restaurants on Customers' Likelihood of Return to a Restaurant. *Journal of Foodservice Business Research, 15* (3), 285-299.

Dacko, S. G. (2017). *Enabling Smart Retail Settings via Mobile Augmented Reality Shopping Apps.* Warwick: Elsevier.

Danova, I. (2015, December 17). *Beacon technology and the Internet of Things.* Retrieved February 24, 2020, from Pegusdigital: https://pegus.digital/beacon-technology-and-the-internet-of-things/

Davenport, T. H., DalleMule, L., & Lucker, J. (2011, December). *Know What Your Customers Want Before They Do.* Retrieved February 15, 2020, from Harvard Business Review: https://hbr.org/2011/12/know-what-your-customers-want-before-they-do

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science, 48* (1), 24-42.

Deloitte. (2019). *2019 mid-market technology trends report: Survey of middle-market private companies.* Deloitte.

Dix, A., Finlay, J., Abowd, G. D., & Beale, R. (2004). *Human Computer Interaction.* Pearson Education.

Doorn, J. v., Lemon, K. N., Mitta, V., Nass, S., Pick, D., Pirner, P., et al. (2010). Customer Engagement Behavior: Theoretical Foundations and Research Direction. *Journal of Service Research, 13* (3), 253-266.

Dwivedi, A. (2015). A higher-order model of consumer brand engagement and its impact on loyalty intentions. *Journal of Retailing and Consumer Services, 24* (3), 100-109.

Eyüboğlu, E. (2011). Augmented reality as an exciting online experience: is

it really beneficial. *International Journal of Social Sciences and Humanity Studies, 3* (1), 113-123.

Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). The impact of virtual, augmented, and mixed reality technologies on the customer experience. *Journal of Business Research, 100* (7), 547-560.

Forte, D. (2017, October 19). *How Retailers Are Engaging and Personalizing the Customer Experience.* Retrieved February 19, 2020, from Multi-Channel Merchant: https://multichannelmerchant.com/marketing/retailers-engaging-personalizing-customer-experience/

Gangwar, H., Ranjan, P., & Patel, S. (2019). Factors Affecting the Success of Big Data Analytics in the E-Commerce Environment. *Smart Marketing in Digital Age* (pp. 148-159). Indore: Emerald.

Grewal, D., Noble, S. M., Roggeveen, A. L., & Nordfalt, J. (2020). The future of in-store technology. *Journal of the Academy of Marketing Science, 48* (1), 96-113.

Grewal, D., Roggeveen, A. L., & Nordfält, J. (2017). The Future of Retailing. *Journal of Retailing, 93* (1), 1-6.

Hauser, M., Günther, S. A., Flath, C. M., & Thiesse, F. (2019). Towards Digital Transformation in Fashion Retailing: A Design-Oriented IS Research Study of Automated Checkout Systems. *Business & Information Systems Engineering, 61* (1), 51-66.

Hollebeek, L. D. (2011). Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management, 27* (7-8), 785-807.

Hollebeek, L. (2011). Exploring Customer Brand Engagement: Definition & Themes. *Journal of Strategic Marketing, 19* (7), 555-573.

Itsquiz. (2017, March 14). *Chatbots for Retail and E-commerce — Part Three.* Retrieved February 18, 2020, from Chatbot Magazine: https://chatbotsmagazine.com/chatbots-for-retail-and-e-commerce-part-three-c112a89c0b48

Jaucot, F., Ackx, S., Loutas, N., Martens, M., Vanhout, S., & Billiet, P.-A. (2017). *Rethinking retail:Artificial Intelligence and Robotic Process Automation.* PWC.

Jenkins, P. (2019). ClickGraph: Web Page Embedding using Clickstream Data for Multitask Learning. *The 2019 World Wide Web Conference* (pp. 37-41). ACM Digital Library.

Juniper. (2018, February 12). *Digital Voice Assistants in Use to Triple to 8 Billion By 2023, Driven by Smart Home Devices.* Retrieved February 18, 2020, from Juniper Research: https://www.juniperresearch.com/press/press-releases/digital-voice-assistants-in-use-to-8-million-2023

Karunakaran, M. S., & Raveendran, P. (2018). Customer Engagement - The Co-Creation of value in the Marketing Process. *Ictact Journal On Management Studies, 4* (1), 683-690.

KBVResearch. (2017). *North America Retail Automation Market By End Users, Implementations, Types.* KBV Research.

Kilani, A., Hamida, A. B., & Hamam, H. (2018). Artificial intelligence review. In Fourth (Ed.), *Encyclopedia of Information Science and Technology* (pp. 106-119). Hershey, PA, USA: IGI Global.

Kok, J. N., Boers, E. J., Kosters, W. A., Putten, P. v., & Poel, M. (2009). *Artificial Intelligence: Definition, Trends, Techniques, and Cases.* Encyclopedia of Life Support Systems (EOLSS).

Korad, S., Sinnarkar, M., & Baul, S. (2019). *Retail Automation Market by Type, Implementation, and End User: Global Opportunity Analysis and Industry Forecast, 2019-2026.* Allied Market Research.

Kumar, K. (2015, September 2015). *Best Buy tests robot at New York store.* Retrieved February 19, 2020, from Star Tribune: http://www.startribune.com/best-buy-tests-robot-at-new-york-store/329583301/

Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., et al. (2017). *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation.* McKinsey & Company.

Marchand, A., & Marx, P. (2020). Automated Product Recommendations with Preference-Based Explanations. *Journal of retailing, 96* (1).

Mittal, S. (2019, June 19). *Proximity Marketing Examples: 28 Retail Companies Nailing it with their Campaigns.* Retrieved February 25, 2020, from beaconstac: https://blog.beaconstac.com/2016/02/25-retailers-nailing-it-with-their-proximity-marketing-campaigns/

Nicholson, C. (2019). *A Beginner's Guide to Neural Networks and Deep Learning.* Retrieved January 30, 2020, from Pathmind: https://pathmind.com/wiki/neural-network

Okoli, A. (2017, August 22). *7 Technologies to Watch: Bringing Offline Retail Experiences Online.* Retrieved February 19, 2020, from Zoovu: https://zoovu.com/blog/bringing-offline-retail-experiences-online/

P., D. (2018, September 26). *11 Superb Ways AI Can Revamp the Retail Industry.* Retrieved February 17, 2020, from RubyGarage: https://rubygarage.org/blog/11-use-cases-of-ai-in-retail

Pijak, J. (2018, November 12). *The FXMirror by FXGear Helps Users Virtually Try on Garments.* Retrieved February 20, 2020, from Trendhunter: https://www.trendhunter.com/trends/fx-gear

Prasad, K. (2018, September 7). *DIGITAL COMMERCE - FIVE WAYS BEACONS CAN TRANSFORM RETAIL.* Retrieved February 25, 2020, from interactionone: https://www.interactionone.com/digital-commerce

ReportLinker. (2019, October 8). *Global Beacon Technology Market, By Component, By Technology, By Connectivity Type, By Application, By Region, Competition, Forecast & Opportunities, 2024.* Retrieved February 24, 2020, from Global Newswire: https://www.globenewswire.com/news-release/2019/10/08/1926790/0/en/Global-beacon-technology-market-stood-at-1-17-billion-in-2018-and-is-projected-to-grow-at-a-CAGR-of-45-5-during-2019-2024.html

ReportsandReports. (2020). *Retail Automation Market to Grow at 10.96% CAGR to 2023.* Open PR.

Reyes-Menendez, A., Palos-Sanchez, P. R., Saura, J. R., & Martin-Velicia, F. (2018). Understanding the Influence of Wireless Communications and

Wi-Fi Access on Customer Loyalty: A Behavioral Model System. *Wireless Communications and Mobile Computing*, 1-16.

Santos, D. (2017, November 22). *What is Social WiFi Marketing and How Can it Help You Grow Your Business.* Retrieved February 26, 2020, from Aislelabs: https://www.aislelabs.com/blog/2017/11/22/wifi-marketing-what-it-is-and-how-it-can-help-you-grow-your-business/

Sapiezynski, P., Stopczynski, A., Gatej, R., & Lehmann, S. (2015). Tracking Human Mobility Using WiFi Signals. *PLoS ONE, 10* (7).

Sashi, C. M. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision, 50* (2), 253-272.

Seal, A. (2020, January 23). *Top 7 Augmented Reality Statistics for 2020 [+ Use Cases].* Retrieved February 24, 2020, from vxchnge: https://www.vxchnge.com/blog/augmented-reality-statistics

Seng, C. M. (2018, February 1). *Customer Engagement In Retail – Not Merely About Customer Experience.* Retrieved February 5, 2020, from Digitalist Magazine: https://www.digitalistmag.com/customer-experience/2018/02/01/customer-engagement-in-retail-not-merely-about-customer-experience-05816286

Shaikh, A. A., Shinde, P. S., Singh, S. R., Chandra, S., & Khan, R. A. (2014). A Review on Virtual Dressing Room for E-Shopping using Augmented Reality. *International Journal of Soft Computing and Engineering, 4* (5), 98-102.

Singh, A. (2018, October 1). *Retail is Transforming - Thanks to Marketing Automation.* Retrieved January 15, 2020, from BW Disrupt Entrepreneurs' Disrupt: http://bwdisrupt.businessworld.in/article/Retail-is-Transforming-Thanks-to-Marketing-Automation/01-10-2018-161230/

So, K. K., King, C., & Sparks, B. A. (2012). Customer Engagement With Tourism Brands: Scale Development and Validation. *Journal of Hospitality and Tourism Research, 38* (3), 304-329.

Sraders, A. (2019, January 3). *What Is Artificial Intelligence? Examples and News in 2019.* Retrieved February 15, 2020, from The Street: https://www.thestreet.com/technology/what-is-artificial-intelligence-

14822076

Tiffany, K. (2019, March 27). *McDonald's new drive-thru menus will change based on the weather, traffic, and time of day.* Retrieved February 18, 2020, from Vox: https://www.vox.com/the-goods/2019/3/27/18284045/mcdonalds-tech-startup-artificial-intelligence-menu-drive-thru

Triantafyllou, S., Koutsokera, L., Stavrou, V., & Griva, A. (2017). Enhance shopping experience and support decision making leveraging BLE beacons in a grocery retail store. *DMST Student Conference.* Athens, Greece.

Underwood, C. (2019, June 19). *Robots in Retail – Examples of Real Industry Applications.* Retrieved February 19, 2020, from Emerj: https://emerj.com/ai-sector-overviews/robots-in-retail-examples/

Van Doorn, J., Lemon, K. N., Mittal, V., Naß, S., Pick, D., Pirner, P., et al. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research, 13* (3), 253–266.

Wang, A. (2006). Advertising Engagement: A Driver of Message Involvement on Message Effects. *Journal of Advertising Research, 46* (4), 355-368.

Wheeldon, G. (2014, February 5). *How to use free wi-fi for social marketing and analytics.* Retrieved February 26, 2020, from econsultancy: https://econsultancy.com/how-to-use-free-wi-fi-for-social-marketing-and-analytics/

Yao, Y., Huang, Y., & Wang, Y. (2019). Unpacking People's Understandings of Bluetooth Beacon Systems - A Location-Based IoT Technology. *Proceedings of the 52nd Hawaii International Conference on System Sciences.* Hawaii.

Yusop, N. I., Tiong, L. K., Aji, Z. M., & Kasiran, M. K. (2011). Free WiFi as Strategic Competitive Advantage for Fast-Food Outlet in the Knowledge Era. *American Journal of Economics and Business Administration, 3* (2), 352-357.