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**Customers Shopping
Experience in the
Digital Era**

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Introduction

We are experiencing an era of disruptive changes driven by digitization, machine learning, information and communication technology, robotics and artificial intelligence. Many economists have named this trend as the “Fourth Industrial Revolution”. The major impact, of this phenomenon, is occurring in decision-making process. So far, conventional technology helped companies to process large amount of data but still all decisions were left to humans. The new emerging technologies are able to make appropriate and optimized decision and this shift will have deep consequences on sales management and personal selling functions.

Marketers and advertisers, for many years have based their marketing strategies on traditional channel such as radio, TV, print media to deliver their marketing message. The effectiveness of this media has been questioned by the advent of newer digital channels such as social media, email and mobile. Mobile marketing and other communication techniques have transformed communications’ channels and business’ goals. A new form of marketing has been established with the widespread use of tablets, smart phones and other mobile devices which allow companies to target a substantial number of people all over the world, and gain insights about profile, preferences and needs of their customers. A profound change has occurred also in the relationship between companies and customers, not only in terms of the way, time and place it take place, but the major disruption is the shift from product-dominant to service-dominant view.

Also, the concept itself has been changed, with respect to values and motivators, with the relationship becoming more symbiotic and the customer assuming a more active and participant role. Therefore, the integrated marketing communication mix must be adapted to these emerging trends and the consequent changes in customers’ behavior and motivators. Marketing paradigm, particularly direct marketing, has been impacted by the emergence of Internet and Communication Technologies transforming it into digital marketing, where customers and sellers are connected electronically.

Two types of communication channels are used by direct marketing: traditional channels (e.g. direct mail, TV marketing, direct selling,...) and online channels (e.g. mobile marketing, Search Engine Marketing, Display Advertising,...).

Established marketing channels are defined as outbound, one-way and broadcast form of communication, mainly message-driven.

In contrast, digital marketing channels allow a two-way and interactive communications where campaigns are content-driven, enabling the personalization of content according to customers' preferences and expectations. Nowadays, new technologies such as instant messaging, social network enabled consumers to communicate with other people all around the world with no concerns about location or time zones. This kind of interaction strengthen the importance of the role played by digital technologies into marketing strategies. Consumers have a wider range of information available and accessible in an easy and fast way, they can research and compare products before committing to purchase.

They have the possibility to filter content relevant to them and ignore what they define overwhelming, this means that through digital technologies the power shift from the marketers to the consumers.

The interactive and interconnected nature of digital technologies enable consumers to share their own content, opinion and feedback across different channels. Due to the shift of power to consumers, is vital for the marketers to pay attention to consider their reviews and opinions. A new term has been coined to define the consumer in the digital age, "prosumer", which define "production by consumer" and it refers to the role of the consumer which is both producer and final user of a product or service.

This type of user is becoming a relevant variable for digital marketers since with the content they create, by publishing and sharing reviews, they generate value for companies. In addition, digital consumers, are constantly changing behavior and they like try different consumption experiences, they rather prefer marketing communication that are experience – based that focuses on connectivity, interactivity and creativity.

The marketplace has evolved up to a point where the consumer leaves the stressful activities derived from taking an optimal purchase decision to a computer. Consumers, today, choose their products and services based on how much time they can save and how convenient the

alternative is. They prefer to leave to bot activities such as comparing attributes and searching for the best price, since they find them to be time-consuming.

Names like: Ok Google, Siri, Alexa and Cortana are becoming familiar in the recent years, they are new service platforms powered by Artificial Intelligence (AI) which have control over a series of smart devices and have the ability to provide useful information and help with delivery and purchase of everyday goods. Customers consider them as a key service provider to which they outsource most of their important purchasing decisions. The cognitive effort and time needed to make elaborate decisions, it is no more needed since activities are now performed by the bot. This outsourcing choice of consumers to AI is a relevant aspect for marketing. Shopper bots are able to give the best output based on the preferences, budget and requirements of the user.

Consequently, retailers might reconsider the target of their marketing activities from human customers, which are often influenced by brand loyalty and emotions, to a new entity. These conversational agents assume the role of personal assistant because of their capacity to provide advise according to the information they can access, in particular, product recommendation. This functionality is extensively implemented in different devices. Companies are preparing for the rise of voice shopping by putting their effort in strategies to optimize contents and products based on voice search engine.

Since voice bots can deliver interactive messages to users and they are able to provide specific answers to their questions, companies are replacing telephone-based call center or human agents. This widespread use of chatbots present challenges, particularly for their lack of humanness, in fact, they reflect their programmed script while interacting with the customers.

Another important player of the fourth industrial revolution is augmented reality (AR) which refers to the interaction between real world image and computer-generated graphics. This technology is frequently used to help shoppers in buying decisions thanks to its ability to reproduce a virtual product into a three-dimensional image and so to overcome the online retailers' obstacles. The virtual content is generated in different forms, such as information, pictures and objects. Basically, AR is able to augment existing content so that users can visualize in the screen the final output.

AR technology has developed in various forms, as companies have been interested in incorporating AR technology in their processes.

Nowadays AR can be found in head-mounted display, mobile applications, devices and contact lenses, this type of AR can be employed by companies based on their goals and in diverse contexts, some retailers have already introduced customers into this technology. The AR ability to superimpose real world with virtual element opens new ways to deliver content to customers and affect information search and product trial. As the use of AR increased, there is the need to acknowledge the impacts it has on the experience that it delivers and the resulting consumer behavior. The purpose of this study is to analyse the consequences derived by disruptive technologies in customer buying experience and to provide a possible solution to address the relative problems that might result.

In the first part, a brief overview of the current landscape regarding the Ecommerce is presented, showing the main characteristics and figures. Secondly it is presented the phenomenon of Mobile Commerce, with an analysis on how marketers can connect directly to customers in real time with mobile devices and no constraints. The study deeply analyzes the rise of voice commerce, explaining how voice bot are currently used, how they affect the decision-making process, which factors influence their adoption and how to address the challenges they present particularly how to overcome the lack of humanness in strategies.

Lastly the use of Augmented Reality in customer related experience is examined, what are the ingredients to design an effective augmented reality campaign, how to generate engagement in this regard a new concept defined as “ENTANGLE” is proposed. Media characteristics of interactive technology are used to predict customer response to AR. Finally, suggestions are given on how to overcome people concern of privacy.

The study has been carried out analyzing secondary data, both quantitative and qualitative.

Chapter 1

SMART RETAILING

Currently retailers are undergoing the investment and adoption phase of smart technologies where marketing practice and consumer behavior have still to get synchronized. The behavior of the consumers is expected to change in terms of purchase, consumption, search and in the after-sales activities.

The leading technology in retailing field is Electronic Retailing, or in other words, Ecommerce. Ecommerce is also known as E-Tailing is the practice to conduct retailing activities over the internet. Visionary leadership, business mind, financial analysis are all ingredients of a well-defined and clear Ecommerce strategy needed for a successful E-Tailing.

This type of shopping experience suits best those who are unwilling to shops at a physical store¹.

Companies with a clear new vision of business that meets the needs and expectations of a core customer group tend to have a successful retailing concept especially during the first days.

Based on the distribution channel used, there are five categories of E-Tailing business model²:

1. Direct marketing by retailers;
2. Direct marketing by manufacturers;
3. E-Tailers pure players;
4. Click-and-mortar retailers;
5. Internet malls.

¹ Vize, R., Coughlan, J., Kennedy, A. and Ellis-Chadwick, F., 2013. Technology readiness in a B2B online retail context: An examination of antecedents and outcomes. *Industrial Marketing Management*, 42(6), pp.909-918.

² Turban, E., King, D.R., Lang, J. and Lai, L., 2009. Introduction to electronic commerce. And Bates, 2020. *Retail Industry Is Ripe For Mobile*. [online] Ecommercetimes.com. Available at: <<https://www.ecommercetimes.com/story/71835.html>> [Accessed 11 May 2020].

Internet has been added by traditional retailers as a new channel of distribution keeping their physical store and adopting direct marketing as the main channel of distribution. From company sites, manufacturers can advertise their products online, directly to customers. Successful examples of direct marketing manufacturers include companies like Sony, Nike and Dell.

Pure play E-Tailers are companies who sell over internet directly to the final customer, without a physical sales channel. One example is the big giant Amazon.

Companies that combine physical stores and Ecommerce activities are defined as Click and mortar. Some E-Tailers companies are now building physical stores to increase the power of the brand of the online world to reinforce classic selling activities through stores.

The last category, internet malls, are website that connect in a single online location, all the electronic retailers. This type of retailers allows customers to filter their research based on collections, trends and they provide a marketplace where they can exchange products. Retailer industry big turning point is represented by the diffusion of mobile and the opportunity to control cross-channels marketing initiatives that go beyond physical stores. To take advantage of the increasing consumers interest in mobile shopping experience, is essential for companies to have their processes, order management and inventory prepared to integrate mobile channel. It is essential for mobile retailing platform to incorporate key elements purposely created for the mobile channel. Among others, these elements include mobile vouchers and coupons, SMS marketing, mobile transaction payments and specific applications for mobile devices. In order to be profitably embrace by customers, platforms for mobile retailing, before initializing interactions must obtain the consent and permission of the customers. This help to construct a relationship among customers and companies, based on transparency and trust.

1.1 Ecommerce

Ecommerce, also known as electronic commerce, refers to any form of business transaction conducted online. This means that whenever someone buys or sells something using the internet is involved in ecommerce. The term is often used to refer to the sale of physical products online, the most famous example of ecommerce is online shopping.

However, ecommerce can also entail other types of activities such as internet banking, online ticketing and payment gateways.

The history of Ecommerce begins in 1994, it was August 11 when Phil Brandenberger logged into his computer and used his credit card to buy Sting's "Ten Summoners' Tales" for \$12.48 plus shipping, this is the first example of a customer purchasing a product from a business through the internet.

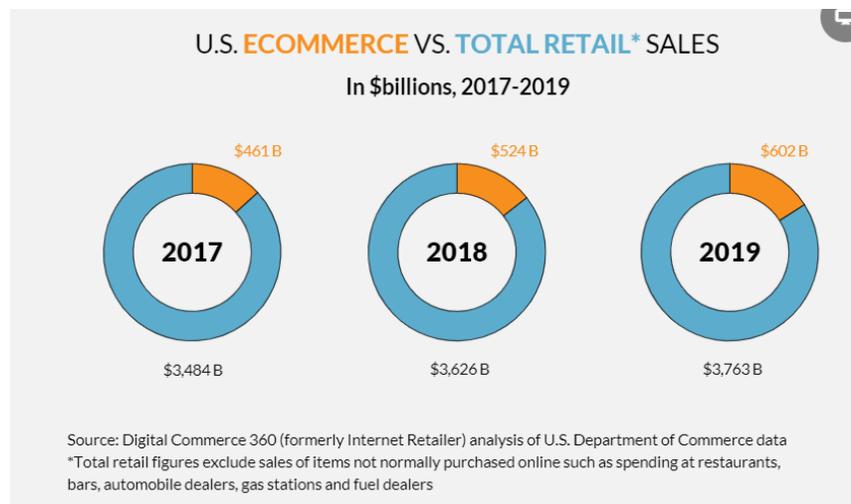
Since then Ecommerce has evolved, it has grown bounds and by leaps, it is the fastest growing retail market projected to hit \$4.135³ trillion in sales in 2020 according to eMarketer study done in 2016.

It is possible to classify ecommerce into three different models based on the type of participants involved in the transactions:

1. Business to Business (B2B): when a business sells goods or services to another business;
2. Business to Customer (B2C): when a business sells a small amount of goods or services to an individual customer;
3. Consumer to Consumer (C2C): when a customer sells goods or services to another customer, this is a relatively new business model.

³ Ecommerce Guide. 2020. *What Is Ecommerce In 2020? Ecommerce Definition Explained With Examples*. [online] Available at: <<https://ecommerceguide.com/guides/what-is-ECommerce/#what>> [Accessed 13 May 2020].

Looking at the recent data about ecommerce, it is clear that this phenomenon has not to be underestimated and consumers are more and more switching from in store purchase to online buying. According to a Digital Commerce 360 Analysis of Commerce department retail data, online spending represented 16%⁴ of total retail sales for the year 2019 in the United States. As reported by the U.S. Department of Commerce quarterly ecommerce figures, consumers spent \$601.75⁵ billion online with U.S. merchants in 2019, up 14.9%⁶ from \$523.64⁷ billion the prior year; That was the higher growth rate than 2018, when online sales reported by the Commerce Department rose 13.6%⁸ year over year.



Online sales share of total retail sales has always increased, with ecommerce penetration reaching 16%⁹ in 2019 according to a Digital Commerce analysis of the Commerce Department’s year-end retail data. The growth has ben of 14.4%¹⁰ in the 2018 and of 13,2%¹¹

⁴ Digital Commerce 360. 2020. *US Ecommerce Sales Grow 14.9% In 2019* | Digital Commerce 360. [online] Available at: <<https://www.digitalcommerce360.com/article/us-ecommerce-sales/>> [Accessed 6 May 2020].

⁵ ibidem

⁶ ibidem

⁷ ibidem

⁸ ibidem

⁹ ibidem

¹⁰ Digital Commerce 360. 2020. *US Ecommerce Sales Grow 14.9% In 2019* | Digital Commerce 360. [online] Available at: <<https://www.digitalcommerce360.com/article/us-ecommerce-sales/>>

¹¹ ibidem

in the 2017. US Ecommerce sales grew by 14.9%¹² in 2019, it has been the biggest annual percentage point jump of Ecommerce penetration since 2000.



Ecommerce also accounted for more than half—56.9%¹³—of all gains in the retail in 2018. That’s the largest share of growth for online spending since 2008, when ecommerce represented 63.8%¹⁴ of all sales growth.

This is only the third time in the history of U.S. retail that the year-over-year dollar gains for online purchases exceeded the gains for in-store spending in a given year. The ecommerce retailers ranking is dominated by Amazon.com Inc., who ranked No.1 in 2019 growing market share chagrin of its competitors.

The total value of transactions on Amazon.com in the U.S. reached \$221.9¹⁵ billion in 2019 from \$117.10¹⁶ billion the previous year, registering a growth of 25.3%¹⁷. In the calculations are included Amazon’s own products and items sold by third-party marketplace sellers.

¹² Digital Commerce 360. 2020. *US Ecommerce Sales Grow 14.9% In 2019* | Digital Commerce 360. [online] Available at: <<https://www.digitalcommerce360.com/article/us-ecommerce-sales/>>

¹³ ibidem

¹⁴ ibidem

¹⁵ ibidem

¹⁶ Ibidem

¹⁷ ibidem

This would mean Amazon alone represented more than a third—36.9%¹⁸—of all U.S. ecommerce last year. Additionally, the web behemoth accounted for more than half—57.4%¹⁹—of ecommerce growth and nearly a third—32.7%²⁰—of total retail gains through all sales channels. Ecommerce in Europe is growing too, the business-to-consumer turnover in the 2019 has been forecasted to be 621²¹ billion euros, this would mean an increase of 13.6²² percent compared to the situation the previous year, when ecommerce was worth 547²³ billion euros. According to the Ecommerce Foundation, most ecommerce turnover is concentrated in Western Europe (66 percent).

Eastern Europe however only accounts for 23 billion euros of the total of 547 billion euros. When talking about ecommerce in Europe, it is very difficult to consider all the countries as a whole while making calculation, is more efficient to consider each country as a unit. There are differences between countries in terms of share of consumers using internet who shopped online.

In the United Kingdom, In Switzerland and Denmark it's over 85²⁴ %, while in countries such as Ukraine and Romenia, less than 26²⁵ percent shopped online last year. The average online shopper spending in the whole Europe was 1,346²⁶ euros in 2018 and the forecast for the 2019 was to grow to 1,464²⁷ by the end of the year. Norther Europe is the region with the highest spending per online shopper: 2.046²⁸ per year, although the continent's ecommerce turnover is generated in Western Europe. Even if online shopping in Europe is growing, there are consumers who prefer to shop in person for different reasons (they prefer to see the product, they are loyal to shops, because of habits).

¹⁸ Digital Commerce 360. 2020. *US Ecommerce Sales Grow 14.9% In 2019 | Digital Commerce 360*. [online] Available at: <<https://www.digitalcommerce360.com/article/us-ecommerce-sales/>>

¹⁹ ibidem

²⁰ ibidem

²¹ ibidem

²² ibidem

²³ ibidem

²⁴ ibidem

²⁵ ibidem

²⁶ European Ecommerce Report, 2019

²⁷ ibidem

²⁸ ibidem

In certain countries, for example Kosovo and Montenegro, people are more likely to refrain from ordering online, while in Poland only 2%²⁹ prefer physical stores over online stores, in Demark 11%³⁰, the Netherlands 11%³¹ and the United Kingdom 10%³².

Below are reported some key figures about Europe ecommerce:

- B2C e-commerce turnover continues to grow at around 13%³³;
- Northern Europe has the highest spending per online shopper;
- The largest share of B2C e-commerce revenue is concentrated in Western Europe (66%³⁴);
- 88%³⁵ of Swiss online consumers made online purchases in 2018. Switzerland leads this list and Ukraine comes last with only 22%³⁶;
- Portuguese e-shoppers most concerned about payment security concerns;
- Kosovo and Montenegro will shop in-store rather than online.

Amazon.com is the most-visited online marketplace in 2018, but even though major American retailers have their influence on locale ecommerce it is not say that Europe doesn't have its own marketplace. In the ranking of the biggest retailers in Europe are listed Amazon, Staples and Apple, but it also contains Otto (Germany), Tesco (UK), Groupe Casino (France), Shop Direct Group, Home Retail Group (both UK), Zalando (Germany) and John Lewis (UK). And then there's this list of top 10 online stores in Europe, which features Amazon (on 7th place) as the only non-European player in that list.

²⁹ European Ecommerce Report, 2019

³⁰ ibidem

³¹ ibidem

³² ibidem

³³ ibidem

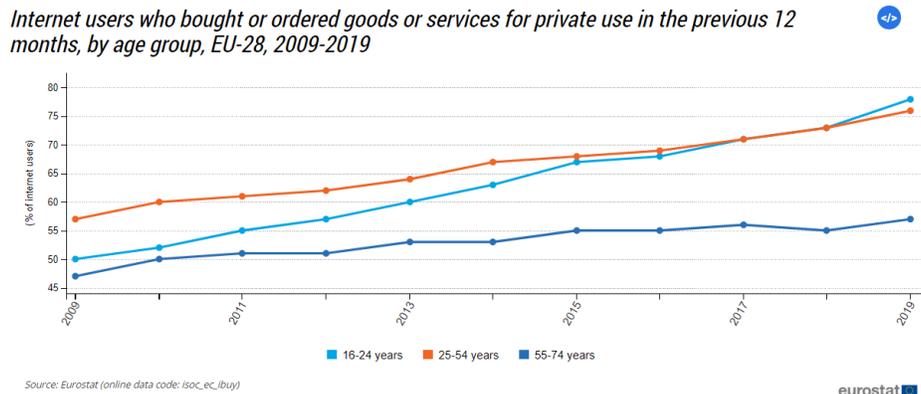
³⁴ ibidem

³⁵ ibidem

³⁶ ibidem

1.2 Characteristics of Online Shoppers

In the survey on ICT usage by households and by individuals made by European Union in 2019, it emerges that the proportion of e-shoppers among internet users is growing and it is dominated by the age groups 16-24 (78%)³⁷ and 25-54(76%)³⁸. It also emerged that more than 7 out of 10³⁹ internet users made online purchases in 2019.



Thanks to ecommerce consumers are able to shop anytime anywhere, having the possibility to compare prices, share and read opinions on products, and have access to a broader range of products all these factors make online shopping very popular in EU, the proportion of individuals aged 16-74 having shopped online in the 12 months prior to the 2019 survey stood at 63%⁴⁰. 88%⁴¹ of individuals, in the 12 months prior to the survey, aged 16 to 74 in the EU has used the internet 71%⁴² of whom ordered or has bought goods or services for private use. Up to 2016, those with the highest share of online shoppers among internet users are aged 25-54.

In the “E-commerce statistics for individuals” study done by Eurostat emerged that in the period 2009-2019 Ecommerce picked up among all age groups, with individuals aged 16-24

³⁷ *European Journal of Educational Research*, 2020. https://www.eu-jer.com/EU-JER_9_2_743.pdf.

³⁸ *ibidem*

³⁹ *ibidem*

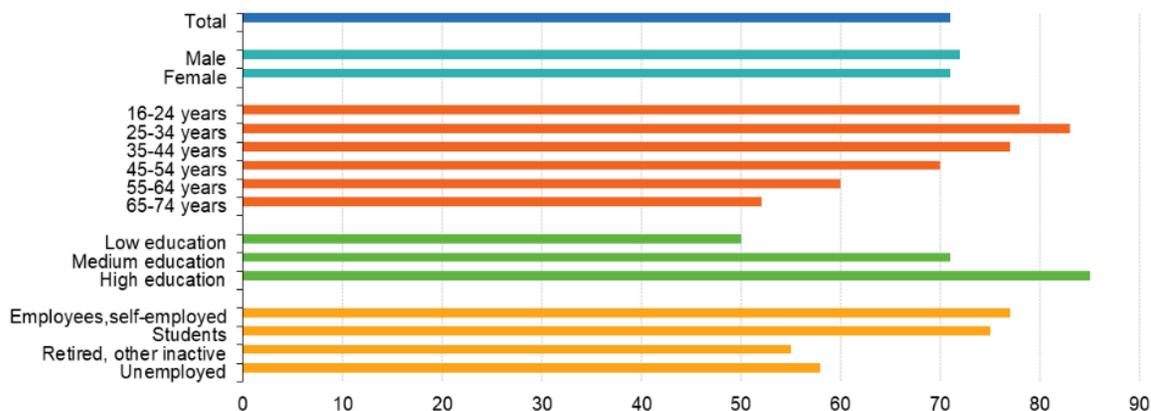
⁴⁰ *ibidem*

⁴¹ *ibidem*

⁴² *ibidem*

showing an increase of 28%, the biggest one. In 2015, the youngest age group (16-24) overtook the EU average level, surpassing the level of the 25-54-year age group in 2019. Gender, age, level of education and employment situation all affect e-commerce activity.

Internet users who bought or ordered goods or services for private use in the previous 12 months, EU-28, 2019
(% of internet users)



Source: Eurostat (online data code: isoc_ec_ibuy)

eurostat 

The share of online shoppers among internet user is slightly higher for men (72%)⁴³ than for women (71%)⁴⁴, the more active e-shoppers are people aged 25-34 (83%⁴⁵ of internet users). The proportion of internet users with a higher level of education shopping online (more than eight in 10) is 35%⁴⁶ points greater than that of internet users with lower education. Employees and the self-employed (77 %⁴⁷ of internet users) as well as students (75 %⁴⁸) shop online far more than unemployed (58 %⁴⁹) or retired/inactive people (55 %⁵⁰).

⁴³ *European Journal of Educational Research*, 2020. https://www.eu-jer.com/EU-JER_9_2_743.pdf

⁴⁴ *ibidem*

⁴⁵ *ibidem*

⁴⁶ *ibidem*

⁴⁷ *ibidem*

⁴⁸ *ibidem*

⁴⁹ *ibidem*

⁵⁰ *ibidem*

1.3 Impacts of Ecommerce

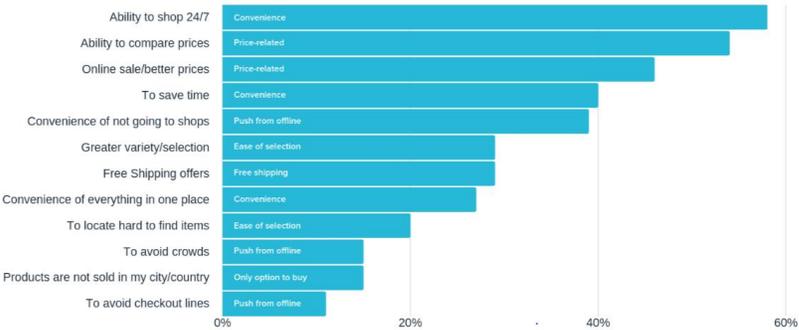
Probably the main revolution caused by the introduction of the ecommerce is the cut of the middleman from the equation of the consumerism previously based off a network of people: who manufacture, sell and purchase. Business today can directly sell to customers without the need of an intermediary, eliminating the need to depend on a broker and vendor to distribute the goods to geographical location beyond business's immediate vicinity. This allow even small business owners to earn higher profits offering their products to the customers at better rates. Another important effect is that Ecommerce has made vertical integration no longer relevant. This practice was considered the best for several decades, all the process from R&D to all other ones down the chain was carried out in-house. Today this practice is become inefficient since the economy is global, established enterprises that are vertically integrated are finding it harder than before to retain their market share.

The threat derives from new companies built on a more flexible structure that are entering the market making competition harder for the companies that dominated it in the past. Traditional companies have spent a significant amount of money to develop physical infrastructures and suddenly find themselves being outsmarted by startups usually based on Ecommerce model and much fewer physical infrastructures able to gain advantage by their ability to ship goods from oversea suppliers who produce high-quality goods at less expense. In order to stay in the market, "old" companies must adjust to new technologies and developing new capabilities by incurring capital expenditure, they are forced to focus only on what they can do best and outsource the rest in order to remain competitive. Outsourcing specific functions to experts and specialist is mandatory to help business concentrating on their product core making them deliver the best value to their customers and reduce capital expenditure, unnecessary expenses and overhead costs. Ecommerce has an impact also on productivity and inflation. The continued expansion of electronic commerce could also lead to downward pressure on inflation through increased competition, cost savings and changes in sellers' pricing behavior.

Ecommerce made it easier for business to reach a wider audience at less expense in comparison to traditional method applied by retailers. With Ecommerce retailers can produce and store goods at a remote upcountry location and still advertise and sell them worldwide avoiding the need to acquire expensive shops in high streets.

Having a good website is essential and the cost of development are quite high, but it is still cheaper than letting expensive high street storefronts. With Ecommerce, sales can happen at any time of the day, there is no downtime, business are open 24h for 7 days for 365 days of the year. Shoppers are no more restricted to complete their purchase within a particular time, today they are able to shop at any convenient time even during the night or while lounging on their couches over the weekends.

A research⁵¹ done by KPMG company, highlights that the number one reason people shop online is that they are able to shop at all hours of the day



Source: Global Online Consumer Report, KPMG International, 2017

An important aspect of Ecommerce is that has contradicted the classic economic theory of decreasing returns to scale, this law states that when inputs (capital and labor) increase, the output is not proportional so a business cannot grow its profits infinitely. This theory does not apply to Ecommerce based enterprises, they have proved that it is possible to sustain fast growth while continuing to offer excellent returns.

⁵¹ KPMG. 2017. *The Truth About Online Consumers*. [online] Available at: <<https://home.kpmg/xx/en/home/insights/2017/01/the-truth-about-online-consumers.html>> [Accessed 6 May 2020].

The main reason behind is that Ecommerce does not need high investments unlike traditional companies, they have minimal infrastructure and inventory since their need is a bare minimum, and rely heavily on information, technology and communication. Sale and distribution via Ecommerce may bring the cost per unit to almost zero in information-based industries, once the initial investments are done, the cost per unit is dramatically lower when compared to traditional business models. Since Ecommerce has changed the way people purchase, advertising techniques also changed accordingly.

Nowadays people who shop at a brick and mortar store before they make the decision to buy read reviews, look up products online and compare prices. Business must consider digital marketing to meet the demands of the today customers, they can no longer depend on traditional marketing techniques alone. Paid ads, social media optimization, email marketing are some of the tactics that business owners employ to reach out millions of potential customers online. It is undeniable that the threat from Ecommerce applies to all business, from tiny startups to large corporation. Business have to remember that old commerce rules are obsolete and don't apply in today's era of e-markets.

Players in the market are changing very quickly, there is no guarantee that a company that is the leader today would retain its competitive edge tomorrow. The threats of Ecommerce is especially high for companies that are not ready to embrace the changing commercial landscape. The change must come from all levels, everything has to adapt to an Ecommerce-first strategy right from how employees works to how management plans, Business that do not jump on the Ecommerce bandwagon are bound to get lost.

1.4 Implications for Customers

It is possible to divide customers according to their online shopping behavior into three groups:

- First group: all the customers that continuously buy goods and services using different online sites, social media, mobile applications or web shops.
- Second group: all the customers that use Ecommerce platforms few times in a year or rarely than that.
- Third group: all the customers that decisively refuse to use ecommerce and are not aware of all benefits.

Ecommerce has both advantages and disadvantages for customers. Starting from the benefits probably the greatest advantage of Ecommerce for customers is the ability to make purchase at any time, customers can easily approach at any time of the day any Ecommerce site and order anything they want. Removing working hours of the physical retailers is a huge benefit for the customer. A great benefit of Ecommerce for the is the possibility to buy the same products at a lower price. Online business can offer price at a lower cost since they do not need a physical storefront and need less staff to run the business. Another important benefit is that online purchase need fewer time with respect to onsite shopping.

It takes just the time of few clicks and have the products sent right at home, eliminating the time spent waiting in line to pay for the products or looking for a parking near the store. Thanks to the availability of information a customer can benefit by searching on Ecommerce sites they are able to make better buying choice. They can compare functionalities, colors, prices and any other essential information to evaluate its value before committing to purchase. Customer can have all their doubts clarified and track their delivery status when the goods are being sent to them. If they changed their mind or any doubts arise while handling the products, customers can easily contact the business almost in real time through different channels like live chat, email

or Facebook messages. In comparison with classic stores, Ecommerce lets the customer choose from a variety of products range, they can purchase a product or a service of their choice from any vendor anywhere in the world. A vendor in the physical store can stock only a minimum amount of goods due to space constraint limiting the choice for customers in terms of size, color and any other characteristics of the product. A virtual store enables a business to stock a lot of goods without considering the inventory costs.

Ecommerce has disadvantage too, maybe the biggest one is the inability for the customer to try and test the product, this make customers a bit hesitant before making a purchase since they feel the fear that the product will not meet the standard expected, the size or color is not the right one of the functionalities do not meet the expectations.

Another common disadvantage of Ecommerce platform is the time related to the delivery, the earliest a consumer can get the product bought is the day after the purchase (except for some Amazon services).

In communicating the day of delivery, the time is not specific but it is usually a range of possible time or more generic is a part of the day (morning, afternoon) this make customer wasting some of their time in waiting to receive the goods stuck in their house or in the location choose as a delivery point. Such a situation can make customers angry and he feel unnecessarily harassed. Digital goods, e.g. a music file or eBook, is an exception to this rule, in this case Ecommerce might be faster than purchasing goods from a physical store.

One of the main characteristics of the physical stores is their ability to make a personal touch and make the shopping experience for the customer reassuring and refreshing, starting from welcoming them at the gate and help them in case of any difficulties. In a virtual store the only interaction is made through the call to action that are preset, for the example the “buy now” button. Credit and debit card and internet banking are the most use payment method for online transactions, in very few cases cash on delivery.

Even though website owners make the possible and take any precaution to protect card details the sits are possible target of hack action done by cybercriminals.

Since Ecommerce transactions are mostly faceless and paperless without any dye proof.

Customers fear the unknown, they are hesitant to make card payments beforehand since most of the organizations do not have a physical existence.

The main fear they have is that if the product they bought does not arrive then they will lose their money.

Since Ecommerce portals access is not limited to a particular geographical location but it is accessible in most part of the world, a customer has to pay taxes when makes a purchase and it becomes difficult to calculate the actual sales tax levied in that place thus consumer face issue during computation of tax, this is also considered a disadvantage of Ecommerce.

Chapter 2

MOBILE COMMERCE

Mobile commerce, also known as MCommerce, is an increasingly large subset of Ecommerce expressed as the conduction of commercial transactions through mobile devices like smartphones and tablets.

It essentially entails the e-commerce transactions done with a mobile phone. The use of MCommerce activity is on the rise and it includes different types of activities such as the buying and selling of goods and services, online banking and paying bills but also in-app purchasing, digital wallet (e.g. Android Pay, Samsung Pay and Apple Pay) and virtual marketplace app for example Amazon mobile App.

In 2017 purchases made via smartphones accounted for 66%⁵² of Mcommerce sales and are expected to rise 82%⁵³ by 2021. Sales on tablets and other mobile devices are expected to increase even though the trend is toward the use of smartphones.



⁵² CBREUS. 2020. *What Is The Role Of M-Commerce In Retail Sales?*. [online] Available at: <<http://www.cbre.us/real-estate-services/real-estate-industries/omnichannel/the-definitive-guide-to-omnichannel-real-estate/by-the-numbers/what-is-the-role-of-m-commerce-in-retail-sales>> [Accessed 10 May 2020].

⁵³ *ibidem*

The major drivers of the rapid growth of this phenomenon are the proliferation of Mcommerce applications, the increased wireless handled device computing power and the broad resolution of security issues. Over time the content deliver over wireless devices has become more scalable, secure and faster.

Nowadays consumers are reliant on digital devises more than ever and Mcommerce has the potential to change consumer shopping habits and become a major channel for shopping. According to a Business Insider Intelligence within the next five years mobile will inch closer to become consumer's preferred channel for online shopping.⁵⁴From the business side the "one-click checkout" has been introduced in the sites of many retailers, this method allow consumers to enter their payments information once, and use the "one-click" option for the next purchases, avoiding to re-enter it. Additionally, in order to let shoppers make purchase without having to leave the platform, social media sites such as Twitter, Facebook and Pinterest have introduced a "Buy" button.

With Millennials and Gen Z holding massive spending power, app usage continuous growth will be a major contributor to sales growth. Younger generations considered tech-savvy consumers are more likely to do a wider share of shopping on their smartphones and so they have the ability to boost Mcommerce sales volume.

The industries that MCommerce has most influenced are the following:

- 1) Telecommunication: customers can view and change their contract, pay for the services and review their account all from their device;
- 2) Financial Services: customers can access their bank account, make payment transactions, use brokerage services in which trading activities and stock quotes assessments can be done all from the same handled device;

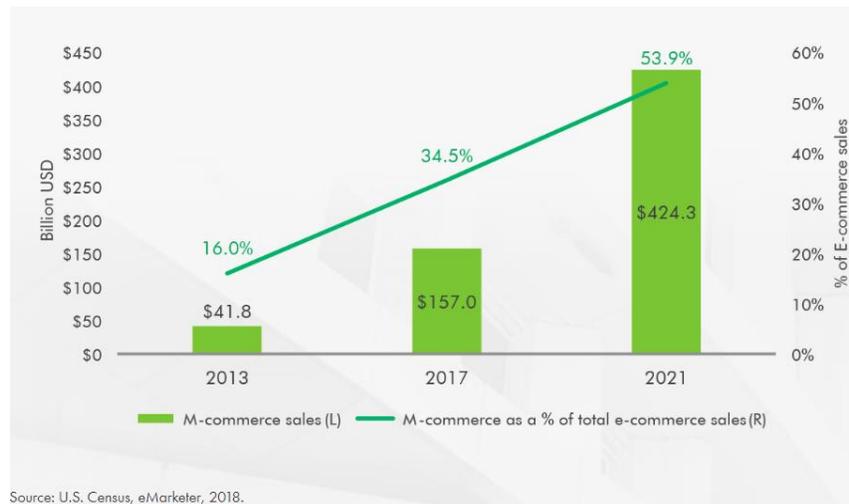
⁵⁴ Business Insider. 2020. *Rise Of M-Commerce: Mobile Ecommerce Shopping Stats & Trends In 2020*. [online] Available at: <<https://www.businessinsider.com/mobile-commerce-shopping-trends-stats?IR=T>> [Accessed 9 May 2020].

3) Information Services: all activities regarding the delivery of financial figures, sport news and traffic updated are all managed by customers through their devices;

4) Services and Retails: customers are able to place order very fast.

2.1 Differences between Ecommerce and Mcommerce

Mcommerce and Ecommerce have similar goals and meaning, both aim at making easier the life of the customers. Ecommerce can be considered as an umbrella term for selling and buying online, while Mcommerce is the subcategory that groups the Ecommerce activities done via mobile devices. This phenomenon is rapidly increasing, sales grew 276%⁵⁵ from 2013 to 2017 and are expected to rise 170%⁵⁶ by 2021. This rapid growth will bring the Mcommerce sales above those of computer sales and account for nearly 54%⁵⁷ of online retail sales by 2021.



One of the key differences between the two involves the mobility; with Ecommerce shopping transactions are done over the internet usually using computers or laptops so customer need to be in a specific place to do their transactions. With MCommerce customers perform their activities through a mobile device so they can do their business transactions anywhere as long as they have internet access.

⁵⁵ CBREUS. 2020. *What Is The Role Of M-Commerce In Retail Sales?*. [online] Available at: <<http://www.cbre.us/real-estate-services/real-estate-industries/omnichannel/the-definitive-guide-to-omnichannel-real-estate/by-the-numbers/what-is-the-role-of-m-commerce-in-retail-sales>> [Accessed 10 May 2020].

⁵⁶ *ibidem*

⁵⁷ *ibidem*

Another difference regards the capabilities of location tracking, in Ecommerce they are limited due to non-portability of the devices, Mcommerce App instead can provide personalized recommendations and location-specific content with the help of GPS technology and WI-Fi they can identify and track user location.

Another difference concerns the reachability, mobile commerce can reach a wider audience with respect to Ecommerce due to mobile device portability. In these way retailers can reach users almost everywhere.

Security of the payment is also different, security capabilities of mobile commerce are a bit more extensive, in addition to the security measure of Ecommerce such as multi-level authentication, MCommerce can also offer biometric authentication (e.g. face ID, fingerprint, retina scans).

2.2 Mcommerce types and Implications

Mcommerce applications cover a broad range of transaction options, it is possible to include them into one of the following types:

- Mobile payments: this type of Mcommerce involves all the progressive innovation in payment options that can be realized via mobile devices;
- Mobile shopping: it is very similar to ECommerce but it is accessible through mobile devices. In this category are included all the dedicated apps, websites optimized and social media platforms that link to the online store or allow in-app purchases such as Instagram or Facebook;
- Mobile banking: it is very similar to online banking, transactions can be done through a dedicated application, however services might be limited or restricted on mobile devices.

Mcommerce is now part of consumers modern life, they are able to conduct their business and activities through mobile devices everywhere and anytime, applications have grown to be an everyday part of the customers' life.

For business it is now a priority to find possible ways to integrate MCommerce into their business model or improve their existing services. Particularly for retailer's business it is essential to work on mobile commerce app development to stay and remain competitive. MCommerce does not consist of only buying and selling of good and service, they have so many applications.

The most business-impacting types of MCommerce service and application can be divided into the following groups:

- **Mobile Marketing:** Mcommerce is a great way for business to reach a wider group of people thanks to the ability of Mcommerce to send out promotional rewards, correspondence to help get customers on board and messages for new services and products;
- **Mobile ticketing:** it is possible for customers to buy tickets on their mobile devices and show the electronic ticket to the event or where the ticket is to be redeemed. Almost every business offers mobile purchase ticket, from airlines companies to movie theaters and concerts;
- **Entertainment:** Mcommerce can be seen as a mobile entertainment, it is the best use a mobile phone can have in terms of using it for something other than making calls. Mobile phone can be used for all form of entertainment from applications that shows video such as YouTube to those that shows movies and television shows and even music applications;
- **Reservations:** with this type of Mcommerce applications customers can reserve their spot with their mobile phone which is easier for everyone involved. Both customers and companies can reduce the amount of effort and work needed to book various reservations from hotel rooms, restaurant dinners and parking spots;
- **Healthcare:** these applications can be used both by doctors and patients. Patients can access their healthcare records, paying medical bills and more. Doctors can use application to access the healthcare records of a patient, make clinical decisions and send prescriptions. It is a very useful tool to remain connected to the hospital database and enhance the patients' experience overall;
- **Office Communication:** Mcommerce application can help to improve communications between working teams, they can act as a bridge for different unit of the business. It is possible to track inventory level, access information, give immediate approval or response without the need to wait for long.

2.3 Advantages and Disadvantages of Mcommerce

Starting from the advantages that Mcommerce can bring to business, for sure there its ability to create a global customer base. Individuals that has an internet connection and a mobile device are potential customer for business that operate through platforms since they can provide information to them wherever they are. Both for buyers and sellers it is easier to reach each other and connect to make transactions. Since more and more the mobile activities are done through an application, app have revolutionized the way in which business contact future customers. It is estimated that individuals spend approximately 2 hours per day on app, this represents an opportunity for business to gain access to user data by introducing an app to Mcommerce market in order to create more deals. In addition, all the activities the customer does on the app are registered and stored in the system's database, so there is the possibility to remark items based on the customer's activities, and also items discovered during product search and/or abandoned in the cart to bring people back in the app or use this information in the future to better target the communication and offers to the customers.

Mcommerce application give the possibility for business to maintain a low level of inventory for the goods they are selling. When a product is present in the database, it is possible to know product availability in terms of quantity and characteristics in this way business can avoid backorder situation. There is also the possibility to reduce the need to carry certain type of inventory by sourcing specific items only when purchased from a mobile device. Mcommerce presence gives the opportunity to scale a business very quickly to meet customer needs. For example, it is possible to add money to an advertising campaign that is performing well, there is no need to add space in the shop or in the inventory because everything is available online. The experience that Mcommerce is able to provide to the customer encourage impulsive purchase, the pictures customer sees, information they can search and even the emotions they feel and perceive create the urge to make impulsive purchase. For these reason businesses put a lot of effort on content that stirs emotions, product photography, and vibrant colors are choose to present items to customers. Many times, countdown timer is added in the platform or limited quantity of items are shown to encourage

a sales using scarcity as a strategy.

On the other hand, Mcommerce has also disadvantages, for definition it requires mobile devices in order to work in this way all individual who don't have one or do not have internet access are excluded from being part of the Mcommerce experience.

Since the first impression of an app or a mobile website become the foundation of the reviews the customer will leave, business must be very careful when using Mcommerce; discounts, in-depth product description and inviting graphs the app must be easy to use for customers. Because there is a lack of personal touch companies need to get the first impression right as often as possible especially because there will be fewer opportunities to reverse an initial poor experience. Having an excellent IT support is mandatory for Mcommerce platform, in this case the uptime percentage becomes a key metric to monitor and pay attention to. If the platform cannot be assessed for some reason or crashes, business will lose the ability to generate sales. A simple temporary surge in traffic can be enough to take the platform down, one strategy to prevent this to occur can be plan for the worst-case scenario and be ready to implement the required measures in a short time.

As for Ecommerce, there is no possibility for the consumer to try the product before deciding whether to buy it or not, so it is mandatory to have a clear, valuable and concise return option available to consumer. In this sense augmented reality technology is helping a lot. As previously mentioned, Mcommerce creates a global marketplace the competition a business face is enormous, having a good marketing strategy and being able to be find by the customers is mandatory foe companies. The amount of time a consumer is willing to wait on a purchase from a Mcommerce application is very low, at best companies have 8-seconds window to close a sale, if this do not happen customers will do the purchase from a competitor that offer the same but in a faster way. Consumer may stop using an app if it fails to load the information, they need in more than 2 seconds. Because more internet traffic than ever before is coming from mobile devices, the advantages and disadvantages of Mcommerce are important to consider. Since half of all website visits come from tablets and smartphone is essential for companies to evaluate these key points from a business perspective in order to avoid losing money.

2.4 Mobile Marketing – The Concept of “So-Lo-Mo”

It was late 1990s when Mobile Marketing emerged from the sending of a message using SMS (Short Message Service). The diffusion of tablets and smartphones and the introduction of better technologies allow to improve and change marketing strategies accordingly and also different mobile communication tools have appeared⁵⁸. As mobile channels becoming a preferred communication channel for customers. Marketers was able to improve the permission-based marketing, that is the practice of obtaining consumer’s consent before a continuous marketing conversation through mobile devices in return for value exchange. Therefore, one of the key variables of successful and effective mobile marketing permission-based is the notion of “value exchange”, customers are willing to consent an give their personal information like preferences and demographic information if they receive services, products, or promotions which they find interesting and relevant. Mobile marketing is an innovative wat to promote specific products and services to new prospects and leads, it is attractive for man companies, both small and large. Customers nowadays are more connected to each other, this have changed the change their use of mobile devices, that can support app website, that leads to an increase in interactivity. Mobile strategy indicates how different mobile strategies such as mobile app, website and other tools are employed in order to reach determined marketing goals to satisfy the needs of the customers. Influential methods that are cost-effective and innovative are constantly being search by marketers to enhance rate of response of customers and revenues by realizing marketing campaign specifically targeted. To achieve these goals, the most indicated medium is mobile marketing, because of the benefits it can provides to both marketers and businesses. Benefits include, interactivity, immediacy, distribution, affordability, viral potentials and campaign integration. Furtherly, it can be integrated in an easy way, since its flexibility, with innovative and new form of advertisement to boost their potential.

⁵⁸ Okazaki, S., 2012. *Fundamentals of mobile marketing: theories and practices*. Peter Lang Publishing.

When other digital marketing communication channels such as social media and mobile marketing are integrated to form a marketing approaches defined as multi-channel, they become a primary source to reach marketing goals.

The process of obtaining attention or traffic with social media tools is defined as Social Media Marketing (SMM). Communication and massive collaboration among users, is enable by the user generated content and the networked structure of social platforms. Social networks are composed of groups, enterprises and individuals connected to each other by mutual connections and interdependency.

Social network, particularly social media, have continued to prove in many ways that word-of-mouth marketing can be classified as most transparent and purest type of direct marketing. One of the key variables of social media revolution was the creation of the “Like” feature in 2010 by Facebook, this implicates that users can express themselves over content shared, and the content, products, companies could be digitally “likeable” which in turns could increase popularity and trust.

But mobile marketing strategies work better when they are integrated with other strategies and channels to build a cross-platform strategy. A new term “So-Lo-Mo” has been coined to indicate a new marketing trend concerning the convergence and integration of social media, location-based service, and mobile channel. It is one of the latest marketing concepts to provide access to user of tablets and smart phones to a promotions and store offering based on their location through searches performed on the mobile. With this kind of approach, companies are able to promote their products and services in an easy way since customers are able to receive relevant content based on their search results.

By motivating customers to purchase in different channels, marketers have the chance to increase customer profits.

Potentially, customer growth and retention are improved with multichannel experience, since customers allocate more money to the firm which in turns increase company’s profits.

Customer channel choice is influenced by marketing communications, each customer has a proper optimal level of communication frequency and if exceeded it can have harmful consequences⁵⁹.

As a consequence, there are differences in planning mobile marketing strategies and mass marketing, the former has the ability to directly target consumers through highly tailored messages with promotional or advertising nature.

To deepen interactions with customers, marketers are integrating social media with mobile marketing, in fact, it is essential to firstly understand mobile consumer preferences when planning marketing campaigns.

⁵⁹ Venkatesan, R., Kumar, V. and Ravishanker, N., 2007. Multichannel Shopping: Causes and Consequences. *Journal of Marketing*, 71(2), pp.114-132.

Chapter 3

CONVERSATIONAL COMMERCE

3.1 Chatbots – An Introduction

Natural language - base interfaces are dominating the interaction between computers and humans. Recently, personalization has been improved a lot through the use of natural language thanks to which the user is able to interact with the system in her own word, instead of using the already present ways to interact⁶⁰. A voice – based or a text – base conversation typically starts with a user that using natural language ask a question to a chatbot that provides an answer using natural language⁶¹. Communication between a human and a chatbot is favored by the design of the chatbot that uses textual or auditory method and natural language.

The role of a chatbot have change a lot from being considered an entertainment and fun tool. Although artificial intelligence is the primary component of the modern chatbot used to answer user's questions, still they are far from being able communicate with human in a contextual, natural and coherent way.

In 1960 Joseph Weizenbaum programmed ELIZA, a robot which uses basic chatbot technology, and it was able to fool users by giving the impression they were having conversation with a real person. ELIZA and other early chatbots had not the ability to sustain a conversation, they used minimal context identification and keywords. ELIZA analyses the inputs inserted by the user, and associates the keywords founded returning a sentence according to the rules connected to the keywords present in the script.

⁶⁰ Zadrozny, W., Budzikowska, M., Chai, J., Kambhatla, N., Levesque, S. and Nicolov, N., 2000. Natural language dialogue for personalized interaction. *Communications of the ACM*, 43(8), pp.116-120.

⁶¹ Hussain, S. and Athula, G., 2018. Extending a Conventional Chatbot Knowledge Base to External Knowledge Source and Introducing User Based Sessions for Diabetes Education. 2018 32nd International Conference on Advanced Information Networking and Applications Workshops (WAINA).

The answers provided by the chatbot are based on reassembly/assembly rules linked to precise decomposition rules.

The SCRIPT is formed by transformation rules and associated keywords for a determined class of conversation. One of the most impressive chatbot with the most advanced technology for natural language processing is A.L.I.C.E. (Artificial Linguistic Internet Computer Entity), it has been awarded three times with the Loebner Prize, recognized to talking robots and accomplished humanoid. It is constructed with the use of Artificial Intelligence Mark-up Language, a technology that supports most of today's chatbot platforms. Chatbot designed with this technology are the most widespread thanks to their simplicity in configuration and because they are lightweight.

While generating the responses, appropriate context needs to be considered since predefined answers for a determined group of questions implies constraint on the conversational agent.

Chatbots can be classified into two main categories based on goals:

1. Task – oriented chatbots;
2. Non task – oriented chatbot.

The first one is built with the purpose of accomplish a task, and they are designed to have brief conversations, typically within a restricted domain. The main aim is to support the user to accomplish a specific goal. Typical scenarios are: booking accommodation, placing an order for a product, booking a flight/hotel, help user to find a specific information, scheduling an event. Most frequent examples of voice-based task – oriented chatbot/conversational agents are personal assistant like Alexa, Cortana and Siri. This type of chatbots are not suited to process general knowledge and answer to difficult questions. The latter can produce chitchat for pleasure purpose and perform a conversation with a human in open domains. This kind of chatbots are very useful for improving the learning and understanding of a second language or keeping company to elderly people.

Unlike task-oriented chatbot, they respond to the user in a way to proceed on the conversation⁶², in fact, they can sustain long conversations, and are able to interpret human interaction known for its unstructured characteristic.

It is possible to divided non task-oriented chatbot into two classes based on the architectures:

1. Generative – Based: that generates proper answers during the conversation, it is a sequence-to-sequence model.
2. Retrieval-Based: which learn to select responses from the current conversation from a repository.

Evidence suggests that natural language have become the main component in modern chatbots and interaction between computer system and human has been updated. The dialog is different whether it is a task-oriented or not-task-oriented chatbot, for the first one it is possible to process only simple algorithms constructed on pattern matching used to process the queries, and only similar inputs. For the second one in order to guarantee correct answers several algorithms and strategies are required, and queries may be different based on their context. Generative-based chatbots are difficult to build as compared to retrieval-based chatbots.

3.2 A New Decision – Making Paradigm

Customers today are focused on timesaving and convenience, so they choose their services accordingly. For this reason, they tend to outsource uncertain and time – consuming parts of the customer service experience, like the search for the most efficient attributes and best offer are left to the computer⁶³. Bots have assumed the role of personal assistants, the new service platforms such as Amazon’s Alexa, Google Assistant, Apple’s Siri are more and more present in the homes of the consumers.

⁶² Vtyurina, A., Savenkov, D., Agichtein, E. and Clarke, C., 2017. Exploring Conversational Search With Humans, Assistants, and Wizards. *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '17*.

⁶³ Lemon, K. and Verhoef, P., 2016. Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing*, 80(6), pp.69-96.

Their capabilities have been improved, now they are able to control other smart home devices and to commit to purchase and delivery of goods⁶⁴. For many consumers, smart speakers have become a key service provider. Outsourcing customer choices to AI has important implications for the marketing area. Thanks to the ability of shopper bots to make purchases decisions that are optimized based on the preferences, budgets and requirements of the user, direct-to-customers producers and retailers have to change their communication strategies, since the target receiver is different. They no longer communicate their product features to human consumers that make decisions according to brand loyalty and emotional feelings but rather to bots that are the solutions for insufficient cognitive capacity the customer for making the best decision. Service research, service companies and service marketers must be aware of this shift and embrace it.

Apparently, the major disruptions brought by AI will be in the service sector. The most affected by the shift in customers behavior are “branded business”⁶⁵, companies that have strongly invested in the brand as their market advantage and now consumers may ask for a product not by brand but by an attribute such as “low fat content”. Not only bots are able to evaluate a product independently of brand recognition, but also, they lack brand loyalty⁶⁶. Additionally, visual emotional perception of packages or merchandise is irrelevant to voice AI.

The second most affected categories of suppliers are the ones who built their market advantage on superior customer experience and personal service. The perceived personalization of a service is almost irrelevant when customers leave the decision-making process to algorithm. Customer service previously done by human interaction is now executed through home bots⁶⁷. Thanks to this technology also start-up and small businesses

⁶⁴ LEWIS, M. and MARVEL, H., 2011. WHEN DO CONSUMERS SEARCH? *The Journal of Industrial Economics*, 59(3), pp.457-483.

⁶⁵ Mizik, N. and Jacobson, R., 2009. Valuing Branded Businesses. *Journal of Marketing*, 73(6), pp.137-153.

⁶⁶ Klassen, M., Gupta, P. and Bunker, M., 2009. Comparison shopping on the internet. *International Journal of Business Information Systems*, 4(5), p.564.

⁶⁷ Klaus, P., 2013. The case of Amazon.com: towards a conceptual framework of online customer service experience (OCSE) using the emerging consensus technique (ECT). *Journal of Services Marketing*, 27(6), pp.443-457.

do not need huge investment in advertising to be suggested as a possible choice by bots. The main benefit bring by chatbots for customers is their ability to give the optimal alternatives among the available ones. Documenting the shift of consumers choice from computer screen (visual) to voice bots (audial) is very important in order to adjust marketing strategies according to the new needs of the users, that are: ease use and convenience. Given the modern interaction between humans and computers and the Artificial Intelligence evolution, the expected future changes in terms of service and marketing environment are the following: The role assumed by digital disruption in consumer choice; consumer decision-making process and influencing factors; actions and further analysis needed by service marketers to fully integrate AI voice command purchasing.

AI is more and more present in consumer and organizational environment; it acts as a driving force for perception. Service research and service marketers need to carefully understand the implications of AI in the customer decision-making process.

Since the dominant role of voice bots for all customer service interactions we will analyze their implication in detail.

Changes in the purchase environment made search for information complex, customers have to face a lot of difficulties and effort to make optimal decisions. Consumers need to think that their knowledge of alternatives is optimal when making a purchase. Traditionally the brand was used to reduce the cost of access for information⁶⁸ since it represented a particular level of quality and benefits delivered. Many researches show that brand name and price are the most important attributes for consumer in decision-making⁶⁹. Value, quality, prestige and dependability are abstract attributes, almost impossible to objectively measure, for this reason brand names help in representing the abstract⁷⁰. Service brand are important in providing reliable information about the quality of purchase

⁶⁸ Wu, D., Ray, G., Geng, X. and Whinston, A., 2004. Implications of Reduced Search Cost and Free Riding in E-Commerce. *Marketing Science*, 23(2), pp.255-262.

⁶⁹ Dawar, N. and Parker, P., 1994. Marketing Universals: Consumers' Use of Brand Name, Price, Physical Appearance, and Retailer Reputation as Signals of Product Quality. *Journal of Marketing*, 58(2), pp.81-95.

⁷⁰ Brucks, M., Zeithaml, V. and Naylor, G., 2000. Price and Brand Name As Indicators of Quality Dimensions for Consumer Durables. *Journal of the Academy of Marketing Science*, 28(3), pp.359-374.

from a customer point of view⁷¹. The advantage given by the brand of speeding up the process of decision-making by short-cutting alternatives from the decision has been replaced by AI comparison ability. This implies the rise of lot of questions for researches and marketers especially about the future of the role of the brand, will functional branding become obsolete due to the bot ability to determine quality without reliance on a brand? According to a study done by Capgemini Digital Transformation Institute 24% of 5,000 people surveyed said that they would prefer using a bot assistant rather than a website⁷². Today, voice assistant service is used by 51%⁷³ of consumers, mainly accessed through smartphones. 35%⁷⁴ have used voice assistants to buy groceries, clothing and home-care products. Google, Microsoft, Amazon and Apple, to deliver a greater level of convenience have linked home bots to delivery systems.

Since human beings have different capabilities, experiences and different skill sets, they will respond differently to a training session and given their limited access to information and memory capacity, companies have to compensate by investing huge amount of money on technological systems. Customer service experience, provided by human employee, may vary based on person offering the service and on other factor such skill set effort, energy level and emotional state. Differences on the service received can lead to frustration, confusion and undesirable variations in the customer service delivered. Engagement, trust and rapport are factors that contribute to a negative or positive customer service experience, all are considered “soft” skills. For service marketers, the use of vocal AI is an area of particular attention considering that by 2020 85% of all customer interaction will take place without a human representative⁷⁵. Service delivered by AI have advantages in terms of consistency of service delivery compared to people-delivered services.

⁷¹ Zeithaml, V., 1988. Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, 52(3), p.2.

⁷² Capgemini Worldwide. 2020. *Empathetic Intelligence: How Smart Voice Assistants Are Transforming The Way Brands Drive Consumer Convenience*. [online] Available at: <<https://www.capgemini.com/2018/09/voice-assistants-driving-consumer-convenience/>> [Accessed 22 May 2020].

⁷³ Ibidem

⁷⁴ ibidem

⁷⁵ Wirtz, J. et al. (2018) "Brave new world: service robots in the frontline", *Journal of Service Management*, 29(5), pp. 907-931. doi: 10.1108/josm-04-2018-0119.

The evolution of AI adoption in making decision for the consumer, is driven by the trust of the source to providing the choice. Trust has been shifting from the brand of the product to the brand delivering the service – the bot. As the consumer uses the bot repeatedly, it gains trust for purchases advice. The situation can evolve to the point that consumers that are heavily dependent on AI will be afraid to make their own decision because they fear of not making the optimal decision and to leave to the AI complete control⁷⁶.

Additionally, AI knows consumer's preferences since its ability to learn from past decisions, purchases and preferences, content filtering is used to provide the most accurate alternatives to customers. Bot suggest products based on two methods of research: Content filtering recommends and knowledge – based recommender system. With the first one, alternatives are provided based on comparison between user's profile and the characteristics of the product. In order to be efficient, user profile needs general knowledge of user's past purchases and preferences. With this system, users are categorized based on responses to early recommendations and initial preferences. It is particularly used for "low involvement" decisions.

The latter requires explicit knowledge about user's preferences and requirements and their dependencies⁷⁷.

It requires solicitation from the user that has to select the preferred alternative among the proposed ones, which requires time, once identified they are combined with content-filtering in order to provide recommendations. This system is more suitable for "high involvement" decisions.

Since bots shoppers relay on the recommendations provided by the bot, they are willing to pay a price that is 7 – 17% higher⁷⁸.

⁷⁶ Makridakis, S. (2017) "The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms", *Futures*, 90, pp. 46-60. doi: 10.1016/j.futures.2017.03.006.

⁷⁷ Mandl, M. et al. (2010) "Consumer decision making in knowledge-based recommendation", *Journal of Intelligent Information Systems*, 37(1), pp. 1-22. doi: 10.1007/s10844-010-0134-3.

⁷⁸ Adomavicius, G. et al. (2013) "Do Recommender Systems Manipulate Consumer Preferences? A Study of Anchoring Effects", *SSRN Electronic Journal*. doi: 10.2139/ssrn.2285042.

3.3 Smart Speakers Usage in Shopping – The Convenience Addicted Customer

Computer's interface is able to provide visible alternatives, since they subsist along a two-dimensional surface, the suggested alternatives are freeze for a certain amount of time and customer can contemplate the alternatives, but still the decision on what to buy is left to them.

On the other hand, voice is based on a single temporal dimension. When a consumer asks suggestions to a vocal bot, it does not provide a list of products, since human have constraints on retaining and listening to information in short-term memory. Rather, the final choice of what to buy is the first or second one that the bot suggested. The main reasons why consumers use bot to do their shopping are the following:

1. Perceived control they get through voice;
2. Emotions perceived by the voice;
3. Voice is easy to use and convenient.

1. BY USING VOICE CONSUMER EXPERIENCE POWER AND CONTROL

The bot's advices are considered as a friend to rely on and not as a computer screen that does not provide emotions. Typically, the name of the chatbot is female (Siri and Alexa) and the voice is charm with a trustworthy tone. Data from recent researches on the consumer interest in voice shopping, showed that 22%⁷⁹ of consumers that own Google Home or Amazon Alexa use voice shopping. Statistics can change with the introduction of Google Duplex, which in order to understand the context and adjust the responses uses a recurrent neural network and a speech synthesis (WaveNet). This app makes can make call to book hair appointments, book dinner reservations and other services.

2. CONSUMER FEELS POSITIVE EMOTIONS

⁷⁹ Kennedy, J. (2020) *Amazon Echo is a Trojan horse that threatens traditional retailers, Silicon Republic*. Available at: <https://www.siliconrepublic.com/machines/amazon-commerce-retail-echo-wolfgang-digital> (Accessed: 22 May 2020).

Happiness of consumers is increased when they spend money on time-saving services⁸⁰, and they prefer to avoid bad experiences by using determined facilities. It is more effective to provide mechanism to avoid bad customer experience rather than to delight customers⁸¹. In tests performed to analyze the customers' acceptance of smart speakers, it was found that factors such as ease of processing information and enjoyment are driving factor for their usage⁸². Marketers should focus on enhancing the enjoyment while reducing the privacy and security risks perceived. Business have started to understand the importance of voice and they are finding a way to represent their brand by unique pleasant voices. Voice role is analogous to trademark's role, such as slogans, logos and colors used to identify a brand.

3. CONSUMERS ARE ADDICTED TO CONVENIENCE

Convenience is now embraced by consumers without thinking of it, the reason why they pay more attention to convenience with respect to other attribute has a long history⁸³. The fact that convince represent a key variable in consumer behavior is reflected by the increased adoption of AI vocal bots. Time saved by using specific tools for shopping and convenience are factors that by today's customers keep in mind while shopping. They believe that by saving time they save also money. Amazon Prime is probably the most brilliant example of consumers valuing convenience. Companies are considered innovative in terms of delivery convenience, driving consumer's loyalty to their offering. Costumers, over the past 20 years, have been trained to purchase without touching or examining the available options first, this is mainly due to the development of online shopping preparing the way for voice shopping

⁸⁰ Whillans, A. et al. (2017) "Buying time promotes happiness", *Proceedings of the National Academy of Sciences*, 114(32), pp. 8523-8527. doi: 10.1073/pnas.1706541114.

⁸¹ Ponsignon, F., Klaus, P. and Maull, R. (2015) "Experience co-creation in financial services: an empirical exploration", *Journal of Service Management*, 26(2), pp. 295-320. doi: 10.1108/josm-10-2014-0277.

⁸² Kowalczyk, P. (2018) "Consumer acceptance of smart speakers: a mixed methods approach", *Journal of Research in Interactive Marketing*, 12(4), pp. 418-431. doi: 10.1108/jrim-01-2018-0022.

⁸³ Collier, J. and Kimes, S. (2012) "Only If It Is Convenient", *Journal of Service Research*, 16(1), pp. 39-51. doi: 10.1177/1094670512458454.

bots.

Today customers can choose among a wide range of alternatives, thanks to warehouse infrastructures with access from different sources around the world. A new age of consumer will arise, characterized by the extensive usage of AI shopping bots with access to all relevant data and computing power to analyze them to select the best alternative.

3.4 Building Product Attitude

Conversational Agents have taken the role of personal assistant that recommend product to customers based on their preferences. In 2022 the market for shopping conducted through voice devices is expected to grow up to USD 40 billion⁸⁴, a huge increase that mirrors the fact that nowadays product recommendation feature is implemented in many devices. Marketers and businesses are trying to find ways to optimize products and content to voice search engines⁸⁵. One of the most attractive attributes of conversational agent as a tool for shopping is the convenient access through voice interaction, like advertisement, smart speakers that recommend products has the aim to sell and promote. It is challenging for marketers to promote a product through vocal tool because product comparison is almost impossible, no more than two or three choices should be suggested and be one of them is very hard. The concept of personalization in voice commerce must be carefully revisited and must be understood if it is the right strategy given the voice – only interaction constraint considering the nature of voice agent and whether there are more appropriate and effective solutions. Since companies are trying to construct a closer engagement and relationship with consumers on interactive platforms, the role that voice agent represented for the customers should be carefully examined as a key factor in product recommendation. Voice shopping requires ad hoc strategies to enhance user experience, we will analyze how personalized message and the social role of the agent influence attitude toward a for low and high involvement products.

⁸⁴ Perez, S. (2018). Voice shopping estimated to hit \$40b billion across U.S. and U.K. by 2022. TechCrunch, March 2, 2018 <https://techcrunch.com/2018/03/02/voice-shopping-estimated-to-hit-40-billion-across-u-s-and-u-k-by-2022/>. (Accessed 18 May 2020).

⁸⁵ Bentahar, A., 2020. *Council Post: How Voice Search Is Changing Shopping*. [online] Forbes. Available at: <<https://www.forbes.com/sites/forbesagencycouncil/2018/12/03/how-voice-search-is-changing-shopping/#238e10c72615>> [Accessed 19 May 2020].

3.4.1. Social Role of the Conversational Agent

How it is possible for a voice agent to persuade the customer and build a favorable attitude toward a product? The change in attitude can be explained by the two most famous dualistic mods of persuasion: The Heuristic-systemic model (HSM) and Elaboration Likelihood Model (ELM) both state that the change in the attitude is affected by two different models of processing persuasive messages. ELM explains that a person exposed to a persuasive message form its attitude based on its likelihood to elaborates the information received⁸⁶. Elaboration likelihood means how much effort a person will allocate to understand a message, it requires going through the proposed argument which involves cognitive attempt. The cognitive effort employed to elaborate the information is denoted by the central route that implicates that a person, in order to assess the details of the proposed message needs to carefully revise it. The model of persuasion refers to messages is the same in the HSM, changes in attitudes and information processing are strongly influenced by the capacity and cognitive ability of a person. In systematic processing, people have the tendency to formulate an opinion based on the grade of suggestions content after having analyzed the message. People tend to formulate an opinion and develop an attitude according to other communication sign in heuristic processing, as they apply less cognitive effort to judge a received message. When the customer receives a message for a product to which he is strongly emotional connected, he would be more likely to use cognitive effort to understand and analyze the message, we will refer to these cases as “high-involvement product”. In the opposite situation, customer depends more on signal that are peripheric like the message ambassador, we will consider this case “low-involvement product”. There are many evidences of social responses during interaction between humans and computers⁸⁷. People tend to apply the human behavior way when dealing with technology, for example they try to be polite, replicate stereotypes derived from gender and interpret as a unique person the same voice from different tools.

⁸⁶ Petty R.E., Cacioppo J.T. (1986) The Elaboration Likelihood Model of Persuasion. In: Communication and Persuasion. Springer Series in Social Psychology. Springer, New York, NY

⁸⁷ Reeves, B., & Nass, C. I. (1996). The media equation: How people treat computers, television, and new media like real people and places. Center for the Study of Language and Information; Cambridge University Press.

In analyzing the conversational agent social characteristics, probably the most important attribute is the social role assigned. Social role theory states that “a role refers to the set of shared, normative expectations that can explain the behaviors of a person with social position within a society”⁸⁸. People expect certain type of behavior from a determined role occupied in society, the way customers interact with a conversational agent such as the politeness, tone of voice, expressions, language used determine the social role of the agent and the relationship with the user. The majority of conversational agents have the role of a personal assistant or secretary, for example Alexa and Siri are advertised as personal assistant and interact using formal language and norms. A different social role could be the one of a friend, with informal language style and more like the user. For products related to personal taste such as TV series, foods and books advises from closer contact are more appreciated.

With reference to humans, the role of a conversational partner can be interpreted by verbal and visual signs, this is not possible for conversational chatbot that must rely only on language style. If the message is persuasive or not depends on the attributed social role’s or the personal judgment on the role of the agent. A message can be defined to be personalized when the content of the communication matches the preferences of the customer, in this way the customer can develop a favorable view toward the product and believe the argument as valid.

There are researches that show online review’s influence on shopping behavior, the quality and the quantity of the argument present in the reviews affected peripheral and central routes of the ELM model⁸⁹. Recent development in technology for content filtering and customer purchasing history have strongly pushed tailored and personalized communication in Ecommerce. Product involvement mirrors the motivation and the interest level of the customer toward a specific product⁹⁰. The association level of a particular product communicated through personalized message is based on customer’s motivation. Same

⁸⁸ Biddle, B., 1986. Recent Developments in Role Theory. *Annual Review of Sociology*, 12(1), pp.67-92.

⁸⁹ Sher, P. and Lee, S., 2009. Consumer skepticism and online reviews: An Elaboration Likelihood Model perspective. *Social Behavior and Personality: an international journal*, 37(1), pp.137-143.

⁹⁰ Bruwer, J. and Huang, J. (2012), "Wine product involvement and consumers' BYOB behaviour in the South Australian on-premise market", *Asia Pacific Journal of Marketing and Logistics*, Vol. 24 No. 3, pp. 461-481.

product can have different involvement levels on different customers. The involvement on product depends on factors such as consumption motives, search – experience goods and price. For products whose quality and price information can be found through a search by customer we refer as “search goods”, it is easy for customer to compare prices and attributes before committing to a purchase. This type of product are categorized as “high-involvement” state since cognitive effort is required. Instead “experience good” are products whose quality and price information are not easy to find and costly, since evaluation can be done only after purchase they are referred as low involvement. To conclude, the personalized message effect might depend on the level of the involvement of the customer on the product. Studies have found that the lessen effect of involvement when high involvement is verified the personalized message have a greater impact in developing a positive attitude⁹¹.

A study found that formation of the attitude on a product is strongly influenced by personalized messages and social role of the conversational agent. A personalized message will produce more favorable attitude than a non – personalized message independently of the assigned role of the conversational agent⁹². Study also highlighted that when the conversational agent assumes the role of a friend, the product was liked more in comparison to situation in which the product is suggested by a personal assistant⁹³. For low involvement products, the social role of the agent had a higher impact as stated in the dual processing model of persuasion, the relation between product involvement and social role has a significant impact⁹⁴. The growing use of voice shopping have changed the way products

⁹¹ Li, C. and Liu, J., 2017. A name alone is not enough: A reexamination of web-based personalization effect. *Computers in Human Behavior*, 72, pp.132-139.

⁹² Rhee, C. and Choi, J., 2020. Effects of personalization and social role in voice shopping: An experimental study on product recommendation by a conversational voice agent. *Computers in Human Behavior*, 109, p.106359.

⁹³ ibidem

⁹⁴ Rhee, C. and Choi, J., 2020. Effects of personalization and social role in voice shopping: An experimental study on product recommendation by a conversational voice agent. *Computers in Human Behavior*, 109, p.106359.

need to be promoted, marketers are aware of this phenomenon and are starting to find ways to optimize the search based on voice⁹⁵.

Buying behavior of the consumers and their decision-making process is influenced by the way in which information are communicated by the voice agent in terms of style and language used.

In order to personalize a content, it is essential to carefully revise behavioral patterns and then plan the agent features accordingly. Privacy concern of the user represent a big challenge for personalization⁹⁶, careful and precise consideration must be done in terms of how to perform data collection, which data to collect and how to store them in light of the institutional policies concerning privacy issue.

3.5 Chatbots Adoption – The Concept of Anthropomorphism

Chatbots environment is represented by text-based systems used in platforms for instant messaging and voice -driven assistant. 25% of the process of customer service will integrate chatbots in 2020⁹⁷ , in cases where customer service activities are conducted by a chatbots independently from human agents, we refer to them as Self-Service Technology (SST)⁹⁸. We are going to examine factor influencing the use of SST by customer, considering anthropomorphism as a key variable specially to understand the differences between a perfect chatbot with no miscommunication problem, a chatbot that requires clarification and a chatbot that fails to understand the commands.

⁹⁵ Bentahar, A., 2020. *Council Post: How Voice Search Is Changing Shopping*. [online] Forbes. Available at: <<https://www.forbes.com/sites/forbesagencycouncil/2018/12/03/how-voice-search-is-changing-shopping/#611e751c2615>> [Accessed 19 May 2020].

⁹⁶ Montgomery, A. and Smith, M., 2009. Prospects for Personalization on the Internet. *Journal of Interactive Marketing*, 23(2), pp.130-137.

⁹⁷ Gartner. 2020. *Gartner Says 25 Percent Of Customer Service Operations Will Use Virtual Customer Assistants By 2020*. [online] Available at: <<https://www.gartner.com/en/newsroom/press-releases/2018-02-19-gartner-says-25-percent-of-customer-service-operations-will-use-virtual-customer-assistants-by-2020>> [Accessed 17 May 2020].

⁹⁸ van Doorn, J., Mende, M., Noble, S., Hulland, J., Ostrom, A., Grewal, D. and Petersen, J., 2016. Domo Arigato Mr. Roboto. *Journal of Service Research*, 20(1), pp.43-58.

Anthropomorphism is considered a key factor in chatbot development since years, and it is defined as attributing humanlike motivations, intentions and characteristics to a non-human entity⁹⁹.

Development in chatbot has been guided by the Turing's test (1950) evidences, this test focuses on analyzing the ability of a machine to behave in an intelligent way, the main focus was on assuming that a perfect chatbot is the one that is perceived as a human interlocutor, thus enhancing automorphism. The main bias for refusing to use SST is the customer's needs for human interpersonal interaction, this kind of customer shows adversity in adopting SST¹⁰⁰.

Evidence shows that companies that invests in SST benefits in terms of financial performance¹⁰¹ and in stock price¹⁰², benefit is derived by the pleasure that customers feel in using it, in order to incentive future use (adoption) not simply by deploy them for this reason companies need to find a way to incentive the adoption of chatbot. Studies have examined how a chatbot that seeks for clarification is perceived by customers in order to investigate how to fill the gap between an ideal chatbot (no miscommunication error) and current commercial chatbot. It is clear that a chatbot that perfectly understand communication with human and produce no error will be adopted more readily compared to a chatbot that fails to understand since it is perceived more like a human.

Searching for explanation is part of human behavior when conversating, for this reason a chatbot that requires clarification might be evaluated as human as a chatbot capable to sustain a conversation without any further clarifications.

⁹⁹Waytz, A., Morewedge, C., Epley, N., Monteleone, G., Gao, J. and Cacioppo, J., 2010. Making sense by making sentient: Effectance motivation increases anthropomorphism. *Journal of Personality and Social Psychology*, 99(3), pp.410-435.

¹⁰⁰ Lee, H. and Lyu, J., 2016. Personal values as determinants of intentions to use self-service technology in retailing. *Computers in Human Behavior*, 60, pp.322-332.

¹⁰¹ Hung, C., Yen, D. and Ou, C., 2012. An empirical study of the relationship between a self-service technology investment and firm financial performance. *Journal of Engineering and Technology Management*, 29(1), pp.62-70.

¹⁰² Yang, J. and Klassen, K., 2008. How financial markets reflect the benefits of self-service technologies. *Journal of Enterprise Information Management*, 21(5), pp.448-467.

3.5.1 Humanize Chatbots

Anthropomorphism is not a new concept in marketing, it has been widely used as a strategy also when designing products, understanding the failure of a product and the trust in advertisement. People have a natural tendency to try to anthropomorphize what they perceive not human from young age, this is connected to human experience, that are central to motivations.

This motivation can be classified as effectance motivation and sociality motivation. Levels of social motivation is less present for people that are more socially linked. Anthropomorphism help people to reduce the odds of an unfavorable interaction by predicting a non-human entity behavior. The two motivations are present in the mind of human. The central point of modern studies is the elicited agent knowledge (EAK) that is the human activities done by an agent that is not human, a person that interacts with a chatbot check ad examine in order to find similarities, so to perceives a chatbot in a more human way it is essential to modify its behavior to affect the access to EAK of consumer.

Chatbot that perfectly understand communication from human and a chatbot that needs clarifications have the same level of adoption this is due to perceived human attribute in clarification seeking¹⁰³. Instead a chatbot which fails to understand and is not able to sustain a conversation is not perceived as human and therefore it is not adopted but rejected. From recent studies is clear that anthropomorphism will be a key characteristics in the adoption of SST, it can be seen as a good strategy since people that have a low level of human interaction need are extremely favorable in adopting this new technology and people high in the need for human interaction are positively affected by the anthropomorphize role.

Yet, marketers need to pay attention to undesired effects, mostly derived from expectation that consumers place on humanlike chatbot that might augment the chatbot's capabilities ending with a dissatisfaction or frustration when they are not met. Since the difference

¹⁰³ Sheehan, B., Jin, H. and Gottlieb, U., 2020. Customer service chatbots: Anthropomorphism and adoption. *Journal of Business Research*, 115, pp.14-24.

between experience received and expectation are the greatest factor of dissatisfaction in customer service.

A chatbot can assume human aspect through three attributes: Visual attributes (human figures), Identity attributes (human names) and Conversational attributes (human language). Human figures can be enhanced by manipulating the structure of the chatbot by adding a human figure, this will lead to human perception by user, and evaluate its performances based on human expectations.

Assigning name to chatbot is another easy way to render the chatbot more human-like. It is most difficult and challenging to use human language to enhance humanness, researchers are trying to develop chatbot that use discourse as human, but the difficult part is to provide a consistency response which is a key characteristic of human language. Visual human factors augment the social presence, that is “the degree of salience of the other person in the interaction”¹⁰⁴, between customers that are conversating with the agent, this is enhanced by the presence of a human figure in the chat it also enhance human contact. Given the psychological component such as emotional proximity of the social present it is a valid indicator to predict of behavior and attitude, that is the more a user feels social presence when using chatbot the more he will feels emotional closeness and positively evaluating the agent which in turns will result in a favorable evaluation of the website creating the willingness to visit it again the future and so building trust into the brand resulting in purchase. In determining behavioral and attitudinal results, the ability of the agent to formulates message interactivity and consistency is a key factor, it also compensates on the visual component¹⁰⁵.

Evidence indicates that message interactivity when a customer uses a chat with an icon representing a human figure, was not significant but when the chat had no human figures, message contingency had a positive effect¹⁰⁶.

¹⁰⁴ Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. John Wiley & Sons.

¹⁰⁵ Go, E. and Sundar, S., 2019. Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior*, 97, pp.304-316.

¹⁰⁶ *ibidem*

On the other hand, identity cue places expectation on the agent's behavior, an agent that has been identified as a human is positively evaluated if it is able to guarantee an interactive conversation¹⁰⁷ since contingency is an attribute of human conversation. In designing the chatbot functionalities, it must be considered the mitigation of negative experience derives from high expectations.

¹⁰⁷ Go, E. and Sundar, S., 2019. Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior*, 97, pp.304-316.

Chapter 4

AUGMENTED REALITY IN SHOPPING

Augmented reality, also known as AR is an interactive technology that can be defined as an integration between real world images and computer generated graphics¹⁰⁸. Through super imposed virtual elements, AR is able to change the actual environment surrounding a person. Different type of information such as images, text, videos or other virtual items can be added in the virtual layer located between the user and the actual environment. The artifacts deriving from AR can be displayed on different kind of tools, for example tables, smartphones, projectors, fixed interactive screens and also wearables¹⁰⁹. It is important to stress that in addition to the co-existence of the real and virtual in the same place there is also the bilateral structure and reciprocal registration of the physical sources and the ones deriving from computer generation. Another peculiarity of AR is that it is wearable and portable for certain specific category of technologies¹¹⁰.

Morton Heilig, in the 1950s developed the first AR forms for cinematography and named the properties “Sensorama”¹¹¹. The first AR prototype was developed at Harvard by Ivan Sutherland in 1960, it allowed the visualization of graphics in 3D with holographic projection.

Later on, digital displays, wearable devices and 3D graphics with AR were developed by NASA, research institutes, aviation industry and other industry centers in the 70s and 80s. The term Augmented Reality was coined in the 1990s by Mizell and Caudell, two scientists

¹⁰⁸ Lu, Y. and Shana, S., 2007. Augmented Reality E-commerce Assistant System: Trying while Shopping, In Human-Computer Interaction. Interaction Platforms and Techniques. *Springer Berlin Heidelberg*, pp.643–652.

¹⁰⁹ Carmigniani, J., Furht, B., Anisetti, M., Ceravolo, P., Damiani, E. and Ivkovic, M., 2010. Augmented reality technologies, systems and applications. *Multimedia Tools and Applications*, 51(1), pp.341-377.

¹¹⁰ ibidem

¹¹¹ ibidem

that developed an AR assistant in the area of aviation¹¹². The development and use of mobile and wearable computers integrating AR, started in the 1990s and have gained great interest in the field of computer science together with the topics of virtual reality, 3D printing and mobile technologies¹¹³. AR has broadness in terms of application sectors, including gaming, medicine, industry, navigation, tourism, education, architecture and art.

Since early AR tools were neither cost-effective nor robust and intuitive they could not be diffused in the market because they were missing the two main characteristics: intuitiveness and easy to use, preventing users to engage with that technology and reducing adoption¹¹⁴. Nowadays AR technology has been developed, it is more advanced in terms of activities performed and quality, its portability and mobility is increased, related costs have been decreased. The interest and relevance of AR has been increased thanks to the integration with near-field communication (NFC), digital landscape and global positioning system (GPS). Today AR is used as a marketing tool, allowing the deployment for enhancing and reinforcing marketing strategies in different touchpoints particularly in mobile, retails and online.

¹¹² Azuma, R., Baillot, Y., Behringer, R., Feiner, S., Julier, S. and MacIntyre, B., 2001. Recent advances in augmented reality. *IEEE Computer Graphics and Applications*, 21(6), pp.34-47.

¹¹³ *ibidem*

¹¹⁴ Davis, F., Bagozzi, R. and Warshaw, P., 1989. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), pp.982-1003.

4.1 Optimizing AR Ingredients to Design an Effective Experience

To reach company's goal, retailers are starting to introduce to customers AR features. Company like McDonald's, General Electric, Coca-Cola, employ AR in their marketing strategy to construct interactive packaging and advertising, develop compelling games and intensify retail experience. Thanks to augmented reality product and spaces can be experienced in different ways by the customers and marketers can construct immersive brand experience.

Advancement in screen and smart glasses technology¹¹⁵ will allow human to see digital content through their eyes in a more transparent way making AR by 2020 reaching \$120 billion business¹¹⁶. Digital AR content has influence on the augmented reality experience, we can identify five ingredients of the physical world and divide them into active and passive. Active ingredients are the content of the Augmented Reality experience, targets represented by the objects where digital information is applied and the users that are the people who experience the AR. Bystanders, namely people that do not participate in the experience and the background that is the objects not-augmented and the conditions of ambient represent the passive ingredients. These factors can influence the response of the customers and the customer's experience to AR campaign that are market-oriented even though they are not direct part of the augmentation. Consumers perceive and experiment augmented information in a different format (text, pictures, animations, videos) through different tools such as AR application, generic AR browser, digital devices (e.g. smart phones, digital window, large screen AR installation) or AR custom made applications. An AR layer is made up of all the available contents that can be view in a generic or specific AR browser, or an application. AR layer can be experienced by a user though either a device that is publicly shared (e.g. digital window, projection screen) or private such as their smartphone.

¹¹⁶ Fortune. 2020. *How Augmented Reality And Virtual Reality Will Generate \$150 Billion In Revenue By 2020*. [online] Available at: <<https://fortune.com/2015/04/25/augmented-reality-virtual-reality/>> [Accessed 24 June 2020].

Users can experience the same AR layer while they are located in different places, this is the case when an AR content placed on an active print campaign is accessed by readers of the magazine via their smartphone in their homes or they can be part of the same physical environment for example when the street behind a bus stop is augmented through a screen display.

Contrary, Bystanders do not experience directly an AR augmentation, but they see actions performed by a user either in an indirect way that is observing the content a user produced while experiencing AR or in a direct way by splitting the same physical environment. The user's willingness to engage and experiment AR experiences can be influenced by bystanders because they compose the experience's social context, they represent generalized others that users contemplate when deciding if their activities are socially appropriate¹¹⁷. Entities placed in the physical environment that are the subject of augmentation with digital information are defined as the target, usually they are objects for example a product package, but in some cases, people can also be a target. Interpretation of the AR experience is given by the context of the physical environment in which it is located¹¹⁸.

The term background is used to capture the significance of the physical context, and with this term we indicate all the objects and environment conditions that are not subject of augmentation in the AR layer but share the same physical place with the target. The influence given by the background to the AR content can vary from application to application, for example campaigns AR using the paradigm of print/packaging are typically less influenced compared to others. In order to optimized and designed AR campaigns is necessary to use the five ingredients described above as they are representing the building blocks of an AR campaign.

They must be carefully analyzed when considering in which way the AR campaign is experienced by user, populated with content and accessed.

¹¹⁷ Mead, G. H. (1934). *Mind, self and society* (Vol. 111). University of Chicago Press.: Chicago.

¹¹⁸ Biocca, F. (2002). The evolution of interactive media: Toward "being there" in nonlinear narrative worlds. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 97—130). New York: Psychology Press

Marketers must carefully consider and optimized the dynamics among these five elements to enhance the efficacy of AR initiatives. Since Augmented Reality is a new tool for marketing strategies, some marketers might use a technology-driven approach and commit too early to a particular AR tool. Rather the AR campaign design must be guided by the objectives and expected consumer experience. In order to design an optimal AR campaign, it is essential to follow these steps:

1. Define the campaign goals, that is the target audience and the objectives of the communications;
2. Determine the trigger, what factors will activate the AR layer;
3. Determine content contribution, who and how the AR layer will be enriched with content and targets;
4. Determine context integration, establishing how AR layer will be integrated with physical and social context.

The first thing to be defined is the desired target audience and the objectives of the communications in order to set up the goals of the campaign in a way to provide information to AR design planning and communicate the desired experience to be provided to users. A suitable target for AR campaigns could be early adopters since they are prone to use and download application embedding AR. Augmented Reality can be employed even by companies targeting an audience that is less likely to use technology, a more suitable tool could be bogus window paradigm or magic mirror because they do not require the download and they don't rely on personal devices but rather on public video installations. Marketers needs also to define what are the communication objectives they want to reach through the AR campaign: product knowledge, brand or product awareness, strengthening community relationship, create emotional experiences all can be reached with an AR campaign.

After the first step, it is necessary to establish the roles played by users and marketers in creating the AR layer, considering what will trigger its activation and how it will be enriched with content contribution by digital content and targets.

While considering these factors, managers need to carefully align the objectives of the communication with how the layer is produced since when making decision on the design of the AR campaign, they influence the user experience and the degree of control they have over the campaign. The trigger represents the mean to activate and display an AR layer, users can undertake some actions such as using a magic mirror to access many clothing options or using their mobile to scan a print advertisement placed in a magazine. In these cases, the users can control where and when to activate an AR layer, this will make users more positive when evaluating AR content and future willingness to explore in more details¹¹⁹.

If the goal of the campaign is increase product knowledge, giving the possibility to the users to activate the trigger by themselves is a suitable strategy. In case the objective is product awareness, marketers must trigger the AR layer for consumer in a way that the users do not have to take deliberative actions so that the fractioning of starting an AR experience is decreased.

As described, the triggers indicate who is in control over the AR layer activation, instead the content contribution analyzes who has the authorization to contribute an AR layer by including more targets and content. Typically, a small group of people can contribute to AR content and target that can control the AR experience.

Examples include AR campaigns in which marketers limit the range of merchandise that a user can virtually choose to try on or plan a specific amount of content on the AR layer. When the objective of the communication is to convey precise and accurate information or there is the concern on the generation of contents that influence in a negative way the value of the brand it is very important to strongly control the content present in an AR layer¹²⁰. In contrast to what discussed above, content can also be co-created by different users that are solicited to give their contributions or changing existing digital content. Giving the possibility to co-create content is useful to empower consumers, stimulate advocacy and cultivate brand communities.

¹¹⁹ Collier, J. and Sherrell, D., 2009. Examining the influence of control and convenience in a self-service setting. *Journal of the Academy of Marketing Science*, 38(4), pp.490-509.

¹²⁰ Thompson, C., Rindfleisch, A. and Arsel, Z., 2006. Emotional Branding and the Strategic Value of the Doppelgänger Brand Image. *Journal of Marketing*, 70(1), pp.50-64.

In any cases, marketers must keep control over the management of content policies, the development of the communities, which users are allowed to contribute and on the kind of content that can be contributed.

Marketers must also consider how to intervene in the communities when critical or inappropriate content is shared, to prevent the damages on the brand reputation¹²¹. The last step in the design an effective AR campaign is deciding how much to integrate the AR experience with background and bystanders (passive ingredients). It is important to keep in mind the type of experience to offer to the customers and the communication objectives when deciding how to integrate the AR campaign to the surrounding physical and social environment.

Integrating and adapting to the physical context in which the AR campaign is located is mandatory when there is the willingness to enhance the appealing content of the campaign, a careful consideration of the influence that passive ingredients of AR may have on the customer experience must be made when designing campaigns to be located in public spaces such as squares, streets, store or malls. In fact, in public places, especially the crowded ones, the experience can be negative, causing disappointment and frustration since the risk of impacting the experience is great. An experienced can be disrupted by other people that walk between the target real world that has been augmented and a user's screen or a person can enter in the space of the user who is performing action as part of the augmented experience.

¹²¹ Noble, C., Noble, S. and Adjei, M., 2012. Let them talk! Managing primary and extended online brand communities for success. *Business Horizons*, 55(5), pp.475-483.

4.2 Enhancing Engagement – The Concept of Entangle

Consumer engagement is becoming a focal point to sustain competitive advantage, it is defined as involving consumers in interactions or experience aimed at enhancing or creating consumer relationships. The ability of Augmented Reality to embed branded content in the physical and social environment of the consumer, can be used by marketers as a dynamic way to connect with customers. Three kinds of consumer engagements are derived from the optimization of the active and passive AR ingredients:

1. User-Brand engagement;
2. User-User engagement;
3. User-Bystander engagement.

Engagement can be increased by slightly changing the design of the AR content, or changing the interaction way between user and AR content or other users or bystanders.

1 .USER-BRAND ENGAGEMENT

With Augmented Reality users can interact with inanimate objects by changing the shape or color of a digital product, watching a product being embedded into a 3D landscape or pretending to cuddle animals. User-brand engagement can be generated by all AR campaigns, it can be increased by allowing users to carry out actions that are immersive. Immersion feeling perceived by the customers can be achieved with three types of action: manipulation, perception and interaction¹²². The term affordance is used to indicate the actions a user can undertake to an AR initiative. Not necessarily giving the opportunity to customers to perform different action is expensive or technologically difficult, in fact, the level of affordance can be increased by letting the users to modify and manipulate the content displayed.

¹²² Biocca, F. (2002). The evolution of interactive media: Toward “being there” in nonlinear narrative worlds. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 97–130). New York: Psychology Press. And Lee, K., 2004. Presence, Explicated. *Communication Theory*, 14(1), pp.27-50.

When an AR campaign gives the possibility to the user to interact with its content the maximum level of user-brand engagement is reached. Since interaction in which AR content and users influence each other might be challenging in terms of technology implementation marketers can still use the magic mirror paradigm that facilitate the consumer's perception of interacting with AR content.

2. USER-USER ENGAGEMENT

When a content that is branded facilitates the interactions or is inserted into online community consumer engagement is enhanced¹²³. By allowing users to interact among them through AR activities, marketers have the possibility to create user-user engagement. In order to activate this kind of engagement it is necessary that the artifact derived from a user modification of the AR content must be perceived by other users and they must have the possibility to act upon it. In user-user engagement the concept of sociability is the main aspect to activate it, which give the possibility to social interact between other users of a specific group of users. Since sociability embeds content that is branded into conversations among consumers, it is a powerful tool to increase the value of an AR activity. When elements of sociability are integrated in an AR campaign the connection with the brand is amplified, enforcing the relationship with customers so that they are prone to return.

3. USER-BYSTANDERS ENGAGEMENT

This type of engagement can be achieved in an easy way by letting the user produce artifacts that they can share in their social channels. Artifacts can have different forms: tweet, images, posts and are visible to people not currently involved in the AR experience. With the artifacts, bystanders are informed about the AR experience so that they can also be engaged.

Messages that contains social identity or currency value tends to be share more frequently and receivers are more interested in messages containing practical value or activate emotional

¹²³ Brodie, R., Ilic, A., Juric, B. and Hollebeek, L., 2013. Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(1), pp.105-114.

response¹²⁴.

In the best-case scenario, an AR campaign can go viral if artifacts can provide additional value to both users and bystanders when they decide to try the experience and create and share their artifacts.

ENTANGLE

It is important that managers learn the best way to leverage the AR potential, it is essential to design a campaign that optimize both active and passive ingredients of AR and create immersive experience to engage customers in multiple ways. To create experience that provide value for both the company and users, it is essential to integrate AR with social and physical content to achieve this goal, an augmented reality campaign should be ENTANGLE:

- Experiences;
- Nourishing Engagement;
- Target audiences;
- Aligning AR with the marketing program;
- Neutralizing threats;
- Goals;
- Leveraging brand meanings; and
- Enticing customers.

¹²⁴ Berger, J. (2013). *Contagious: Why things catch on*. New York: Simon & Schuster

EXPERIENCES

Augmented Reality activities should not be technology driven but rather consumer experience centric. Particular attention and the effort must be placed on stimulating, unique, consumer insight and valuable experiences that AR can generate. Insights must also guide marketers in deciding where the experience should be placed, what is the trigger and the content's features. Connecting to the consumers in the right way and in the right channel is important, companies that commit to the newest platform or technology risk to fail in connecting with the target. Exceeding or failing to meet the expectations of the customers can imply damage on brand image or jeopardize future AR programs or technologies.

NOURISHING ENGAGEMENT

Instead of focusing on producing the most fancy, flashiest and coolest AR campaigns marketers should focus on enhancing customer engagement. It is possible to achieve this goal by taking minor and relatively inexpensive decisions concerning the design of the AR campaign. By offering to consumers the opportunity to interact, manipulate or choose the digital content can increase user-brand engagement. Architects that design AR campaigns using a bogus window paradigm can use content in a way to offer customers the possibility to have enough space and time to immerse themselves into the core of the AR experience. This kind of AR design can increase consumer engagement and affordances of AR campaigns, marketers have also the possibility to foster user-user engagement and user-bystander engagement.

Marketers can, for example, let consumers share content deriving from an augmented reality activity, particularly the content that carries identity and social goals.

TARGET AUDUENCES

Opinion leaders and early adopters of new technologies represent a suitable target audience for an AR activity since they have the power to create content and spread AR technologies. But marketers should not forget the potential users that receives the artifacts as an additional target audience. This implies making consideration when deciding the target audience and selecting the one that is able to create additional awareness and increase the reach of AR activities by sharing artifacts in its social channels. It also implies programming AR activities that are interesting also for bystanders.

ALIGNING AR WITH THE MARKETING PROGRAM

The marketing strategies and goals of a companies can be achieved and enhanced by integrating AR activities in the marketing plan since it can provide great benefits for example by showing how products can integrate into the physical space decided by the user. It can also generate impressions and stimulate communication in both earned and owned media.

NEUTRALIZING THREATS

Augmented Reality has the power to connect and embed physical environment with digital world, but this makes it prone to possible warning that needs to be proactively managed. When marketers take decision about where to locate the AR activity must carefully take into account in which way its brand, the content and the message they are trying to convey can be influenced by competitors and activists. In case there are potential warnings, marketers should promptly intervene by mitigating and reducing the risks or move their AR activities into a new location. Once a location is chosen the spaces must be organize in a way that risks are reduced. For example, if an AR activity is located into a store which is crowded due to bystanders, people are less prone to engage with AR campaign or taking the time to analyze the artifacts resulting in negative user experience.

It is essential that marketers design the AR experience considering the space around the installation and avoiding the possible warnings to the brand image by an adequate management of the contents that gives the possibility to control and design digital contributions in order to support a positive image about the brand.

GOALS

Marketing objectives should be the basis of AR goals, if the goal is to increase brand awareness AR campaign should be design accordingly, choosing a public location a shared screen experience and a trigger that is automatic. Contrary, if the objective is to enhance the community behind the brand, activities must be direct to offer opportunities to interact or modify the content and letting users contribute to the content. In this case including sociability is essential since the connecting value that generate motivate users to revisit the AR layer and the target should be placed into private devices such as mobile phone since they are suited for response inputs.

LEVERAGING BRAND MEANING

In order to be optimal, an AR experience its features and activities must be coherent with the brand's image and identity. Marketers can design AR experiences that represent the brand image that contributes to integrate marketing activities.

ENTICING CONSUMERS

AR campaigns must be designed in order to tempt the customer to try it and return back for future try. Attractive reasons should be used in order to make the customer activate the AR layer particularly if the consumer controls the trigger¹²⁵.

¹²⁵ Dobele, A., Toleman, D. and Beverland, M., 2005. Controlled infection! Spreading the brand message through viral marketing. *Business Horizons*, 48(2), pp.143-149.

Even if the trigger activation is control of marketers, this does not prevent them by providing value as they might frustrate customers in case the contents are not informative, entertaining, and does not have identity and social value. Marketers can deliver value to customers in different ways using Augmented Reality. Customers could be informed about marketplace offerings and how this offering could be placed in the life of the customers by integrating augmented digital content with physical environment.

Entertaining value could be delivered by providing to customers interactive experiences that give the opportunity to users to manipulate, modify, choose or respond to content that is generated by marketers or even by the customers. AR activities that includes sociability let the users to build social relationships with other users and artifact that enable user to reach self-presentation goals assist them in build their identity. Marketers able to attract customers to AR activities by delivering them valuable content will reduce the risk of disappointing and offending them by offering campaigns considered jarring or intrusive.

4.3 Mitigate Customers' Privacy Concerns with Augmentation Quality

We will study the concept of equity theory in order to study the how satisfaction derived from AR experiences are formed, we are going to use two concepts: control that users have to their personal information and augmentation quality. The augmentation quality is a necessary element to analyze to form a satisfactory user experience since the personalization of the output is performed by augmenting and superimposing digital content over reality. Augmentation quality represent the first origin of user satisfaction. Users are concern about who access the information they share or give up when engaging into an AR experience, and some AR application have violated the customer's privacy asking personal information such as location, name, address, email that was necessary for the application to generate content

that is personalized¹²⁶. Application that use face recognition technology could be used into smart devices and pointed to strangers that if they have shared personal information such as occupation, age, birthdate, email with an AR application, they can be displayed on the pointer's screen since these technologies use cloud computing, computer vision and recognition technology. This unpleasant factor can render the technology unappalling. Augmented Reality is a very powerful technology that can deliver enjoyment and fruitful results, users are gratified by receiving an immersive fantasy world, but it can also upset and irritate users when they are fearing that their personal data and privacy are being violated. AR experiences that violates privacy will threaten the user willingness and delight in using also and they are also unethical. The inability to access adequately information about products will refrain some customers to commit to online purchase, since they can perceive it as risky¹²⁷. The lack of information can be compensated by the Augmented Reality ability to create three dimensional experiences and augmented digital content. Sensory shopping experience is important for users to be able to gather information about the products¹²⁸ augmented reality has this advantage, it allows users to simulate the shopping experience in order to optimize their choices and make decisions reducing uncertainty. Enjoyable and entertaining experiences are provided to customers when they interact with three dimensional digital product, in this way the behavioral intention of the customers are influenced by the quality of the content derived from AR activities¹²⁹. Augmented reality experiences that are positive and satisfactory for the customers results in an increase in the consumer's willingness to purchase products from retailers employing augmented reality technologies.

¹²⁶ Olsson, T., Lagerstam, E., Kärkkäinen, T. and Väänänen-Vainio-Mattila, K., 2011. Expected user experience of mobile augmented reality services: a user study in the context of shopping centres. *Personal and Ubiquitous Computing*, 17(2), pp.287-304.

¹²⁷ Kim, J. and Forsythe, S., 2008. Adoption of Virtual Try-on technology for online apparel shopping. *Journal of Interactive Marketing*, 22(2), pp.45-59.

¹²⁸ Papagiannidis, S., Pantano, E., See-To, E., Dennis, C. and Bourlakis, M., 2017. To immerse or not? Experimenting with two virtual retail environments. *Information Technology & People*, 30(1), pp.163-188.

¹²⁹ Pantano, E. and Timmermans, H., 2014. What is Smart for Retailing?. *Procedia Environmental Sciences*, 22, pp.101-107.

The concepts of equity theory¹³⁰ states that people are willing to use technology if they perceive that the equity is higher with respect to the conditions in which they perceive a lower level of equity. Comparison between what people receive (output) and what they sacrifice (input) shape the perceived equity concept. Perceived quality is higher when the customer believe that the output is superior to the input, instead is lower when output is inferior. According to this theory users are willing to share personal data with Augmented Reality technology if they perceive they can gain a higher value, augmentation quality, with respect to what they share, personal information. Comparison between the output and the inputs shapes user satisfaction. Augmentation quality concept refers to the quality of the output that is the result of an interaction with the integration of digital and physical environment and the interaction with virtual content express in terms of correspondence quality, information quality and mapping quality. Basically, it is the product of the interaction with Augmented Reality.

User satisfaction can be defined not only as a pleasant experience, but the experience should have been good at least as expected, Dissatisfaction is the result of what a person received and what he was expecting. Augmented Reality is able to reduce anxiety of the shoppers in decision making and enhanced their satisfaction, successful AR campaigns are able to increase satisfaction attitude of the customers.

Users are not aware of the process behind an AR activity, performed by the software, from their perspective augmentation quality is represented by the AR's capabilities and they are satisfied when they receive a high output and they are willing to recommend the experience to others.

On the contrary, if they receive a poor experience they will be dissatisfied. Modern AR applications employ powerful technology, and some of them create marvelous experience, some others are less sophisticated, and they cannot display sufficient or practical content.

Therefore, we can say that a customer is more satisfied as augmentation quality improved

¹³⁰ Adams, J., 1963. Towards an understanding of inequity. *The Journal of Abnormal and Social Psychology*, 67(5), pp.422-436.

with respect to how satisfied they are when augmentation quality is poor¹³¹. The ability of every person to protect personal information privacy has been defined as user's control of access to their own information, and it is necessary when dealing with online technologies¹³².

Privacy concern of the users are well known and their willingness to protect information is increasing, the main reason behind it is the fact that many AR application requires the user to share information needed to deliver a personalized output such as email, employment, age and location. The ability of AR to share and create information with mobile context or different devices makes the user concern and refrain from using AR technology, they do not want to share personal information, but they want to receive personal content¹³³. According to the equity theory previously discussed, the value of the AR experience they expect to received determines the amount, quality and accuracy of the information they are willing to share.

Augmented reality applications that are able to deliver Applying content to users are the ones that grants control to users over their personal information, instead the one that do not guarantee access and control to personal information are considered to be infringing user's privacy discouraging future usage and decreasing satisfaction.

Interacting with Augmented Reality applications that do not breach user's privacy generates higher satisfaction compared to the one derived from interaction with AR application that violate user's privacy information.

¹³¹ Poushneh, A., 2018. Augmented reality in retail: A trade-off between user's control of access to personal information and augmentation quality. *Journal of Retailing and Consumer Services*, 41, pp.169-176.

¹³² Ackerman, M. & Mainwaring, S. 2005, "Privacy issues in human-computer interaction", *Computer*, vol. 27, no. 5, pp. 19-26.

¹³³ Olsson, T., Lagerstam, E., Kärkkäinen, T. and Väänänen-Vainio-Mattila, K., 2011. Expected user experience of mobile augmented reality services: a user study in the context of shopping centres. *Personal and Ubiquitous Computing*, 17(2), pp.287-304.

4.3.1 Attributes of Augmented Quality

The quality level of the information that are provided by the content generated through augmented reality applications, the degree of self-empowerment and the degree of correspondence quality are associated with augmentation quality. Mapping quality, self-empowerment and information quality have influence on the quality of the augmentation that derives from AR. The ability of AR to deliver content to the user that is trustworthy, useful and reliable refers to information quality in fact. Correspondence quality, the second attribute of augmentation quality, refers to the ability of the Augmentation Reality to deliver digital augmented content into the corresponding place. The last attribute, user empowerment, represent the capacity of the AR to augment users' skills to accomplish their intended goals.

When developing Augmented Reality application one of the major concerns is access to user's personal information. The ability of AR to deliver immersive content it is perceived as a fun and entertaining tool, but when these applications threaten user's privacy or they delivery poor quality augmentation, users are not willing to use them. Developers have to design Augmented Reality application or devices so that they do not breach user's private data and personal information. The main variables that influence the privacy and augmentation quality are:

1. Recognition of the Image: it is probably the most important factor of AR, in fact, customers give for grated the ability of AR to recognize the object they are pointing with their devices. Augmented reality must be able to identify the target in order to augment it and impose the digital content. Augmented reality must recognize these objects in order to superimpose;

2. Quality of Information: It refers to the ability of AR to deliver to user content that sufficient and relevant. Quantity of information is important too and the amount delivered should be the same expected by the customer, if too many information is delivered the customer might

be overwhelmed little might dissatisfy users that need to perform tasks. Augmented Reality application have to be designed in a way that the output reflects user's desires and needs.

3. Correspondence Quality: It refers to the ability of AR to portray the virtual content in the appropriate place. If AR application fails to display the content in the place where it belongs, the quality will not be accepted. 4. Control on the Access of Personal information: For user engaging with AR the control over the access on their personal information has become one of the main concerns. Augmented Reality applications must collect and have access to user's personal information since they have to provide personalized content.

Since users do not know for what purpose their information will be used, they are unwilling to share information such as email, location address and so on. Augmented reality has increased ethical and safety concerns because users' safety can be threatened while they are creating their personal reality. AR, in order to work in the right way, needs another feature, that is interactivity. The two subfunctions of AR are interactivity and augmentation, it works properly only when the two are working as they should. Even if augmentation represent the essence of AR it is not powerful in the case augmentation quality is poor, to be attractive for users the quality has to be great. Interactivity refers to the ability of users to modify in real time the content and the form of a modified environment¹³⁴. Interactivity is starting to become an integral variable of the applications with the progress of technology. Interactive technology, like AR can produce content in three dimensions with different colors, outputs and directions. If the AR lack the interactivity variable, it will be able to produce only static and two-dimension output like all the old technologies that do not allow users to interact with them. Users, nowadays, expect to be able to modify, interact and control the content shared on the internet.

¹³⁴ Steuer, J., 1992. Defining Virtual Reality: Dimensions Determining Telepresence. *Journal of Communication*, 42(4), pp.73-93.

4.4 Predicting User Perception with Media Characteristics

In order to find the best suitable setting for AR technologies, brands have been making tests and using various options in the recent years. Nowadays, among retailers, the most common Augmented Reality technology used are large interactive screens and smart devices either publicly or privately. Consumers, through augmented reality technologies embedded in smart devices are able to see an augmented product in the environment or scanning a product's related image or logo to access additional content. On the other hand, interactive large screens can project great part of the surrounding environment where the augmented elements are located into the screen. Augmented Reality apps can differ also in terms of entities they augment¹³⁵, the target of augmentation could be: products, person or surrounding space. In the case the target is a person, it can be an augmented view of the user or another person which can be done through augmented reality glasses, but this technology is rarely used in marketing since the reduce access to goggles or head mounted. The most used technology for a self-augmentation is digital try-on or virtual mirror. While the latter existed in earlier versions, in fact, some websites had the opportunity to upload a piece of apparel on a user's avatar or a photo, the latter are able to deliver a more interactive and realistic experience. Augmentation of a product is achieved by using a smart phone to scan an item in order to visualize an increased view. The last kind of augmentation is the one of the surrounding environments with virtual elements, that allow users to see how an item would appear in a specific place or in order to gain more content about the surrounding space.

The term "interactive technology" indicates all the different kind of digital and computer-mediated environments, more precisely all the tools that allow users to communicate through digital technology, like hyper-text technologies, instant messaging, web browser, access technology, email, social networks and others. Interactive technologies have in common the media characteristics that are variables used in communication which represents the delivery

¹³⁵ Carmigniani, J., Furht, B., Anisetti, M., Ceravolo, P., Damiani, E. and Ivkovic, M., 2011. Augmented reality technologies, systems and applications. *Multimedia Tools and Applications*, 51(1), pp.341-377.

and exchange of messages between various entities. In marketing and technology fields, it represents the functional aspects of technology that allow error-free and objective measurements so that companies can interpret customers' responses to determined parts of experience occurred with technology. This model is different from the one where the focal point of media characteristics are: subjective criterial, for instance media synchronicity, social presence and gratifications and uses approach.

The most typical media characteristics are described below:

1. *Interactivity*: It is one of the main concepts to access virtual and digital media. There is no a clear definition, but the general meaning is that it refers to the ability of the users and their choice and the degree to which this are synchronized. The link between interactivity and consumer responses is established by the perception that the consumer has on how much control they perceive to have over a tool and how the tool let the user lead two-way communication. According to some studies performed, interactivity can enhance customer loyalty¹³⁶ and trust; the perception of interactivity is impacted also by factors such as the type of task and quality of message.

2. *Hypertextuality*: It refers to the numbers of connected sources¹³⁷, it includes connections among different data that are nonsequential or navigability. It is related to the actions performed by the user that is moving through a digital environment and the interface which provide many connected sources and different path in terms of how there are linked together. It has been investigated a lot in terms of navigability that can end up in the investigation of the huge number of diverse sources and links on the user's devices¹³⁸. The drivers are different between men and women. The latter are more prone to search

¹³⁶ Song, J. and Zinkhan, G., 2008. Determinants of Perceived Web Site Interactivity. *Journal of Marketing*, 72(2), pp.99-113.

¹³⁷ Hoffman, D. and Novak, T., 2009. Flow Online: Lessons Learned and Future Prospects. *Journal of Interactive Marketing*, 23(1), pp.23-34.

¹³⁸ ibidem

according to their skills while the latter are drive by the challenge in each of the two cases, such behavior results in a more positive attitude and involvement with the site. Emotional states and activities related to the post search phase are positively impacted by the perceptions gained during the explorations. Content which is perceived as entertaining is a better predictor for the user's involvement on the site with respect to effectiveness of the content information. When search is easy, consumers are more willing to search among different kinds of information so that they can narrow down to considers only the products they want to take into account before deciding.

3. *Modality*: It represents the type of content delivered by the medium, it can be delivered in text format, images, video, ecc. all information delivered in diverse ways have impacts in the communication process. Augmented Reality content is predominately delivered through animated content, video or 2D or 3D images. Consumers reacts in different ways according to the medium by which they receive the content, according to psychology studies visual cues have more impact attitude and memory compared to the verbal ones¹³⁹. Video that contains high sound and visual effects positively impact consumer's attitude and he is more likely to share that video. Also, product characteristics have an important role; visual information provide a sufficiently good description of a product for hedonic ones, additional verbal information are required for certain utilitarian products. The positive attitude formation, toward a brand, is influenced by the richness in modality that results in a higher buying intention.

4. *Connectivity*: This term refers to communication model type considered a revolutionary attribute of social media. The communication model has been changed from one-to-one or one-to-many into many-to-many interactions, where all the parties involved can contribute simultaneously in exchange of messages. Augmented Reality application do not yet allow such connectivity as social media, even if they are often embedded in applications containing connectivity's features. In the future, higher degree of connectivity and the integration with

¹³⁹ Childers, T. and Houston, M., 1984. Conditions for a Picture-Superiority Effect on Consumer Memory. *Journal of Consumer Research*, 11(2), p.643.

social platforms are expected to be more present. Social networks allow a high degree of connectivity between consumers and brand and both parties are influencers based on their credibility, influence and reach. The degree of involvement of the consumer and the consumers' flow toward a website, is based on his embeddedness in social identity and social networks¹⁴⁰.

Positive attitude toward an advertisement is formed by social-interactive engagement, which in turn it results in a higher probability that the consumer will click on it and a higher activity on contributing to the content on social media with respect to nonsocial engagement.

5. Location-specificity: The term refers to GPS system which gives the opportunity to track the location of the user with their personal mobile devices and so delivering information which are location-specific. Location relevance, in Augmented Reality application, is different.

The content that is delivered, is linked to the elements that the camera identifies in the surrounding of a GPS position. The glocalization allow marketers to deliver a content which is tailor-made for customer and the message is more precise and engaging which in turn results in the formation of a positive attitude and the user is more likely to commit to purchase.

However, customers' concerns on privacy can reduce the ability to deliver location-specific content since accuracy requires precise knowledge of location proximity in order to construct an efficient marketing message.

6. Mobility: The term indicates the special dynamism ability of a device¹⁴¹ and includes also wearability. The degree of mobility of Augmented Reality varies according to the type of the device it is used on. For example, fixed screen present into stores do not provides mobility, on the contrary mobile devices can be moved which have impact on the typology of content

¹⁴⁰ Huang, E., 2012. Online experiences and virtual goods purchase intention. *Internet Research*, 22(3), pp.252-274.

¹⁴¹ Rohm, A., Gao, T., Sultan, F. and Pagani, M., 2012. Brand in the hand: A cross-market investigation of consumer acceptance of mobile marketing. *Business Horizons*, 55(5), pp.485-493.

that can be visualized according to the location. Privacy concerns can represent an obstacle to the advantages given by mobility for mobile marketing communications. Consumers that use mobile device for commercial motives, reported positive attitude and intentions to reuse it in future. Personal traits like tech-savviness and innovativeness are strong variables with the adoption of smart phone for retail shopping motivation. Mobile advertising has different impacts based on product characteristics, for utilitarian products the response of consumer is more favorable.

7. *Virtuality*: It refers to the capacity of the media to show virtual world or elements to the user experienced with the immersion in the computer graphic environment created with computer graphics. An important part of Augmented Reality is represented by virtual annotations, but with an important note: Augmented Reality is embedded into physical world, but they are separated. The reality that a user is able to see in virtuality does not include items derived from real world and it is computer generated. In Augmented Reality, what the users see correspond to real world and only one part is computer generated, there is no clear distinction between virtual and real environment. Based on these trait, Virtual reality is less close to real world with respect to Augmented Reality even if the two have elements in common. One effects typically caused by virtuality is immersion sensation where the user feels detached from the real world and absorbed by the elements in the screen and the virtual activities present-. Enjoyment level can be higher in virtual shopping malls compared to the physical ones¹⁴². There are proofs that a 3D environment lead to a more powerful enjoyment compared to a 2D environment¹⁴³ and technologies that allow virtual try-on generates greater entertaining value for the consumers while shopping. There are different types of virtuality, the world can be represented as virtual in its entirety, just a portion or only some elements. Direct and virtual experience with a product, brings the same attitude toward a brand and buying intentions but better cognitive response such as brand knowledge is given by virtual

¹⁴² Lee, K. and Chung, N., 2008. Empirical analysis of consumer reaction to the virtual reality shopping mall. *Computers in Human Behavior*, 24(1), pp.88-104.

¹⁴³ Nah, Eschenbrenner and DeWester, 2011. Enhancing Brand Equity Through Flow and Telepresence: A Comparison of 2D and 3D Virtual Worlds. *MIS Quarterly*, 35(3), p.731.

experience¹⁴⁴.

Virtual product simulation can overcome the absence of a physical presence on the website making it unable to give a direct experience with the item. However, virtual reality as a novel feature integrated into the shopping channels decreases the level of trust compared to the one of the websites creating a negative impact. Personal traits like self-congruence and cognitive involvement have impacts on the connection among consumer responses and virtual features.

¹⁴⁴ Daugherty, T., Li, H. and Biocca, F., 2008. Consumer learning and the effects of virtual experience relative to indirect and direct product experience. *Psychology and Marketing*, 25(7), pp.568-586.

Conclusions

Fourth Industrial Revolution, with the diffusion of AI algorithms, machine learning and models, have empowered salespeople giving them opportunity to be informed about which data to use in their daily activities, to predict possible pitfalls and obstacles through the simulation of the buying center and the relative complexities. So far, all routinized, repeatable and standard activities have suffered the greatest impact from technology and automation in sales activities, where technology can make more efficient the selling function. In the future, the next target of the digitalization would probably be all the activities carried out to gain insights about customers' behavior to deliver and design a perfectly tailored content. Thus, technology will have the role of facilitator for decision-making, or even it will take decision itself, acting closely with salesperson to enhance effectiveness. Customers have been getting used to purchase without the opportunity to touch or examine directly the product, thanks to the online shopping developments in the past 20 years, preparing the way for voice shopper bots. A new age of consumers has been created with the rise of AI shopping bots which have the ability to analyze large amount of data with their computing power, and make optimal decisions based on budgets, requirements and preferences of the user. Human customers with their emotions and limited cognitive capacities to take optimal decisions are not more a problem for retailers. The online product research is switching from visual to voice dominance. Companies that produce vocal shopping bots, are dominating Wall Street stock market, as their profitability derives from delivering the service experience desired by customers and the tools needed to receive products directly in their home which in turn make more convenient their life. Since the first and most-used conversational agent was promoted as a digital personal assistance, current agents have assumed that role. Their role is reflected in the manner and tone of voice they use, by being friendly in a formal and polite way. Depending on the context, the conversational agent persona has to be designed to be suitable for product recommendation and conversation settings. The results of the study shows that from the words and tone used consumers are able to recognize social traits and consequently attribute the related social role to the agent.

When developing bots, a particular attention must be put in the preparation of the scripts, since words and tone must be chosen according to the desired social role. Marketers are starting to optimize their strategies according to voice search engine optimization.

Consumers' attitude toward the product and buying intentions, are affected by tone of voice, the information delivered, and words used. Personalization variable, on the attitude change, was also an interesting finding. It is analyzed by gathering data derived from a pattern of behavior of users including the ones who have similar needs and interests. To enhance the power of personalization, the interactions, features of the agent and collection of data must be correctly planned. Customers' privacy concerns represent the main challenge for personalization, with the rise of data protection policy such as the European Union's General Data Protection Regulation, attention on how data are collected, stored and obtaining consent from user are mandatory activities to put attention on.

According to the findings of the study, we can state that to compensate human-traits lack in communication of bots, it is possible to use anthropomorphic visual cues. Impersonal communication and low levels of humanness can be compensated with visual image present for all the duration of the chat interaction with the customer. On the other hand, when identity cue is present, customers have expectation on the performance of the agent, which in turns leads to contingency expectations which is a core characteristic of conversations between humans.

According to the results of the study, to address the issues related to the impersonal nature linked to chatbot identity cue and low anthropomorphic visual cue, message interactivity is a valuable solution. Identity cue can be also employed to elicit agent's performance expectations regarding conversation. Consequently, agent's performance or message interactivity may vary according to identity cue. Therefore, developers need to implement live-chatbot in website in a way to not disappoint user's expectations. A plausible solution, to increase the satisfaction of the shoppers, is the adoption of Augmented Reality by retailers. Its use in stores will entertain and encourage them to remain for a longer time. Store traffic and shopping entertainment can be achieved through good augmentation quality, this practice can be applied also to online shopping. When AR is present, shoppers can gain product

information with 3D products, both online and in store, so that shoppers can reduce their uncertainty and risk. Willingness and satisfaction in using AR, are only reached with a high augmentation quality, in order to convince a user to engage with AR the experiences must be great, and this can be done only when users trust AR. Trust in AR is build when AR output is precise, informative and accurate.

Promotions can be shown to customers through augmented reality application, when they visit a store, they can access promotions and virtual products information in their mobile phone, so they do not need to print coupons. Augmented Reality help shoppers by making shopping experience easier.

According to this study, Augmented Reality is different from the other interactive technologies in terms of augmentation, which is its defining trait, referring to the capacity to overlay real world with virtual elements. The closeness of physical space and virtual element and enhancement of users' surrounding environment are fields not yet studied in marketing theory.

Further studies need to be done to explore the extent to which the immersion can defined AR consumer experience, taking into account that AR and virtual technologies share some characteristics. AR differs from Virtual Reality because it does not imply a disruption between virtual and real world. In marketing, Augmented Reality technologies are evolving very fast, for this reason further studies are needed to investigate its role and future development.

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