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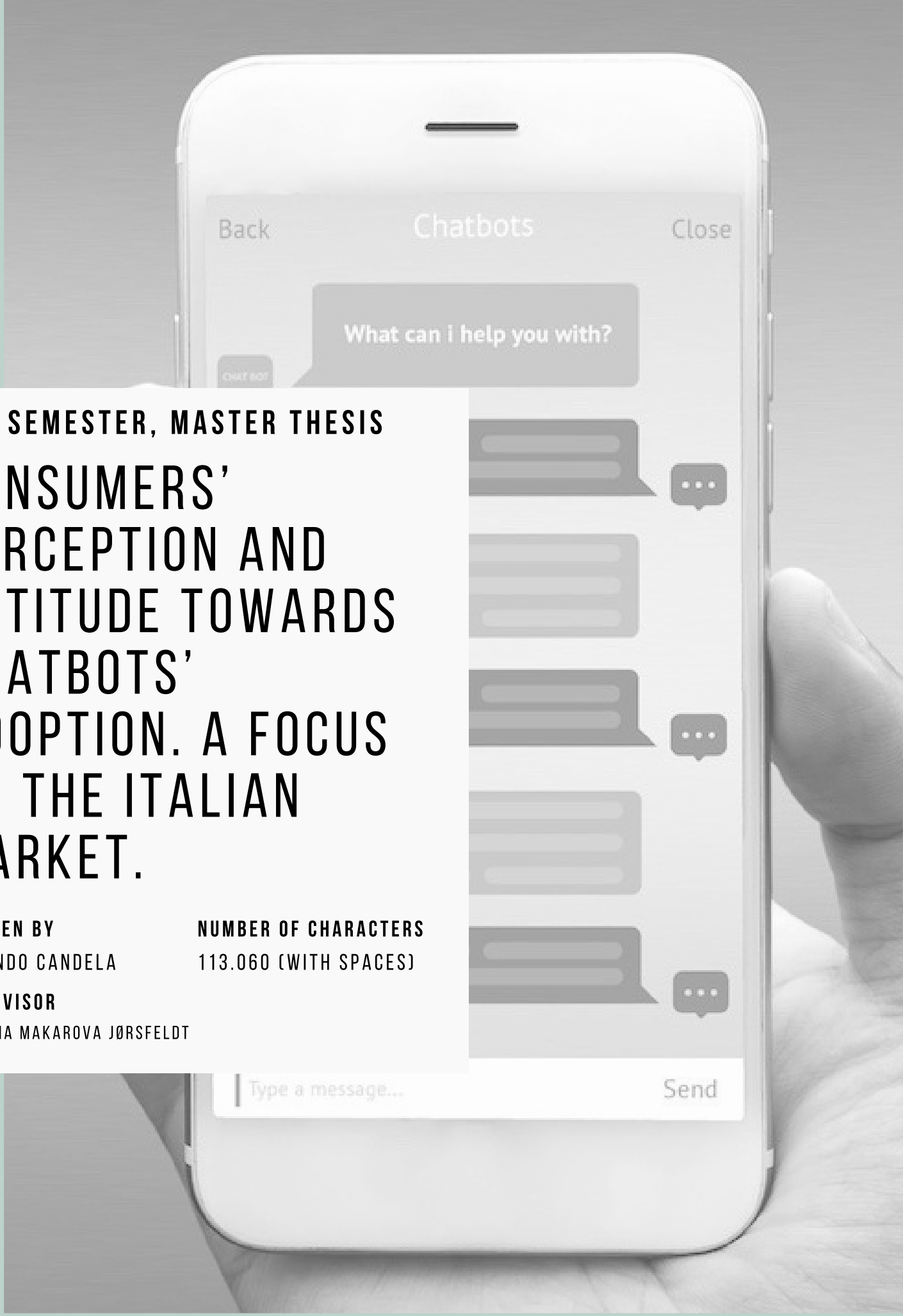

4TH SEMESTER, MASTER THESIS

CONSUMERS' PERCEPTION AND ATTITUDE TOWARDS CHATBOTS' ADOPTION. A FOCUS ON THE ITALIAN MARKET.

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Abstract

This research focuses on investigating Italians consumers' perception and attitude towards chatbots adoption.

The Uses and Gratification Theory (UGT), Technology Acceptance Model (TAM) and Diffusion of Innovation theory (DOI) have been combined to build a conceptual framework. Hypothesis have been tested thought a quantitative research such as a questionnaire. The questionnaire was distributed via online channels such as Facebook Groups, Instagram and WhatsApp.

The author adopted a statistical analysis to investigate the relationship between consumers' perception and attitude towards chatbots.

From the findings the author identified a significant correlation between positive attitude and perception and chatbot adoption. Furthermore, the author discovered that productivity was the main motivation for chatbot adoption.

At the end of this paper the author provided some suggestions for companies based on the information collected from this research.

Executive summery

With this research the author aims to understand which determinants influence consumer's perception and attitude towards chatbots. Furthermore, the author wants to determine if Italians are willing to adopt or not this technology.

In the first chapter the author introduced the topic, looking at the main data the show why chatbots are so relevant nowadays and which are the main applications of this technology for business.

In the second chapter the author described which methodology used in the all thesis, looking at the main paradigms involved, and the process thought which the articles have been selected to build a thematic literature review.

The third chapter comprehends all the main theories that the author collected after reading all the theoretical sources found both in peer reviewed articles, websites, books and reports. At the end of this chapter a framework has been designed from which two different hypotheses has been stated.

In the fourth chapter the author discussed the method that has been used to collect the data. As mentioned before, the author conducted a quantitative research asking people to fill a questionnaire composed by ten different questions that aimed to cover all the aspects of consumers' perception and attitude towards chatbots. After that, the author illustrated the main findings that proved the stated hypotheses.

In the last chapter the author summarises the main findings to write some conclusions about the all research and make suggestions for further research. Last but not least, the author also gives some recommendations to companies that would like to adopt chatbots in their marketing and communication strategy in the future.

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Chapter 1, Introduction

1.1 Research context

According to *HelloPal*, an online messaging application, in 2016 there were about 2.5 billion people registered to at least one messaging app and by 2018 this number is expected to reach 3.6 billion. That is 90% of the world's online population (Desjardins, 2017). If those numbers are not enough, according to a report from Business Insider in 2014 messaging apps already surpassed social networks in terms of daily active users. This phenomenon could be related to the falling of data prices and cheaper devices with which people can easily be connected and chat (BI Intelligence, 2016).

The rising of those applications is changing the landscape and opening new opportunities for businesses (Facebook Insights, 2016). According to a report that Facebook IQ commissioned to Nielsen, people are messaging worldwide for several reasons. This is a global phenomenon that is enhancing everyday communication and enabling people to create closer connections – one-to-one – both with groups and businesses (Nielsen, 2016). Based on this report[1], that takes under consideration 14 markets in 5 continents, it is possible to make three observations:

1. *Everyone gets the message*. People are messaging more than ever. According to Nielsen, 59% of people message more today than 2 years ago and 56% of people expect their messaging to increase in the next 2 years. And this phenomenon is similar across generations that are chatting one-to-one or in groups: 65% of Millennials, 65% of Gen X and 63% of Baby Boomers (Nielsen, 2016).
2. *Messaging is associated to different benefits*. People message for distinct reasons such as convenience (45%), economical (41%), efficiency (39%), fun (35%) and user-friendly (28%) (Nielsen, 2016).
3. *Messaging means business*. Facebook data from July 2016 show that on Messenger people exchange more than 1 billion messages with business every month. Among people who message businesses, 63% declare that they message more with business than 2 years ago and 67% of people expect to message more with businesses in the next 2 years (Nielsen, 2016). Figure 1.1 illustrates how people interact with brands in the key sales funnel stages such as:

[1] The data reported below are based on a sampling of 12 500 individuals across AE, AU, BR, FR, ID, IN, JP, KR, MX, TH, TW, UK, US and VN with a age 18+ who used a messaging app in the past 30 days.

- *Considering* (ask ordinary questions about store hours or location).
- *Converting* (place an order or make a purchase).
- *Connecting* (provide feedbacks about the business; share photos of products).

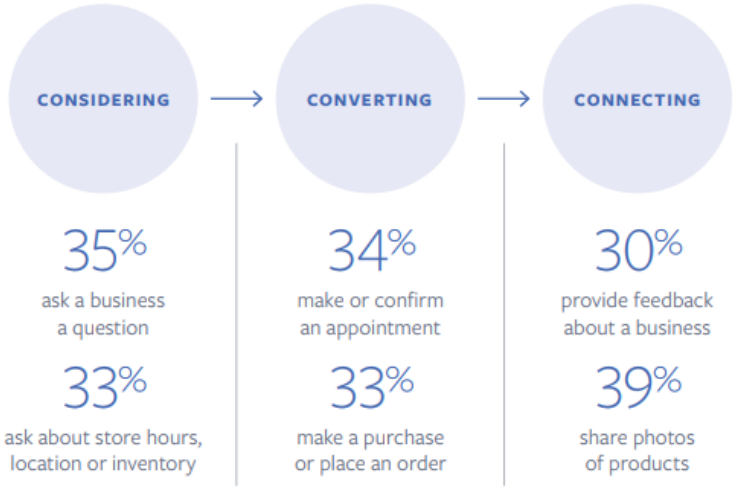


Figure 1.1 – People who see messaging as the best way to connect (Facebook Insights, 2016)

eMarketer, a market research company that provides insights and trends related to digital marketing, predicts that in 2019 65% of global population will use messaging apps (Kina, 2017). Figure 1.2 shows that this prediction is not surprising as since 2015 the top four messaging (WhatsApp, Messenger, WeChat and Viber) apps have surpassed the top four social networks (Facebook, Instagram, LinkedIn and Twitter) in terms of monthly active users (BI Intelligence, 2016).

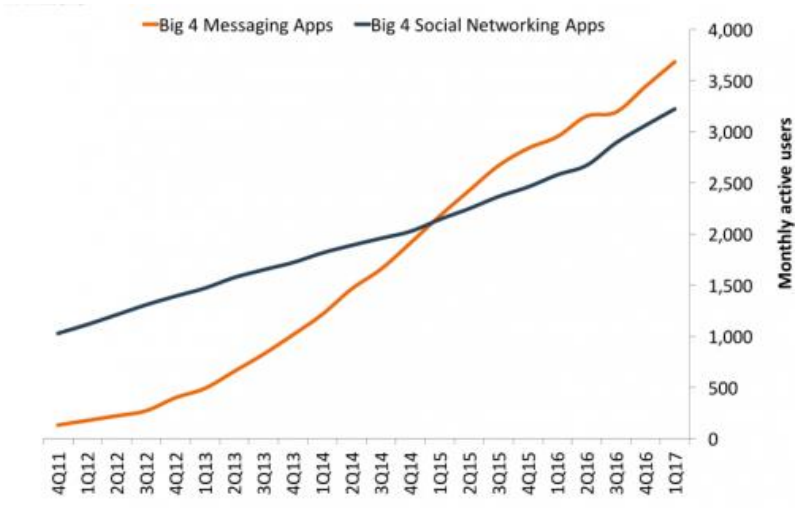


Figure 1.2 - Messaging apps have surpassed social networks (BI Intelligence, 2016)

The rise of messaging apps combined with the advent of innovative technologies such as AI and machine learning brought a meaningful change in the way people communicate with brands

(van Eeuwen, 2017). In this context, marketers understood the importance of those apps to have conversations with their consumers (BI Intelligence, 2016). Therefore, companies started to use messaging applications to send automated replies and managed the most common issues of their customers such as questions about store hours, items availability, terms of payments, et cetera. Those automated replies were sent through what is called a "*chatbot*". The term "chatbot" has increasingly widespread and consists of a software that attempts to simulate the conversation or "chatter" of a human being via text interactions. A user can ask a chatbot a question or make a command, and the chatbot responds or performs the requested action (Rouse, 2017). Indeed, according to Khan & Das (2018) a chatbot consists of "*a computer program that processes natural-language input from a user and generates smart and relative responses that are then sent back to the user*" (Khan & Das, 2018).

Figure 1.3 below draw a map of chatbots' history starting from Eliza, that could be considered as the first-ever chatbot developed at MIT by Joseph Weizenbaum in 1966. In the first decade of 21st century AOL Messenger introduced a chatbot named "*SmarterChild*" that not only provided entrainment to users but also more useful information such as sports scores and stock prices. with the advent of smartphones and the development applications, chatbots became more intelligent and powerful. Nowadays, chatbots are independent computer programs that can be plugged into any of the main messaging applications that people use nowadays such as Messenger, Skype, Telegram, et cetera. During the last 5 years, with the progress of AI and voice recognition technologies, companies like Microsoft, Apple and Amazon developed smart agents that take advantage of artificial intelligence and talk with their users. Indeed, in 2012 Apple launched Siri while few years later also Google and Amazon launched their voice-based assistants Google Home and Alexa, which are both physical devices placed at home or office that can help people with tasks such as switching on/off your lights, play some music on Spotify, managing your calendar, and so on. These voice-based assistants could be considered as an evolution of chatbots that instead of recognizing text, that recognize and converts voice into actions (Khan & Das, 2018). As the purpose of the author is to investigate chatbot technologies, voice-based agents will not be considered in this research.

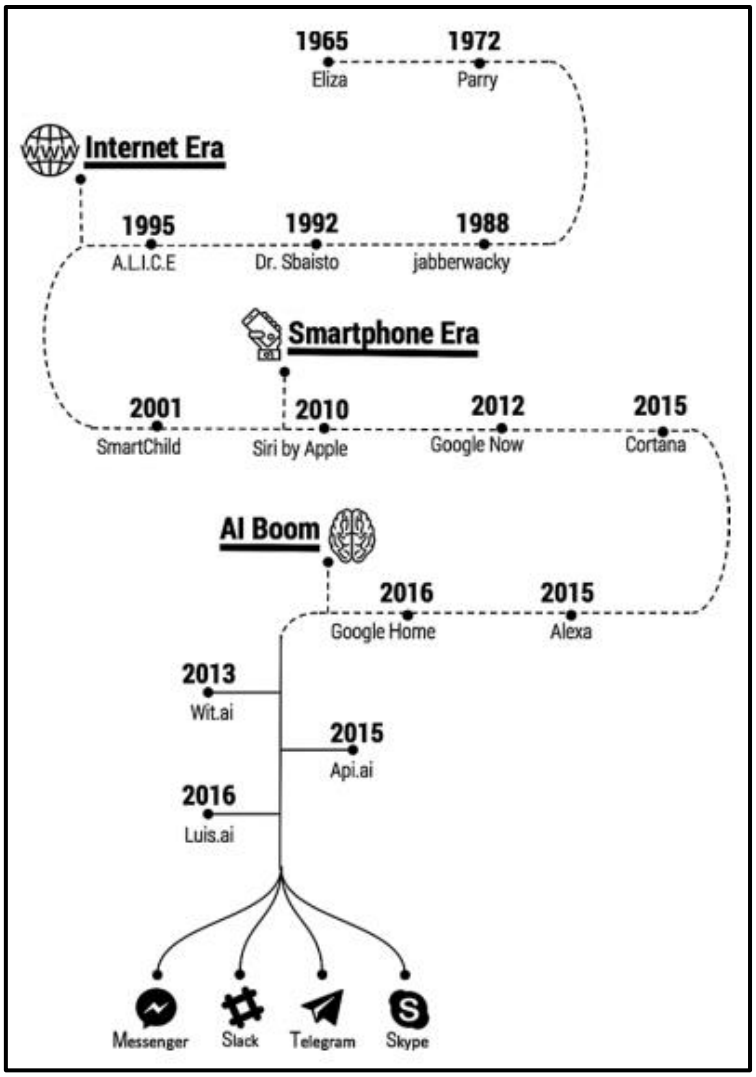
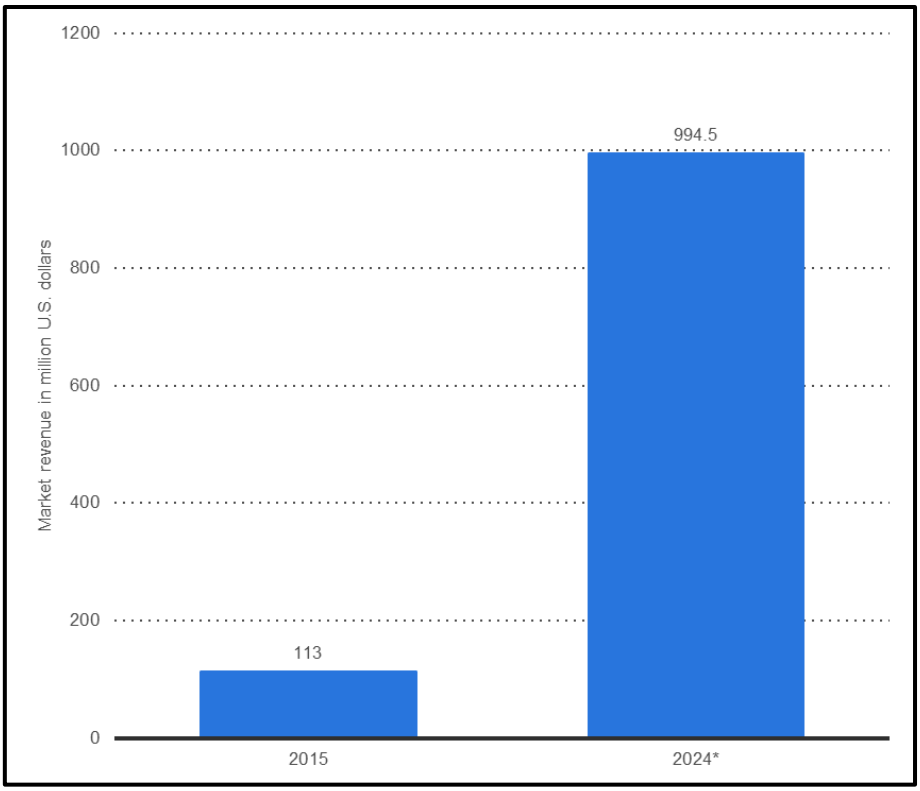


Figure 1.3 – Timeline of chatbot's history (Khan & Das, 2018)

As a result, companies understood the business opportunities of chatbot technologies and a lot of different bots have been launched in the last few years from brands such as Adidas and KFC that used automated messages to reply to consumers' requests and offer them a responsive customer service (Chahal & Tesseras, 2017).

1.2 Problem formulation and aim of the research

Chatbots have received growing attention and the chatbot market value increased from $113 million in 2015 to $703 in 2016 and, according to Statista, it is expected to reach $994.5 million by 2024 just in USA (Graph 1.1 below).



Graph 1.1 - Size of the chatbot market worldwide, in 2015 and 2024 (Statista, 2016)

A key step towards chatbots adoption was made in 2016 when Facebook introduced bots on Messenger. According to the biggest social network worldwide, Messenger combined with bots could enhance customer loyalty and engagement. That is, Facebook allowed developers to create bots that would be easily implemented to be used by brands such as Spotify and Starbucks. Since the big player made a massive move towards this technology, a big hype was created. Therefore, other players such as WeChat and Skype started to work on the implementation of chatbots on their platforms (Khan & Das, 2018).

As chatbots are implemented in messaging platforms, the huge amount of people using messaging apps represent an opportunity for companies that want to interact in a one-to-one conversation with users. Digitalisation and the advent of new technologies such as internet and mobile devices has changed the way people interact with each other and with companies. Nowadays, we are in what is called "conversational commerce era". In fact, the integration of messaging apps such as Facebook Messenger allow customers to chat with bots and ask questions, receive recommendations or even purchase a product all within one channel. Indeed, with conversational commerce customers can interact with human agents, chatbots or both. Chatbots are also useful for companies to automate customer service replies or send

information about customers' orders (such as shipping and delivery notifications) and interact with customers in real-time (Nguyen, 2017).

That is, chatbots could lead to different benefits both for customers and companies.

1. *Gain insights about your customers*. Chatbots can be used to reply to customer requests and proactively engage with that person. Almost every kind of question could be answered such as price or delivery requests, booking requests or provide general information about a product or service (Chatbots Magazine, 2017).
2. *Faster payments processing*. It is possible to process payments, directly check out and pay a product/service from your device using a chatbot (Isham, 2017).
3. *Interact with your consumers*. Conversational commerce allows to customers to talk to companies and have companies talk to you back in a way that is bidirectional, asynchronous and in real-time (van Eeuwen, 2017).

However, there some issues connected to every technology that uses artificial intelligence. First, those technologies are under development and there is still a lot to do to perfectly simulate a human being conversation. Second, from the bot-customer exchange empathy is always missing and that is hard for a machine to emulate. Third, consumers are still sceptical about the adoption of this kind of technologies (Telus International, 2016). Moreover, there is a lot of debate concerning issues related to AI technologies. In fact, prestigious entrepreneurs and physicist such as Elon Musk and Stephen Hawking warn that "*AI is highly likely to destroy humans and […] it may replace humans altogether*" (Koetsier, 2017).

In every adoption of a new technologies us as humans and consumers we play an active role. Indeed, the aim of this research is to feel the gap about consumers perception towards the adoption of chatbots. As a result, the author aims to understand which factors influence consumers' adoption of new technologies. Moreover, the research will be conducted in Italy to get the Italian consumers perspective about the phenomenon.

Indeed, based on what it has been mentioned before, it is possible to get to the following problem formulation:

What is the consumer perception towards the adoption of chatbots?

To investigate this problem three different research questions will be answered:

1) *What is a chatbot and how relevant are chatbots for consumers and companies*?

With this question the author wants to draw a map of the current chatbot market to understand if chatbots are popular or not nowadays and the reasons behind that. What is a chatbot? Which is the diffusion of these technologies towards companies? Which are the main applications of these technologies? Is the technology mature enough or should be improved? These are some of the sub-questions that the author aims to answer with the first research question.

2) *Which factors play an active role in consumers positive attitude towards of chatbots*?
   First the author will look at the current situation about how the Italian market perceive chatbots. Second, the author will analyse the factors that influence adoption of new technologies. Third, the author will understand how positive perception and attitude influence adoption. Finally, once the author gets a framework of the phenomena it will be possible to understand what people perceive about chatbots and their adoption. Perception will be part of the model because some factors that influence attitude towards chatbots involves consumer's perception of this technology (i.e. perceived usefulness and perceived ease of use).
3) *Which are the implications of chatbots in conversational commerce and brand communication strategies?*
   Chatbots can be applied in different sectors of business. Along the literature review author will describe the main applications of this technology to explain how chatbots and other AI conversational agents could change the business landscape over the years. At the end of this research the author wants to provide some suggestions about why chatbots should be applied in a brand communication strategy. Thus, part of this research question constitutes the managerial implications that will be reported in the last chapter of this research.

Chapter 2, Methodology

2.1 Philosophy of Science

Social science researchers agree that authors have different world views that imply different foundations for knowledge about the social world. Philosophy of science comprehends several paradigms, that is a set of common understanding of what phenomenon is being investigated, a set of the questions that should be asked and the approach that researchers should follow to answer and interpret the results (Kuada, 2010).

According to Kuada (2010) all research efforts are related to how researchers make sense of the phenomenon under investigation such as subjective and objective views. However, making sense of the phenomenon is challenging since the process deferrers among different authors based on the different paradigmatic orientations. In fact, it is hard to detach some parts that to some degree refer to social disciplines (Kuada, 2010). That is, in general there are two different approaches to conduct a research such as objective or subjective. However, determining the right approach is challenging since objective and subjective views are interconnected (Bryman & Bell, 2015).

Consumers' perception and attitude towards chatbots is the main topic that this research aims to investigate. The author analysed this topic with an objective approach using the four paradigm dimensions such as ontology, epistemology, human nature and methodology. In this specific study the author adopted an objectivism ontological approach. In fact, the social reality is represented by Italian people and their perception and attitude towards chatbots is not subjectively influenced by the author (Bryman & Bell, 2015).

Epistemology refers to the nature of knowledge. It investigates what should be considered as true and acceptable in a given social reality. Reference to this study the author has adopted a positivism epistemological position as this is a quantitative research in which the author is an external observer (Kuada, 2010). Therefore, the author's reality on consumers' perception and attitude towards chatbots can be explained trough the observation of causes and effects that could confirm or disconfirm the stated hypotheses (Bryman & Bell, 2015).

Human nature defines how the researcher look at the relationship between humans and their environment. Comprehending this relationship helps to understand how knowledge is acquired and what the author considers to be true. As previously mentioned, the author

adopted a positivist position since the researcher considers the social world as external and out of his personal influence (Kuada, 2010).

Methodology is defined as the plan of action that guides the entire research. It refers to the reasons behind the choice of specific methods in the research process (Kuada, 2010). According to the objective approach and due to the epistemological and human nature positions a nomothetic perspective has been adopted. This method encourages quantitative studies based on a systematic protocol and techniques such as survey methods (Kuada, 2010).

2.2 Paradigmatic consideration

The objective-subjective debate has produced four typologies of paradigms such as (1) the FISI classification, (2) the RRIF classification, (3) the Morgan Smircich's classification and (4) Abnor and Bjerke's classification. Each of these paradigms has its own usage and importance that contributes to social science research studies (Kuada, 2010).

In this research the author is investigating chatbots' adoption in the Italian market. Thus, the author wants to understand how consumers' perception and attitude shapes chatbots' adoption and usage. Moreover, at the end of this research the author will give some suggestions about why chatbots should be applied in a brand communication strategy.

2.2.1 The FISI classification

In this case the author adopts the FISI model as it emphasizes the importance of studying social phenomena in terms of structures, functions and interactions. Furthermore, according to Kuada (2010) several scholars argue that this paradigm embraces a positivistic epistemology and methodology. In fact, according to these authors social facts exist outside individual actions (Kuada, 2010).

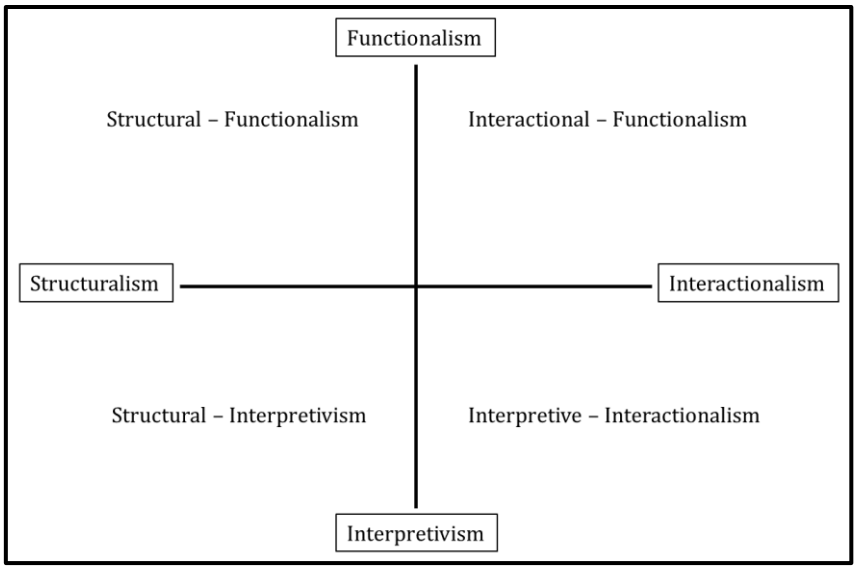


Figure 2.1 – FISI model (Kuada, 2010)

Kuada (2010) states that the FISI model can be described as follows (see Figure 2.1 above).

Functionalism. It refers to a positivist epistemology and therefore it is related to the objectivist or positivist type of research. This paradigm is adopted by some business economics that believe that the organization should make adaptive structural changes according to the environment to maintain effectiveness overtime.

Structuralism. It considers human societies as complex systems of interrelated parts. It also states that the structure of the system defines the position of the individual within the social system.

Interpretivism. Ascribes to a subjective orientation. It emphasises the need to understand how people define the situations in which they are involved and which meaning they get from their personal experience.

Interactionalism. It refers to the understanding how human interactions influence their social life. Scholars state that individuals do not respond to stimuli in a pre-established way, but they act through "minded behaviour".

Kuada (2010) also describes four different combinations of the four paradigms.

Structural functionalism. It combines structuralism and functionalism. Thus, it states that society has an existence over the individuals. According to Parson's (1951) structural functionalism explains four characteristics of social systems such as adaptation, integration, goal attainment and latency.

Structural interpretivism. According to this view the social world is organized by some basic structures that defines relationships. Scholars that embrace this view understand the social world through the eyes of the individuals. Therefore, the interpretation of the reality is based on their personal experience.

Interactional functionalism. It is a combination of functionalism and interactionalism. According to this view social phenomena are interconnected. Thus, interactions are fundamental for the functioning of social systems as they create norms that influence individuals' behaviours.

Interpretive interactionalist. According to this view the interaction of individuals and organizations define their behaviour to interpret events and co-create.

In this research the author adopted a structural functionalism paradigm as the author used a deterministic approach to investigate the phenomena. Thus, the author analysed a human behaviour (individuals' perception and attitude towards the adoption and usage of chatbots) in relation to the surrounding environment. Furthermore, the author defines his approach as functionalism also because in this research he applied positivist business theories.

2.3 Thematic Literature Review

A literature review represents an important chapter of this research as it provides a background to and justification for the research undertaken (O'Gorman & Macintosh, 2015). Thus, doing a literature allow the author to update and get findings about a topic into a field of research.

The aim of this research is to get knowledge and compare the findings about consumers' willingness to adopt chatbots based on their current perception and attitude towards them. For this reason, the author adopted a thematic literature review. In fact, this type of literature aims to analyse and summarise a body of literature. In this literature the author presents a comprehensive background of the theories within the interested topic to highlight new research streams or recognise inconsistencies (Naef. M, 2016). This type of literature review helps in shaping research questions as well as in developing theoretical and conceptual frameworks (O'Gorman & Macintosh, 2015).

To identify the main sources that compose the body of literature, the author used the Wilson's five search strategies such as multiple database searching, citation and footnote tracking, consultation, hand searching and browsing.

Two different databased have been used to look for the articles and books to write the literature review: Scopus and ProQuest. There are different criteria used to select the articles.

First, the author selected a timeframe from 2015 to 2018. In fact, as artificial intelligence connected to chatbots is a recent topic that is constantly up-to-date, the author wants to construct a research with the most recent and valuable information. However, this restriction has not been applied to the books and articles that constitute the theoretical foundation that are the bases of the literature. To integrate the literature with the latest information, some sources from valuable websites such as statista.com and techcrunch.com has been used. That is, these websites provide the latest data about the chatbots market that can be used to understand chatbots level of adoption.

The reason behind considering only articles or books published in the last three years is that according to various sources such as Forbes.com in the last years messaging apps surpassed social networks in terms of monthly active users. Thus, the chatbots market experienced a massive growth during that timeframe (Transparency Market Research, 2016).

All the articles that constitutes the building blocks of the literature review are peer reviewed articles, full text and completely in English. To narrow the results of the research and reduce the number of articles the author used some filters such as “business”, “marketing”, “consumer perception”, “consumer attitude”, “chatbots” and “artificial intelligence”.

As mentioned before, the author chose to write a thematic literature review. Thus, some keywords have been used to look for the articles that best fit the purpose of this research. As the research is based on a problem statement and there are three different research questions involved, the author used different keywords based on the aim of each research question.

All the general criteria described above has been adopted to each research questions. In the following lines the author describes which keywords have been used to answer each research question.

1) **What is a chatbot and how relevant are chatbots for consumers and companies?**
   The author looked at the main articles that provided a complete definition of chatbots in relation to consumers. Thus, the author looked for keywords such as “chatbot*” OR “messaging app* bot*” OR “chatbot* benefit*” OR “artificial intelligent bot*” and “chatbot* market”. The combination of these queries with the filters discussed above gave a result of 32 articles. The author scanned all these articles by reading the abstract to understand the

focus of each article was. At the end of this process the author excluded all the articles that were too specific or that did not fit the topic under investigation such as articles that considered too specific sample and case of studies.

2) **Which factors play an active role in consumers positive attitude towards of chatbots?**
   The following keywords have been used to answer the second research question: "consumer* attitude" OR "positive attitude", "consumer* perception" OR "positive perception" and "consumer AND perception AND chatbot*" OR "messaging app* bot*". The result of the research provided 1247 articles. To reduce the amount of papers to scan, the author put two other filters such as full text English articles and a timeline of 3 years (2015-2018). After applying these filters, the number of articles to scan was 73**.**
3) **Which are the implications of chatbots in conversational commerce and brand communication strategies?**
   To answer to this question the author looked at some case studies about companies that adopted chatbots to communicate with their customers. All the sources adopted are based on corporate websites of multinational companies. The second part of this research question will be answered at the end of this research (see chapter 6, paragraph 6.2). Therefore, the author did not used any keywords because the answer of this question is based on the insights gained from the findings. Thus, the author looks at the main insight provided by the people who answered the questionnaire to suggest why chatbots should be used by brands in a communication strategy. The only sources used in this section refers some reliable marketers' blogs that suggest some tactics about how to use chatbots to boost companies' communication.

To clarify which peer reviewed articles have been effectively used to draw the literature review the author constructed a table representing each article that has been selected (see Appendix 1). Moreover, the all questionnaire is reported in Appendix 2.

2.4 Research methods and design

Choosing the right research methods and designs is fundamental to write a research. Although these terms could be confused, there is a difference between the research design and the research method. A research design refers to a framework with which it is possible to conduct the research. In fact, while the research method refers to the process of gathering the data, the research design provides a plan to action to do the research such as the right procedures to

collect and analysed the needed information. The research design also explains how the data will be analysed to prove or disprove the stated hypotheses (Eduardsen, 2017).

In following paragraphs, the author will explain the research design and method used in this thesis as well as the process with which the data have been collected. Furthermore, in paragraph 2.4.3 the author explains how the questionnaire has been designed and the insights that it aims to provide.

2.4.1 Research design choice

According to Eduardsen (2017) there are five different kind of research designs such as experimental design, cross sectional design (survey design), longitudinal design, case of study and comparative design.

Cross-sectional design. It refers to the collection of data on multiple cases with multiple variables to detect the patterns of association. This type of research design uses a non-manipulative method as it forms variations between the cases in a systematic way (Eduardsen, 2017).

The author chose to adopt this research design as it the one that better fits with the purpose of the research. In fact, the author wants to investigate the Italian chatbots market understanding which factors influence attitude and perception towards chatbots and consumers' willingness to adopt them. Thus, this study it makes use of a systematic data collection via questionnaires that will be delivered to a sample of Italians. As a result, the main insight resulting from the questionnaire will be used to draw a conclusion.

2.4.2 Sampling and data collection

As already mentioned, the author will investigate the topic of this research using a quantitative method of data collection. Sampling is the main way through which it is possible to collect data.

Sampling is the process of selecting a given number of units of analysis from a population, that is a group of individuals that share some common characteristics. Thus, if a sample is representative it is possible to test the hypotheses and deriving estimates. The author chose to use a sampling process according to the low budget and time limitation to make this research (Eduardsen, 2017).

The population is composed by Italians that not necessarily know what a chatbot is. The reason behind this choice is to consider an heterogenous sample to understand what pushed some people to adopt chatbots and what could push more people to adopt them. Indeed, the author wants to draw a comprehensive picture of the Italian chatbots market in terms of adoption.

Thus, to reduce the chances of sampling errors the author decided to collect data from a large population (Eduardsen, 2017). The only condition is that people selected to answer the survey should be Italian and currently live in Italy. This is because Italians living in other countries could be influenced by cultural and habits of the foreign country.

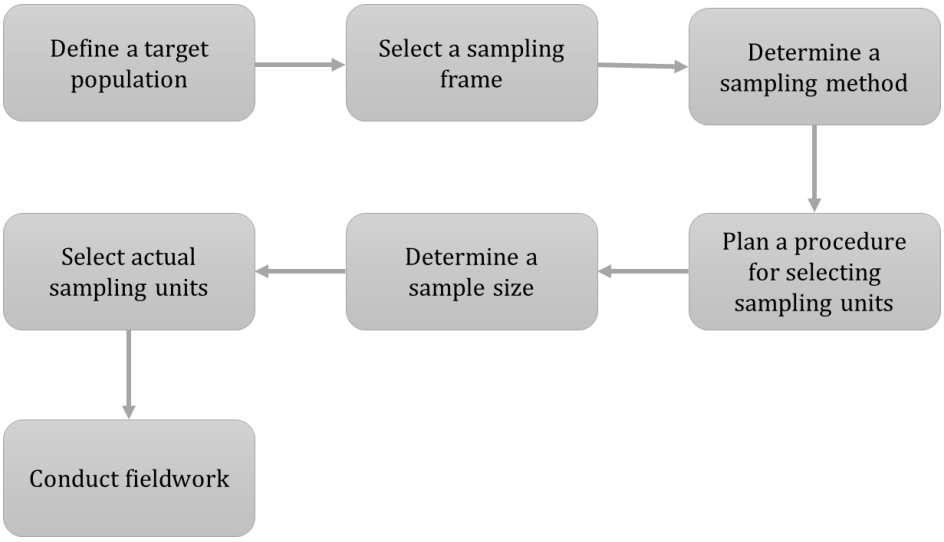


Figure 2.2 – Stages in selecting a sample (Eduardsen, 2017)

Figure 2.2 above describes the phases that compose the sampling process followed by the author. As mentioned before, the target population is composed by Italians currently living in Italy. After selecting the sampling frame, the author determined the sampling method. The author was expecting a sample size between 100 and 150 responses to draw conclusions about an heterogenous population. Subsequently, the author cleaned the data collected from the questionnaire to determine the sampling units that would prove or disprove the hypotheses.

The target group selection has been based on author judgment and convenience. Therefore, a non-probability sampling method has been used. According to this method, the representativeness of the sample could be affected as the respondents were not truly random (Eduardsen, 2017). In fact, the author used the main channels and groups where it is possible to get responses such as Facebook groups, Instagram and WhatsApp groups. Indeed, only people subscribed to one of those platforms got the chance to answer the survey.

Because of the budget and time limitations, the author decided to deliver via Instagram to capture the youngest audience and Facebook and WhatsApp groups where older people are more active.

First, the author decided to involve an Instagram micro influencer with 13.000 followers to advertise the survey and spread it through this platform. Figure 2.3 below (see English

translations in red) shows that the micro influencer selected for the survey delivery is popular between 18 – 24 years old male and female mostly living in Italy.

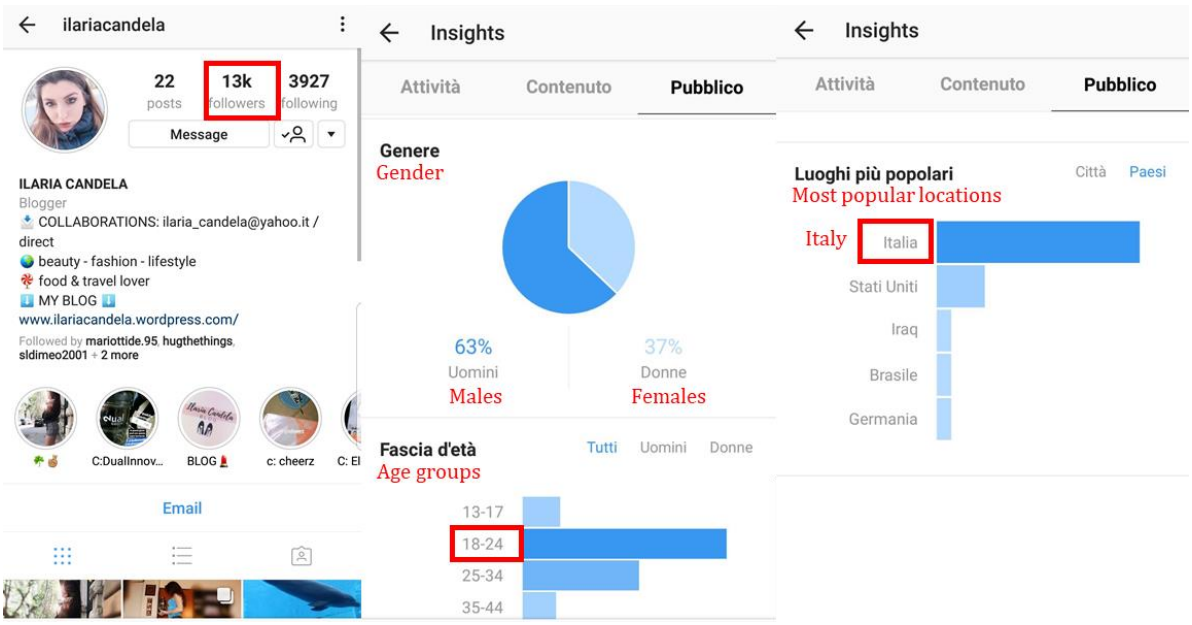


Figure 2.3 – Instagram profile insights about the micro influencer selected (Instagram, 2018)

To share the survey and get as many replies as possible the author asked to make an Instagram Story lasting 24h and put a reward (an Amazon coupon of 20 euro) to push the number of respondents and increase the response rate. The goal was to create a win-win situation where respondents could get a reward and the author could receive the amount of answers to stop the data collection process and start to analyse the data.

After 24 hours the Instagram Story was seen by 576 people and 52 of them answered it. Therefore, the response rate related to this channel was 9,03%. Figure 2.4 below shows the Instagram Story shared on Instagram.

Figure 2.4 – A screenshot of the Instagram Story that pushes people to fill the questionnaire (own creation)

The same process has been followed with the other two channels such as WhatsApp and Facebook. The author joined some groups followed by Italians between 30 years old or older to intercept this audience.

First, the author delivered the survey through 4 different Facebook groups. The groups count 1253 members in total and in 5 days the survey was filled by 87 people. Therefore, the response rate related to this channel was 6,94%. Figure 2.5 below shows one of the posts shared in these Facebook groups.

Figure 2.5 – A sample of post shared on a Facebook group (own creation)

Finally, the author posted the questionnaire in 3 different WhatsApp groups counting 134 members in total that lead to 29 more answers with a response rate of 21,64%.

To understand if the sample was enough representative, the author looked at the data of the 168 total respondents provided by the tool that has been used to design the questionnaire such as *Google Form*. The data are reported in the Figure 2.6 below (see English translation in red).

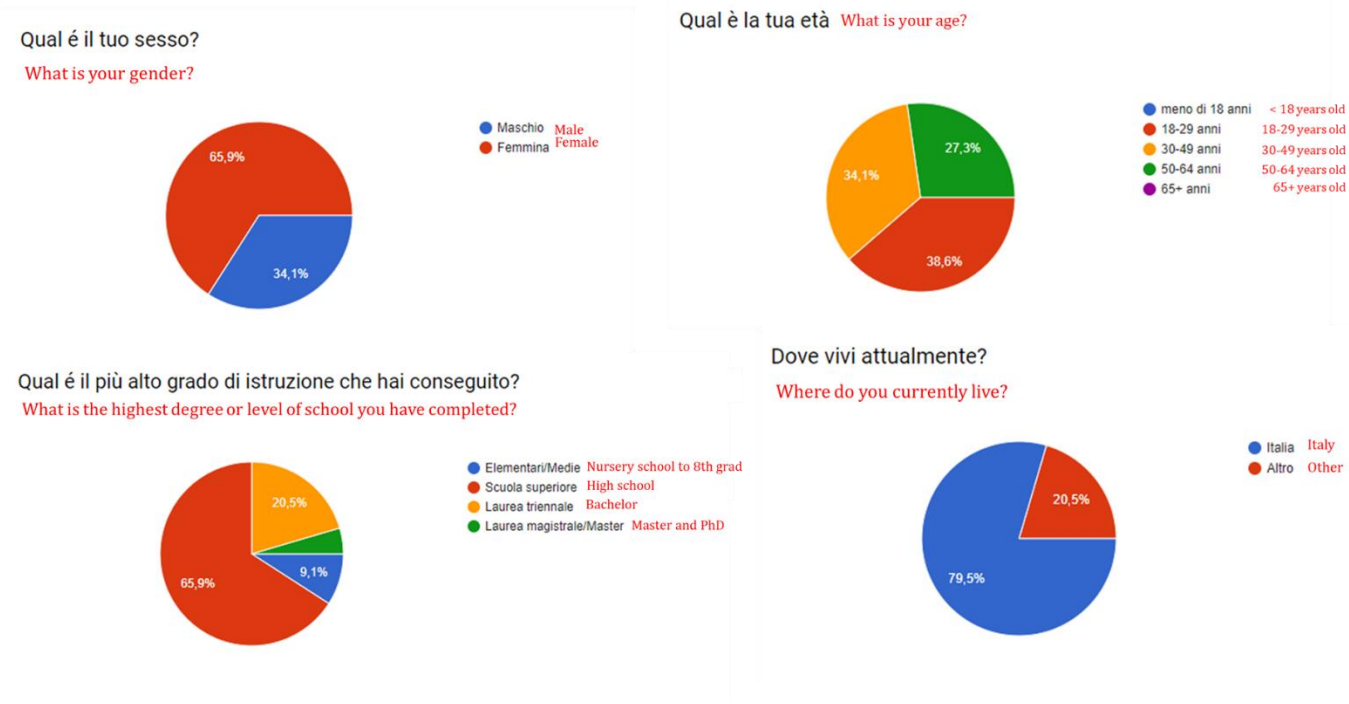


Figure 2.6 – Demographics about the Italian consumers' that filled the questionnaire (own creation)

The goal of this research was to obtain the most heterogenous set of data to analyse consumers' behaviour and attitude. Indeed, at this point the author established that the total response was significant enough to conduct the data analysis.

2.4.3 Survey research method and design

All the questions included in the questionnaire are based on theories discussed in the literature review to guarantee the survey trustworthy. Furthermore, the hypotheses that the questionnaire aims to prove or disprove have been constructed based on peer review articles from the literature review. This is because the author wants to make the survey as credible as possible.

As mentioned before, the questionnaire contains questions from peer reviewed articles. However, to make the research up to date, some questions have been constructed using data from reliable web sources. For instance, question 5 contains the main tasks that a chatbot could handle such as shopping, tracking and customer service based on the currently available data

from Statista. That is, the author just took the main tasks that have been rated higher to not include irrelevant and not high considered tasks. Thus, the author would not make the questionnaire longer with almost irrelevant statements that would make the response rate lower.

Looking at question 4, the author combined the Uses and Gratification Theory from the article written by Luo and Remus (2014) with a study by Brandtzaeg and Følstad (2017) that investigates the main reason behind the adoption of artificial intelligence devices. Indeed, the author combined the information from a peer reviewed article (Luo and Remus, 2014) with the most update statistics about motivations to adopt chatbots (Brandtzaeg and Følstad, 2017). Furthermore, also question 6 has been adapted to the chatbot context. In fact, the original question from van Eeuwen (2017) considered every kind of artificial intelligent technology such as smart speakers and virtual assistants. The author adapted the original questions to the purpose of this survey to understand if consumers have a positive attitude towards chatbots. These choices allowed the author to include the most updated information while this master thesis was written.

Considering the quantitative aspect of the research, most of the survey questions are multiple choice to easily quantify and handle the data. The questionnaire contains also some demographic questions from which the author could identify different segments and analyse the difference between each demographic group (Eduardsen, 2017). All the questions together should provide the amount of information of respondents' perception and attitude to draw conclusions. In fact, the questions contained in this survey have been design in a way that data can be combined to get the most relevant answers to prove or disprove the stated hypotheses.

The number and the type of questions included in this survey take no more than 5 minutes to be answered. Therefore, the author believes that making a short questionnaire would enhance the number of answers. At the beginning of the survey the author provided a small introduction emplaning what is the purpose of this study to get people informed about how their answers will be used in this research. Finally, in question 1 the author asked to the respondents if they knew what a chatbot is. In fact, as some people do not necessarily know exactly what a chatbot is, the author also provided a section with a brief explanation with two examples of chatbots' application.

Table 1.1 contains all the survey's questions. The author designed this table to make the research more reliable and explain for each question which the expected outcome is such as

which information the author wants to get. To make the answers easy to analyse and compare, the author mostly asked interval and multiple-choice questions. Each question is associated to the factor that aims to investigate and to the source from which the question has been designed. As already mentioned each question is based on a peer-reviewed to guarantee the questionnaire reliability.

Question	Measurement	Type of question	Reseach type	Source
1	General knowledge of a chatbot	Multiple choice		
2	Actual usage of a chatbot	Multiple choice	Behaviourial	Papacharissi and Rubin (2000)
3	Behavourial usage	Multiple choice	Behaviourial	Papacharissi and Rubin (2000)
4	Motivations	Multiple choice	Psycographic	Luo and Remus (2014)
5	erceived usefulness, percieved easy o	Interval	Psycographic	Davis et. al (1989)
6	Positive attitude	Multiple choice	Psycographic	Davis et. al (1989)
7	Gender	Multiple choice	Demograhic	Eduardsen (2017)
8	Age	Multiple choice	Demograhic	Eduardsen (2017)
9	Education	Multiple choice	Demograhic	Eduardsen (2017)
10	Nationality	Multiple choice	Demograhic	Eduardsen (2017)

Table 1.1 – Background of survey questions (own creation)

2.4.4 Research validity and reliability

As the author adopted a quantitative method of research, it is important to evaluate validity and reliability of the theories that support this study. Reliability refers to "*the extent to which a research consistently has the same results if it is used in the same situation on repeated occasions*" (Heale & Twycross, 2015). In other words, reliability is the consistency of the concepts over time. Validity refers to "*the extent to which a concept is accurately measured in a quantitative study*" (Heale & Twycross, 2015). In fact, validity is related to the quality of the conclusion obtained from the research. That is, a study is valid if other scholars conducting the same research can reach the same conclusions.

In this case, to address validity and reliability the questions asked in the survey should be reliable and valid. That is, to be valid a question should be based on the right theories to address the right conclusions. Therefore, the research is valid if all the questions that are asked answer to the problem statement. Therefore, to provide "criterion validity" and "content validity" the author adopted only theories from peer-reviewed articles (At Work, 2016).

Reliability is guaranteed from the fact that the survey was conducted in the most structured and transparent way to allow other researchers to replicate the same study and get the same results (At Work, 2016).

To guarantee internal consistency the author filtered and cleaned all the answers using Microsoft Excel tool "*Remove Duplicates*" to eliminate the people that answered the

questionnaire twice, for instance to have a double chance to win the €20 Amazon coupon prize. That is, cleaning and filtering the data allowed the author to get reliable results to be discussed (At Work, 2016).

Chapter 3, Literature Review

3.1 Introduction: chatbot definition

As mentioned in the introduction chapter, with this research the author wants to investigate chatbots. As the topic involves different terms, it is important to provide a definition for each of them. That is, according to Khan & Das (2018) with "chatbots" the author defines an *artificially intelligent conversational agent that simulates human-like conversation that, for example, allow users to type questions (i.e., queries) and, in return, generates meaningful answers to these questions* (Khan & Das, 2018). The chatbot analyses the content typed by the user and links this to a database that contains possible answers (Crutzen, et al., 2011). To be used a chatbot needs a platform on which users can type to get answers. Indeed, messaging apps are the platform on which chatbots work (Radziwill, 2017). Telegram, WhatsApp and Facebook Messenger are all examples of messaging apps that people use on a daily base to chat with friends, interact with brands, make calls, consume content, buy products and even book a restaurant. These are just a few of the tons of features that it is possible to do with messaging apps nowadays. And marketers use chatbots on these apps to provide customer service, deliver content to users, advertise as well as to sell products (Chi, 2017).

Chatbots receive natural language input and execute one or more related commands in a goal-direct behaviour. The most advanced systems implement machine learning technologies, that is they can adapt to additional information or new requests. These conversational agents are usually autonomous, proactive and social (Radziwill, 2017).

But chatbots are just one type of conversational agents, which are software systems that interact with real people. Conversational agents are a type of dialogs systems and have been a subject of research for decades. IVR (*Interactive Voice Response*) systems are another type of dialog system that allow a computer to interact with humans thought the use of voice via a keypad (Radziwill, 2017). Figure 3.1 illustrates the relationship between the different typologies dialog systems. As this research is focused on chatbots, in the following paragraph the author will make an overview of the different typologies of these technologies.

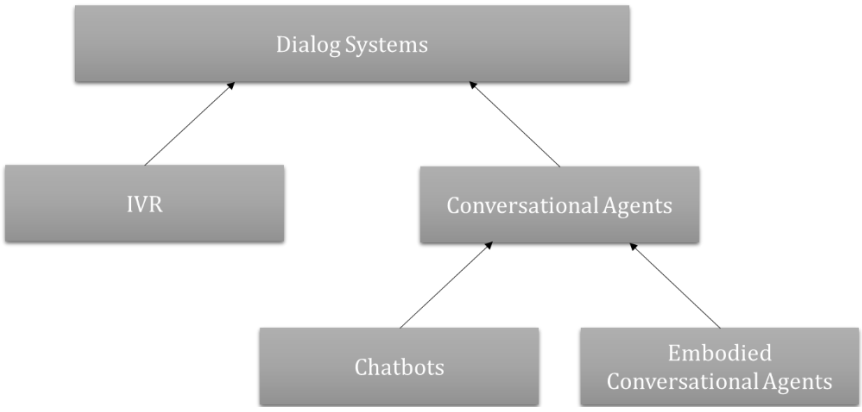


Figure 3.1 – Different types of dialog systems (Radziwill, 2017)

The emphasis of this paper is on chatbots such as text-based conversational agents that are in contrast with voice-activated conversational agents such as Siri, Alexa and Cortona which are not considered as chatbots.

Today implementing chatbots is easier and lead to better results in terms of performance due to new development platforms that allow an easier implementation of these technologies with social media and developer productivity tools. Machine learning approaches are also increasingly integrated to make chatbots more adaptive and responsive to different inputs and new tasks.

3.2 Typologies of chatbots

As mentioned before, chatbots are just one type of the different kind of conversational agents. However, there are different type of chatbots, and some react in different ways than others. That is, not every bot is the same based on the level of intelligence and define a particular task. According to several authors such as Oisin Muldowney (2017) it is possible to distinguish between four typologies of chatbots.

1) *Flow-oriented chatbots*

   This kind of chatbots follow a predefined path chosen by the programmer. In flow-oriented chatbots, the user goes through a set amount of questions and options. Thus, the user can take a decision based on the options that the chatbot's developer has made available. This kind of bots usually involve a lot of buttons and keywords through which the user can choose a specific action to take or an information to be displayed (Debecker, 2017). This kind of bots are also named as "*rule based chatbots*" as they are built to perform a predetermined number of tasks based on the rules provided by a programmer. These kind of chatbots lack in deep learning compared to artificial

intelligence bots as they are not able to learn over time. For this reason, flow-oriented chatbots are fast to be developed and low cost (Refine, 2017). Figure 3.2 below illustrates an example of a flow-oriented chatbot.

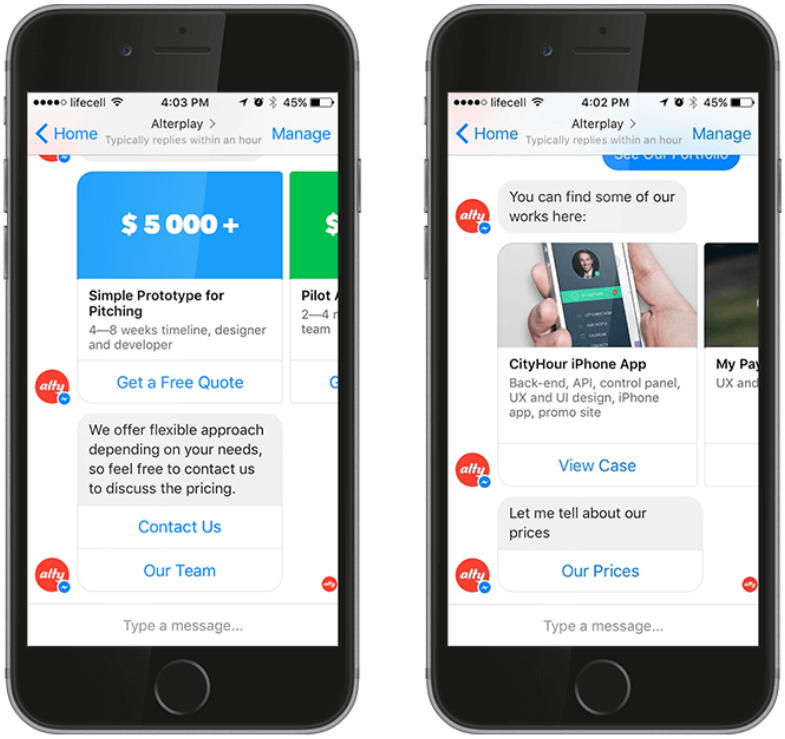


Figure 3.2 – Example of a flow oriented chatbot projected for Alty (Smashing Magazine, 2016)

2) *Artificially intelligent chatbots*

In the last half century artificial intelligence efforts to model human language use by have not been successful. Scientist had to deal with the complexity of human language in terms of comprehension and generation. In fact, the main issue for computer is not understanding the meaning of words but understanding the context into which these words are used to communicate meaning. However, decades later the situation is changed as it is possible to find different natural language interaction with conversational agents. That is, nowadays communication occurs through digital technologies rather than in person. Therefore, *computer mediated communication* (CMC) has become a critical area of research to explore human natural language simulation (Hill, et al., 2015).

Today, one of the most popular forms of CMS is instant messaging (IM). That is, chatbots are an important domain of CMS (Hill, et al., 2015). Artificial intelligence chatbots rely

on artificial intelligence to deliver the user experience (Debecker, 2017). This computer applications aim to imitate human personality, that is they are interactive and responding in sentences while creating a meaningful conversation with humans. Artificially intelligent chatbots allow the user to engage in a much freer way and have a real discussion. Indeed, the user can enter any sentence and the bot will be able to analyse a set of parameters to understand user's intent and react. However, in 2015 Hill et al. (2015) made a reseach about how communication changes when people are communicating with a chatbot compared to a human. According to this reseach while messages sent to chatbots containes fewer words per message compared to those sent to humans, people send more than twice messages to chatbots compared to other people. Indeed, it seems that people adopting chatbots feel confident and confortable. Moreover, the fact that people were using fewer words while communicating with chatbots could be related to the fact that people model their communication to match that of the chatbot. This behaviour can be compared to the one adopted by humans while speaking with children or non-native speakers (Hill, et al., 2015). In conclusion, users adapt their language based on the environment. Although chatbots are still not able to have extensive conversations, users express their desire to have deep discussions with these conversational agents and use them in the future. That confirms how it is important to work on chatbots that use AI to better simulate an intelligent human conversation (Hill, et al., 2015). This is powered by NLP (Natural Language Processing) technologies that allow chatbots to process the information and respond with a natural language mechanism (Tarazi, 2017). Figure 3.3 below shows an example of how an artificial intelligent chatbots work.

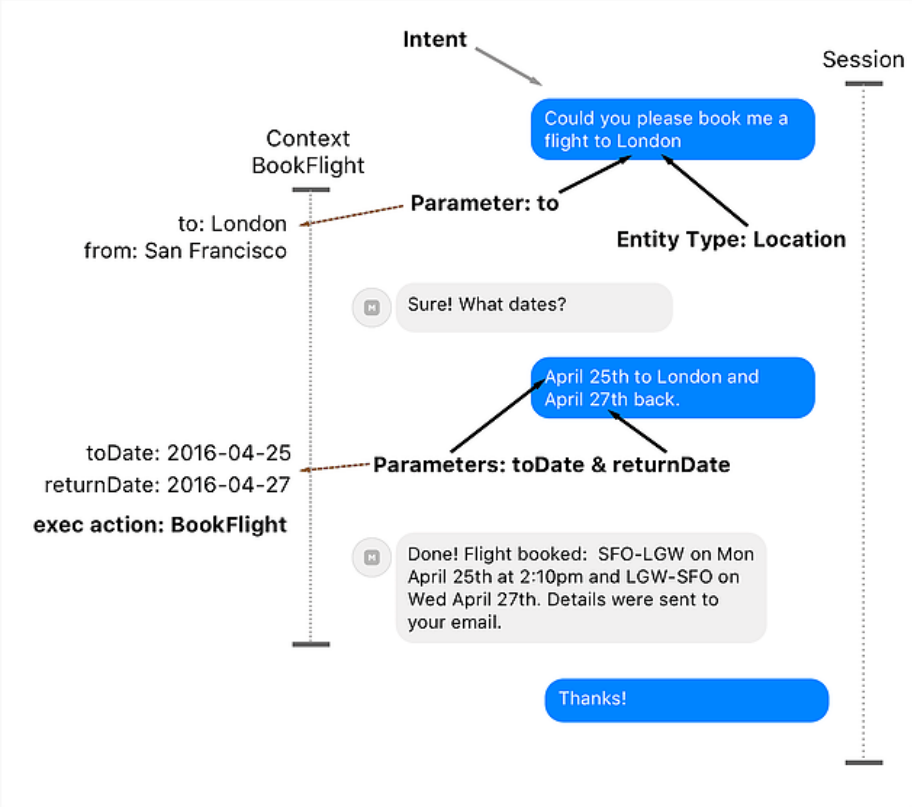


Figure 3.3 – An example of how an artificial intelligent chatbot works (Hill, et al., 2015)

3) *Hybrid chatbots*

These bots combine the best characteristics of the previous bots (flow-oriented and artificial intelligent bots) to offer a better user experience. Most of the bots available today are hybrid chatbots as NPL technology is still not mature enough to understand every sentence, which means that the users would not be able to get always the answer they want. Indeed, with a hybrid chatbot users go through a set of questions like happens in flow-oriented bots but (s)he can also type free text to ask other questions. The combination of flow-oriented and artificial intelligence techniques allows users to get what they ask for. These kind bots are often used in booking and delivery services (Tarazi, 2017). Figure 3.4 represent an example of a hybrid chatbot.

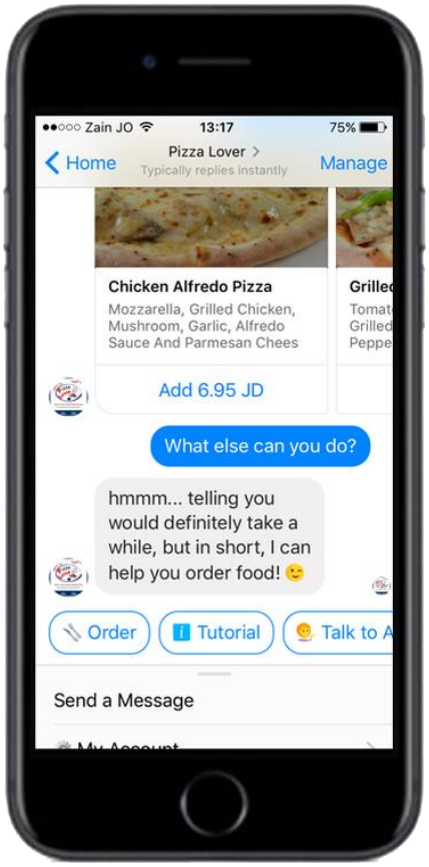


Figure 3.4 – A hybrid chatbot used in a pizzeria to help customers order food (Tarazi, 2017).

4) *Human supported bots*

As the name suggests human supported chatbots deploy AI to allow users to interact while using free text. However, behind this technology there is also a human operator that observe the conversation and takes over if the bot is not handling and satisfying the customer's requests (see Figure 3.5 below). The advantage of this type of chatbots is that the bot can be trained by the operator. Therefore, teaching the bot guarantee a better reply from it for future conversations (Tarazi, 2017).

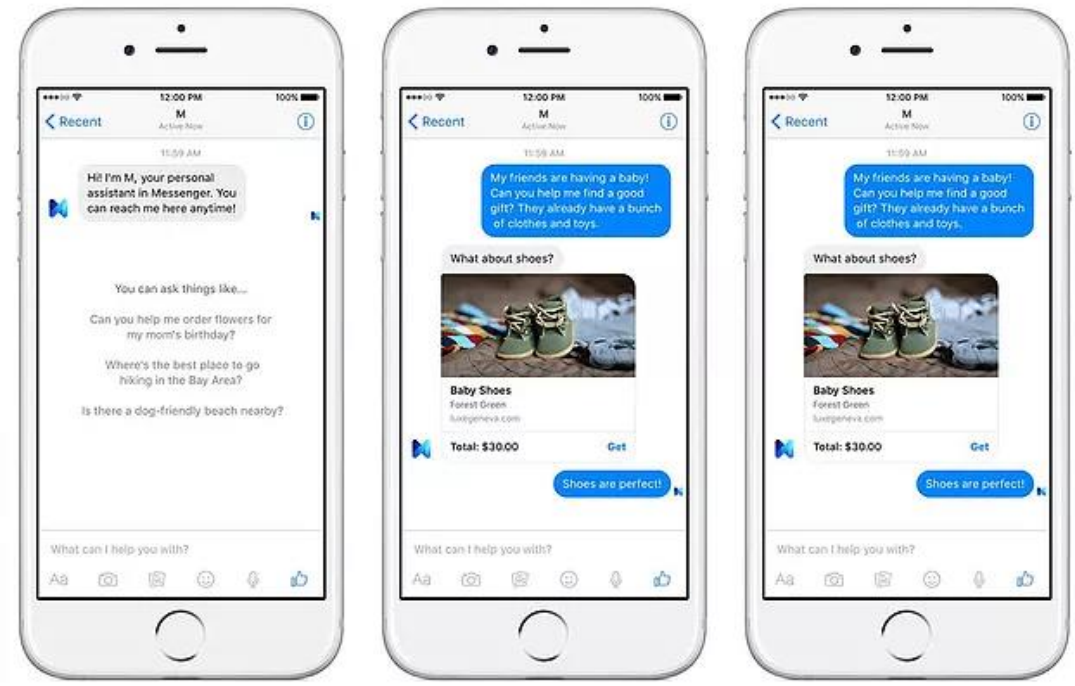


Figure 3.5 – An example of Facebook human supported bot "M" (Tarazi, 2017)

3.2 The relevance of chatbots

"*Bots are the new apps*". This is one significant sentence from Satya Nadella said at Microsoft WPC 2016. This sentence has a deep meaning that can be investigate looking at the application market landscape. Since smartphones has been developed, the main strategy to drive traffic on mobile was through apps. However, while more apps have been developed it has become hard for companies to get people to download a new app and even harder to get them to use it. In this sense, it is possible to talk about a phenomenon called "*app fatigue*" (Perez, 2016).

In 2016 Adobe investigated the phenomenon of app abandonment based on analysis of over 85 billion app launches. Figure 3.6 below shows how only the top applications are experiencing a massive growth in launches (62%) and installs (41%) while average apps see lees growth (24% in launches and 6% in installs).

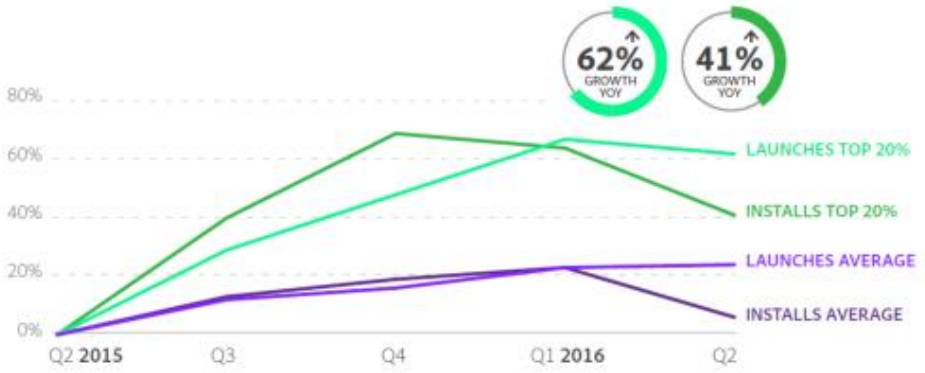


Figure 3.6 – App launch and install growth in US (Adobe Analytics, 2016)

That suggests how consumers stick with what they know. In fact, even if some new apps are installed, they are quickly discarded after their first install. Figure 3.7 below illustrates how five out of ten apps installed on our phone are used fewer than ten times (A) and two out of ten are used only once (B).

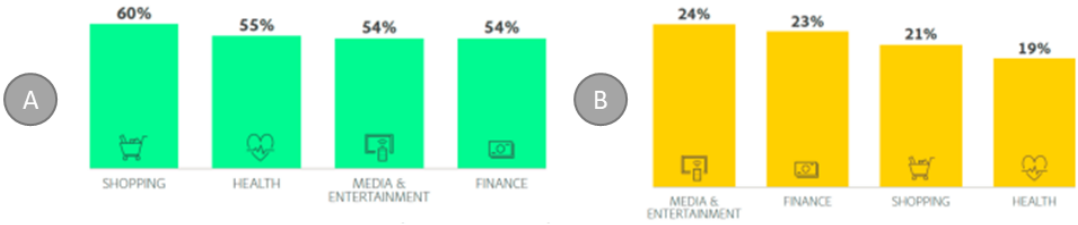


Figure 3.7 – (A) Percentage of apps used less than ten times / (B) Percentage of apps used only once (Adobe Analytics, 2016)

As people are less willing to install new apps and use them, companies are using bots on messaging apps to drive traffic and engagement. The case of KLM is emblematic. While the company was investing in a new mobile application, their social media manager said: "*Why would we push people to our app? We want to be where they are* [in social apps]". That is, KLM started to invest time and effort on Messenger where they developed a bot-based service. As reported on KLM official website, now it is possible to receive flight documentation and flight status updates directly via Messenger (see Figure 3.8 below). Moreover, it is also possible to use the KLM Messenger Bot to make a check it and receive your boarding pass (KLM, 2018). This option has been really appreciated by KLM customers. In fact, in 2016 KLM President and CEO Pieter Elbers declared: "*The new Messenger service is a perfect addition to KLM's social strategy. We believe we should be where our customers are, and therefore Messenger and KLM are a good fit. Our customers feel comfortable sharing info with us via a more personal platform like*

Messenger. Cases increased by 40%, which shows customers appreciate this form of communication" (KLM, 2016).

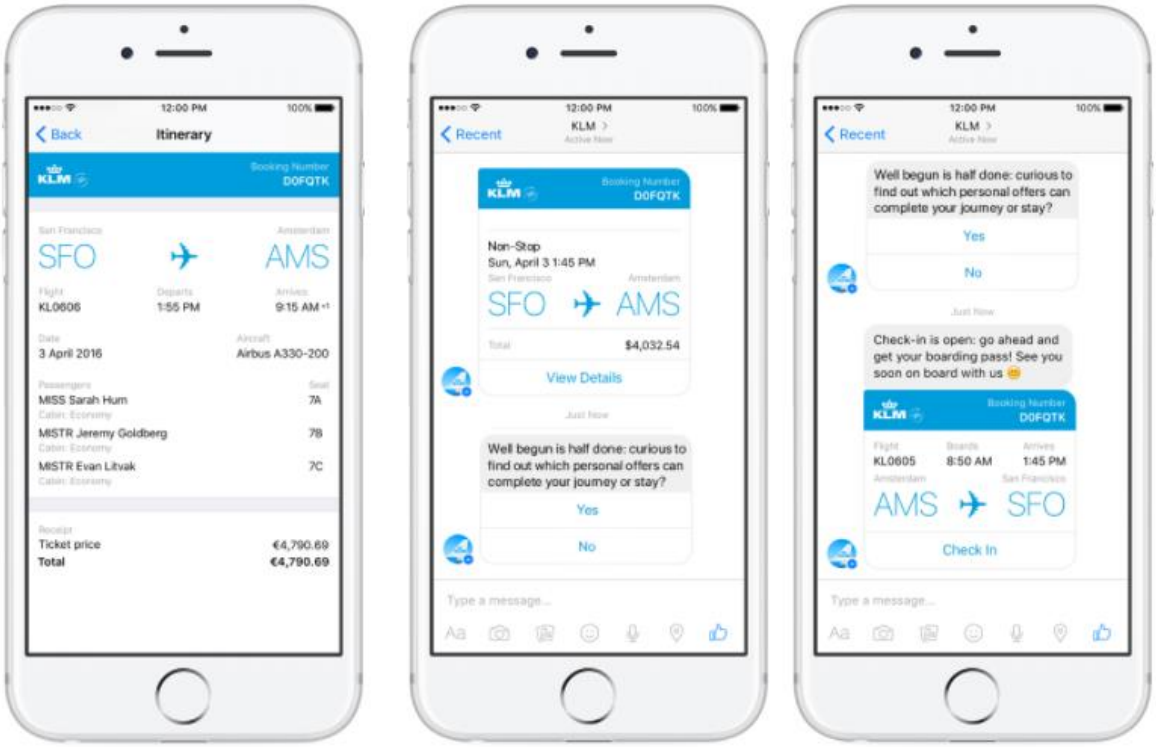


Figure 3.8 – KLM Messenger chatbot for ticket booking (KLM, 2016)

Bots are the greatest opportunity for growth, engagement and customer relationship since consumers are starting to experience what has been described above as "*app fatigue*". In fact, the rise of chatbots is related to the falling demand of apps from consumers. Figure 3.9 illustrates the number of apps purchased in 2016 by age segment. It is possible to see that higher is the age group lower is the number of apps purchased. For instance, it is possible to notice that 36% of people between 18 and 34 years old purchase 0 apps while this percentage reach 80% considering people with an age of 55 years old or higher.

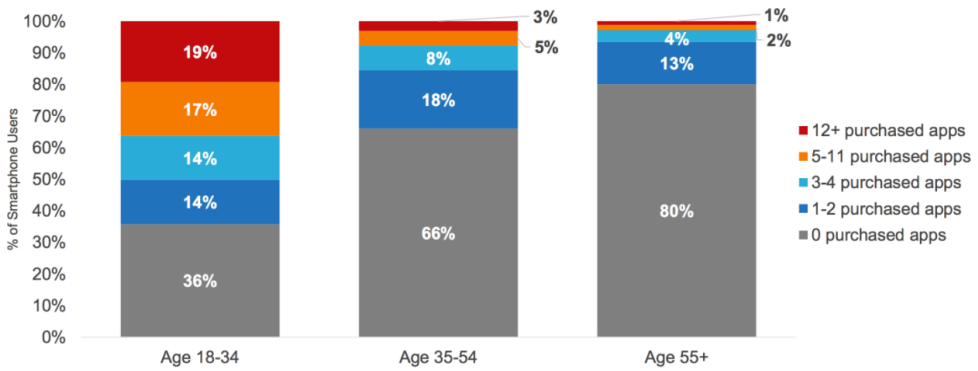


Figure 3.9 – App purchases in the past year by age segment (comScore, 2017).

According to a report from comScore, a recognized global leader in measurement of audiences and consumer behaviour, the number of app accessed by users is less than twenty per month. Moreover, as shown in Figure 3.10 the top ten most used apps account for nearly all the time spent in apps (Frommer, 2017).

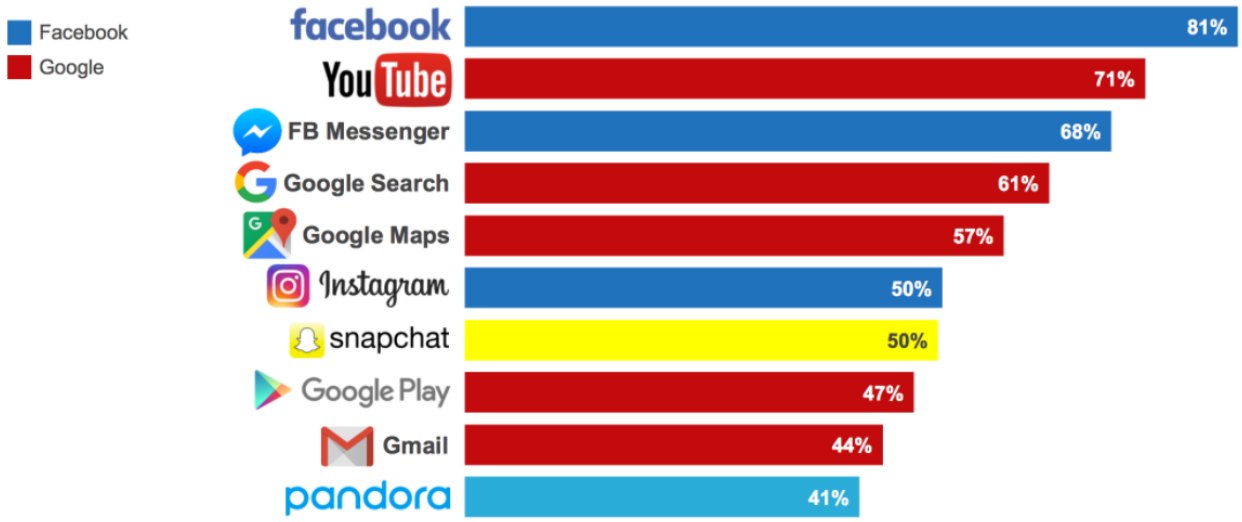


Figure 3.10 – Top 10 mobile apps by penetration of app audience (comScore, 2017)

These data suggest how top mobile apps are almost fixed in users' preferences and unless brands have a really compelling product, it is hard to overcome the app fatigue of users. In this context of high competition, Facebook Messenger represents an important opportunity for brands to reach their audience. In fact, this app is in most of people's smartphone and it represents a cheaper opportunity for companies to interact with their customers. Moreover, according to a research by Oracle (see figure 3.11 below), chatbots automated replies provide also an economic benefit in terms of salary savings (BI Intelligence, 2016)

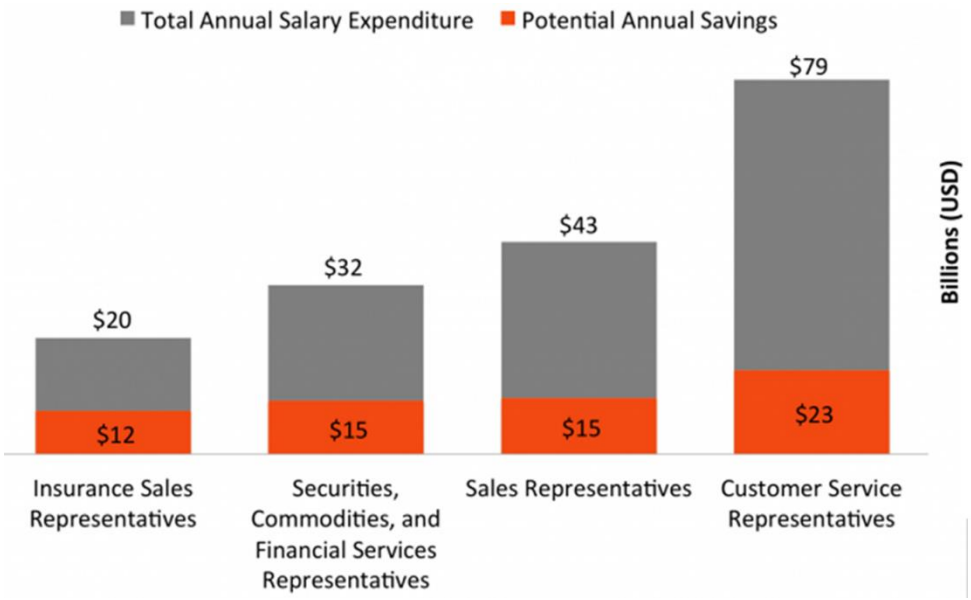


Figure 3.11 – Potential annual US salary savings created by chatbots (BI Intelligence, 2016)

Beyond the cost savings, chatbot provide a better customer service due to the instant connection with consumers and 24/7 availability. Furthermore, compared to human customer service, chatbots are more flexible and can provide a broader range of solutions for clients. Indeed, chatbots for different industries can be embedded in the same chat. For instance, after using a chatbot to book an hotel room, the same chatbot could also suggest you a taxi that carry the passenger from the airport to the hotel (van Eeuwen, 2017).

3.3 Applications of chatbots

As mentioned during the previous paragraph, chatbots have different applications from which companies and brands could benefit. In this paragraph the author will look at the main applications of chatbots in business.

First, it is important to remember that chatbots is a new topic that need further investigation. Therefore, the applications of chatbots described below are just a small proportion of all the possible utilizations that chatbots could guarantee in the future.

Second, as chatbots is a new topic it is hard to find journal articles that describe their utility. Therefore, there are not a lot of peer reviewed articles report data about the phenomena and to get valuable insight the author looked at the main reports from the most known web agencies and companies that works with data. To make the research more practical, the author will look at the main ways with which the most common brands introduced chatbots as part of their business strategy while using online sources.

3.3.1 Customer Relationship Management

According to a report from the customer experience consulting firm Walker Information Inc. by 2020, 85% of customer interactions will be handled by a machine and will be the first way for businesses to differentiate themselves from competitors. This sentence is clear and based on today's consumers expectations and how these expectations will change in the future. In fact, as described in paragraph 3.3 connected devices are taking relevance and in 2018 there are around 8 billion of devices requesting support. Nowadays, customers are savvier and prefer social media and mobile platforms to communicate. The number of channels and touchpoints increased as well as consumers expectations that continue to evolve towards customised interactions and instant answers to questions. As a result, businesses are challenged to guarantee better, faster and tailored replies (Inbenta, 2016).

Data sustain what has been described above. In fact, NewVoiceMedia report from 2016 states that:

- 85% of consumers have used an online channel to ask for support such as email, live chat, text, etc.
- 40% of consumers expect a reply within 1 hour.
- 60% of consumers communicate through different channels depending on where they are and what they are doing, requiring business to be always present in different channels.

According to these results it is possible to state that consumers are constantly expecting more, and companies need to improve their customer service in a sustainable way. That is, using live agents in not a scalable solution as when the volumes of requests are high it is not possible to provide faster and smarter solutions (Inbenta, 2016).

To understand the size of the problem, other data can be provided. For instance, according to Salesforce 40% of consumers cannot find information online about a product or service. Microsoft estimated that 90% of consumers now expect a brand to provide a platform for self-service customers support. Moreover, NewVoiceMedia estimates a loss for companies of $41 billion just in the U.S. market due to the poor customer service. Finally, one of the world's largest telecommunications service subsidiary Dimension Data states that around 80% of current customer service systems are not ready to meet the future business needs (Inbenta, 2016).

Indeed, customer relationship management is one of the key parts of business where chatbots can play an active role. However, CRM concept evolved over the decades. At one time, marketing campaigns just to increase customer loyalty towards a product or service. Moreover, strategies were not optimized for different type of consumers. Nowadays, one of the key points of CRM is to personalize the experience of each consumer and building better relationships with the most profitable ones. As a result, customer value such as economic value of the customer relationship to the firm, expressed as a contribution margin or net profit represent a key point for CRM. Firms should optimize the marketing efforts towards the increment of customer value. From a customer value perspective, CRM is defined as "*the practice of analysing and using marketing databases and leveraging communication technologies to determine corporate practices and methods that maximize the lifetime value of each customer to the firm*" (Kumar & Reinartz, 2012).

As mentioned before, consumers' behaviour evolved and nowadays consumers look for a tailored experience. Therefore, customer-centric business strategies are required according to changes that occurred in consumers' behaviour. Shifts in consumers' behaviour are linked to changes in the usage of media, information availability and attitude toward service levels. In the following lines different changes in consumer behaviour are described as well as the impact that chatbots could have on these changes.

Time scarcity. A lot of consumers nowadays are technologically rich but time poor. Consumers reach negatively especially when firms impose place and time constraints such as a timetable to contact the customer service. That is because time is becoming more and more precious for consumers. As a result, a lot of efforts of companies lead to the reduction of time for consumers. The rise of internet and new forms of communication is an example of that. Nowadays, according to Statista there are more 2.5 billion people are on social networks and 1.79 billion of digital buyers. If we also look at the most important companies raised in the last decade, it is possible to understand that most of them reduce the time needed to take actions. For instance, Amazon success is mostly based on his price convenience and even more on the fast delivery service. Consumers are taking seriously their time. Marketers should provide products and services on demand and pay attention to time value while interacting with customers (Kumar & Reinartz, 2012).

Chatbots solve this problem. Consumers do not need to waste their time waiting for a human agent answering. Consumers do not have a fixed timetable that must follow to communicate with the brand. Therefore, another important task related to chatbots is customer service 24/7

availability. Consumers can express their doubts and ask question whenever without the feeling of waiting minutes to be connected to the first operator available to answer (Schlicht, 2016).

Moreover, also knowing that consumers are less willing to download new apps, chatbots overcome this problem allowing consumers to use the same app that they use to chat with their friends. Chatbots can gather a real time feedback from consumers. This is a real advantage for business that want to understand customers' sentiments. Furthermore, brands can also send time-based promotions and send important news to their customers. Finally, also ordering a product or a service is easier and faster (Schlicht, 2016). Figure 3.12 below represent Domino that created a Facebook Messenger bot to inform their customer about the latest deals available. Moreover, thought Domino's chatbot is also possible to order products (see Figure 3.13).

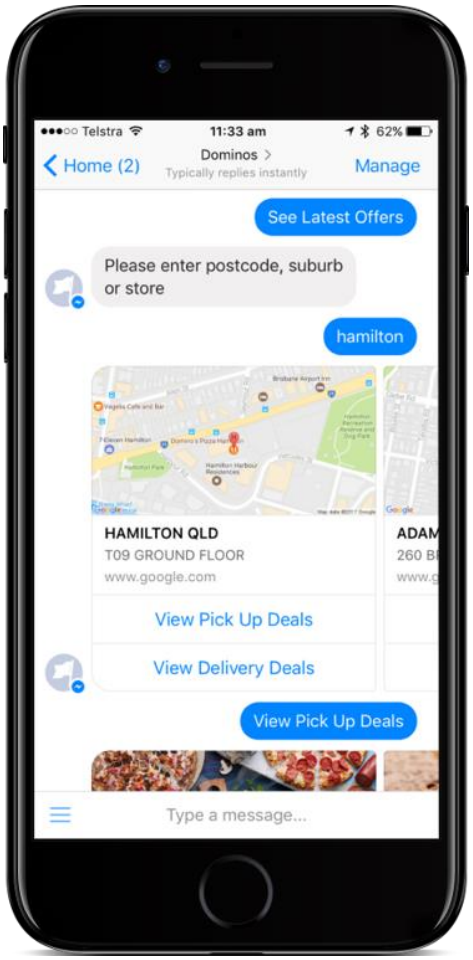


Figure 3.12 – Domino's Facebook Messenger chatbot (dominos.com, 2018)

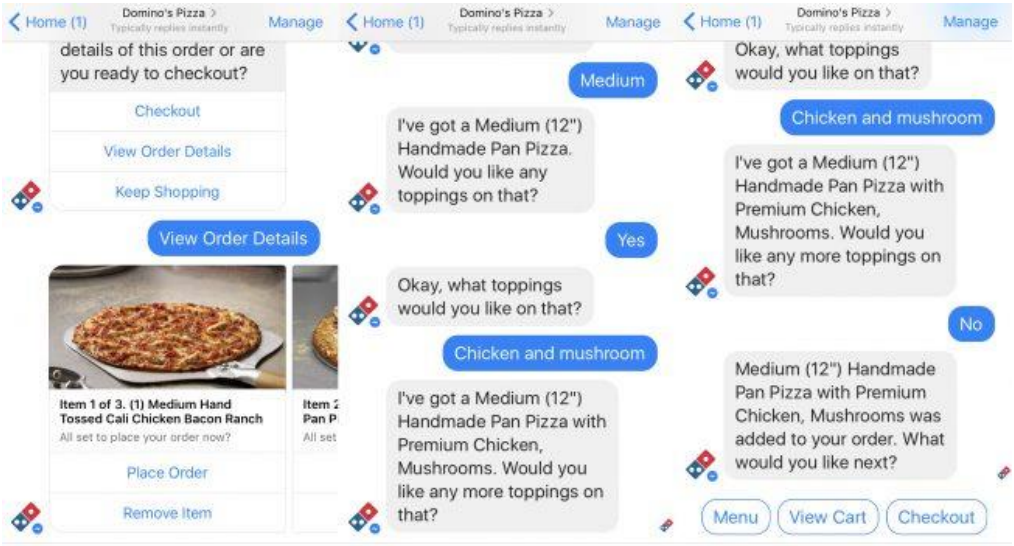


Figure 3.13 – Ordering system on Domino Messenger chatbot (Facebook Messenger, 2018)

Overall, it is evident that chatbots reduce and respect customers' time, helping them to get the fast solution to their requests.

Intolerance to low service levels. Consumers are expecting more and faster. As they try a new products and services, and as they develop new needs, consumers expectations keep rising. Indeed, when every time consumers' expectations are met, their expectation bar is higher. Picture 3.14 below ask to American consumers if their expectation in customer service raised in just 1 year from 2016 to 2017. Results[2] show that 57% of Americans declare that their expectations are higher compared to the last year (Statista, 2017).

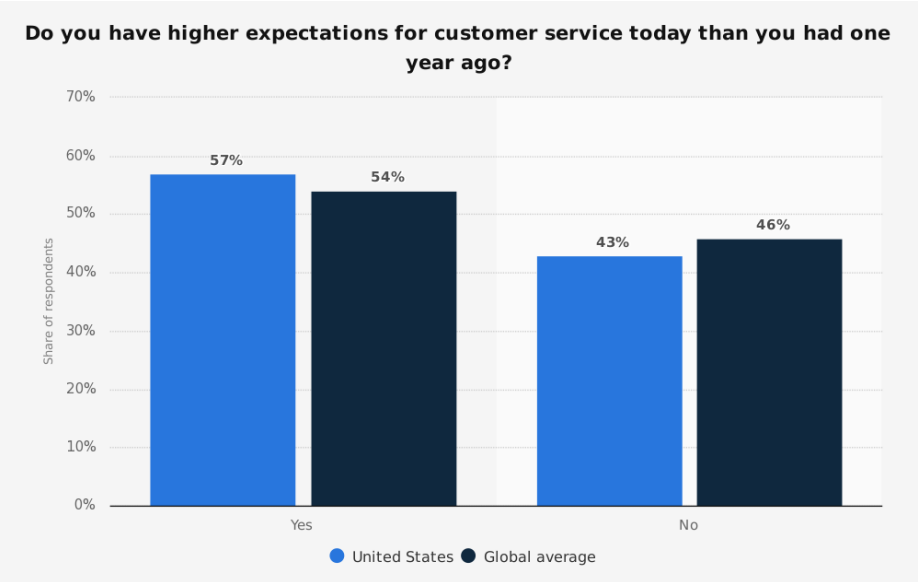


Figure 3.14 – Changes in customer service expectations within 1 year (Statista, 2017)

[2] Survey made by Microsoft in 2017 on American 18 years and older customers (Microsoft, 2017)

Expectations could be evaluated in different terms. For instance, as nowadays there are a lot of technologies with which it is possible to communicate also the number of touchpoints raised. In 2017 Salesforce Research conducted a study on 2011 Americans from 18 years and older to understand how customers keep in contact with online retailers. Figure 3.15 shows that customers communicate with online retailers through different channels such as website (52%), chat or IM (25%) and social media (21%).

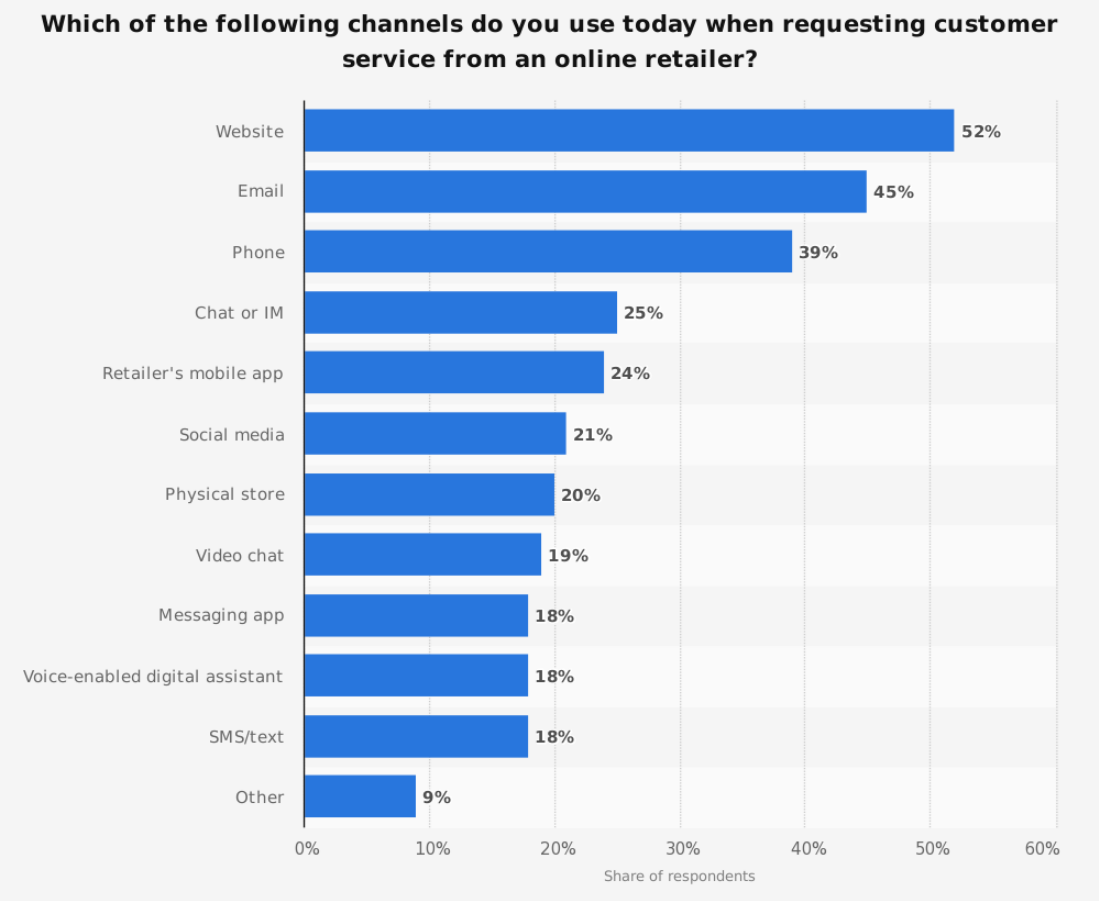


Figure 3.15 – US shoppers' customer service channels (Statista, 2017)

It is also possible to evaluate how companies support customers in terms of waiting time. As mentioned before, customers are increasingly impatient and demand faster services. However, according to Statista[3] in 2012 Americans didn't see an improvement in customer service waiting time or consider worse than before both at the phone and in person. In fact, 44% of Americans declared that they perceive phone customer service waiting time as not changed while 30% of them consider the service worse than before (Statista, 2017). Moreover, 58% of

[3] Research conducted by American Express in 2012. Sample composed by 1000 American respondents from 18 years and older.

respondents felt that customer service in person did not change while 17% perceive it as worse than before in terms of time spent waiting (see Figure 3.16 below).

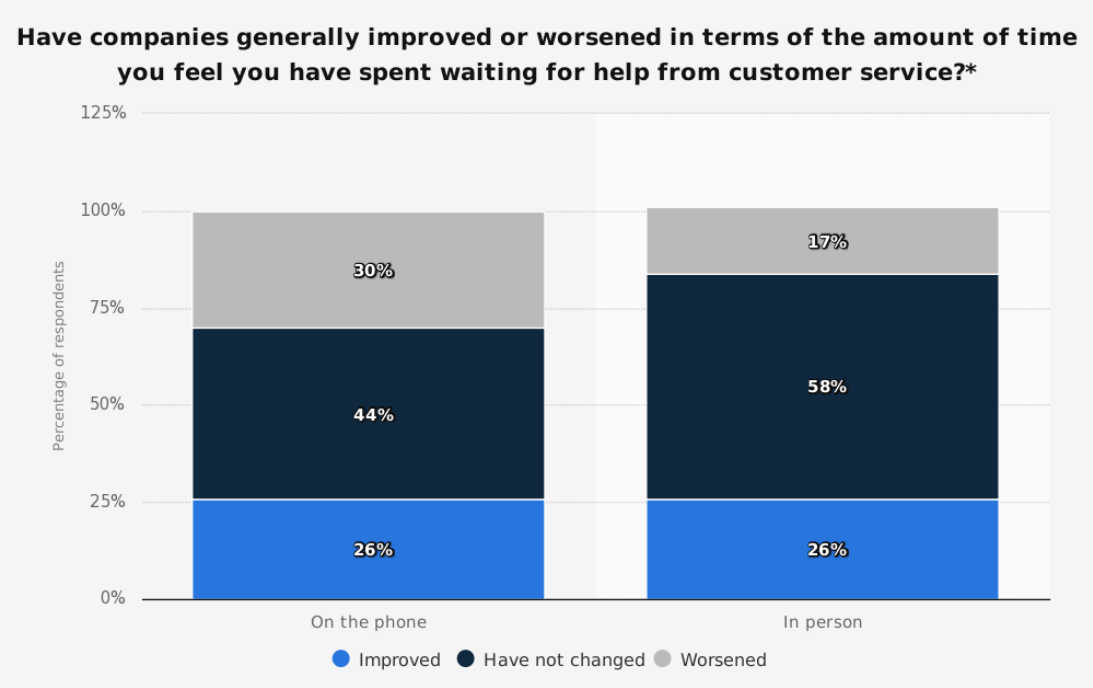


Figure 3.16 – U.S. consumers' opinions on whether waiting times for customer service have improved in the past year (Statista, 2012)

Increased usage of social media. Social media are now a place where most of internet population interact. According to Statista[4] the social networks penetration worldwide in 2017 was 71% and it is expecting to reach 73,1% by 2021 (see Figure 3.17 below). That means that now almost two-thirds of internet population subscribed to social networks (Statista, 2017). Therefore, also companies quickly moved to these channels to communicate with their consumers and potential clients. Today people meet online to talk about products and services, look for information and engage. That creates a word of mouth that cannot be controlled. As a result, companies must realize this shift trying to listen consumers online, get their feedback and execute new forms of communications such as chatbots to do a sort of sentiment analysis[5] (Kumar & Reinartz, 2012).

[4] This research has been conducted worldwide by eMarketer from 2014 to 2017.
[5] With *sentiment analysis* the author refers to a type of data mining that measures people's opinions through natural language processes and text analysis extracted from the web (i.e. social media). This analysis helps to understand public's sentiments or reactions toward a certain product or service (Gaspar, et al., 2016).

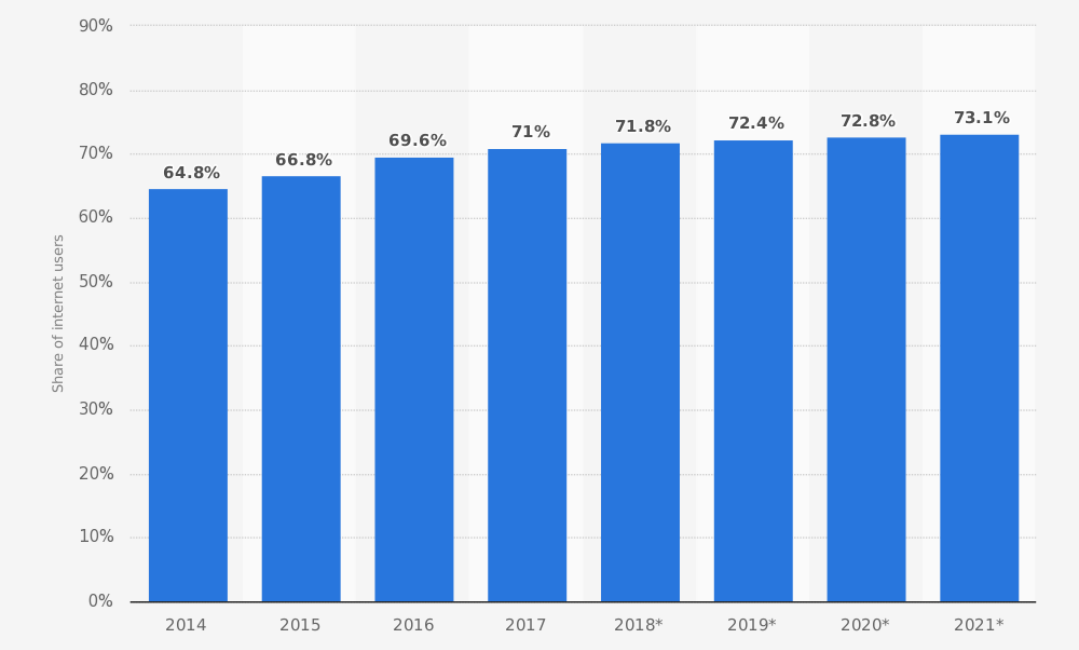
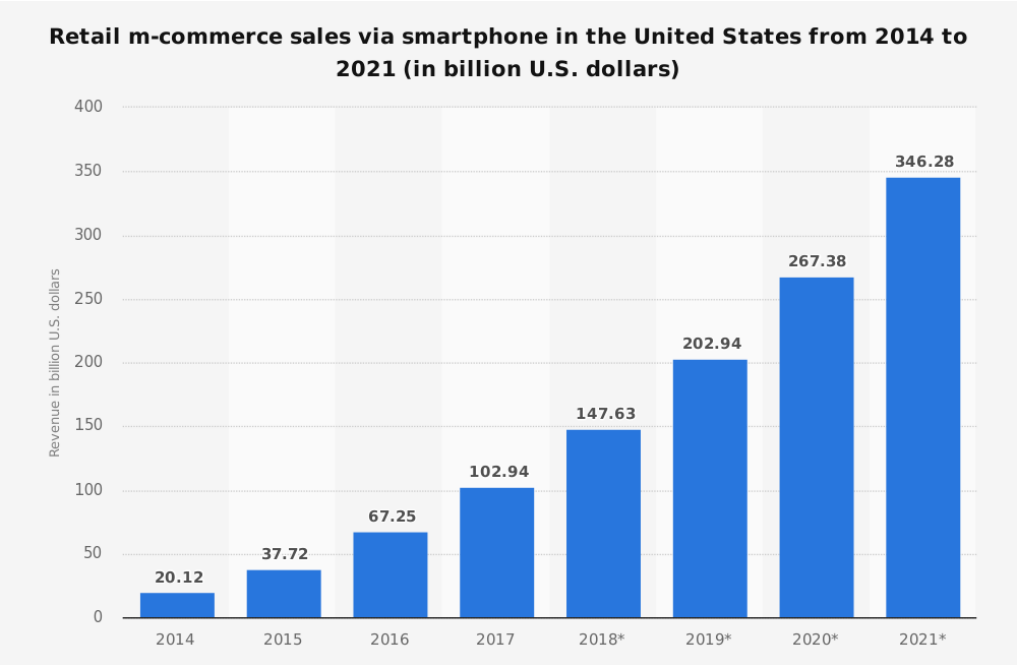


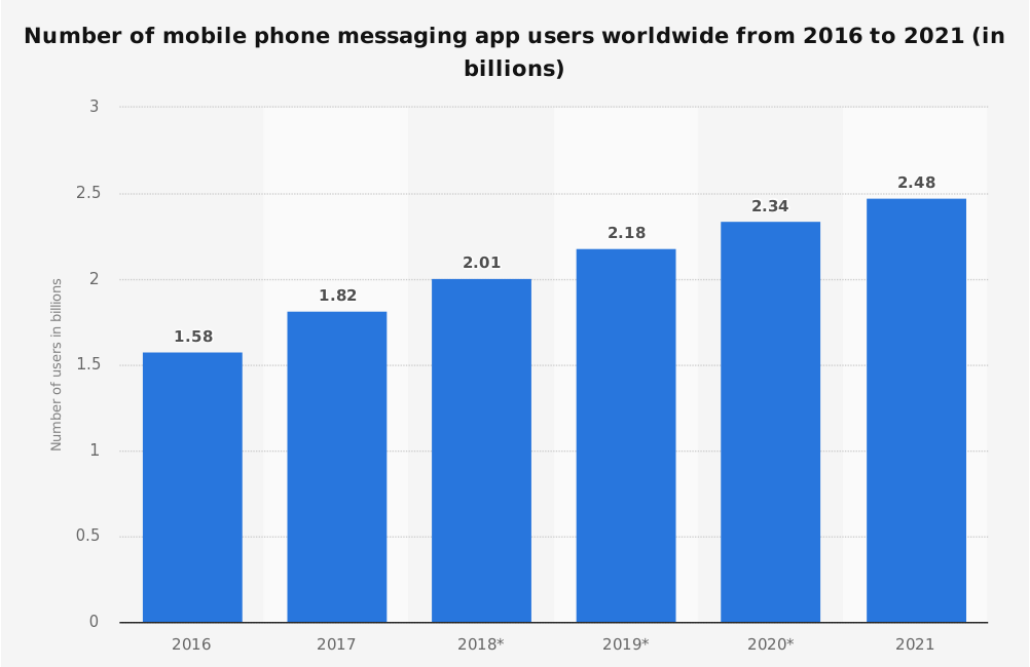
Figure 3.17 – Social network penetration worldwide from 2014 to 2021 (Statista, 2017)

3.3.2 Chatbots in mobile conversational commerce

Digitalization and the rise of mobile devices changed the way through which people interact with each other and with companies. It is not just about sharing information, but internet also boosted ecommerce, that is people nowadays conduct buying activities with their mobile devices. This provides a lot of opportunities for companies that due to the rise of internet and smartphones can now establish more direct relationships with their customers. The graphs below show that next to the grow of m-commerce is terms of billions of dollars spent per year also the number of users on mobile messenger apps is growing (see Graph 3.1 and Graph 3.2). Although there are not peer reviewed studies that investigate the connection between these two phenomena it is possible to state that if more people register to messenger apps there is a higher audience for companies to capture (Eeuwen, 2017).



Graph 3.1 – U.S. mobile retail commerce sales as percentage of total retail e-commerce sales from 2017 to 2021 (Statista, 2017)



Graph 3.2 – Number of mobile phone messaging app users worldwide from 2016 to 2021 (Statista, 2017)

As mentioned before, in response to this trend several companies such as airlines and fashion brands started to provide services to their customers through messaging applications. For instance, it has been mentioned the case of KLM that allows its customers to check in, ask questions and send updates about the flights via Facebook Messenger. As a result, using messaging applications allows customers and companies to communicate using text messages

using a familiar interface. Indeed, customers can easily reach out companies via text at the preferred and conformable time instead of calling, sending an email or opening an app.

Chatbots have originally been used on computers but consumers are now shifting to the mobile messenger interface. As a result, using mobile messenger chatbots for commercial purposes lead to the development of what is called "conversational commerce". The use of artificial intelligence made chatbots more responsive. Thus, chatbots can now respond to customers with messages, recommendations about products and send links to keep customers to shop while not leaving the messaging platform. A chatbot can also recognize consumer's intent and refine offerings based on the buyer's choices or preferences.

The growth of m-commerce (i.e. mobile commerce) has led to the development of mobile marketing. According to Barnes (2002) m-commerce is defined as *"*[…] *any transaction with a monetary value – either direct or indirect – that is conducted over a wireless telecommunication network*" (Barnes, 2002). Instead, mobile marketing can be defined as "[…] *using a wireless medium to provide consumers with time and location sensitive, personalized information that promotes goods, services and ideas, thereby benefiting all stakeholders*" (Scharl, et al., 2005). This discipline can be applied for different purposes such as text messaging, advertising and m-commerce. Moreover, delivering a message to mobile devices is something more personal and invasive for a consumer compared to email inbox, indeed it is important to obtain user permission delivering them high valuable information.

Applying AI chatbots for commercial purposes is part of what is called conversational commerce, that "[…] *is about offering convenience, personalization and assisting decision making processes*". Conversational marketing is defined as the process of using natural language interfaces under chat or voice to interact with people, brands or bots". With conversational commerce the user can be engaged with humans, chatbots or a mix of both. Conversational commerce refers to the integration messaging apps and e-commerce that aims to offering convenience through a conversation (i.e. voice or chat).

As already stated consumers do not have to leave the messaging platforms during all the process and any app download is required. Therefore, the use of chatbots in messaging platforms help companies to shorten the stages of the buying process and transform the platform into a "one stop shopping" channel. Although the development of mobile messenger chatbots is still slow, messenger apps will be the next interface for mobile commerce. For instance, in Asia WeChat is already a widely-used app with which people transfer money, book

a flight or order a taxi. This is because in countries such as China consumption is considered a social phenomenon and people share and buy products on social platforms. Instead, in Europe this phenomenon is less popular (Wang, 2017). However, it is not still clear people intention to use chatbots in the mobile messenger interface.

In the following paragraphs the author will look at some theories that explain how the adoption of new technologies works to understand if consumers' perception towards the adoption of chatbots in messaging apps. After a brief look at the main theories the author will draw a picture of the Italian market, that is the context under investigation.

However, first the author will describe consumer perception and attitude that are two important concepts of this research.

3.4 Consumer perception and attitude

One of the main aspects that this paper investigates is built around the concepts of consumer perception and attitude towards chatbots. Consumer perception as well as attitude is something that impact on adoption of technologies. This concept will be clear in the following paragraph 3.5 when the author will describe how perception and attitude occur in the main theories about technology adoption. However, consumer perception and attitude are two terms that often people them interchangeably. For this reason, as these terms are so important for this research the author wants to provide meaningful definitions in the following lines.

First, it is important to understand what consumer perception exactly is. Consumer perception is a marketing concept that express consumers' impression, awareness and consciousness towards a company or its offering such as a product or a service (Dictionary, 2018). Give the exact definition of consumer perception is complicated. Therefore, the author aims to give a comprehensive definition based on the literature and some online sources that provides insights about the topic under investigation.

According to the available literature, it is possible to state that consumer perception contains two main aspects (Hentschel, 1986).

1) Perception cannot be defined as an instant response to certain stimulus but refers to something that happens over time.
2) Perception comprehends people own being including their memories and emotional conditions that could have experienced in the past.

As mentioned before, attitude is closer related to perception and people sometimes just use the same term while referring to both. However, in 2007 authors provided an inclusive definition of attitude. In fact, according to Eagly and Chaiken (1993) "*attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of disfavour*" (Eagly & Chaiken, 2007). Attitude is considered as an opinion about the environment which consumers already perceived in advance. Indeed, according to Ajzen and Fishbein (1980) perception is about comprehending and understanding the customers' environment, while attitude refers to feelings and mindset towards the environment (Vallerand & Pelletier, 1992). Attitude adds something to perception and helps to explain consumers' behaviour. Indeed, when consumers become concerned about something, it is possible that they assume a positive or negative perception which results into a positive or negative attitude. Attitude is related to which extent a consumer likes or dislikes something according to their behaviour towards that thing. Furthermore, numerous studies agree that attitude cannot exist without perception because an opinion is related to a degree of awareness about the subject matter (Ajzen, 1980). For this reason, it is important to consider both these terms while discussing consumer behaviour.

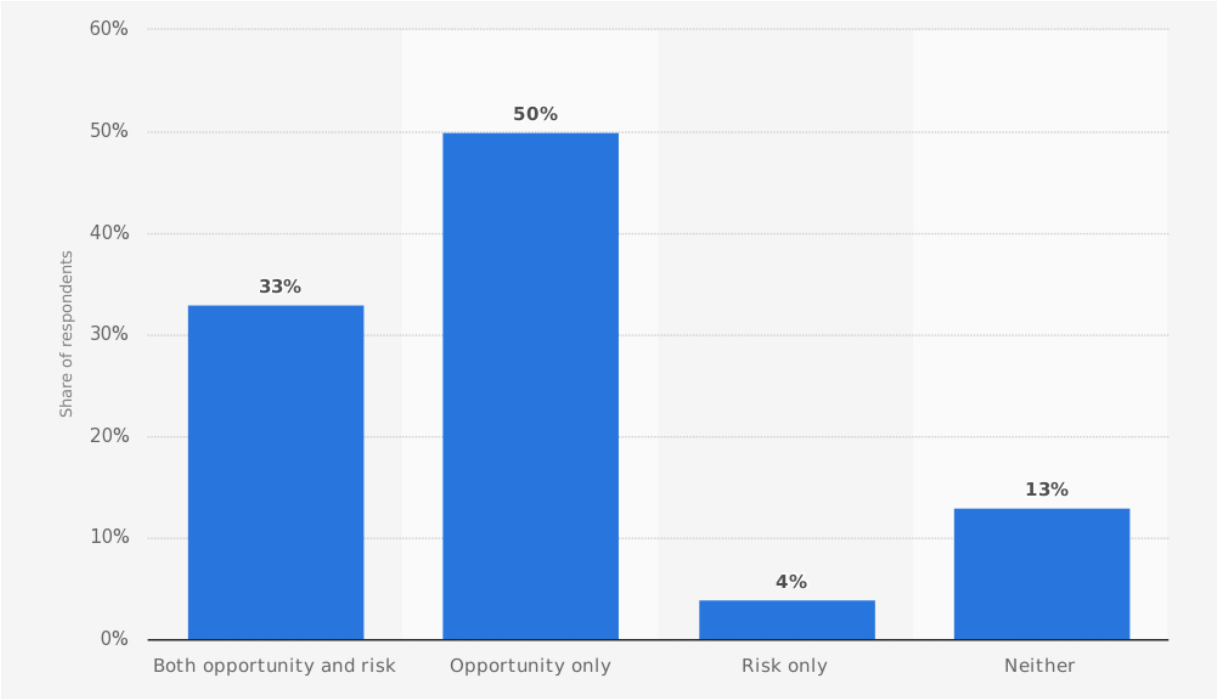
3.4.1 Importance of consumers' perception and attitude

After introducing and clarifying what consumer perception and attitude exactly are in the following lines the author will explain the importance of consumer perception and attitude.

Consumer perception and attitude are two concepts that are important especially for companies. In fact, perception and attitude are important components that determine consumers' willingness to adopt a technology. These determinants can determine the success or failure of companies in relation to the adoption of a product or service. In fact, when consumers have a negative attitude towards a company also its products are put on a negative light and this could damage their adoption (Brown & Dacin, 1997).

A critical component that affects perception and attitude is risk. Risk can be defined as the variation from an expected outcome over time. As a result, a negative perception and attitude increases the risk for a company that its products will not be adopted by the mass of consumers. Therefore, to minimize the risk, a company should influence consumer perception and attitude. It is also important to notice that perception and attitude are connected to the consumers' intention to adopt and purchase a product or service (Sjoberg, 1999). However, according to the purpose of this study consumer's purchase intentions will be further investigated.

As mentioned in the introduction chapter of this research modern chatbots are based on AI technologies. However, this technology is not perceived in the same way from consumers. For instance, some people perceived this technology as a big opportunity to simplify some tasks and organize the work. Some others, are scared about these technologies because of the reduction of work labour and cut of low skilled jobs. As a result, according to a research conducted by MIT Sloan Management Review[6] in 2017 (see Graph 3.3 below) global business organizations perceive artificial intelligence (AI) as either opportunity or risk. In fact, 83 percent of respondents saw artificial intelligence as an opportunity, although 33 percent believed there was risk as well (Statista, 2018).



Graph 3.3 – Global perception of artificial intelligence as a strategic opportunity/risk in 2017 (Statista, 2018)

3.4.2 Positive perception and attitude

As mentioned in the previous paragraph perception and attitude are close related concepts and therefore the author provided some definitions to distinguish between what perception and attitude stand for.

However, it is also important to know that perception or attitude could be positive or negative. Positive or negative perception and attitude are two important concepts often associated to brands. In fact, companies always pay attention to create a positive perception of their brands

[6] The research has been conducted in 2017 and involves a sample of 3000+ respondents including business executives, managers and analysts.

so that consumers can shape a positive attitude and be more likely to adopt their products (Halim & Christian, 2013).

The same reasoning can be applied to users' willingness to use or not to use a technology, that is chatbots. People that have a positive perception of this technology are more willing to have a positive attitude towards the adoption.

In the following paragraphs the author will explain how adoption of innovative technologies works and which determinants play an active role to push people towards chatbots adoption. Indeed, all the theories discussed in the following lines aim to understand which determinants shape a positive perception and attitude, and consequently also why people choose to adopt or not to adopt chatbots.

3.5 Technology adoption theories

In this paragraph the author will investigate which factors mostly influence the adoption of innovative technologies to understand how consumer judge chatbots and which is their intention to adopt this technology. Finally, the author aims to draw hypotheses about consumer' perception towards chatbots and test them to understand how could impact on companies' communication strategy. As the purpose of this master thesis is to investigate perception, not all the determinants will be considered but only the ones that impact on consumer perception.

3.5.1 Why people use chatbots: Uses and Gratification Theory (UGT)

Behind the adoption of every technology motivations play always an active role. As chatbots represent a potential shift in how people interact online, companies are interested to understand why people use chatbots.

A theoretical framework to understand people motivations to use chatbots is provided by the Uses and Gratification Theory (UGT). The purpose of this theory is to explain why people use a specific media to fulfil specific needs. According to this theory the use of the specific media depends on the expected and experienced gratification that the media will provide.

The user is goal-driven in his or her choice of the media based on the needs and gratifications that (s)he wants to achieve. Indeed, in the complex media landscape where consumers have different choices to fulfil their desires such as chatbots, web pages and applications the UGT assumes that the users choose the medium that best suits the purpose (Luo & Remus, 2014).

That is, the name "uses and gratifications" refers to the motives that push consumers to use a specific medium and the satisfaction people gain from use. For instance, the main gratifications from media use, some of them already discussed for chatbots applications, could be information, entertainment and social interaction.

The combination of UGT and Diffusion of Innovations Theory (DOI) designed by Everette Rogers (1983) identifies different users that might have dissimilar needs and gratifications compared to the rest of the population. Rogers distinguishes between five user segments (Rogers, 2003).

1. **Innovators** (2,5%) are the people that want to be the first to try the innovation. The reason is that they are risk-takers. As a result, innovators want to learn how to use a technology before others (Rogers, 2003).
2. **Early adopters** (13,5%) represent the opinion leaders. These people like to play a role of leaders and are open to changes. It is not necessary to give a lot of information to convince them to change (Rogers, 2003). Early adopters have a higher social status and are more likely to hold leadership in the social system. That is, early adopter's leadership in adopting the innovation decrease uncertainty about the innovation within the diffusion process (Sahin, 2006).
3. **Early majority** (34%) have a good relationship with the other members of the community such as innovators and early adopters, but they do not have the leadership role of early adopters (Sahin, 2006). However, their network represents an important channel in the innovation-diffusion process. Thus, early majority adopts an innovation before half of their peers adopt it (Rogers, 2003).
4. **Late majority** (34%) includes one third of all the members of the social system who wait until most of their peers adopt the innovation. This group is sceptical about the innovation but due to the economic pressure and peer pressure some of them adopt the technology. Thus, interpersonal networks of close peers play a significant role in reducing uncertainty and persuade the late majority towards the adoption process (Sahin, 2006).
5. **Laggards** (16%) are the more sceptical about innovations compared to the other groups. These groups mostly interact with their pairs within the social system. Furthermore, laggards do not have a leadership role. Because of the lack of awareness and knowledge about the innovation, laggards are the last group of the adoption process (Sahin, 2006). therefore, this group adopts an innovation after looking at whether the

innovation is successfully adopted by the other members of the social system in the past (Rogers, 2003).

In addition to these five categories, Rogers distinguish between 2 categories of adopters: early adopters and late adopters. **Early adopters** that consist of innovators, early adopters and early majority. **Late adopters** refer to late majority and laggards (Sahin, 2006).

The use of chatbots in the consumer industry is based on a recent technology. Therefore, now chatbots are mostly used by innovators and early adopters. In fact, as mentioned before early adopters are usually risk-oriented and curious about innovations (Brandtzaeg & Følstad, 2017). However, the purpose of this research is to consider consumers on a general base and not to distinguish between different group of adopters. In any case, it is possible that from the data collected the author will differentiate between distinct groups of adopters.

The final goal of UGT is to identify the main motivations to adopt a technology. Figure 3.18 below describes the relationship between motivations, technology usage and level of gratification obtained.

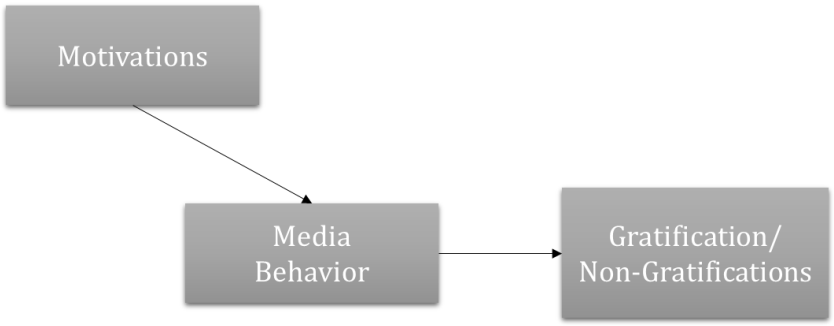


Figure 3.18 – Relationship of motivations, usage, and gratification (Luo & Remus, 2014)

In 2017 P. B. Brandtzaeg and A. Følstad designed a research[7] to identify the main motivations for chatbot use. In the following lines each motivation will be briefly described (Brandtzaeg & Følstad, 2017). However, it is important to notice that the article from which this research comes is not peer reviewed. Therefore, the information reported below will no influence the design of hypotheses.

According to 68% of participants **productivity** is the main motive for using chatbots. In connection to productivity the respondents highlited factors such as ease of use, speed and convenience. Ease of use is also one of the main pillars that compose the TAM (Technology

[7] This research took place in US and involved 146 chatbots users most of them using chatbots since less than 2 years (68%).

Acceptance Model) that will be described in paragraph 3.5.2. That is, according to these users, it is easier and faster to get information. Indeed, chatbots allow you to get quick answers and in general help people to save time. Some people also prefer obtain help from chatbots because they do not feel embarrassed or stupid while asking important questions (Brandtzaeg & Følstad, 2017).

This motivation was the one provided by most of consumers as they need an instant and consistent feedback while searching for information. For this reason, customer service is one of the main application of chatbots in terms of productivity. This is also because of the trend that see people using immediate communication channels such as Messenger, WhatsApp and Snapchat that show how consumers are looking for more instrumental and goal-directed forms of communication. This aspect as also been confirmed while mentioning Kumar and Reinartz (2012) in paragraph 3.3.1: the number of channels and touchpoints increased according to the consumers expectations that continue to evolve towards customised interactions and instant answers to questions. As a result, businesses are challenged to guarantee better, faster and tailored replies (Kumar & Reinartz, 2012).

The 20% of respondents declared that the reason behind adopting chatbots was **entertainment**. Indeed, consumers perceive chatbots as fun and entertaining. These kinds of users are usually curios to explore chatbots and the limits or their abilities (Brandtzaeg & Følstad, 2017).

The rest of the people interviewed use chatbots for **social and relational purposes**. These people see chatbots as personal opportunity of interaction that constitutes a social value. For these people chatbots represent a way to avoid loneliness and fulfil a desire for socialising. For instance, some people declare that during "boring moments" chatbots represent a way to chat with someone else that could be perceived as a human. Furthermore, when some people fill down chatbots are someone to talk with without getting judged. Instead, some people use chatbots to strengthen relationships with other people. In this case people declared that chatbots within a group chat or just using it alone improved their conversational skills (Brandtzaeg & Følstad, 2017).

Entertainment and socialization are two important activities of human daily life. As a result, systems should provide to consumers a social platform that enhance the development of a community to generate a good user experience. Moreover, this need for entertainment and social interactions has a higher in the chatbots context as chatbots are more humanlike

compared to other interactive systems. Thus, people expect chatbots to be entertaining and/or social.

Curiosity is also a factor included in the UGT that represent a motivation for consumers to use a technology. For instance, according to the book "*Mass Communication Theory: An Introduction*" satisfying curiosity and general interest is a key point of gratification in relation to the use of a media. The sense of curiosity behind the use of an innovative technology is relevant for innovators and early adopter while other groups view trying novel technologies as to risky. In fact, according to Rogers innovators and early adopters are more willing to take risks trying new products or services that may result in failure. In this case, they perceive chatbots as something new that they should try and learn before others (Rogers, 2003).

As a result, in the case of chatbots the UGT model can be represented in the figure 3.19 below.

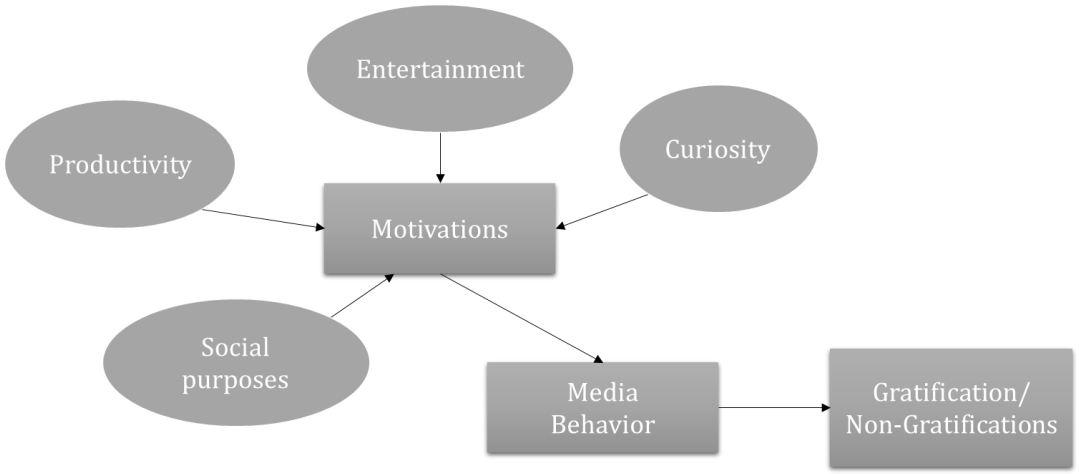


Figure 3.19 – UGT model representation adapted to chatbots' case (Rogers, 2003)

3.5.2 Technology Acceptance Model (TAM)

The adoption of a modern technology is always a theme under investigation and several authors provide theories with the aim of understanding how the adoption of an innovative technology works. Across the history, different technology adoption models have been formulated. One of the most important is the TAM (Technology Adoption Modes) developed by Fred Davis in 1986 to address user acceptance of information systems and it is useful to describe why some technologies are more likely to be adopted or not (Davis Jr, 1986). This model is an expansion of the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPM) by Fishbein and Ajzen in 1975. These theories indicate the individuals' intention to perform a given behaviour (i.e. *behavioural intention* – BI) as the immediate causal determinant of the overall performance of that behaviour and their intention is jointly determined by their attitude to

perform that behaviour (A) in the perceived social influence (SN) of these determinants. In summary, an individual will perform an action based on believe that their action will lead to positive consequences or be viewed positive from those who are important to them. However, the TMA differs from the TRA as Davis theories that social norms do not directly affect attitude or behaviour in relation to system use. Instead, attitude towards using the systems is in function of perceived usefulness and perceived ease of use. As a result, there are two core believes that form the TAM (Legrisa, et al., 2003).

1) **Perceived usefulness** (PU) refers to *a users' subjective probability that using a specific system/technology will increase his or her job performance* (van Eeuwen, 2017). In the case of chatbots, perceived usefulness could be applied in different fields such as CRM and conversational commerce. For instance, consumer perception that chatbots will improve their performance while asking for a question or performing a task it is positively related to attitude towards mobile messenger chatbots. This concept has been already partially described in paragraph 3.5.1 when the author identified how chatbots are perceived as useful in different terms such as productivity, entertainment and social interactions.
2) **Perceived ease of use** (PEOU) is defined as *the degree to which an individual believes that using a system will be free of physical and mental effort* (van Eeuwen, 2017). Using a chatbots should not require too much effort for consumers. For instance, the technology should be easy to understand since the beginning. In this case, perceived ease of use of a chatbot is positively related to consumers' attitude towards mobile messenger chatbots. It is also important to notice instant messaging apps, that is the platform on which chatbots works, is already a technology with a large diffusion and adoption[8]. Thus, according to TAM model the perceived usefulness and ease of use of the platform is already positive for most of consumers.

This model is useful to describe why some technologies are more likely to be adopted or not.

[8] According to Statista, messaging apps had more than 5 billion monthly users worldwide in 2017 (HubSpot Research, 2017). A graph is

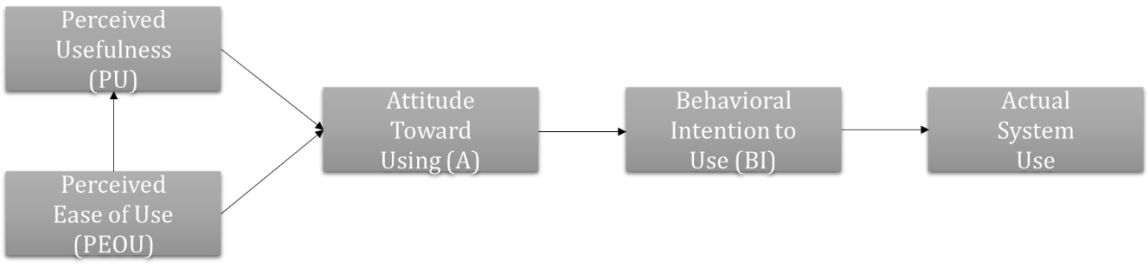


Figure 3.20 – Technology Acceptance Model (van Eeuwen, 2017)

3.5.3 Diffusion of Innovations Theory (DOI)

Different authors introduced theories about technologies' adoption in the last 30 years. One of the main theoretical constructs has been proposed by Rogers in 1983. Rogers named this theory DOI (Diffusion of Innovations Theory). According to Roger there are four elements that determine the spread of an innovation (Sahin, 2006).

1. **Innovation** refers to "[…] *an idea, a practice or project that is perceived as new by an individual or other unit of adoption*" (Rogers, 2003).
2. **Communication channels** are the second element of the diffusion of the innovations process. According to Rogers (2003) communication is "*a process in which participants create and share information with one another to reach a mutual understanding*" (Rogers, 2003). The communication occurs through channels between sources, that is "*an individual or an institution that originates a message*". Thus, a channel refers to the mean trough which a message is transferred from the source to the receiver. In the case of chatbots the channel trough which messages are delivered is an instant messaging application (Sahin, 2006).
3. **Time** is an element that is not considered in most of the research about technology adoption. However, both adopter categorization and rate of adoptions include a time dimension (Rogers, 2003).
4. **Social system** is defined as "*a set of interrelated units engaged in joint problem solving to accomplish a common goal*". In other words, the social system is the place where the diffusion of innovation takes place (Sahin, 2006).

The rate at which an innovation is adopted depends on several characteristics (Rogers, 2003). In the following lines the author will consider the one that could determine the adoption of chatbots.

Compatibility (C) is defined as "*the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters*" (Rogers,

2003). In this case it is important to distinguish between different target groups according to the values shared and needs (Sahin, 2006).

Complexity (CM) is "*the degree to which an innovation is perceived as relatively difficult to understand and use*" (Rogers, 2003). In this case, the aim of the research is to understand to which extend consumers perceive chatbots as difficult to use. As the concept is similar, this characteristic can be assumed as the "*perceived ease of use*" described in the Technology Acceptance Model.

Perceived risks (PR) refers to "*the consumers' level of uncertainty regarding a desired outcome*". Different studies related to the adoption of a new online technology such as internet banking and mobile commerce considered also consumers' privacy concerns and the issues related to that (van Eeuwen, 2017). In fact, as mentioned in paragraph 3.3 consumers can use chatbots for money transitions and payments. In fact, with a chatbot it is possible to order products and services. More in general, everything that is related to sharing information on the net is subject of privacy concerns. Indeed, privacy issues can also be linked to a more general determinant called "*perceived risks*". In fact, there is a risk factor connected to the use of chatbots in marketing. Brands are starting to use chatbots to engage consumers. For instance, consumers could perceive the use of mobile marketing and conversational commerce through chatbots as too intrusive and dangerous for their privacy. According to Dinev and Hart (2006) there is a negative relationship between perceived internet privacy risk and people willingness to provide information for internet-based transactions (Dinev & Hart, 2006). Furthermore, some consumers do not have a good perception of programs that use artificial intelligence to perform tasks. In fact, there is a big concern about machines that substitute humans performing automatic actions while destroying job opportunities. This is another risk that could diminish consumers' adoption of this type of technologies.

At the present, the Technology Acceptance Model is used to evaluate how communicators adopt technology to effectively convey messages. Communicators should also use this model to identify audience adoption and use of technology and use accepted technologies to communicate with audiences.

3.6 The Italian Chatbots Market

In the previous paragraphs the author displayed the main theories about technology adoption process. The following paragraph will take under consideration the context of this research.

Thus, this study wants to draw a picture of Italians perception towards chatbots adoption. That is, it is important to display some data of the current Italian chatbots market.

First, from a research of Kayak made in 2017, it emerges that on a sample of 1000 respondent 43% of them used chatbots at least ones while 57% never used a chatbot or they do not know about their existence (see Figure 3.21 below).

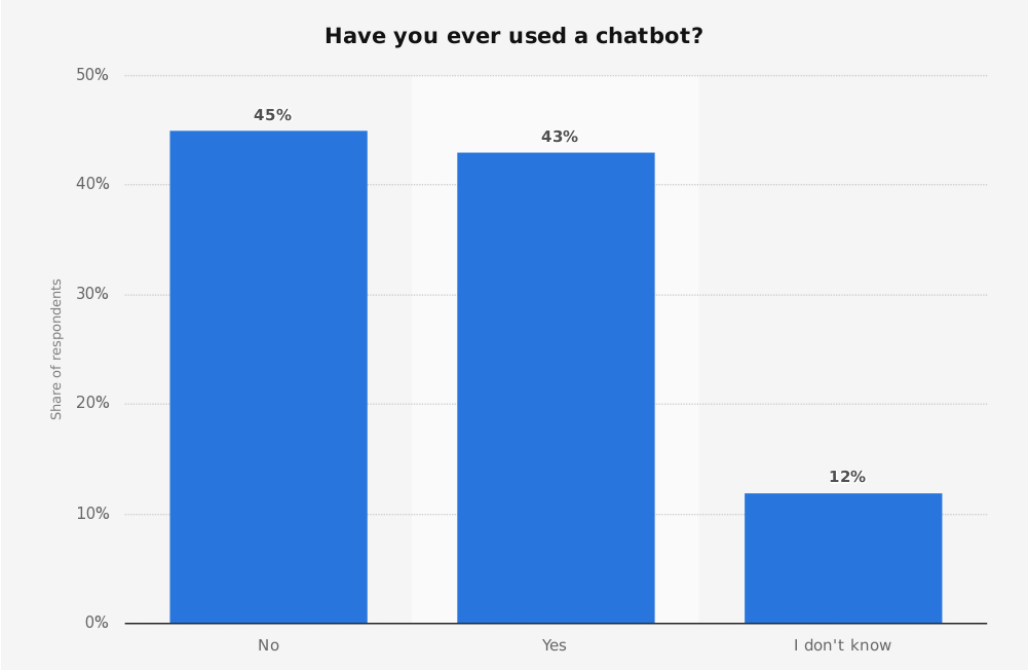


Figure 3.21 – Italians usage of chatbots (Statista, 2017)

Second, another research of Kayak conducted between 2016 and 2017, took under consideration 1000 replies to the question "*In your opinion, what are the main benefits of using chatbots?*". How it is possible to notice from the figure below (see Figure 3.22 below) most of the answers refer to productivity such as availability (54%) and speed (34%).

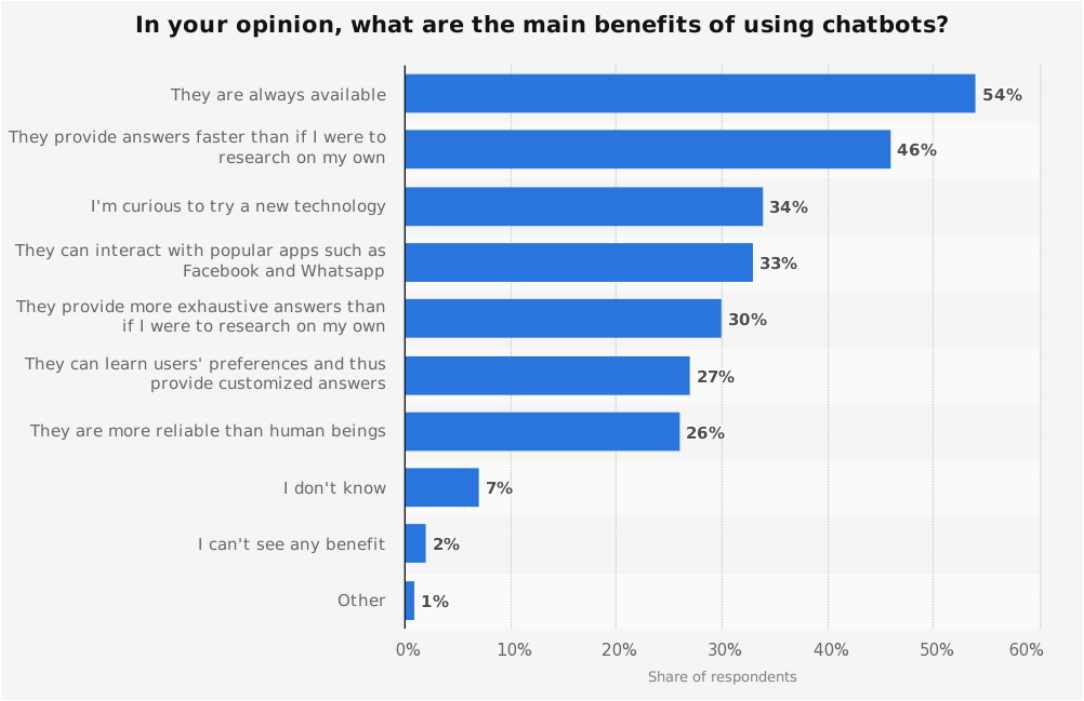


Figure 3.22 – Italians' opinions about chatbots' benefits (Statista, 2017)

Third, also according to Kayak (2017) the circumstances in which Italians used chatbots are online shopping (49%), customer service (49%) and travel booking (42%) (see Figure 3.23 below).

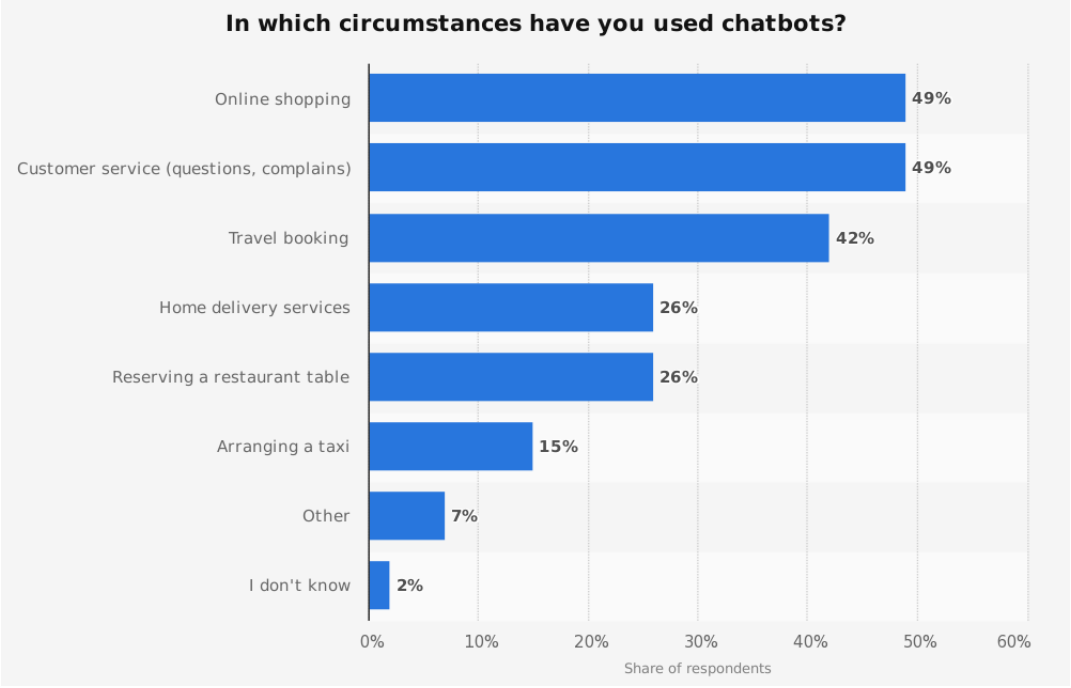


Figure 3.23 – Circumstances in which Italians use chatbots (Statista, 2017)

Finally, the main disadvantages identified by Italians while using chatbots are: not being understood (37%), concerns about data security (27%), manipulation of the answers provided

(24%) and a preference to communicate with a real person (23%). Figure 3.24 below gives more insights about these disadvantages.

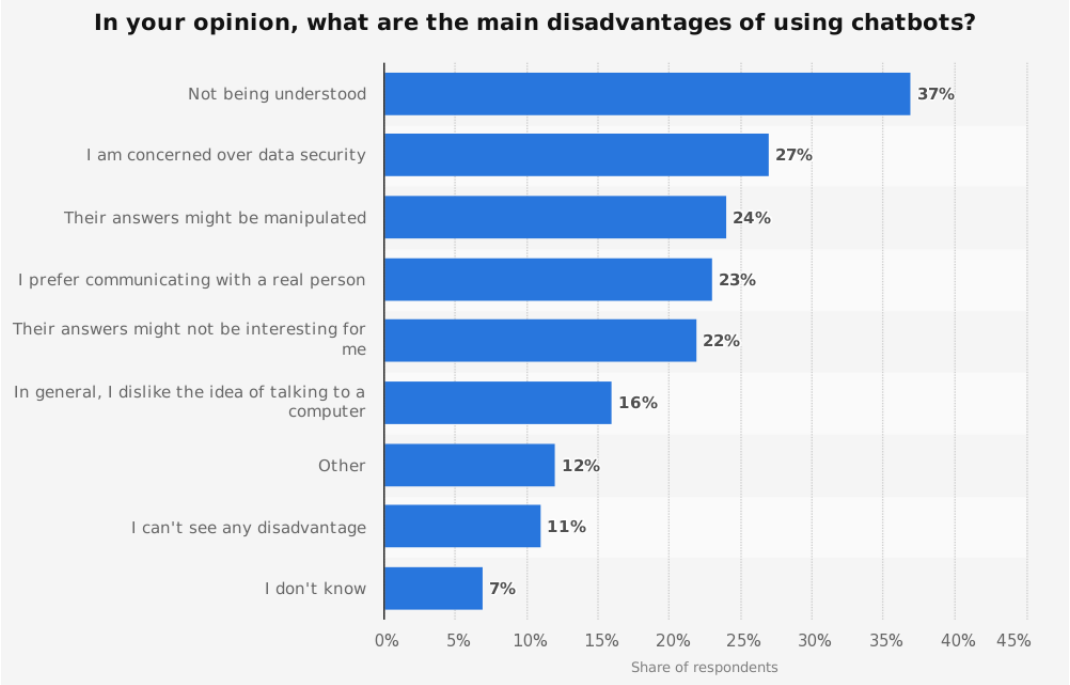


Figure 3.24 – Italians' opinions about chatbots' disadvantages (Statista, 2017)

3.7 Framework development and Hypotheses formulation

In the all literature available about chatbots, no theories about their adoption have been formulated. For this reason, the author will combine the elements of the theories already described in the all literature to create a framework from which the hypotheses will be drawn.

Based on the reviewed literature and previous studies three concepts of the Technology Acceptance Model have been discussed: perceived usefulness, perceived ease of use and attitude. Moreover, in the Diffusion of Innovations Theory the author presented some determinants that play and active role pushing consumers to adopt a technology. That is, the author selected perceived risks as the main variable related to DOI theory. There are multiple reasons behind this choice. First, the author decided to select just the variables that are related to the adoption of chatbots. Second, the author wants to create an understandable framework where all the variables can be investigated and from which it is possible to draw some hypotheses. Finally, due to the time limitation and the complexity of the topic, it is not possible to consider all the variables under investigation.

Figure 3.25 below represents the result of the combination of TAM and DOI models.

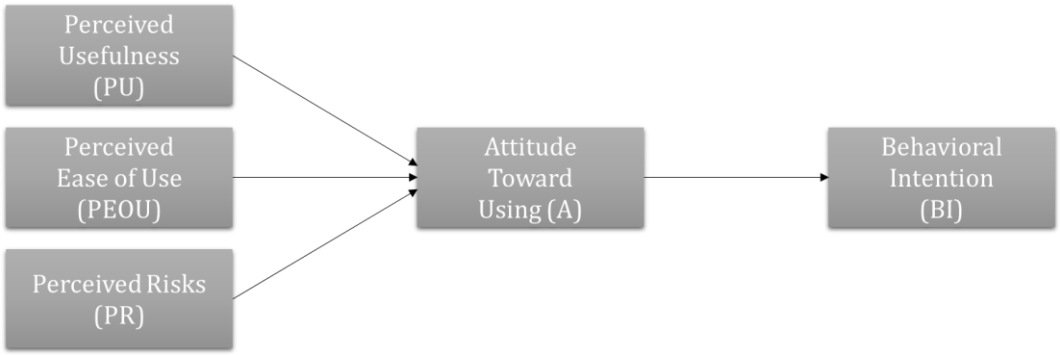


Figure 3.25 – TAM and DOI integrated models (Luo & Remus, 2014)

As seen in paragraph 3.5.1 there are always some motivations behind the adoption of an innovation. Thus, Uses and Gratification Theory is combined with TAM and DOI.

UGT focuses on the hedonic and utilitarian motives for IT usage while TAM-related models focus on the utilitarian IT use. However, the TAM and UGT approaches are complementary, regardless of their differences. Numerous studies found that TAM predicts and explains a substantial variance in behavioural intentions and use, regardless of the application. Perceived usefulness is a strong predictor of behavioural intention and usage as well as perceived ease of use. Instead, the UGT comprehensive nature helps to explain not only the domestic features of electronic media but also their business and work features (Luo & Remus, 2014).

Therefore, an integrated model of the TAM and UGT involves some contextual factors to solve the limitations of the TAM. The result of this integration is represented in figure 3.26 below.

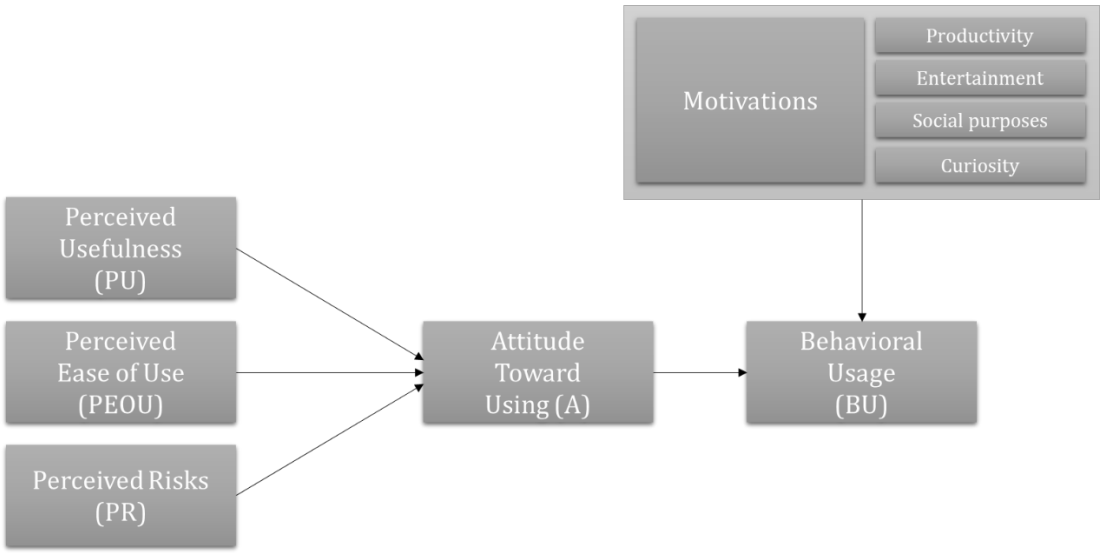


Figure 3.26 – TAM, DOI and UGT integrated model (own creation)

According to this integrated model that comprehends TAM, DOI and UGT, there are different variables that aim to explain consumer's attitude towards the adoption of chatbots. Table 3.1 below describes each construct involved in this model and gives a definition in relation to chatbots. Furthermore, each definition is associated with a reference.

Construct	Definition	Reference
Perceived Usefulness (PU)	The degree to which a person believes that using a messenger chatbot would enhance his or her performance (modified).	Davis et. al (1989)
Perceived Ease of Use (PEOU)	The degree to which a person believes that using mobile messenger chatbots would be free of effort (modified).	Davis et. al (1989)
Perceived risks (PR)	A combination of uncertainty plus seriousness of outcome involved. (1) Privacy concerns. (2) Trust issues. (3) AI as a threat to humans.	Davis et. al (1989)
Motivations (M)	General dispositions that influence people's actions taken to fulfill a need or want. (1) Productivity. (2) Entertainment. (3) Social purposes. (4) Curiosity.	Papacharissi and Rubin (2000)
Attitude (A)	An individual's positive or negative feelings about using a messenger chatbot.	Davis et. al (1989)
Behavioural Usage (BU)	Refers to patterns of exposure of use (i.e. amount of use, duration of use, and type of use).	Papacharissi and Rubin (2000)

Table 3.1 – Definition of each construct used to build figure 3.26 (own creation)

Therefore, based on what has been discussed in the previous paragraphs it is possible to develop a conceptual model that summarize the literature and allow the author to structure the research to develop and test the hypotheses (see Figure 3.27 below).

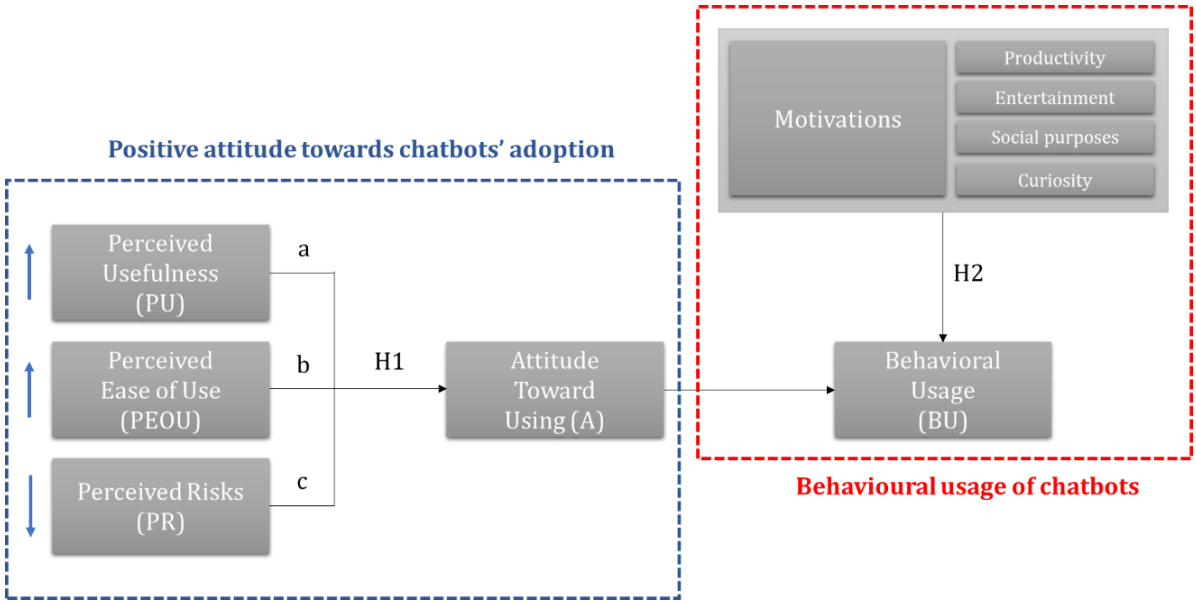


Figure 3.27 – Conceptual framework (own creation)

With this conceptual model the author wants to make a step further into the investigation of chatbots' adoption in the Italian market. Thus, the author will look at to distinct stages that involves consumers. First, the author will investigate which factors influence consumers' attitude towards using a chatbot (see blue dotted line in Figure 3.27 above). Second, the author will look at the motivations that influence consumers' behavioural usage of chatbots (see red dotted line in Figure 3.27 above). It is important to consider that, with behavioural usage the author refers to "*patterns of exposure of use*". In this case the author will consider the amount of time spent using chatbots and the duration of use. Therefore, the final goal of this research is to investigate Italians attitude towards the adoption of chatbots and which motivations shape their actual behavioural usage of this technology.

There are six constructs from which the author developed the hypotheses. Most of them has been already explained in the literature. Thus, the author wants to focus his attention explaining some concepts that need a further clarification.

Perceived risks (PR) are often related to users' feeling of uncertainty regarding possible negative consequences of using a product or service. Thus, perceived risk has formally been defined as "*a combination of uncertainty plus seriousness of outcome involved*" and "*the expectation of losses associated with purchase and acts as an inhibitor to purchase behaviour*" (Featherman & Pavlou, 2003).

Chatbots have different risks connected to their usage. To simplify and make the research more focused, the author selected the following risks perceived by consumers:

1. *Privacy concerns*. While using an innovative technology there is always a risk related to the data that this innovation could collect and use. In the case of chatbots, users' concerns are related to the fact that as those chatbots are extremely intelligence, they could also use their response to record their replies and profile them. Moreover, as it is also possible to use chatbots for payments, security and privacy are two big obstacles towards chatbots adoption (Featherman & Pavlou, 2003).
2. *Trust issues*. Consumers are less likely to trust something that is not controlled by humans (Featherman & Pavlou, 2003). That is, the author decided to investigate how much consumers trust chatbots and how trust in technology could be a risk towards their adoption.
3. *AI as a threat to humans*. AI-based technologies such as chatbots are in the middle of a huge and controversial debate that involves also big exponents of the tech industry. The most important concerns are about the loss of jobs and risks for human life. Some important entrepreneurs such as Elon Musk talked about AI in these terms "[…] *I keep sounding the alarm bell but until people see robots going down the street killing people, they don't know how to react because it seems so ethereal*" (Sulleyman, 2017).

According to what has been stated in the literature, the aim of this research is to understand which factors play an active role influencing consumers' positive attitude towards the adoption of chatbots. Indeed, to understand the connection between these factors and consumers' adoption, the author stated the following hypotheses.

H1 – *Consumers positive perception in terms of usefulness, ease of use and risk determine a positive attitude towards chatbots.*

Based on this hypothesis the author will verify three different assumptions:

(a) There is a positive relationship between perceived usefulness and the consumers' attitude towards chatbots. Therefore, a positive level of perceived usefulness lead to a positive attitude towards chatbots.

(b) There is a positive relationship between perceived ease of use and the consumers' attitude towards chatbots. Therefore, a positive level of ease of use lead to a positive attitude towards chatbots.

(c) There is a negative relationship between perceived risks and the consumers' attitude towards chatbots. Therefore, a high perceived risk lead to a negative attitude towards chatbots.

The first hypothesis investigates how perception shape consumers' positive attitude towards the adoption of chatbots. Thus, the aim is to understand how Italians perceive chatbots in terms of usefulness, ease of use and risks connected to their adoption. Therefore, attitude is jointly determined as the result of how consumers perceive these three determinants.

H2 – *Productivity represents the first and strongest motivation that push consumers to actually use chatbots compared to entertainment, social relations and curiosity*.

While a positive attitude pushes the intention to adopt chatbots, it is still not clear which are the motivations behind the actual usage of this technology. In fact, with the last hypothesis the author aims to draw a picture of the current Italian chatbots market in terms of behavioural usage. Therefore, the goal is to understand which motivations push Italian consumers to use chatbots. Based on the literature, the author discovered that the first and strongest motive for consumers to use chatbots is productivity. That is, consumers strongest motivation to chatbots usage is related to their concerns about the convenience of using them. Indeed, with the second hypothesis the author wants to provide an explanation about how motivations influence consumer's behavioural usage of chatbots.

Chapter 4, Findings

4.1 Conduction of the Data Analysis

The survey was sent on April 29th via Instagram, Facebook or WhatsApp during a timeframe of nine days. At the end of the submission on May 8th the author collected the answers and started the data analysis. As mentioned in the previous chapter, the author got 168 questionnaires filled in total. Afterwards, all the data gathered has been filtered and cleaned using Microsoft Excel to exclude all the questionnaires that were incomplete or filled twice. Therefore, after the cleaning and filtering process the author got 150 answers that has been used in the data analysis process. In the following lines the author will explain how the main questions of the survey have been filtered.

First, the author looked at question 5 that aims to measure consumers' perception towards chatbots. The author divided the question in eight different statements to measure the three factors that influence perception such as perceived usefulness, perceived ease of use and perceived risks. The question has been designed as it follows:

- Three statements aimed to measure perceived usefulness.
- Three statements aimed to measure perceived ease of use.
- Two statements aimed to measure perceived risks.

This question has been designed using a Likert scale to understand how perception influence consumers' adoption of chatbots. The answers provided from the Likert scale has been converted into numerical scale, where "1" refers to "strongly disagree" and 5 refers to "strongly agree" (see table 4.1 below).

Likert scale	Number
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly disagree	5

Table 4.1 – Conversation of the Likert scale into numerical scale (own creation)

The reason behind the numerical conversation of the answers is that the author wanted to get an arithmetic mean to understand how the data were distributed. That is, the author converted the Likert scale into numbers to measure consumers' perception.

The following lines clarify the all process. First, the author looked at the three different factors involved such as perceived usefulness, perceived ease of use and perceived risks. Each of those factors has been evaluated by the respondents. The first three statements of question 5 aim to measure perceived usefulness of chatbot. The statements asked to measure this factor are the following:

1) "*I think using chatbots me to book something (e.g. hotel, taxi, etc.)*".
2) "*I think using chatbots helps me to shop and track a product*".
3) "*I think using chatbots helps me to be engaged with the customer service*".

If for instance the respondent gave a "5" to the first statement, a "4" to the second statement and "3" to the third one, it means that the average is (5 + 4 + 3) / 3 = 4. As this average is above 3 the author assumed that this respondent perceived chatbots as a useful technology (see the red box in figure XX below). The same process has been applied for each of the answers provided in this question by all the respondents (see table 4.2 below).

Percieved usefulness				
Booking	Shopping	Info	Average	Useful
5	4	3	4.00	Yes
4	3	4	3.67	Yes
3	2	2	2.33	No
4	4	3	3.67	Yes
3	2	3	2.67	No
4	4	4	4.00	Yes
3	4	5	4.00	Yes

Table 4.2 – Process of the numerical conversation of the answer and calculation of the arithmetic mean (own creation)

This process allowed the author to understand the level of perception in terms of perceived usefulness, ease of use and risk of each respondent. Therefore, the results obtained from this arithmetic mean have been used to verify the three assumptions described in the first hypothesis describing the positive relationship between perception and attitude.

Thus, the same process has been applied to all the factors that has been measured through a Likert scale. Therefore, the author applied the same process to question 5 to understand if people had a positive or negative attitude towards chatbots. As a result, the author could get a

comprehensive profile about consumers' perception and attitude towards chatbots and their willingness to adopt this technology. The table 4.2 below shows a frame of the all process.

Percieved usefulness					*Percieved ease of use*					*Percieved risks*			
Booking	Shopping	Info	Average	Useful	Use	Learn	Find	Average	Easy	Privacy	AI	Average	Risky
5	4	3	4.00	Yes	4	4	5	4.33	Yes	2	1	1.5	No
4	3	4	3.67	Yes	5	4	5	4.67	Yes	2	1	1.5	No
3	2	2	2.33	No	4	4	5	4.33	Yes	4	3	4	Yes
4	4	3	3.67	Yes	4	4	4	4.00	Yes	2	2	2	No

Table 4.3 – Arithmetic mean calculation of perceived usefulness, ease of use and risks (own creation)

The results obtained from the answers related to perceived risk of using a chatbot had to be reverse coded as the questions were formulated in the opposite way compared to perceived usefulness and perceived ease of use. Indeed, to reverse the answers the author adopted the following formula (Office, 2018):

$$R = 6 - n$$

Legend
n = numerical scale
R = reverse coded scale

Table 4.4 below shows the results obtained through this process.

Likert scale	Numerical scale (n)	$R = 6 - n$	Reverse coded scale
Strongly disagree	1	6 – 1	5
Disagree	2	6 – 2	4
Neutral	3	6 – 3	3
Agree	4	6 – 4	2
Strongly agree	5	6 – 5	1

Table 4.4 – Reverse coding process (own creation)

As mentioned in the introduction of this chapter the author identified 150 data that have been used to conduct the data analysis. However, during the process described above, the author identified 9 respondents that gave a neutral average such as "3" to one of the determinants measured though the Likert scale (see the blue cell under "Average" in the table 4.5 below). Indeed, the author excluded those people from the analysis as one or more factors of perception and attitude were not measurable. Therefore, after this process the number of respondents was 141.

Positive attitude				
Fun	Good idea	Future	Average	Positive attitude
4	5	3	4.00	Yes
3	4	4	3.67	Yes
2	3	3	2.67	No
4	4	3	3.67	Yes
3	3	3	3.00	
4	3	3	3.33	Yes

Table 4.5 – People which average was neutral have been excluded (own creation)

4.2 Profile of the respondents

In the all literature review the author did not identified a profile of which consumers will be included in the data analysis. Indeed, in the following lines the author will discuss the demographic and psychographic characteristics of the respondents.

First, the author decided to investigate Italian consumers' perception and attitude towards chatbots' adoption. Therefore, the author did not consider all the answers provided by people that are not currently leaving in Italy. Thus, also 10 Italian people currently leaving abroad have been excluded to avoid cultural contamination from foreigners that could influence their perception and attitude. Therefore, the final sample that has been used to test the hypothesis is 131 individuals.

From the data gathered it is possible to draw a consumer profile. Indeed, the data collected from the questionnaire display that:

- 54 % of the people that filled the questionnaire are females while 46 % are males.
- 56 % of consumers belong to an age group between 18 and 24 years old.
- 44 % of consumers have a bachelor's degree.

The criteria used to filter the final sample composed by 131 individuals are summarized in the table 4.6 below.

Filters										
Chatbot knwoledge (question 1)	*Chatbot user (question 2)*	*Chatbot usage (question 3)*	*Motivation (question 4)*	*Perception (question 5)*	*Attitude (question 6)*	*Gender (question 7)*	*Age (question 8)*	*Education (question 9)*	*Country (question 10)*	
Yes	Yes	Daily	Productivity	Book	Fun	Male	< 18 years old	Ns to 8th	Italy	
No	No	Weekly	Entertainment	Shop and track	Good idea	Female	18-29 years old	High school	Other country	
Maybe		Monthly	Social purposes	Customer service	Future		30-49 years old	Bachelor		
		Annually	Curiosity	Easy of use			50-64 years old	Master/PhD		
				Learning			65+ years old			
				Finding						
				Data security and privacy						
				AI risks						
150	150	150	150	141	141	141	141	131	131	131

Table 4.6 – Consumer's profile (own creation)

4.3 Testing hypothesis I

The first hypothesis wants to prove the existence of a positive relationship between consumers' perception in terms of usefulness, ease of use and risk and their attitude towards chatbots. To do that the author needs first to verify three different assumptions that lead to the formulation of this hypothesis.

4.3.1 Assumption A

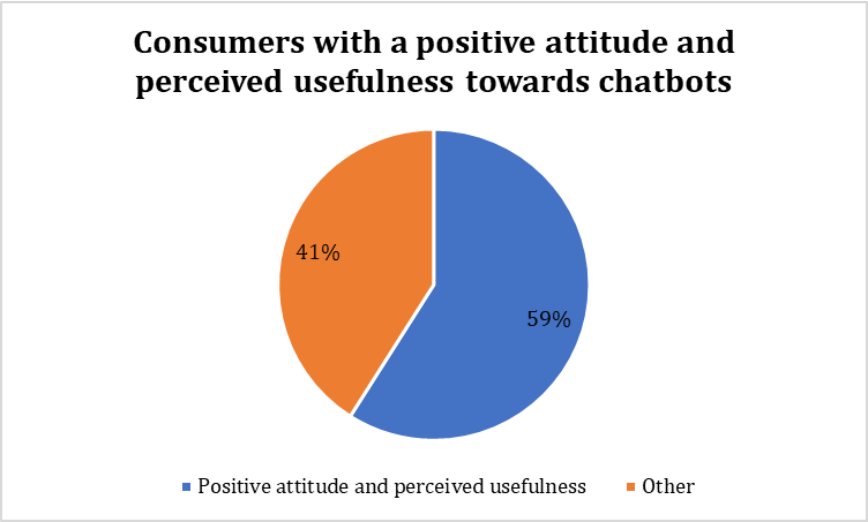
The first assumption states the following:

There is a positive relationship between perceived usefulness and the consumers' attitude towards chatbots. Therefore, a positive level of perceived usefulness lead to a positive attitude towards chatbots.

To verify this assumption the author took the first part of question 5 and question 6. In fact, the first three statements of question 5 asked to the respondents to agree or disagree with different statements about consumer's perceived usefulness towards chatbots while question 6 asked to consumers about their attitude towards this technology.

To verify this statement the author made a crosstab with Microsoft Excel to look for the differences between the evaluation given by the consumers. Moreover, the author selected the number of consumers that gave a higher evaluation (4 and 5) to the determinants under investigation to understand how many people had a positive perception such as perceived usefulness and positive attitude towards chatbots.

The results from the combinations of these two questions are reported in the graph 4.1 below.



Graph 4.1 – Consumers' with a positive attitude and perceived usefulness towards chatbots (own creation)

This graph shows that 54% of the people that perceive chatbots as useful (positive perception) and have a positive attitude towards them. To reach this result the author made crosstab in Excel considering the people that scored 3, 4 and 5, 4 and 5, and just 5 at the question measuring consumers' perceived usefulness of chatbots. Moreover, the author made another crosstab considering people that scored 3, 4 and 5, 4 and 5, and just 5 at the question measuring consumers' attitude towards chatbots (see tables 4.7 and 4.8 below). These tables below allowed the author to define a clear picture of how respondents perceived chatbots.

	Consumers' percieved usefulness of chatbots					
	respondents scoring 4 and 5 in the Likert scale		*respondents scoring 3, 4 and 5 in the Likert scale*		*respondents scoring 5 in the Likert scale*	
	Nominal	Percentage	Nominal	Percentage	Nominal	Percentage
Booking	62	47.33%	111	84.73%	15	11.45%
Shop and track	58	44.27%	105	80.15%	8	6.11%
Customer service	64	48.85%	102	77.86%	11	8.40%

Table 4.7 – Consumers' perceived usefulness towards chatbots (own creation)

	Consumers' positive attitude towards chatbots					
	respondents scoring 4 and 5 in the Likert scale		*respondents scoring 3, 4 and 5 in the Likert scale*		*respondents scoring 5 in the Likert scale*	
	Nominal	Percentage	Nominal	Percentage	Nominal	Percentage
Fun	74	56,49%	106	80,92%	3	2,29%
Good idea	32	24,43%	114	87,02%	3	2,29%
Future	48	36,64%	94	71,76%	2	1,53%

Table 4.8 – Consumers' positive attitude towards chatbots (own creation)

As it is possible to see, most of the consumers scoring 4 (agree) and 5 (strongly agree) in the Liker scale considered chatbots as useful for customer service (48,85%) followed by booking a

service (47,33%) and shop and track products (44,27%). Moreover, according to table 4.8, most of consumers scoring 4 and 5 consider chatbots as fun (56,49%). Moreover, for 24,43% of consumers adopting chatbots seem a good idea and 36,64% will consider adopting chatbots in the future.

To prove the positive relationship between perceived usefulness and attitude the author used the Excel plugin "*Data Analysis*" and the "*Correlation*" tool. Thus, the author calculated the Pearson correlation coefficient and verified the correlation between these two variables (see table 4.9 below).

	Percieved usefulness	*Positive attitude*
Percieved usefulness	1	
Positive attitude	0.8949	1

Table 4.9 – Pearson's coefficient: perceived usefulness and positive attitude (own creation)

As previously mentioned, the author calculates the Pearson coefficient to measure the strength of the relationship between two variables such as perceived usefulness and positive attitude. Pearson's coefficient (r) has a value +1 and −1, where 1 represents a total positive linear correlation and −1 represents a total negative linear correlation. If r is 0 there is not relationship between the variables.

Thus, according to table 4.9 above perceived usefulness and positive attitude are positively and strongly correlated as r is 0.8949. Therefore, it is verified that a positive perception in terms of usefulness is related to a positive attitude.

For this reason, it is possible to state that the fist assumption is proved. That is, people that perceive chatbots as useful tend to have a positive attitude towards this technology.

4.3.2 Assumption B and C

The same process of constructing crosstabs and verifying the positive correlations through Pearson correlation coefficient have been made with the other determinants such as perceived ease of use and perceived risks. The assumptions related to these determinants are reported below:

Assumption b: *There is a positive relationship between perceived ease of use and the consumers' attitude towards chatbots. Therefore, a positive level of ease of use lead to a positive attitude towards chatbots*.

Assumption c: *There is a negative relationship between perceived risks and the consumers' attitude towards chatbots. Therefore, a high perceived risk lead to a positive attitude towards chatbots*.

The results from testing these assumptions with the Pearson's correlation are reported in the tables below (see table 4.10 and 4.11).

	Perceived ease of use	*Positive attitude*
Perceived ease of use	1	
Positive attitude	0.8557	1

Table 4.10 – Pearson's coefficient: perceived ease of use and positive attitude (own creation)

	Perceived risks	*Positive attitude*
Perceived risks	1	
Positive attitude	-0.7664	1

Table 4.11 – Pearson's coefficient: perceived risks and positive attitude (own creation)

From the analysis it is possible to conclude that:

- Consumers' perception of ease of use and attitude are positively and strongly correlated as the Pearson's coefficient (r) is 0,8557 (see table 4.10 above). Therefore, it is verified that consumers that perceived chatbots as ease to use have a positive attitude towards this technology.
- Consumers' perception of risks and attitude are negatively and strongly correlated as the Pearson's coefficient (r) is – 0,7664 (see table 4.11 above). Therefore, it is verified that consumers that perceived chatbots as risky have a negative attitude towards this technology.

For this reason, it is possible to state that also the second assumption and the third assumption are proved.

4.3.3 Hypothesis I

After testing the three assumption is it now possible to prove or disprove the first hypothesis that states that: "*consumers positive perception in terms of usefulness, ease of use and risk determine a positive attitude towards chatbots*".

To prove this hypothesis the author considered all the arithmetic means obtained from the three determinants such as perceived usefulness, ease of use and risks (see table 4.12 below). If the result from the arithmetic mean (see violet cell "Average", table 4.12 below) involving usefulness, ease of use and risks was more than 3 in the Likert scale (neutral) the author considered the consumer's perception as positive and vice versa.

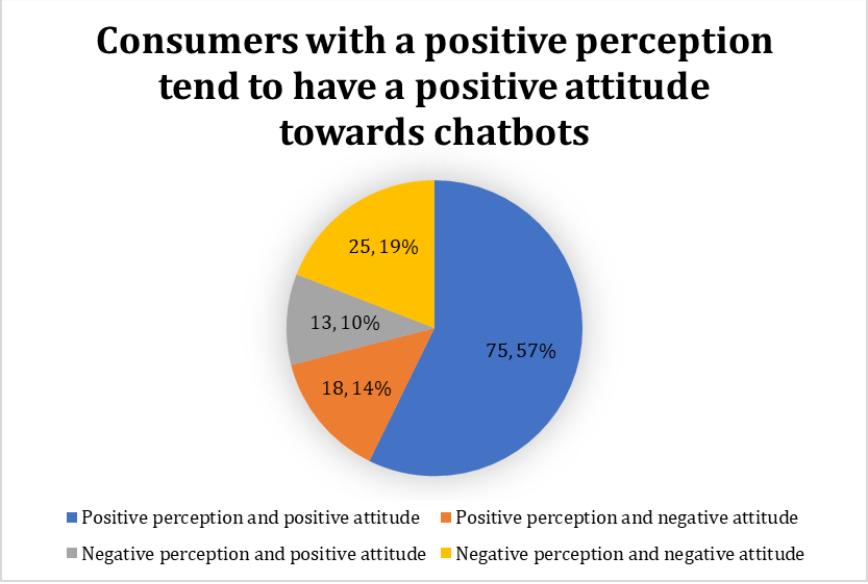
After that the author made a correlation with the results of this arithmetic mean and the ones from question 5 that measures consumers' attitude towards chatbots (see orange cell "Average", table 4.12 below).

This process has been applied for all the answers of the 131 respondents.

Usefulness	Ease of use	Risks	Average	Perception	Average	Additude
4.00	4.33	2.50	3.61	Positive	4.00	Positive
3.67	4.67	2.00	3.44	Positive	3.67	Positive
2.33	4.33	3.50	3.39	Positive	2.67	Negative
3.67	4.00	4.00	3.89	Positive	3.67	Positive

Table 4.12 – Calculation of the arithmetic mean obtained by the three determinants of perception (own creation)

Thus, the author designed a graph with people that had a positive overall perception and attitude (see graph 4.2 below).



Graph 4.2 – Consumers' with a positive perception tend to have a positive attitude towards chatbots (own creation)

The graph above shows that 57% of consumers that answered question 5 (measuring perception) and question 6 (measuring attitude) declared both a positive perception and attitude towards chatbots. Therefore, consumers with a positive perception tend to have a positive attitude towards this technology. Furthermore, as mentioned before the author

calculated the Pearson's coefficient to measure the correlation between the arithmetic means of positive perception and positive attitude. The results are reported in the table 4.13 below.

	Perception towards chatbots	*Attitude towards chatbots*
Perception towards chatbots	1	
Attitude towards chatbots	0.8321	1

Table 4.13 – Pearson's' coefficient: perception and attitude towards chatbots (own creation)

Table 4.13 above shows that perception and attitude are positively and strongly correlated as r is 0.8321. Therefore, it is verified that a positive perception is related to a positive attitude. That is, people that have a positive perception of chatbots tend to have a positive attitude towards this technology. For this reason, it is possible to state that hypothesis I is proved.

4.4 Testing hypothesis II

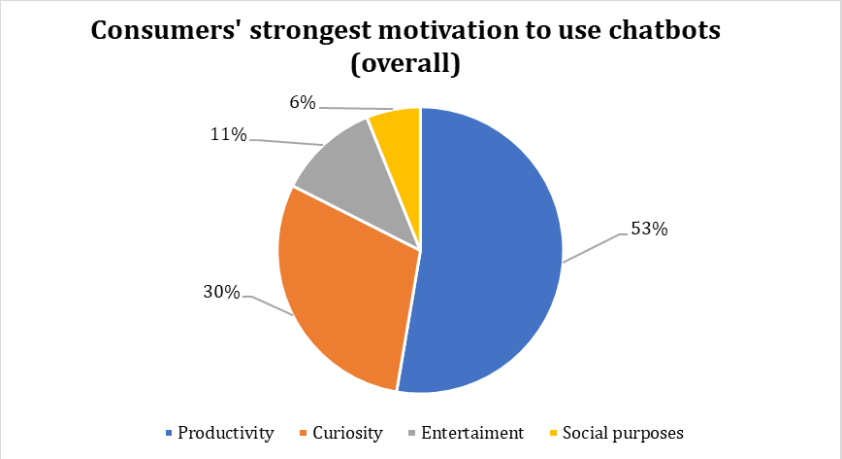
With the second hypothesis the author wants to verify which is the strongest motivation that push consumers to use chatbots.

To test this hypothesis the author simply looked at the number of answers given to the respondents for each of the four motivations reported in the questionnaire such as productivity entertainment, social purpose and curiosity. The final rank based on the answers will determine which is the strongest motivation identified by the respondents to use or to consider using a chatbot.

To do that the author looked at the results provided by question 4. This question asked to the respondents to select the strongest motivation that pushed or could push the to adopt a chatbot.

The results are provided in the following graph and table (see graph 4.3 and table 4.14 below)

Graph 4.3 – Consumers' strongest motivation to use chatbots (own creation)



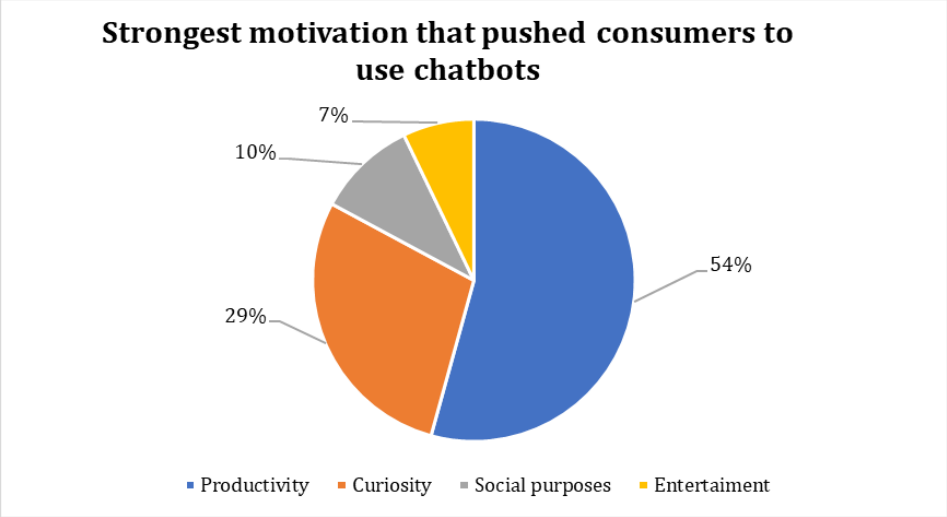
Motivation to adopt a chatbot (overall)		
Motivation	Nominal	Percentage
Productivity	69	53%
Curiosity	39	30%
Entertaiment	15	11%
Social purposes	8	6%
Total	131	100%

Table 4.14 – Overall motivation to adopt a chatbot (own creation)

Overall, the results show that 53% of the respondents consider productivity as the strongest motivation to chatbots usage followed by curiosity (30%), entertainment (11%) and social purposes (6%).

To make an in-depth analysis, the author combined the results with question 1 that aimed to know if respondents were familiar with chatbots. Therefore, the author analysed two different situations such the strongest motivation that pushed people to adopt chatbots compared to the strongest motivation that could push people to adopt this technology.

The results are reported in the two graphs and tables below (see graph 4.4, 4.5 and tables 4.15, 4.16).

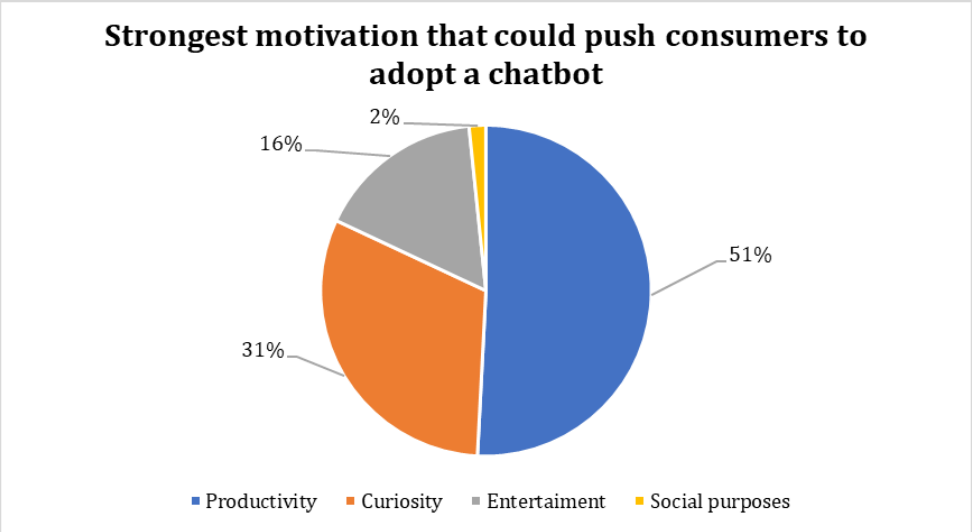


Graph 4.4 – Strongest motivation that pushed consumers to use chatbots (own creation)

Motivation that pushed consumers to adopt chatbots		
Motivation	Nominal	Percentage
Productivity	38	54%
Curiosity	20	29%
Social purposes	7	10%
Entertaiment	5	7%
Total	70	100%

Table 4.15 – Motivation that pushed consumers to adopt chatbots (own creation)

According to the graph 4.4, 54% of consumers that already knew what a chatbot is indicated productivity as the strongest motivation that pushed them to use a chatbot followed by curiosity (29%), social purposes (10%) and entertainment (7%).



Graph 4.5 – Strongest motivation that could push consumers to adopt a chatbot (own creation)

Motivation that could push consumers to adopt chatbots		
Motivation	Nominal	Percentage
Productivity	31	51%
Curiosity	19	31%
Entertaiment	10	16%
Social purposes	1	2%
Total	61	100%

Table 4.16 – Motivations that could push consumers to adopt chatbots (own creation)

According to graph 4.5, 51% of consumers that didn't know or where not sure about what a chatbot is also indicated productivity as the strongest motivation that could push them to use a chatbot followed by curiosity (31%), entertainment (16%) and social purposes (2%).

Thus, according to the different situations illustrated above, productivity is the strongest motivation that pushed or could push consumers to use a chatbot. Therefore, it is possible to state that also the second hypothesis has been proved.

4.5 Summary of the findings

In this chapter the author presented different findings that proved the stated hypotheses. Thus, to better understand the results of this research is necessary to summarise the main findings.

With the first hypothesis the author wanted to understand the relationship between positive perception and positive attitude towards chatbots. To do that the author first proved three different assumptions with the following results:

a. There is a positive relationship between perceived usefulness and the consumers' attitude towards chatbots. In fact, the Pearson's coefficient (r) is 0,8949. Therefore, a positive level of perceived usefulness lead to a positive attitude towards chatbots.
b. There is a positive relationship between perceived ease of use and the consumers' attitude towards chatbots. In fact, the Pearson's coefficient (r) is 0,8557. Therefore, a positive level of ease of use lead to a positive attitude towards chatbots.
c. There is a negative relationship between perceived risks and the consumers' attitude towards chatbots. In fact, the Pearson's coefficient (r) is – 0,7664. Therefore, a high perceived risk lead to a negative attitude towards chatbots.

After proving these assumptions, the author could investigate the relationship between relationship between positive perception and positive attitude with the following results:

Consumers with a positive perception of chatbots tend to have a positive attitude towards this technology. In fact, 75,57% of the respondents that had a positive perception of chatbots declared also positive attitude towards them. Moreover, the positive relationship between perception and attitude is also proved by the Pearson's coefficient (r) that is 0,8321.

With the second hypothesis, the author wanted to prove that productivity is the strongest motivation that push consumers to use chatbots. To do that the author analysed the answers provided by question 4 in two different situations such as respondents that already used a chatbots before and respondents that never used a chatbot before. The results prove the second hypothesis as:

- 54% of respondents that used a chatbot before stated that productivity was the strongest motivation that pushed them to use a chatbot followed by curiosity (29%), entertainment (10%) and social purposes (7%).

- 51% of respondents that never used a chatbot before stated that productivity is the strongest motivation that could push them to use a chatbot followed by curiosity (31%), entertainment (16%) and social purposes (2%).

That is, from the results of this research it is possible to conclude that both the hypotheses are proved. These results will be used to suggest a future research about consumers' perception and attitude towards artificial intelligence.

Chapter 5, Conclusions

Over the last few years topics such as artificial intelligence and the application of this technology have been discussed by the most important companies and entrepreneurs such Satya Nadella (CEO of Microsoft) and the Elon Musk. For this reason, the literature review aimed to discuss the main theories concerning the adoption of modern technologies focusing on chatbots. To do that, the author built three different research questions that guided the writing of the all thesis.

Regarding the first research question, the author looked at the main scholars providing a definition of chatbot, artificial intelligence, technology adoption and consumer's perception and attitude. Thus, the author identified the main theories that represented the building blocks of the first part of the literature review.

Regarding the second and the third research question, the author gathered the main theories explaining which are the main determinants that push consumers to adopt a technology. The author also presented how chatbots can be used by companies such as customer relationship management. Moreover, the goal was to understand the role that perception and attitude play in consumer's adoption of chatbots. From these theories the author built the second part of the literature review. Moreover, the body of literature has been used to develop a conceptual framework and construct two hypotheses.

Indeed, the author designed the questionnaire that has been used to prove the stated hypotheses. The questionnaire has been sent through different channels such as Facebook, Instagram and WhatsApp to capture different segments of consumers. A total of 168 questionnaires have been filled and after cleaning all the data 131 respondents have been used to conduct the data analysis.

The results from the data analysis will be discussed in paragraph 6.2 to make suggestions about why companies should use chatbots in their marketing and communication strategies.

The data analysis confirmed the first hypothesis proving that there is a positive relationship between consumers' perception and attitude towards chatbots. Therefore, the author proved that there is a positive correlation between positive perception and positive attitude towards chatbots.

The second hypothesis has also been confirmed as the main determinant that pushed or could push consumers' usage of chatbot is productivity.

All in all, it is possible to state that consumers are more willing to adopt chatbots when they have both a positive perception and attitude towards them. The main determinants that play an active role in consumers perceptions of chatbots are perceived usefulness, ease of use and risks. Finally, consumers main reason to use a chatbot is productivity.

Chapter 6, Limitations and implications for further research

6.1 Identification and explanation of the limitations

Limitations are defined as problems that the researcher could face while doing the research. As limitations could influence the quality of the research such as how the hypotheses are answered it is important to identify and discuss them (Laerd Dissertation, 2012).

During this thesis the author identified the following issues:

- Survey design.
- The amount of articles.
- Time and money.

Survey design and submission

While designing the survey some problems occurred. First, it was difficult for the author to identify previous research about the same topic. Therefore, the author could not compare the survey that made with previous researches.

First, the author looked at the main theories around perception and attitude. These theories have been used to create some statements that aimed to measure consumers' perception and attitude towards chatbots. For this reason, the author could draw a survey based on general theories but not on a specific case involving chatbots.

As no previous peer reviewed articles designed surveys to investigate on consumers' perception and attitude towards chatbots, the author decided to make a survey considering Italians as wide sample. Indeed, the author did not pick a specific target group based on demographic or psychographic data but decided to consider more than one segment.

Second, the author had to submit the survey trough different channels but without knowing in advance which channels performed better. For this reason, the author could not focus his efforts on a specific channel but had to spend time delivering the survey on multiple channels. This could have affected also the number of answers obtained from the questionnaire.

The amount of articles

According to the thematic literature review there were not strict criteria to follow while selecting the articles used in the master thesis. However, as the author used some specific

keywords to look for the peer reviewed articles that formed the literature, it is possible that some relevant information has been ignored. Furthermore, as chatbots is recent topic it is not possible to always find peer reviewed articles.

Time and money

The short amount of time and the low budget available are two of the main limitations that could have influenced the results of this research.

Concerning the short amount of time available, the author had to narrow down the topic because there was not enough time to consider all the aspects chatbots. Therefore, the author only considered the main determinants affecting consumers' perception and attitude. Furthermore, a quantitative research such as structured interviews could have been done to get more insight about some specific results or target groups but due to the lack of time that was not possible. Also, a higher amount of time the author could have made more comparisons between the data to get some insights beyond testing the hypotheses.

6.2 Managerial implications: reasons to use chatbots in a marketing ad communication strategy

All the insights gathered from this research are useful for marketing managers and other professionals to design a marketing and communication strategy to attract new clients and establish a dialog with them.

First, it is important to establish a specific target of consumers. In this case the target is based only on demographic as no psychographic data have been collected. Looking at the data gathered from the questionnaire, it is possible to see 68% of respondents that use chatbots are between 18 and 29 years old or younger (see graph 1, Appendix 3). Moreover, 50% of users between 18 and 29 years old or younger use chatbots on a daily or weekly base. This segment of consumers represents people of two different generations such as Millennials and Gen Z. This two generation are quite different from each other, but both are looking for new ways of communication that doesn't involve feeds where information is public. For this reason, as already mentioned in this research, big conversations are being replaced by small and more private conversations happening in messaging apps such as WhatsApp, Messenger and Snapchat. Moreover, the rise of micro communities and micro influencer have changed also the online adverting market. For instance, people now prefer to be engaged in smaller communities of people that have same interested and passions. As a result, for example micro-

influencers drive 22 times more conversions establishing authentic relationships that have real influence on buying behaviour and purchase decisions (Neville, 2017).

That is, also messaging apps are attracting more people. In 2017, Facebook Messenger and WhatsApp were used by 73% and 64% of Americans between 18 and 29 years old worldwide (Statista, 2017).

As consumers are using this kind of apps to communicate, chatbots can be a useful tool to create campaigns. Therefore, the use of chatbots combined with messaging apps could substitute email marketing, that is one of the main direct marketing approaches used by companies to directly send personalized messages to each consumer.

According to the 2016 E-mail Marketing Metrics Benchmark Study, the world average open rate of emails was 21.8%. In other words, almost 78% of consumers will never open an email sent by brands. Moreover, the same study shows that 49% of people open emails via mobile. That means that half of consumers nowadays read communication on the move (Olyo, 2017).

Facebook Messenger alone connects more than 1.3 billion people worldwide so there is a substantial portion of potential customers that are using this channel. Moreover, it has been proved that using chatbots so send ads and start conversations via Messenger leads to a CTR (click-through rate) s 12 times higher than the one obtained by e-mail and an opening rate of 98%. That means that people are now more willing to read your messages if you use chatbots instead of emails (Olyo, 2017).

As a result, it is possible to conclude that companies should start testing and using chatbots at the same level they do with email marketing. It is possible that in the future, more and more communications will occur through this technology and companies should be ready to shift between the old way of communication (email marketing) to the new way (chatbot marketing).

6.3 Suggestions for further research

As mentioned in paragraph 6.1 due to the time and money limitations it was not possible to fully explore all the issues related to this topic. For this reason, the author wants to suggest some topics that could be investigated by future researchers.

First, as mentioned before the author did not focus his attention on a specific target group but decided to consider Italian consumers in general. Therefore, it will be possible in the future to start from this research to make a deeper analysis of each target group to understand the main

differences between different kind of consumers. It will also be possible to look at how people from different countries perceive chatbots and which is their attitude towards them. Moreover, a psychographic analysis could lead to a better understanding of which are the main interests of people using chatbots.

Second, this research focuses on both consumers that already used or never used a chatbot before. However, it will possible in the future to make a research that focus more on people that already used a chatbot before to get deeper insights about other motivations that pushed them to use this technology beyond the ones that have already been mentioned in this research.

Finally, there are also other ways that can be tested to collect the data and conduct the data analysis such as interviews. Therefore, the author could have picked a specific target group such as Millennials to get more information about their perception, attitude and usage behaviour of chatbots. For instance, with this method of research it will also be possible to make interviews to marketers that are already adopting chatbots in their marketing and communication strategies to better understand how brands could benefit from this technology.

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Appendix

Appendix 1

Reference Table of Literature Review

Journal	Title	Year	Author	Page	Volume	Issue
International Journal of Information Management	The mobile commerce value chain: analysis and future developments	2002	Barnes, S. J.	91-108	22	2
Journal of Adolescent Health	An Artificially Intelligent Chat Agent That Answers Adolescents' Questions Related to Sex, Drugs, and Alcohol: An Exploratory Study	2011	Crutzen, R. P. et al.	514-519	48	5
Doctoral dissertation	A technology acceptance model for empirically testing new end-user information systems: Theory and results	1986	Davis Jr, F. D.	-	-	-
Information Systems Research	An Extended Privacy Calculus Model for E-Commerce Transactions	2006	Dinev, T. & Hart	61-80	17	1
Social Cognition	The advantages of an inclusive definition of attitude	2007	Eagly, A. H. & Chaiken, S.	582	25	5
International Journal of Human-Computer Studies	Predicting e-services adoption: a perceived risk facets perspective	2003	Featherman, M. S. & Pavlou	451-474	59	4

Computers in Human Behavior	Beyond positive or negative: Qualitative sentiment analysis of social media reactions to unexpected stressful events	2016	Gaspar, R., Pedro, C., Panagiotopoulos, P. & Seibt, B.	179-191	56	-
Evidence-based nursing	Validity and reliability in quantitative studies	2015	Heale, R. & Twycross, A.	66-67	18	3
Computers in human behaviour	Real conversations with artificial intelligence: A comparison between human–human online conversations and human–chatbot conversations	2015	Hill, J., Randolph Ford, W. & Farreras, I. G.	245–250	49	-
Information & Management	Why do people use information technology? A critical review of the technology acceptance model	2003	Legrisa, P., Inghamb, J. & Collerettec, P.	191-204	40	3
Computers in Human Behavior	Uses and gratifications and acceptance of Web-based information services: An integrated model	2014	Luo, M. M. & Remus	281-295	38	-
Journal of Broadcasting & Electronic Media	Predictors of internet use	2000	Papacharissi, Z. & Rubin, A. M.	175–196	44	2
Software Quality Professional	Evaluating Quality of Chatbots and Intelligent	2017	Radziwill, N.	25–36	19	3

	Conversational Agents					
The Turkish Online Journal of Educational Technology	Detailed Review of Rogers' Diffusion of Innovations Theory and Educational Technology-Related Studies	2006	Sahin, I.	14-23	5	2
Electronic Commerce Research and Applications	Diffusion and success factors of mobile marketing	2005	Scharl, A., Dickinger, A. & Murphy, J.	159-173	4	2
Journal of Personality and Social Psychology	Ajzen and Fishbein's Theory of Reasoned Action as Applied to Moral Behavior: A Confirmatory Analysis	1992	Vallerand, R. & Pelletier, L.	98	62	1

Appendix 2

Chatbot Adoption Survey

Hello! The following questionnaire aims to understand the main determinants that push people to adopt and use a chatbot. This survey contains just few questions and it takes no more than 5 minutes to be fulfilled.

All the data gathered from the following questions will be used for an academic purpose only.

Are you ready? Let's start!

1. **Do you know what a chatbot is?** *

- ◯ Yes
- ◯ No
- ◯ Maybe, I am not sure

2. **Have you ever used a chatbot?** *

- ◯ Yes
- ◯ No

Titolo predefinito sezione

3. **On average, how often do you use chatbots (for any task)?** *

- ◯ Daily
- ◯ Weekly
- ◯ Monthly
- ◯ Annually

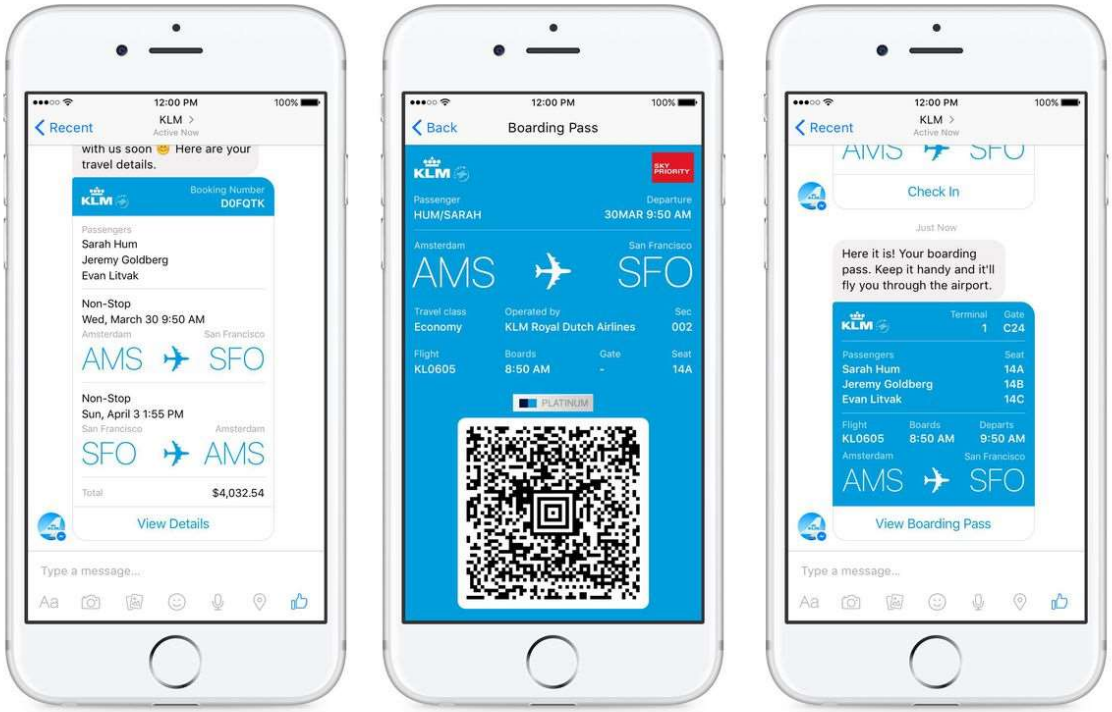
No worries, this is a brief description of what a chatbot is.

A chatbot is a computer program that simulates human conversation, or chat, through artificial intelligence. You can use them to order something, ask something or just have a conversation. It's just like Siri or Google Assistant but instead of using your voice you have to type a question to get an answer.

There are just two examples below.

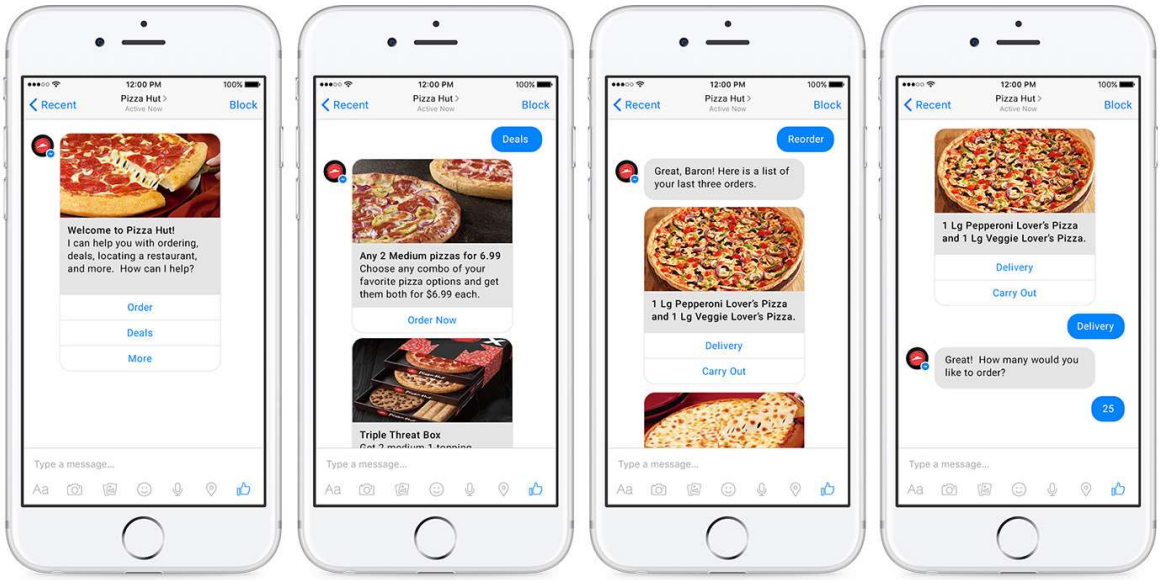
Example 1 - KML chatbot

This is how KLM used chatbots to allow its passenger to check in fast and get their tickets on Facebook Messenger.



Example 2 - Pizza Hut chatbot

Also Pizza Hut developed a chatbot. Now its clients can access to Pizza Hut menu and order directly on Messenger. If they have any questions or requests a virtual assistant (robot) answer to them.



4. **Which is the strongest motivation that pushed or could push you to use a chatbot?** *

- ◯ Productivity. The main reasons to use chatbots are speed and convenience as. I can obtain help and informations
- ◯ Entertainment. I like to use chatbots to entertain myself especially when I am bored based on the funny answers provided.
- ◯ Social purpose. I like to have a social experience of interacting with a chatbot.
- ◯ Curiosity. I am just curious about this new technology and see how it works.

5. **How much do you agree or disagree with the following statements?** *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I think using chatbots me to book something (e.g. hotel, taxi, etc.).					
I think using chatbots helps me to shop and track a product					
I think using chatbots helps me to be engaged with the customer service					
I think using chatbots is easy to use					
I think learning how to use chatbots is easy					
I think finding what I want using chatbots is easy					
I think using chatbots is risky in terms of data security and privacy					
I think that using chatbots is risky because of the general global risks associated with artificial intelligence in the future					

6. **Based on your current attitude towards chatbots, how much do you agree or disagree with the following statements?** *

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Using a messenger chatbot seems fun					
Using a messenger chatbot seems a good idea					
Using a messenger chatbot is something to consider for the future					

The last three questions

You are almost done! Just 3 more questions!

7. **What is your gender?** *

- Male
- Female
- Other

8. **What is your age?** *

- less than 18 years old
- 18-29 years old
- 30-49 years old
- 50-64 years old
- 65+ years old

9. **What is the highest degree or level of school you have completed?** *

- [ ] Nursery school to 8th grad
- [ ] High school
- [ ] Bachelor
- [ ] Master
- [ ] Phd

10. **Where do you currently live?** *

- [ ] Italy
- [ ] Other country

11. **If you would like to get the chance to win a 20€ Amazon coupon, please fill in your e-mail address down below**

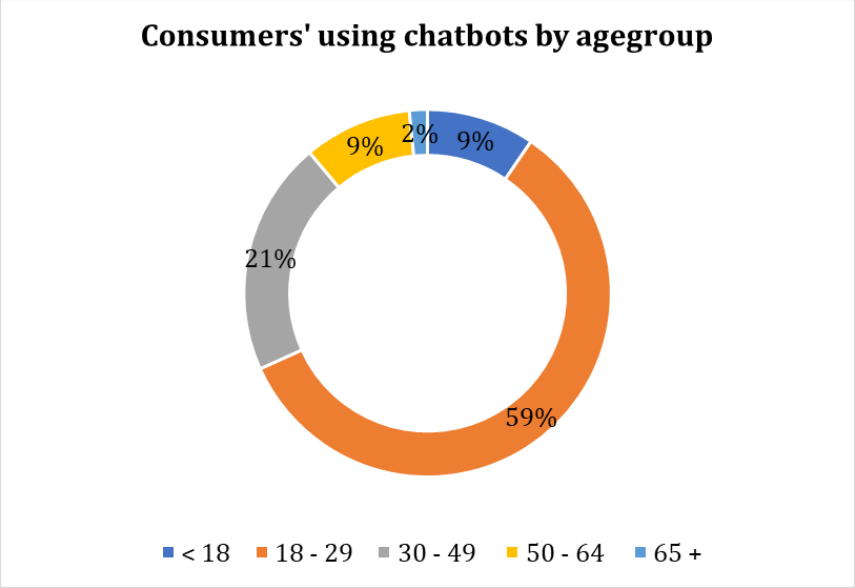
_____

CLICK ON "SUBMIT" to deliver your replies.

Thank you for taking the time to complete this questionnaire.

**** CLICK ON "SUBMIT" to deliver your replies. ****

Appendix 3



Graph 1 – Consumers that use chatbots divided by age group