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CONSUMERS' ADOPTION OF CHATBOTS IN THE E-COMMERCE INDUSTRY

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TABLE OF CONTENTS

ABSTRACT

Chatbots have been considered as one of the leading technologies in the e-commerce industry as virtual shopping assistants able to guide customers throughout the entire shopping experience automatically. However, Chatbot technology is in the development stage and a lot of things should be done to replicate the conversation of a human being completely. The bot-customer exchange still lacks empathy which makes it difficult for a computer to emulate. Users are still sceptical to trust this kind of technology which leads to the low adoption process.

Previous studies that have been investigated, analysed some specific applications of the chatbot in different industries such as language learning, entertainment, healthcare, education tools. The use of the chatbot has also been studied in e-commerce, but primarily from a technological and design point of view. There was a gap in the current literature to validate the relationship between chatbot technology perception attributes and the strongest reason that pushes consumers to use chatbots in the e-commerce industry. Technology is expanding, but the knowledge about the way people interact with a chatbot is not expanding equally.

This study focuses on the interaction aspect of human and chatbot relationships. The author aims to examine the factors that influence the adoption process behind the chatbot usage of e-commerce consumers and their motivation to use it.

Results showed that consumer's perception from being easy and useful perspectives about a chatbot impacts on their behaviour towards this technology. There is a positive correlation between these variables which means that if users perceive chatbots as a useful and easy tool they will have a positive attitude towards them. Moreover, the majority of the users use chatbots because they consider it as a productive tool.

These findings support the literature by analyzing the complementary relationship between perception and attitude of ecommerce chatbot users. Future studies could use these findings to develop chatbot experiences that better fit with customer needs and requirements.

Keywords: chatbots, consumer adoption of technology, e-commerce chatbot users

INTRODUCTION

Artificial Intelligence (AI) technologies and Human Computer Interaction (HCI) improved speedily over the years and conversational tools such as chatbots became more advanced and natural. The term “chatbot” has become increasingly popular and is identified as software-based systems that use the power of AI and natural language processing technologies to simulate communication experiences (Abu Shawar & Atwell, 2007).

Consumers and companies are both taking some advantages of using chatbots. However, any technology that uses artificial intelligence has some problems as well. First, chatbot technology is in the development stage and a lot of things should be done to replicate the conversation of a human being completely. Second, the bot-customer exchange still lacks empathy which makes it difficult for a computer to emulate. Thirdly, users are still sceptical to trust this kind of technology which leads to the low adoption process (Telus International, 2016). These issues mean that more knowledge is needed on interaction with chatbots. Despite the fact that chatbots are vastly growing only little is known about how people react to their use. Although a positive behaviour encourages the use of chatbots, it is still unclear what actually motivates people to use this technology. Consequently, technology is expanding, but the knowledge about the way people interact with a chatbot is not expanding equally. Therefore, there is a lack of research about consumers' adoption of chatbots especially in the e-commerce industry. As a result, the author, considering the increased popularity that the mentioned technology is gaining and its development over the last years, decided to contribute to the research gap about the consumers’ use of an HCI tool, by focusing on the interaction with the chatbot during the shopping online. Moreover, the reason why there is a need for investigation about the consumer's acceptance of chatbot technology is that without the insights on the interactive part, the technical developments for chatbots are in vain. Because a successful chatbot depends on both technical and interactive components. Consequently, a research problem is arising from this point hence, there is a gap in the current literature to validate the relationship between chatbot technology perception attributes and the strongest reason that pushes consumers to use chatbots in the e-commerce industry. Technology is expanding, but the knowledge about the way people interact with a chatbot is not expanding equally.

Two main research questions will be answered in order to investigate this problem: (1) What is the consumer perception towards the adoption of chatbots in the e-commerce industry and how is it influencing the consumer's behaviour? (2) Which parameters play an active role in the decision of the consumer to use the chatbot?

This study focuses on the interaction aspect of human and chatbot relationships. The author aims to examine the factors that influence the adoption process behind the chatbot usage of e-commerce consumers and their motivation to use it.

A theoretical part consists of Diffusion of Innovation theory, Technology Acceptance Model and Uses and Gratification Theory to investigate users' interaction and adoption to use chatbots as well as to build a conceptual framework of the study.

The author will combine the four constructs such as perceived usefulness, perceived ease of use, attitude and motivation based on the theories will be discussed in the literature review to create a framework from which the hypotheses will be formulated. Hypotheses as follows:

H1 – There is a positive relationship between the consumers' behaviour and perceived usefulness towards chatbots. As a result, if perceived usefulness is positive then it will lead to a positive behaviour to the chatbot.

H2 – There is a positive relationship between consumers' behaviour and perceived ease of use towards the chatbots. As a result, if perceived ease of use is positive then it will lead to a positive behaviour to the chatbots.

H3 – In comparison to information, entertainment and interest, productivity is the first and greatest motivator for customers to use chatbots.

The research contributes to the body of the study about the customers' usage of a Human-Computer Interaction tool, focusing on the application of the chatbot as a virtual assistant during online shopping. Besides, the study intends to provide an investigation report about the consumer's intent and motivation to use a chatbot while shopping online to the companies that use chatbots on their e-commerce.

The first part of the thesis is about the theoretical framework, wherein the literature reviews will present from previous research done by scholars in the subjects of consumers' adaptation to chatbots technology. The author will introduce three main theories as mentioned above according to the literature review. The second part is about methodology, where data collection method, analysis and results will be presented. A quantitative analysis will be used to analyse the data taken from the online survey questionnaire and three different hypotheses successfully will be examined. The final part of the research consists of the conclusion where the summary of the findings will be stated.

1. LITERATURE REVIEW

This study focuses on the interaction aspect of human and chatbot relationships. Most of the studies that have been investigated, analysed some specific applications of the chatbot in different industries such as language learning, entertainment (Abu Shawar & Atwell, 2007), healthcare (Bickmore, Schulman, & Sidner, 2013), education tool (Kerly, Hall, & Bull, 2007). The use of the chatbot has also been studied in e-commerce, but primarily from a technological and design point of view. Thus the study of the user behaviour and the rationale of customer usage about chatbot is still at the earliest stage (Sadeddin, Serenko, & Hayes, 2007) and only a little research has been done on adoption and intention to use a customer service chatbot (Følstad, Nordheim, & Bjørkli, 2018). In the following paragraphs the author will describe the current literature state and related theories to the topic.

1.1. Definition of a chatbot

Chatbots, also known as chatter bots, conversational agents and virtual agents (Van Eeuwen, 2017) A Chatbot is a software that reacts to natural language input and attempts to hold a conversation in the manner of a real person by means of auditory or textual inputs (Duijst, Sandberg, & Buzzo, 2017).

The chatbot links the content that got from the user to a database in order to find possible answers (Crutzen, 2011). There needs to be a platform for chatbots where users can type to get answers. Indeed, messaging apps like Telegram, Facebook Messenger, WhatsApp are all examples of chatbot platforms that are used by users on a daily base to make calls, chat with friends, consume content, interact with the brand or even book a hotel or restaurant (Radziwill, 2017). These are only a couple of the many features available in today's messaging apps. Are getting too many benefits of these apps on different marketing activities such as content delivery, customer service management, user engagement, advertisement or selling products (Chi, 2017). Chatbots receive natural language input which allows them to execute one or more related commands in a goal directed behaviour. Machine learning technologies are used in the most sophisticated applications, allowing them to respond to new information or requests. Usually, these conversational agents are

constructive, social and autonomous (Radziwill, 2017). On the other hand, chatbot is a software which interacts with real people based on automated systems.

Chatbots have been used in various sectors, such as healthcare, education, e-commerce, and entertainment, because of their ability to communicate easily with consumers (Io & Lee, 2018). Based on the report Wang published in 2017, 57% of surveyed companies are going to use a chatbot for their operations. Moreover, Gartner projected that the majority of businesses will invest more in the growth of chatbots than traditional applications by 2022 (Gartner., 2017).

The history of chatbots starts with Eliza, which Joseph Weizenbaum created at MIT in 1966 as the first-ever chatbot. Chatbot has become more powerful and intelligent with the development of smartphones and applications. An essential move towards the chatbots adoption was taken in 2016 when Facebook launched its bots on Messenger. This combination aimed at increasing customer loyalty and interaction. Facebook simply started to build bots which can be easily implemented by brands. First adopters of this technology were Starbucks and Spotify. Since one of the big players created a big buzz, other players such as Skype and WeChat started to integrate chatbots on their platforms. As a consequence, companies have recognized the business possibilities of chatbot technology and several different bots have been introduced in recent years by brands such as KFC, Domino's Pizza and Adidas who have used automated messaging to respond to customer requests and provide them with responsive customer service (Chahal & Tesseras, 2017).

There are two primary advantages why chatbots can be considered an essential tool to improve customers' perception of the business (Chung, Ko, Joung, & Kim, 2018). Firstly, chatbots can instantly communicate with users and process natural language strings of text. This interaction speed remarkably improves the conversion rates. Secondly, by automating the customer service process, this technology can help companies lessen their labour costs (Bakhasi, 2018). Indeed, chatbots are expected to help companies save $9 billion in cost for their operational activities by 2023 (Juniper Research, 2017).

1.2. Types of chatbots

In recent years, the classification of chatbots has become very subjective due to the dynamic and rapid changes in technology. There are several categories that play a main role to build modern chatbots such as knowledge domain, design techniques and mode of interaction. According to the research of Hussain et al. (2019), chatbots can be divided into two main categories: task-oriented and non-task oriented. Task-oriented chatbot is programmed to handle complicated situations such

as case arrangement, troubleshooting assistance or order placement while non task-oriented chatbot is focused to provide creative answers without any repetition in order to keep the user engaged. Furthermore, requirements of classification include the design philosophy which defines the context for the chatbots such as type of the conversation, purpose of the content or general understanding of the conversation.

According to Følstad and Brandtzæg (2017) there are two prime types of chatbots such as linguistic in other words rule-based chatbots and machine learning in other words AI chatbots. Majority of the recent chatbots are based on these two types of chatbots. Linguistic based chatbots are based on if/then logic to create conversations and it delivers flexibility. Language conditions for linguistic chatbots are created looking at the order of the words, common ways to phrase a question, synonyms and their capabilities are basic. For example, companies usually are using this type of chatbot to resemble interactive FAQs. Another example can be Facebook messenger that companies use in their social media pages to provide users with the quick answers based on most frequently asked questions. It's important to provide logic questions with the same or similar meaning that will get the similar or same responses. Linguistic based chatbots use Natural Language Processing which requires specific and structured interactions so that the main disadvantage of these chatbots is as the development of this kind of chatbot requires a labour-intensive approach, the development processes are very slow compared to other models.

Whereas, Chatbots powered by AI Software are more complicated than linguistic chatbots and tend to be more data-driven, predictive and conversational. Machine learning chatbots are considered to be more interactive and to use more personalization. Also, they are more sophisticated compared to linguistic chatbots. Machine learning chatbots are data driven which leads them to be more aware of context, personalized, and demonstrate the understanding of the natural language. These chatbots track the data about the patterns of the user to analyse the user experience to be more personalized during the conversation. By its nature it grows by getting more data. However, in order to grow at a high level these chatbots need a lot of training, experiments, tests as well as high skilled chatbot developers which requires a lot of source in terms of time and money. One of the big disadvantages of these chatbots is if something goes wrong with the model it can be hard to intercede, improve and optimize it.

1.3. Chatbot applications in e-commerce

Buying and selling products over the Internet – this was the first simple and straightforward definition of e-commerce. Later on, many economies developed and so did e-commerce and as a result it became more flexible and open term. Hence, “exchange of information” phrase was added to the first definition of e-commerce: it’s a process of buying, selling of goods and exchanging of information (Khoo, Ahmi & Saad, 2018). Moreover, according to the C. Nisha and G. Sangeeta (2012), “e-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals”. In this research the author used e-commerce in terms of buying and selling of goods or services over the Internet.

The fields of application of business chatbots are diverse. They are making it easy for companies to interact with customers and increase the engagement. Now customers can use chatbots to book hotels or flights, to reserve a place for a restaurant, to make appointments, schedule payments or simply by asking questions can get detailed information about a service or company. In the following paragraph the author will write some of the successful implementation stories of the e-commerce chatbots.

Alibaba, one of the world's largest e-commerce companies, has successfully implemented AliMe, an artificial intelligence chatbot that serves as a shopping guide and assistant for both sellers and customers. Alibaba's chatbots are "trained" by Taobao merchants with years of experience. They are well-versed in the goods in their categories as well as the mechanics of Alibaba's platforms, including return policies, shipping prices, how to make adjustments to an order, and other frequently asked questions. The chatbots rapidly develop their ability to diagnose and address customer problems using a range of machine-learning technologies, such as semantic comprehension, context dialogues, information graphs, data mining, and deep learning, rather than simply returning static responses that prompt the user to take more action. They check with the customer that the proposed solution is suitable before implementing it. Alibaba's sellers will benefit significantly from chatbots as well. Senma, a clothing company, began using one a year ago and discovered that the bot's sales were 26 times higher than the merchant's top human salesperson. Another successful example is Nike, which used a chatbot called StyleBot during the launch of their AirMax Day shoes. The StyleBot is an artificial intelligence chatbot that helps shoe fans find shoes based on their preferences through product recommendations. Moreover,

StyleBot's party trick provided users with the ability to create their own personalized shoe designs. Customers may share (or save) or even purchase their own shoes after designing them.

The H&M's chatbot gives advice to customers in terms of fashion and asks questions in order to look for clothes that match the user's style. It also makes outfit suggestions and gives different options to the users to choose between combinations of clothes. The fashion brand H&M provides the consultation to its customers via the chatbot by giving the questions to the users. The answers that are given by users helps the chatbot to find the relevant match regarding the customer's fashion style. Another successful application of chatbot is in the transport industry - SNCF (the French rail network company) made ticket purchasing and booking very easy and time saving by developing the conversational assistant.

Figure 1 indicates the information about different fields of application of chatbots based on the Zumstein & Hundertmark (2017) report.

According to the distribution report chatbots are mostly used as calendar assistants, then as a purchasing or reservation of event tickets, online shopping assistance, and booking of the hotels or transport tickets. Other areas of use of chatbot encompasses getting daily news and customer services. Finally, they are used for delivering services.

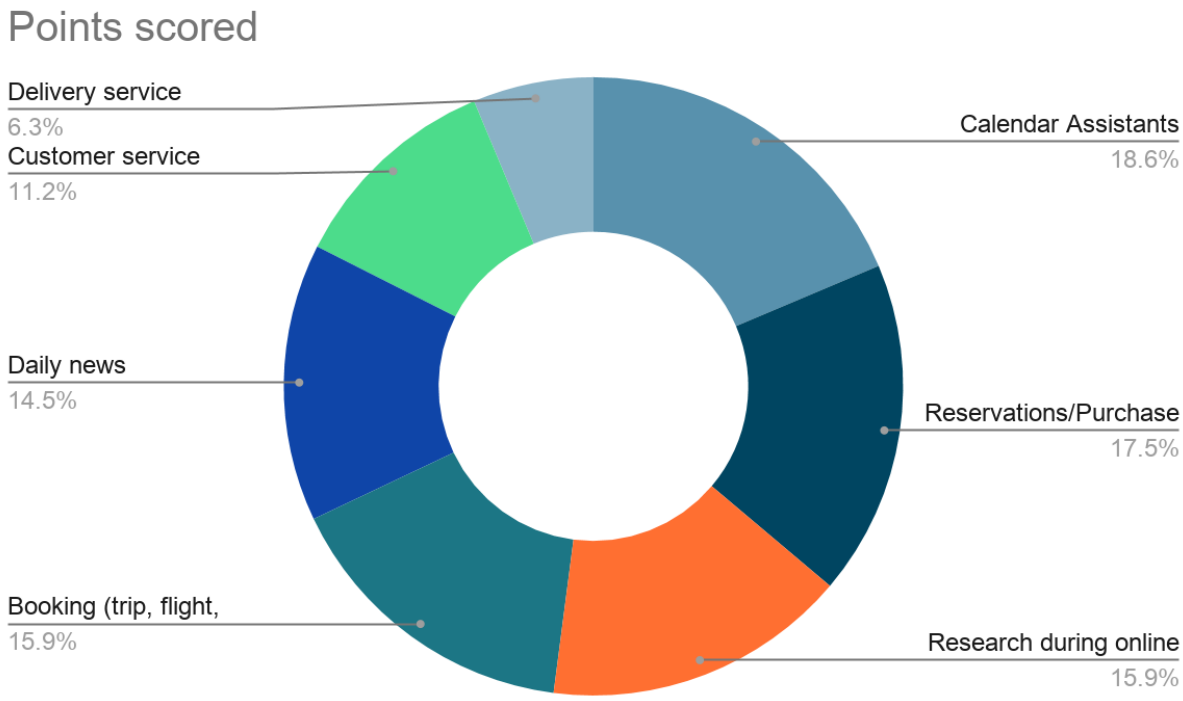

Figure 1. Fields of application of chatbots.
Source: (Zumstein, D., & Hundertmark, S., 2017, IADIS International Journal, 15(1), 101).

So as seen from this survey, using chatbots as a calendar assistant and booking something are very popular comparing to other sectors that chatbots implemented. However, there is not a significant difference between the percentages of calendar assistant chatbot users comparing to the booking chatbot users.

1.4. Conversational commerce

Nowadays, one of the trending topics in digital marketing is conversational commerce which is simply defining conversational agents for commercial aims (Van Eeuwen, 2017). “Conversational Commerce” is a new form of ecommerce in which brands and customers interact with live representatives and AI assistants to learn about products, make purchases, and receive services or assistance with their purchases. Conversational commerce provides personalization, convenience, flexibility and assistance during the decision-making process of the consumers (Baier, Rese, & Röglinger, 2018). Conversational commerce transforms the purchasing journey into a dialogue rather than a one-way dialogue with advertising messaging for the consumer to approve or reject. The new digital trend consists of the combination of using chat to interact with people and bots with natural language (Messina, 2016). The implementation of chatbots for the commercial aims is the main part of conversational commerce which is offering flexibility, personalization, responsiveness and assistance during the decision-making processes. The increase in the usage of mobile messenger chatbots for commercial reasons resulted with the improvement of conversational commerce. That is, modern chatbots can provide customers with recommendations, respond to user questions faster and sometimes smarter than humans. Even some of the chatbots can refine offerings about products or services based on customer intention in order to keep their shopping activity at a high level.

Conversational commerce provides users to be engaged with humans, chatbots or mix of both which is called hybrid chatbots. It refers to the integration of e-commerce and messaging apps which offers convenience within a conversation (i.e. voice or chat). Moreover, there is no requirement to download any application or redirect users to another website in order to communicate with chatbot. Therefore, using chatbot in business brings many advantages to the companies such as shortening the stages of the sales funnel and making the business platform “one stop shopping” place.

According to the industry predictions mobile messenger chatbots will be the next face of m-commerce. As an example, we can look at WeChat messenger chatbot which is very popular in

Asian market and the vast majority of people book a hotel, transfer money or order a taxi by this messenger chatbot. The reason behind this success is that consumption is perceived as a social phenomenon in Asia and as a result sharing or buying activity happen through the social platforms. On the other hand, this phenomenon is not a well-known concept in Europe. However, people's intentions for using chatbots in the mobile messenger interface, are still unclear. In the following chapters, the author will examine several theories that clarify how new technology adoption works in order to better understand consumers' attitudes toward chatbots in messaging apps.

1.5. User perception and experience with chatbots

The perception and attitude of consumers are key factors in the successful adoption of new technology. In the field of chatbots, research has revealed some intriguing findings regarding user perception. One of them is Hill, Ford, and Farreras (2015) experiment which was about comparing the human interaction between human-human online communication and a human-chatbot communication. According to this research, human-human interactions have less duration than human-chatbot interactions. Also, the length of the messages is shorter in human-chatbot interactions and vocabulary is poor compared to a conversation with a human. Another example is Corti and Gillespie's (2016) investigation about perceiving chatbots as humans. According to the research, users put a higher effort to correct misunderstandings when the chatbot is accepted as human, than when the chatbot is perceived as automatic. A number of studies have investigated users' behaviours with chatbots. For instance, Murgia et al. (2016), investigated the human-chatbot interaction in the frame of question-and-answer website. The preliminary findings of the experiment suggested that humans either don't completely trust chatbot advice or expect chatbots to provide better answers than humans.

The principles of user understanding and behaviour toward chatbots are one of the key aspects that this paper examines. The acceptance of technology is influenced by consumer perception and attitude. However, these two terms – perception and attitude of consumers mostly are used interchangeably. For this reason, the author wants to make clear and meaningful explanations for these terms as they are very pivotal for this investigation. To begin with consumer perception, it's a concept which expresses a customer's awareness, consciousness and awareness towards a brand or company service or product (Dictionary, 2018). It's difficult to provide a precise definition of consumer experience. For this reason, the author intends to give a comprehensive definition

according to the literature as well as some online sources related to the topic. Based on available literature, there are two major aspects of consumer perception:

1) Perception cannot be defined as an instant response to particular stimuli but rather a mechanism that happens over time.

2) Perception encompasses a person's entire being, including memories and emotional states that they may have had in the past.

As previously stated, attitude and perception are closely related, and people often use the same word to refer to both. Indeed, "attitude is a psychological trait that is demonstrated by evaluating a specific person with some degree of disfavour," according to Eagly and Chaiken (2007). Attitude is described as a pre-formed opinion about the environment that consumers have already perceived. In fact, if we compare the description provided by different researchers about perception and attitude we can clearly see that perception is concerned with understanding the environment of the consumers, whilst attitude is about mindset and feelings towards the environment (Vallerand & Pelletier, 1992). Attitude adds something to perception and helps to explain consumers' behaviour. Attitude is the complementary component which leads to perception and it helps to explain consumer behaviour. In fact, when customers are worried about something this leads them to have a positive or negative perception that causes the positive or negative attitude about a brand, service or product. Behaviour plays a key role to identify to which extent a customer likes or dislikes something and it is closely related to consumer attitude as well. Additionally, several researchers agree that attitude is not able to exist without perception due to the fact that an opinion is linked to an extent of awareness about the topic. Therefore, both terms are very important to be considered in the upcoming paragraphs when discussing consumer attitude. The author will explain this concept more clearly in the next paragraph through the main theories about technology perception and adoption.

1.6. Technology adoption theories

Information Systems (IS) study has a plethora of hypotheses and models to investigate the factors that affect the adoption of new technologies. In this research the author reviewed the three different technology adoption models. Because of the novelty of this subject, as well as the growing interest in chatbot technology and the need for more details about its adoption, I looked into three theoretical frameworks which suggest components that ease technology acceptance. The main reason behind this holistic approach proposed at describing the psychological elements and other

components that lead users to adopt a specific technology. Therefore, this study uses the DOI, UGT and TAM theories as the main theoretical background to assess the chatbot adoption for e-commerce applications because of the ability to evaluate the factors behind the process of chatbot acceptance. In the final paragraph the author described the hypotheses formulation about the chatbot adoption of consumers.

1.6.1. Technology Acceptance Model (TAM)

The technology acceptance is depending on various elements such as comfort, needs, security and accessibility. One of the most well-known models used to evaluate the effectuality of innovation is the Technology Acceptance Model (TAM) (Al-Natour & Cenfetelli, 2011). The technology acceptance model (TAM) is a theory of information systems that describes how users adopt and use technology. One of the most influential models of technology acceptance is the Technology Acceptance Model (TAM; Davis Jr, 1986), which states that two primary factors influence an individual's intention to use new technology: perceived ease of use and perceived usefulness. An older adult who believes that digital games are too difficult to play or a waste of time will be less likely to embrace this technology, while an older adult who believes that digital games provide required mental stimulation and are simple to learn will be more likely to want to learn how to use them.

The emphasis on the future user's expectations is a key feature of this model. That is, while the developer of a technology product will believe it is useful and user-friendly, potential consumers will not embrace it unless they share those beliefs. (Davis Jr, 1986) suggested the TAM, including two key factors predicted to ease technology adoption (Figure 2). These are:

● Perceived usefulness (PU): consumer’s belief about the system would grow job performance. It was described as the “the extent to which an individual believes that using a specific system will improve his or her job performance” (Davis Jr, 1986, p. 320).This element is still used in new versions of the TAM as an effective mediator (Marangunić & Granić, 2015).

● Perceived ease-of-use (PEU): it’s defined as “The degree to which an individual believes that using a particular system will be painless” (Davis Jr, 1986, p. 320). In this case, using a chatbot should be simple to understand and require minimal effort (Candela, 2018)

Social control and cognitive instrumental processes were previously included as factors affecting users' intention to use technology in earlier iterations of this model (Venkatesh, Morris, Davis, & Davis, 2003). This concept back in times was completed with actual and deliberate use of the technology aspects that were similar together yet were found to play an important role in the consumers’ adoption (Ajzen & Cote, 2008)

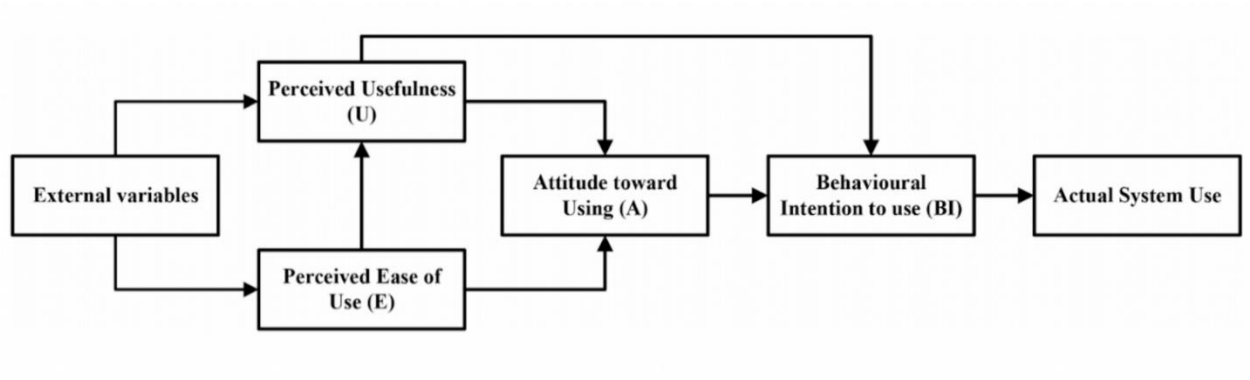

Figure 2. Technology Acceptance Model (TAM)
Source: (Davis Jr, 1986)

As seen in Figure 2, the model indicates that 'behavioural intention (BI)' fosters the intention and motivation to use the technology. 'attitude (A)' influences the intention which is the overall impression of the technology. Nevertheless, 'external variables', for instance cultural or social impact are crucial to determine attitude.

1.6.2. Diffusion of Innovations theory (DOI)

The diffusion of innovations theory (DOI) explains at which rate and how technologies are adopted and diffused by users. Rogers (2003) describes the innovation-diffusion process as "an uncertainty reduction process". It describes the passage of an idea through stages of acceptance by various actors by integrating previous sociological theories of behavioural change. Rogers believed that the implementation of innovations is a universal social change mechanism. It was first used in communications to describe how an idea or commodity gains traction and spreads (or diffuses, as the name implies) through a population or social structure over time.

Many determinants, according to this theory, affect the diffusion of an innovation. The diffusion of innovations theory describes how new technological and other advancements spread across societies and cultures, from their introduction to widespread acceptance. The diffusion of innovations theory attempts to understand how and why new ideas and methods are implemented

over time, with timelines theoretically spanning decades. There are a number of processes and criteria that make technology adoption easier. This literature focuses on the attributes of innovation (Rogers, 2003) to understand the mechanism and pace of chatbot adoption. The speed at which an innovation spreads is largely determined by the characteristics of the technology, as well as a good diffusion network that begins with word-of-mouth and continues with imitation, with the help of change agents and stakeholders. The characteristics of innovations, as suggested by Rogers (2003), help to reduce confusion (Sahin, 2006), and include the following points:

1.Relative advantage: This refers to what extent the innovation is productive, successful, and effective in comparison to current practices (Sahin, 2006).

2.Compatibility: the extent to which an innovation is considered to be in line with potential adopters' existing needs, values and past experiences.

3.Complexity: the range to which an innovation is perceived as hard to comprehend and practice.

4.Trialability: the level to which an innovation might be experimented with on a limited source. The more an innovation is tried, the faster its adoption is (Sahin, 2006).

5.Observability: It’s dynamic and covers areas such as productivity, profitability and performance. For marketers, understanding the characteristics of each point that will either help or hinder the adoption of an innovation is important.

Even though mobile phones were available in the market during the last years of the 90’, the cost was significantly higher. Understanding how people embrace and use cell phones helps to explain Roger's principle of diffusion of innovation. It wasn't something that came with five killer apps when it was first launched, as it is now, but it was simply a portable landline.

According to Rogers, decisions are made in three forms in a social setting. He proposed three options based on people's willingness to make their own choices and adopt them willingly. The three options are authority, optional and collective. These are the main ways to manage the innovation in terms of the adoption of the new technology according to this theory.

The aim of this theory is not to transfer people from one of the five adopter groups to another, but to streamline innovation to meet the needs of all five. To conclude, Rogers (2003) proposed that innovations offering more relative benefit such as observability, trialability, compatibility and simplicity will be adopted more quickly than other innovations.

1.6.3. Uses and Gratification Theory (UGT)

There is a goal and motivation behind the adoption of every technology. Additionally, users’ intent plays a key role to adapt a new technology (Candela, 2018). “Uses and gratification theory” (UGT) backed by psychology and describes the reasons people intentionally use particular media to meet

specific needs and how they are doing it in order to achieve gratification. This theory has a user-centred approach. The uses and gratifications theory (UGT) is a way of looking at why and how people deliberately search out relevant media to meet their needs. UGT is a method of studying mass communication that focuses on the viewer. This theory supports a positivistic approach about the consumer's perception and attitude towards a new technology. The aim of UGT is to explain why consumers use a certain media to meet particular needs. With respect to this theory the decision about using a specific media depends on the experienced and expected gratification that it will provide. For instance, according to the findings of one study about chatbots within the e-commerce domain explains that people use chatbots because they are gratified with better online experience and having fast answers to their questions. The consumer is goal-oriented in his or her choice of the media based on the gratifications and needs that she or he wants to get. Indeed, in the dynamic media environment where consumers have different options to achieve their desires such as, applications web pages and chatbots the UGT assumes that the consumers opt for the channel that best suits the aim (Luo & Remus, 2014).For instance, chatbots applications, could be social interaction, entertainment and information.

Everette Rogers (2003) combined UGT and Diffusion of Innovations Theory (DOI) to identify different consumers who may have different needs and gratifications than the rest of the population. Rogers categorizes users into five classes (Rogers, 2003):

1. Innovators (2,5% of the population) are those users who want to be the first to try the innovation. They love to take risks. Consequently, innovators tend to be the first to learn how to use a new technology (Rogers, 2003).

2. Early adopters (13,5% of the population) 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. In other words, the leadership of early users in adopting innovation reduces confusion about the innovation during the diffusion process (Sahin, 2006).

3. Early majority (34% of the population) have a lack of leadership but they are in a good relationship with community members such as early adopters and innovators (Sahin, 2006) and this connection is a critical channel in the process of innovation-diffusion process. As a result, the early majority acquire a new technology before half of their peers do (Rogers, 2003).

4. Late majority (34% of the population) are the users who one-third of all social system participants wait until the majority of their peers adopt the innovation before them. Late majority don't have any interest in the new technology and usually they are very sceptical about it. However,

financial and social pressure pushes them to adopt the new 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). Therefore, the social network plays an important role in eliminating suspicion and convincing the late majority users to use new technology (Sahin, 2006).

5. In comparison to the other classes, the laggards (16% of the population) are the most sceptical about new technologies. This group is far away from being a leader in the system and they usually communicate with their partners. Laggards are in the last place in the technology adoption process as they don't have any knowledge about innovation (Sahin, 2006). Thus, these users like to make a decision based on past experience of other user categories and if the new technology is successfully adopted then it has surely a positive impact on their decision (Rogers, 2003).

The aim of DOI theory, is not to transfer people from one of the five adopter groups to another, but to streamline innovation to meet the needs of all five. Unlike other media consumption theories, UGT empowers the user to choose what media they consume, assuming that the consumer has a specific purpose and usage. This contradicts previous hypotheses such as the consumer culture hypothesis, which claims that people are powerless victims of multinational corporations' mass media, and the individual differences viewpoint, which claims that knowledge and self-esteem play a large role in an individual's media choice.

The ultimate aim of UGT is to define the primary drivers of technology adoption. Brandtzaeg and Følstad (2017) designed a research to identify the main drivers for chatbot use. In the following lines each motivation will be briefly described (Brandtzaeg & Følstad, 2017). According to 68% of participants productivity is the main motive for using chatbots. In connection to productivity the respondents highlighted factors such as ease of use, speed and convenience. The 20% of respondents declared that the reason behind adopting chatbots was entertainment. In fact, consumers perceive chatbots as entertaining and fun. These kinds of users are usually curious to explore chatbots and the limits or their abilities (Brandtzaeg & Følstad, 2017). Curiosity is also a factor included in the UGT that represents a motivation for consumers to use a technology. Curiosity and general interest are 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 adopters while other groups view trying novel technologies as risky.

To conclude the diffusion of innovation theory describes how quickly a new product or service is adopted by customers. As a result, the theory aids marketers in understanding how patterns develop and businesses in determining the probability of a new product's success or failure.

2. RESEARCH METHODOLOGY

2.1. Framework development and Hypotheses formulation

There is no single theory about chatbot adoption that has been formulated in all relevant literature available about chatbots and human interaction. For that reason, the author will combine the components of the theories already written in the all literature to create a framework from which the hypotheses will be formulated. According to the literature review UGT is combined with TAM and DOI theories. Focus of UGT is utilitarian and hedonic motives for technology usage whilst TAM focuses only on the utilitarian technology usage. Nevertheless, despite the differences, UGT and TAM perspectives are complementary. Moreover, regardless of the application TAM forecasts and describes a considerable variance in behavioural use and motives. Perceived ease and perceived usefulness, both are a powerful predictor of behavioural usage and activity. Moreover, this model includes that primarily perceived usefulness and secondarily perceived ease of use are good determinants for people's intentions to use technology. On the other hands, the comprehensive nature of the UGT helps to define the domestic features of electronic media and their business features (Luo & Remus, 2014). Consequently, the author integrated model of the UGT, DOI and TAM involves the main constructs that will play a main role to investigate consumer perception and attitude relationship and how this relationship affects to the adoption of a new technology. This integrated model that comprehends DOI, UGT and TAM provides different variables that aim to explain consumer's experience towards chatbots adoption. Table 1 below describes each construct such as perceive usefulness, perceived ease of use, attitude and motivation involved in model that integrates UGT, DOI and TAM and gives a definition in relation to chatbots. The author will use each of these constructs in the development of the hypotheses. The main goal is to investigate how perception of consumer influence to their attitude in terms of technology adoption. Also, the author considered these constructs that based on the main theories discussed above in the development of the framework as well. Furthermore, each definition is associated with a reference.

Table 1. Definition of each construct used to build figure 3.

Construct	Definition	Reference
Perceived usefulness (PU)	the extent to which an individual believes that using a specific system will improve his or her job performance	(Davis Jr, 1986)
Perceived ease-of-use (PEU)	The degree to which an individual believes that using a particular system will be painless	(Davis Jr, 1986)
Attitude (A)	a person's negative or positive feelings about interacting with a chatbot	(Davis Jr, 1986)
Motivation (M)	People's decisions to meet a need or desire are influenced by their general dispositions	(Papacharissi and Rubin 2000)

Source: (compiled by author)

Consequently, according to the discussions in the literature review a conceptual model can be developed in order to structure the study as well as to formulate and test the hypotheses (see Figure 3 below).

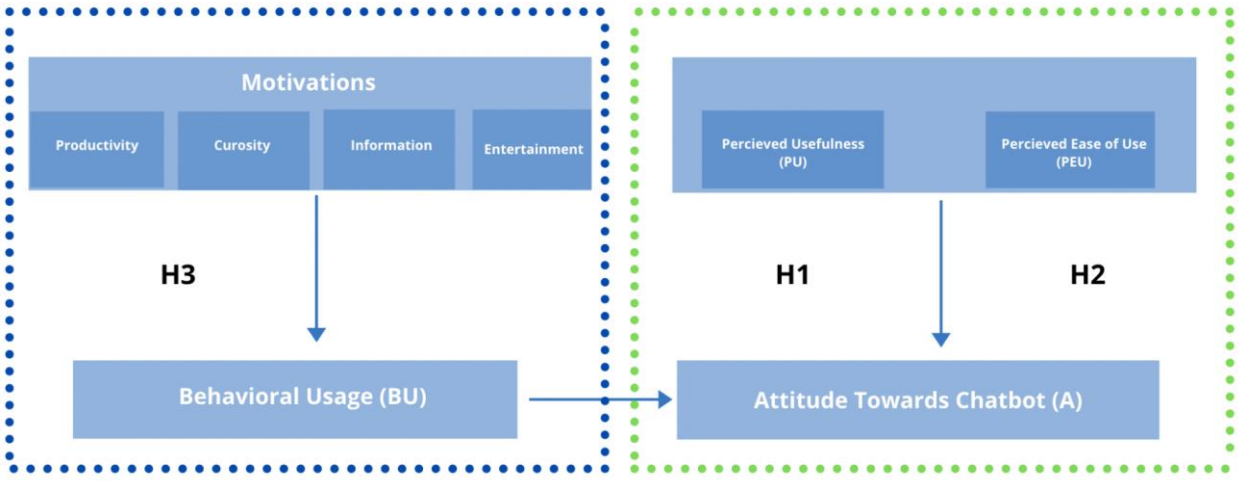

Figure 3. Conceptual framework
Source: (compiled by author)

The author's goal with this conceptual model is to look at the different stages in which customers are involved. First, factors which influence user's behaviours while using a chatbot will be investigated (see green dotted line in Figure 3 above). Second, the author will explore what are the motivations behind the consumers' attitude towards chatbots (see blue dotted line in Figure 3 above). The final objective of this study is to investigate the attitude of e-commerce consumers towards the adoption of chatbots and the motivations that form their behaviour while using this technology. Hypotheses were developed based on four constructs which were discussed in the above. Indeed, following hypotheses were stated in order to understand the connection between consumers' adoption and four factors:

H1 – There is a positive relationship between the consumers' behaviour and perceived usefulness towards chatbots. As a result, if perceived usefulness is positive then it will lead to a positive behaviour to the chatbot.

H2 – There is a positive relationship between consumers' behaviour and perceived ease of use towards the chatbots. As a result, if perceived ease of use is positive then it will lead to a positive behaviour to the chatbots.

H3 – In comparison to information, entertainment and interest, productivity is the first and greatest motivator for customers to use chatbots.

The first and second hypotheses examine how perception forms users' positive attitude towards the adoption of chatbots. Consequently, the author aims to investigate the two aspects of chatbot perception in e-commerce - ease of use and usefulness.

Although a positive attitude encourages the use of chatbots, it is still unclear what pushes people to use this technology. Indeed, the final hypothesis attempts to draw a picture of the current e-commerce chatbots industry in terms of behavioural use. Therefore, the aim is to find out what motivates e-commerce users to use chatbots. Findings based on the literature review showed that the most powerful and first reason why consumers are using chatbot is productivity. That is to say, there is a relation between this strongest willingness and convenience level of chatbot usage. In fact, the author aims to examine what are the main reasons that push consumers to use chatbots while doing online shopping. Based on the third hypothesis the author will find out what is the strongest motivation that causes chatbot usage in the e-commerce industry.

2.2. Philosophy of Research

Consumers' attitude and perception towards the chatbots is the key topic that this research aims to examine. The objective approach was chosen to analyze the topic and four paradigm dimensions such as epistemology, ontology, methodology and human nature were used. Author used an objectivist ontological approach for this specific study. In fact, the social reality is represented by e-commerce users and their perception towards chatbots is not subjectively influenced by the author (Bryman & Bell, 2015). Because the author is an external observer in this quantitative research, the positivism epistemological position was chosen as a reference to this study (Kuada, 2010). Subsequently, the author's reality on consumers' adoption towards chatbots can be described through the observation of causes and effects that could test the stated hypotheses (Bryman & Bell, 2015). Based on objective approach and because of the epistemological as well as human nature positions a nomothetic perspective has been used. This method encourages quantitative researches according to a systematic techniques and protocols like survey methods (Eduardsen, 2017).

2.3. Research methods and design

In the following paragraphs, the author will explain the research method and design used in this thesis as well as the data collection process. Moreover, in paragraph 2.3.3 the author describes how the research survey has been designed and the insights that it aims to provide.

2.3.1. Research design choice

Eduardsen (2017) defines cross-sectional design as the compilation of data on multiple cases with multiple variables in order to identify patterns of association. The author chose to adopt this research design because it aligns with the research objective. The author wants to look into the e-commerce chatbots market to see what factors affect user's adoption of chatbots, as well as their motivation to use them. Thus, this study makes use of a systematic data collection via questionnaires. Therefore, the main insight resulting from the questionnaire will be used to draw a conclusion.

2.3.2. Sampling and data collection

The research will be investigated with a quantitative method and due to a limited budget and time, the author chose to conduct this study using a sampling process (Eduardsen, 2017). The target audience consists of users who have used chatbots while doing an online shopping. Therefore, the only condition for survey participants is that respondents should be experienced with the chatbots in e-commerce. Indeed, the author aims to draw a holistic picture of e-commerce chatbot users in terms of adoption. In order to reduce the possibility of the errors in sampling the author chose the judgement sampling method (Eduardsen, 2017). The only condition was that the audience should be the chatbot users during their online shopping processes. Beside this condition, there were not any of the demographic indicators that the author has decided to use in the audience selection. Based on the judgement sampling method, the survey was delivered to the Facebook community groups which consisted of chatbot users' communities and who were interested in the chatbot usage in the e-commerce industry. Indeed, only people who were the members of those groups could fill the questionnaire.

2.3.3. Survey instrument design

All of the questions presented in the questionnaire are based on theories discussed in the literature review to ensure the survey is trustworthy. As previously mentioned, the author investigates a quantitative study in which people were asked to complete a questionnaire with eight separate questions designed to cover all aspects of consumers' attitudes and adoption toward chatbots as well as factors that influence perception such as perceived usefulness and perceived ease of use. It requires only 5–10 mins to complete the questionnaire and the author believes that creating a short survey will increase the number of responses. The respondents could at any point leave the questionnaire, without expressing their reason to do so. The information about the study was presented, clearly telling the respondents what was demanded. The collected data was not containing health sensitive information, and it was not assumed any reasonably negative effect by participating in the study. No personal data was collected, apart from the gathering of the responses. The author is constantly aware of ethical issues and their impact on this research. This includes a continuing ethics assessment and having ethics principles in mind when designing, executing and finalizing this research.

Because of the quantitative aspect of the study and to easily quantify and handle the data, the majority of the survey questions are multiple choice. The questionnaire also includes some demographic questions, which enabled the author to recognize different demographic segments

and compare and contrast them. The question 6 contains the reasons such as productivity, information, curiosity and entertainment which users might think about when they are in the decision-making process to use a chatbot or not. This question was designed based on the Uses and Gratification Theory to investigate the strongest motivation behind the adoption of chatbot technology, specifically in the e-commerce industry. The author by saying curiosity means the interest that pushes users to try to use a chatbot just to see what is a chatbot and how it is working. The main aim behind that curiosity is to try a new tool without any specific reason such as saving time, getting recommendation or entertaining (Brandtzaeg & Følstad, 2017). The question 7 and 8are designed based on a Likert scale to find out how perception influences consumers' acceptance of chatbots. The responses of the Likert scale questions will be converted to numerical scale, where "1" refers to "strongly disagree" and 5 refers to "strongly agree". The purposes of these questions to evaluate the relationship between consumer attitude and perception towards the chatbots.

Moreover, the hypotheses were developed using peer-reviewed articles from the literature review. This method was chosen because of the aim of the author to make the survey credible. In fact, the questions contained in this survey have been designed in a way that data can be combined to get the most relevant answers to prove or disprove the stated hypotheses.

3. RESULTS

In this chapter, analysis of the data and research outcomes is introduced by the author. The author analysed the data which was collected by an online survey questionnaire with a quantitative method. The results derived from this analysis will be presented at the end of the chapter.

3.1. Respondents' profile

Online survey questionnaire was published in the Facebook groups which were related to the chatbot community in the e-commerce industry. The survey was delivered using google forms. The author got 142 questionnaires filled in total. As 32 respondents answered to the fourth question that they have never used chatbot during the online shopping process thus, the author excluded those respondents and used 110 final samples in the data analysis process to test the hypothesis. Questions were designed to cover all aspects of consumer's adoption and attitude towards chatbots as well as factors that influence perception such as perceived usefulness and perceived ease of use. Profiles of the respondents can be displayed based on the data collected from the questionnaire that overall, 52.1% were females while 47.9% are males. Moreover, as this topic is related to the new technology usage, the majority of the respondents (74,3%) consisted of the young generation whose age is between 18–29 and educational background is mostly in master's degree (48,6%). Second place among the educational background of the respondents is the bachelor's degree with 36,4%. Regarding the frequency of the chatbot usage, 62,1% of the respondents use chatbot often, while 0,7% of the respondents use it rarely. Author specifically wants to mention that this research is not based on investigating the relationship between the adoption and attitude of the users based on different nationalities. So that the author did not deliver the survey specifically for particular nationalities but in the international community of people. Also, a question regarding the respondent's country or nationality was not among the survey questionnaire.

In the 6th question four different reasons were presented to learn what the main reason is to use the chatbot while doing an online shopping. Based on the collected data, 69 respondents use the chatbots for productivity – because they consider it as a quick problem solver and very responsive. Following reason, with the 18 is a curiosity that pushes the consumer to use the chatbot – just to

see how it works. To the author's surprise, only 16 of the consumers use chatbots because they are providing personalized information.

The author took question 8 which was divided into five different statements and question 7 to evaluate the factors such as consumer's attitude towards chatbots, perceived ease of use and perceived usefulness. The statements in the question 8 were aimed to measure the chatbot perception of consumers and designed as follows:

- First three statements evaluated perception of chatbot usefulness
- Following two statements evaluated perception of the chatbot's usage

These questions have been designed using a Likert scale and during the data analysis they have been converted into numerical scale. The reason behind the numerical conversation of the answers is that the author wants to measure consumers' perception and adoption of e-commerce chatbots. Based on this scale the author took the average of the statement answers by calculating in this way: If the respondent answered to the first statement with the "4", for the second statement "5" and for the third statement "3", then the average is (4+3+5)/3=4. The author considered that if the average is above the 3, it means that respondents consider the chatbot technology as useful. If it's below the 3, it means that the consumer does not perceive the chatbot technology as a useful tool. And finally, if the result was equal to 3 it means that the consumer's approach is neutral (Agresti & Finlay, 1997). And finally, if the result was equal to 3 it means that the consumer's approach is neutral. Results showed that based on a calculation of the arithmetic mean of the consumer's perception of the chatbot, majority of the consumers accept chatbots as useful (76) and easy (83) while only few 21 and 8 people do not perceive chatbots as being useful and easy, accordingly. Also, some of the users do not have any idea how they consider chatbots as their opinion is neutral in terms of usefulness (12) and being easy (19). Moreover, according to the calculation of the arithmetic mean of consumers' attitude towards chatbots 83 of the respondents have a positive attitude towards the chatbots while only 11 out of 110 users have a negative behaviour towards the chatbots.

This method allowed the author to determine each respondent's level of perception in terms of perceived ease of use and usefulness. As a consequence, the author could obtain a comprehensive profile about consumers' behaviour and perception of chatbots as well as their motivation to adopt this technology.

In order to assess the reliability of the variables that were used in hypotheses the author used Cronbach's alpha in Excel tool (see Appendix 2, Table 2). α coefficient of reliability ranges from 0 to 1 in providing this overall assessment of a measure's reliability. Hence, the author considered

that the higher the α coefficient, the more the items have shared covariance and probably measure the same underlying concept (Taber, 2018).

In order to calculate α value the author used the number of items used in question 7 and 8, sum of the item variance, variance of the total score. Based on the calculation the author got α = 0.67 and according to Taber's (2018) research we can consider this value as reasonable which means that variables used in hypotheses are reliable.

3.2. Testing Hypothesis I and Hypothesis II

The author aimed to prove if there is a positive relationship between user behaviours towards the chatbots and their perception of chatbots regarding ease of use and usefulness. Following two different hypotheses will be verified:

H1 – There is a positive relationship between the consumers' behaviour and perceived usefulness towards chatbots. As a result, if perceived usefulness is positive then it will lead to a positive behaviour to the chatbot.

H2 – There is a positive relationship between consumers' behaviour and perceived ease of use towards the chatbots. As a result, if perceived ease of use is positive then it will lead to a positive behaviour to the chatbots.

To examine the Hypothesis 1 and Hypothesis 2 the author used Pearson correlation coefficient and Significance test in Excel tool (see Appendix 2, Table 1). First, the author took question 7 and 8 to calculate the arithmetic means for each of them. While calculating the averages for question 8, it was divided into two sections where the first three questions were based on perceived usefulness and the last two based on perceived ease of use. In order to demonstrate the positive relationship between the perception and attitude first, Pearson correlation coefficient analysis was done. According to Pearson's coefficient value of the (r) ranges between -1 and +1, which -1 constitute a total negative linear correlation whilst 1 represents a total positive linear correlation. If the value (r) is 0 it means that there is no relationship between the variables. The author got the r value for Hypothesis 1 as 0.36 which indicates that the relationship between perceived usefulness and attitude towards chatbots positively correlated. Therefore, this verifies that if there is a positive perception of chatbot usefulness then there is a positive attitude towards them. Accordingly, the first hypothesis is proved by this result.

The same calculation was done for Hypothesis 2 and the author got the r value as 0.37 which indicates a positive linear correlation between the perception of ease of use and behaviour towards

the chatbots. So, if consumers accept chatbots to be easy it will lead to the positive behaviour towards them.

The correlation coefficient, r, showed us about the direction and strength of the linear relationship between attitude and perception of the e-commerce chatbot users. However, the author should conduct a "significance of the correlation coefficient" hypothesis test to determine if the linear relationship in the sample data is robust enough to be used to model the relationship in the population. The symbol for the population correlation coefficient is ρ. The author calculated the ρ value for Hypothesis 1 as $p<.001$ and for Hypothesis 2 as $p<.001$ by using coefficient r, number of pairs, t statistics and df. As a consequence, if a p-value less than 0.05 (typically ≤ 0.05) it means statistically significant. In this case the author can conclude that as the results for both Hypotheses are less than $p<0.05$ there is a significant linear relationship between perceived usefulness and attitude as well as perceived ease of use and attitude.

Based on the analysis, it's possible to conclude that:

Pearson's coefficient (r) of 0,36 indicates that consumers' attitude and perceptions in terms of usefulness are positively correlated. As a result, users who consider chatbots as useful to use have a positive attitude toward this technology.

Pearson's coefficient (r) of 0,37 indicates that consumers' attitude and perceptions in terms of ease of use are positively correlated. As a result, users who consider chatbots to be simple to use have a positive attitude toward this technology.

As a consequence, the author based on this analysis proved the first and second hypotheses.

3.3. Results of the testing of the Hypothesis I and Hypothesis II

The author could successfully prove the first and second hypothesis stated below accordingly:

H1 – There is a positive relationship between the consumers' behaviour and perceived usefulness towards chatbots. As a result, if perceived usefulness is positive then it will lead to a positive behaviour to the chatbot.

Result of the H1 – as the $r=0,36$ and $p<0.01$ it was proved that users have a positive attitude towards the chatbots if they perceived them as a useful tool. Also, there is a significant relationship between perception of usefulness and attitude towards chatbots.

H2 – There is a positive relationship between consumers' behaviour and perceived ease of use towards the chatbots. As a result, if perceived ease of use is positive then it will lead to a positive behaviour to the chatbots.

Result of the H2 – as the r=0,37 and p<0.01 it was proved that users' approach to the chatbots is positive if they perceived them as easy to use. Additionally, there is a significant relationship between perceived ease of use and behaviour towards the chatbots.

The author created a graph to draw a holistic picture of the ecommerce chatbot users to show the distribution of the users in terms of attitude and perception towards chatbots (see Figure 4). To calculate the distribution the author took the arithmetic mean of the question 7 and 8. If the mean was above 3 the result was considered as a positive approach and perception towards the chatbots. If the result was equal or below the 3 it was considered as neutral and negative approach and perception, accordingly. Finally, the author used unit of measurement as a percentage.

Thus, the author designed a graph with people that had a positive overall perception and attitude (see Figure 4).

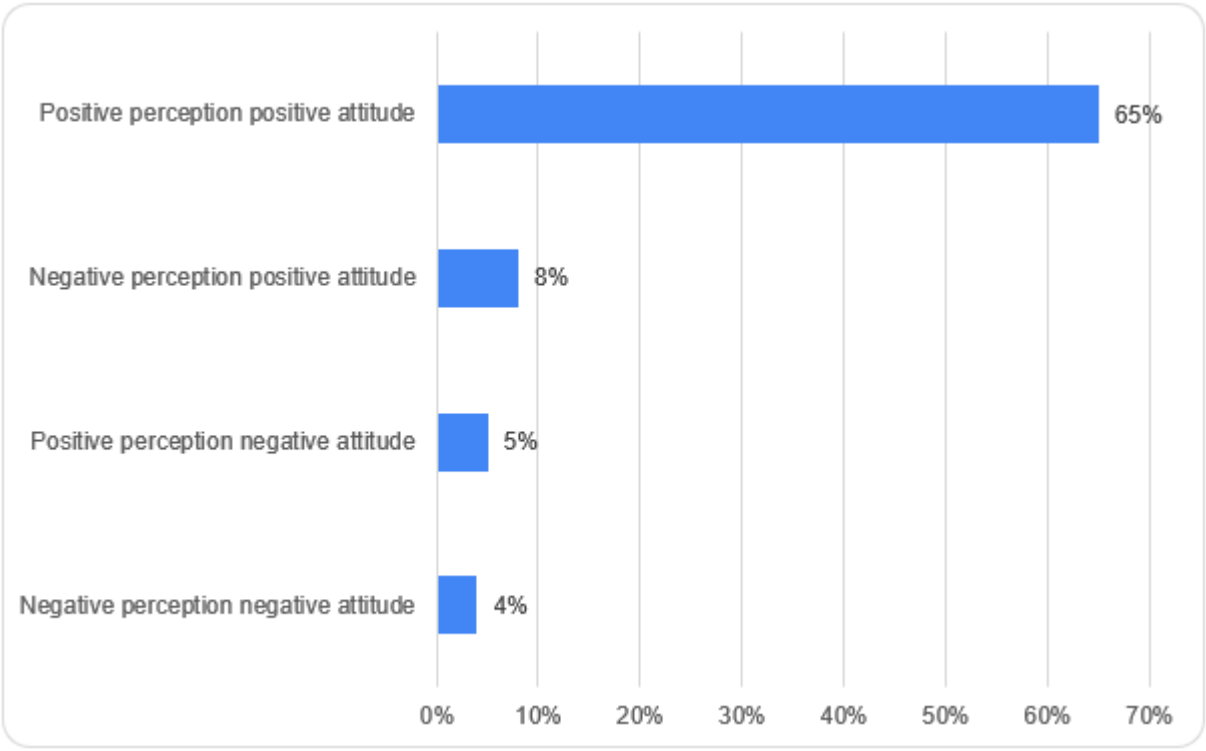

Figure 4. Consumer's with a positive perception tend to have a positive attitude towards chatbots, n = 110
Source: (compiled by author)

According to the graph there are 65% of the users whose perception and attitude are positive about the chatbots technology. To the author's surprise there are people (5%) who perceive chatbots as a positive tool but still approach them negatively. As a result, it can be proven that positive perception of the consumers leads to a positive attitude towards chatbots.

3.4. Testing and result of Hypothesis III

The author examined the third hypothesis in order to find out what is the strongest determinant that pushes consumers to use chatbots. The third hypothesis is as follows:

H3 – In comparison to information, entertainment and interest, productivity is the first and greatest motivator for customers to use chatbots.

As question 6 was designed to get the what are the key drivers of the users in terms of chatbot usage the author took the number of responses given to different statements such as getting the personalized information, for entertainment, for curiosity and for productivity to rank them. Highest graded answer will determine what is the strongest incentive for consumers to use a chatbot. The results are in the following graph below which were shown with a nominal scale (Figure 5).

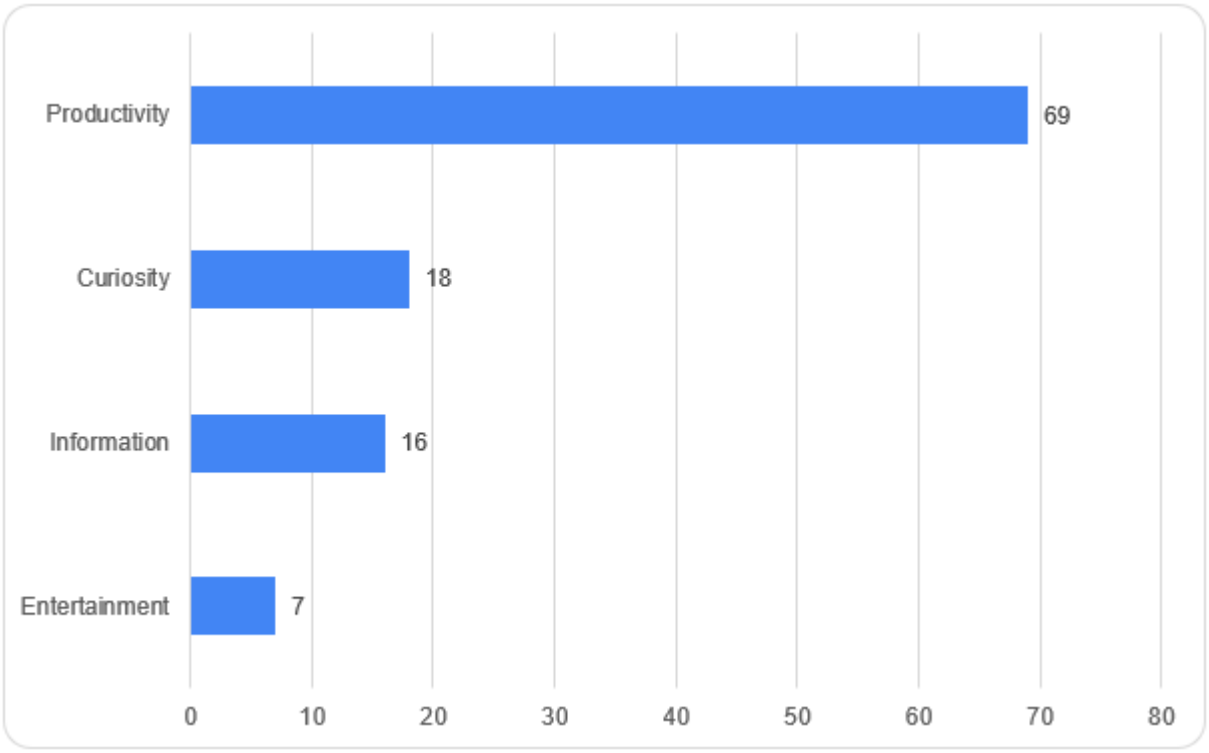

Figure 5. Reasons that push consumers to use chatbots, n=110
Source: (compiled by author)

According to the graph majority (69) of the chatbot users in the e-commerce industry think that chatbot is very useful in terms of productivity so that this motivates them to use it when they need help regarding their product research. Following, in the second place, people who are using chatbots just for curiosity, which means that these users engage with chatbots because they're

curious about what they're for and how they function. To the author's surprise but information reason ranked in the third place and just 16 users out of 110 are using chatbots as an information source about the product or service they are going to buy or use. It's true that there are user types who see the chatbot as an entertainment tool and this reason is the least (7) chosen motivation source to use a chatbot. Lastly, it can be seen from the graph that users who are using chatbots for information almost in the same size with the users who use chatbots just for curiosity (18).
To conclude, as the strongest driver is productivity that pushes consumers to use chatbots it is possible to say that the third hypothesis has been proved as well.

3.5. Summary of the findings

The author will outline the findings of the proven hypotheses in this chapter to better understand the results of this research.
In order to prove the first and second hypotheses the author used Pearson correlation coefficient, significance of the correlation coefficient and Cronbach's alpha to test the relationship between user behaviour and perception about chatbots. The results of the Hypothesis 1 and Hypothesis 2 can be summarized as below:
According to the H1 there is a positive relationship between the consumers' behaviour and perceived usefulness towards chatbots. As (r) is 0,36 and $p<0.01$ it is proven that if perceived usefulness is positive then it will lead to a positive behaviour to the chatbot.
According to the H2 there is a positive relationship between consumers' behaviour and perceived ease of use towards the chatbots. As (r) is 0,37 and $p<0.01$ it is proven that if perceived ease of use is positive then it will lead to a positive behaviour to the chatbots.
After proving the first and second Hypotheses, the author could investigate the relationship between positive perception and positive attitude with the following results:
Consumers who have a positive perception of chatbots are more likely to be positive about this technology. Indeed, 65% of those who had a positive perception of chatbots also had a positive attitude towards them. Moreover, a significant positive relationship between perception and attitude is also proved by Pearson's correlation coefficient.
With the third hypothesis, the author wanted to prove that productivity is the strongest motivation that pushes consumers to use chatbots. To do that the author analysed the answers provided by question 6. The results prove the third hypothesis as:

• 69 respondents stated that productivity was the strongest motivation that pushed them to use a chatbot followed by curiosity (18), information (16) and entertainment (7).

That is, from the results of this research it is possible to conclude that all hypotheses are proved. It can be said that the findings based on three hypotheses support the conceptual framework indicated in Figure 3 as it was proved there is a positive relationship between consumer's perception and attitude towards chatbots as well as the productivity is the main reason why consumers use chatbots. The framework attempted to draw a picture of the current e-commerce chatbots industry in terms of behavioural use and as the hypotheses based on this framework were examined the author could investigate outcomes shown in this study can be considered as successfully achieved. These results will be used to suggest a future research about consumers' perception and attitude towards artificial intelligence.

Consumer perception plays a major role to determine their acceptance behaviour towards the technology. According to the Technology Acceptance Model there are two major factors that have an impact on consumers' objective to use a new technology: perception of usefulness and being easy (Davis Jr, 1986). This conclusion is in line with the Technology Acceptance Model (Davis Jr, 1986) as findings showed that there is a significant and positive relationship between consumers perceived usefulness, ease of use and attitude. However, this model includes that primarily perceived usefulness and secondarily perceived ease of use are good determinants for people's intentions to use technology which is not aligning with the current investigating research. According to the findings of this research, the correlation between perceived ease of use (0.37) and behaviour is stronger than perceived usefulness (0.36). In spite of the little difference in these numbers it was unexpected to the author to see a vice versa result. Moreover, according to the research investigated by Vijayasarathy (2004) perceived ease of use has no significant effect on attitude which is unlikely with the result of this study. So in this case, it is possible to say that the current investigated research added a new layer to the literature that there is a significant relationship between perceived ease of use and attitude as well as it is not the secondarily but primarily determinant.

CONCLUSION

The research was designed to investigate users' perception towards the chatbots and the reasons that push them to use it. Results showed that positive perception of chatbot technology leads to a positive behaviour to the chatbot. Considering this result, the author can state that factors such as perceived ease of use, perceived usefulness influence the consumer's behaviour as well as adoption process in terms of chatbot usage in the e-commerce industry. The relationship between the perception and attitude towards the chatbots was tested based on second and first hypotheses, hence the findings proved that there is a positive relationship between the variables.

Moreover, although a positive perception encourages users to behave positively with chatbots, it was still unknown what motivates people to use this technology. Therefore, the author created the second hypothesis in order to investigate the reasons behind a chatbot usage while doing an online shopping. Findings showed that most of the consumers use a chatbot while doing online shopping due to the need to do productive shopping. In the second hypothesis productivity was stated as the strongest motivation to use chatbots hence it was successfully proven based on the respondent's answers.

All in all, the data analysis confirmed the both hypotheses proving that there is a positive relationship between consumers' behaviour and perception towards chatbots and productivity is the main determinant that pushes consumers to adopt a chatbot technology.

In the literature review main theories concerning the adoption of modern technologies focusing on chatbots such as Technology Acceptance Model, Diffusion of Innovations and Uses and Gratification theories were discussed and the author built two different research questions that guided the writing of the all thesis. In order to make a clear and distinct view of the results of the study, the following answers to the research questions are considered to be the final part of the thesis:

RQ 1: What is the consumer perception towards the adoption of chatbots in the e-commerce industry and how is it influencing the consumer's behaviour?

Findings: 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. In order to answer the first research query, the author reviewed the recent papers, books which provided consumer's perception and behaviour, technology adoption as well as definition of chatbot, artificial intelligence. Thus, according to the literature review it was found that consumer's perception about chatbots being easy and useful is one of the main factors that influence their behaviour. So that most of the questions of the research questionnaire were designed

to get the user's perception and practice with the chatbots in the e-commerce industry. Moreover, the author created two different hypotheses to test based on these answers if there is a relationship between:

- perception of usefulness and behaviour
- perceived ease of use and behaviour

Findings showed that these factors have an impact on the user's attitude towards the chatbots hence, if consumers have a positive perception in terms of the benefits and simplicity of the chatbot usage then they are willing to use chatbots as well as their approach to the chatbots are positive.

RQ 2: Which parameters play an active role in the decision of the consumer to use the chatbot?

The purpose of this question was to get more data about chatbots practice while doing an online shopping. Therefore, the ultimate goal was to find out what motivates e-commerce users to use chatbots. Findings based on the literature review showed that the most powerful and first reason why consumers are using chatbot is productivity. The other determinants ranked after productivity were information, entertainment and curiosity. As a result, four parameters play an active role in the decision of the consumer to use the chatbots such as information, entertainment, curiosity and productivity so that the author examined if there is a relationship between this strongest motivation and convenience level of chatbot usage based on the answers of the survey as the questions were related to getting the data about key drivers to use chatbot. The study revealed that in comparison with the other reasons consumers mostly use chatbots when they want to be productive in their online shopping process. To conclude, in fact, consumer's ranked productivity in the first place as the strongest reason to use chatbots while doing an online shopping.

After reviewing previous studies on all topics relevant to the study at hand, it was discovered that, while there has been a significant effort in the past literature to understand the effect of conversational agents on company results and consumer attitudes, the majority of the reviewed literature was limited to the avatars (embodied type).

Similarly, when the author focused on chatbots (disembodied context) it was shown that mainly comparisons between human-human and human-agent interaction as well as customer satisfaction were investigated. There was a gap in the current literature to validate the relationship between chatbot technology perception attributes and user experience in the e-commerce industry. Reviews come to such a conclusion that also, even though similar studies, reports and analysis previously were done, they were no studies, where most of the questions of the paper gathering together analysed along with the designed way of the survey being implemented to investigate the user's interaction towards a chatbot but to examine the technology usage of the consumer that shops

online. Therefore, the author thinks that the findings revealed, and conclusions drawn might have some impact on future in depth analysis or research in similar topics.

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 in a negative light and this could damage their adoption (Brown & Dacin, 1997). So that companies always pay attention to create a positive perception of their brands 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. That is, while the developer of a technology product will believe it is useful and user-friendly, potential consumers will not embrace it unless they share those beliefs. Hence, it's very crucial for companies to design a chatbot considering consumer perception about usefulness and being easy. In other words, it should be simple to use and relevant to the customer's needs in order to be adopted positively. This research can shed a light from a customer perspective to the companies, developers or product designers while starting to create a successful chatbot.

Despite the useful results and observations mentioned above, time and money are limited since this study is part of a master thesis. As a consequence, when evaluating findings and assumptions, certain limitations should be considered. For example, the survey questionnaire's lack of a control group prevented a meaningful assessment of the actual chatbot technology's impact on the consumer experience, as expected at the outset. This should be taken into account in future studies to reduce the influence of all variables except the independent variable.

Second, this research focuses on the consumers who used chatbots before and in the future it will be possible to make research that focuses on the people that know what a chatbot is but never used it before to get deeper insights about the reason why they did not adopt this technology. Moreover, due to the time and money limitations it was not possible to fully explore all the issues related to this topic. It will also be possible to look at how other motivations that push consumers to use chatbot technology in e-commerce beyond the ones that have already been mentioned in this research. Additionally, this research covered representatives from all countries, and it would be very interesting to investigate country specific customer expectations from chatbots as there are too many variables that influence the adoption of technology from the cultural perspective. It could be narrowed to either a specific country or geographical area to find out the user perception and

attitude towards this technology. Lastly, other methods for gathering data and conducting data analysis, such as interviews, may also be tried. As a result, the author may have targeted a specific demographic, such as Millennials, in order to learn more about their perspectives on chatbots and how they use them. For example, using this method of study, marketers who are already using chatbots in their marketing and communication campaigns can be interviewed to learn more about how brands can benefit from them.

In general, chatbot technology is a new field of study, and further research is needed to address some of the limitations listed.

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APPENDICES

Appendix 1. Questionnaire

Question 1	**What is your gender?**	
	Male	47%
	Female	52%
	Prefer not to say	1%

Question 2	**How old are you?**	
	18–29	75%
	30–49	25%
	50–64	1%

Question 3	**What is your highest level of education?**	
	Master's degree	48%
	High school graduate	9%
	Bachelor's degree	37%
	Doctorate	6%
	Other	1%

Question 4	**Have you ever used chatbot during the online shopping process?**	
	Yes	77%
	No	23%

Question 5	**How often do you use chatbots in order to purchase products?**	
	Sometimes	31%
	Often	60%
	Rarely	8%
	Always	1%

Question 6	**Which is the main reason for using chatbots?**	
	Curiosity – Just to see how it works	23%
	Provide personalized information	15%
	Productivity – Resolve a problem fast as chatbot provides a quick answer	55%
	Entertainment – To entertain myself based on the funny answers provided	7%

Question 7	**Based on your current experience with chatbots how much you agree or disagree with the following statements?**	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	Using a messenger chatbot seems fun	4%	13%	42%	36%	5%
	Using a messenger chatbot seems a good idea	1%	8%	23%	59%	9%
	Using a messenger chatbot is something to consider for the future	1%	15%	19%	44%	20%

Question 8	**How much do you agree or disagree with the following statements?**	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	Using chatbots helps me to book something (taxi, hotel etc.)	8%	20%	27%	37%	7%
	Using chatbots helps me to shop and track a product	6%	17%	20%	47%	10%
	Using chatbots helps me to be engaged with the customer service	6%	15%	21%	41%	16%
	Learning how to use chatbots is easy	1%	4%	18%	45%	33%
	Finding what I exactly want while using a chatbot is easy	6%	20%	30%	37%	7%

Appendix 2. Results of Hypothesis testing

Table 1. Hypothesis testing based on Pearson correlation coefficient and significance test.

Description	Attitude and Perceived Usefulness	Attitude and Perceived ease of use
Coefficient *r*	0.364169511	0.370141807
Number of pairs	110	110
T statistic	4.06359687	4.140720039
DF	108	108
P value	0.000045959	0.000034450

Source: (by author)

Table 2. Cronbach's alpha test.

Description	Values
Number of questions	8
Sum of the item variance	6.694710744
Variance of the total score	16.0614876
Cronbach's alpha	0.666494169

Source: (by author)

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