Master Thesis Exposé

The Customer Intention to use Chatbots In the European E-Commerce Implementation of MOA Framework

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Abstract

Title: The Customer Intention to use Chatbots in the European e-Commerce

Keywords: chatbot, conversational shopping, virtual assistance, MOA Framework, technology usage, intention to transact, e-commerce.

Introduction: Together with the increasing implementation of messaging services, there is a growth of conversational and communication formats. Moreover, both companies and customers are living a new digital era, where artificial intelligent is overcoming human resources to the extent of replacing it with virtual agents (van Bruggen et al., 2010). Focusing on online shopping and e-commerce, according to Eurostat, online shopping is increasing more and more every year and service agent roles are changing. Chatbot, introduced in 1966, is a conversational tool that interacts with customers through an artificial chat with a non-human agent and helps the customer in the navigation of the e-commerce and in finalizing the purchase. Chatbot is an example of a virtual conversational service robot that can provide human– computer interaction.

Purpose: The aim of this thesis is to understand the consumer intent to use this conversational tool during his/her online shopping experience and what are the main factors that influence the decision of usage.

Methodology: In order to understand the consumers' reaction to the chatbot and, especially, which are the main factors that might influence the decision to adopt the conversational tool while shopping online, the research implemented a quantitative method and will ask to the respondents to submit an online questionnaire. The target groups of the study will be the Millennials and the Centennial, due to their familiarity with technology and innovations.

Value: The study contributes to the body of research about the consumers' usage of an HCI tool, focusing on the implementation of the chatbot as a virtual assistant during the shopping online. Furthermore, the study intends to present to the companies that are using chatbots on their e-commerce an overview of the behavior of the consumers in relation with the chatbot and its features.

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List of Abbreviation

AI: artificial intelligence

CU: chatbot usage

HCI: human-computer interaction

IT: intention to transact

FSO: Fear of Seller Opportunism

MOA: motivation opportunity ability

PE: perceived expertise

PI: perceived interactivity

PIA: Perceived information asymmetry

TC: trust in a chatbot

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1. Introduction

This paper is organized into 7 sections. Starting with the introduction, a brief overview of the background of the study will help the reader in the general understanding of the scenario, following with the problem statement of the study and its purpose and concluding with the value of the research. The second section will present the theoretical foundation of the thesis, with the different definitions needed for the description of the topic and a brief introduction to the Motivational Opportunity and Ability (MOA) Framework. Successively, the model will be explained more in detailed and the hypotheses of the model will be claimed. After that, the paper will show the literature review used as a base for the purpose of the research questions of the study, that will be listed in the following section. The sixth section will then highlight the methodology implemented for the research. Finally, contributions and limitations will be discussed.

1.1 Background

Over the last decade, companies and consumers have been living in a new digital era. The digitalization is characterized by the growth of internet and of the technological devices, that have boosted the electronic commerce (van Eeuwen, 2017).

Together with the evolution of Human-Computer Interaction, messaging services such as WhatsApp, Facebook, WeChat or Line have been widely distributed and have influenced the development of conversational toolkits (Baier et al., 2018). If at the beginning the conversational interface was mainly aiming to entertainment, it later served different roles, including the customer experience on an e-commerce website. Indeed, conversational commerce became a marketing trend in 2014, when it was for the first time mentioned by Dan Miller (Baier et al., 2018). Later on, the term has been developed and clarified by several researchers on specific blogs and forums addressed to the topic: deliver of convenience, personalization and decision support (Messina, 2015), an interface for messaging and shopping (Shopify, 2016) and finally, the application of artificial intelligence for the development of messenger chatbots for driving sales and customer support (Van Eeuwen, 2017). This last definition is particularly relevant for the study because it explores the effect of the use of conversational interface for commercial purposes and it refers exactly to chatbots, as the main user interface that has been applied.

The chatbot has been introduced in the 1960s (Atwell & Shawar, 2007) and can be described as a conversational user interface, text or voice-based, that recreates the human language (Griol et al., 2013). It can use messages, links or call-to-action buttons to support the consumer purchasing experience and guide the user in the sale, order and deliver process.

As resulted in recent studies (Abbasi & Kazi, 2014; Cui, et al., 2017; Luo, Tong, Fang, & Qu, 2019) on the topic, the presence of conversational agents in websites is more cost-effective than human support (Lester, Branting & Mott, 2004). Moreover, an online seller-consumer interaction is being preferred not only for its effectiveness, as just states, but also because, as a matter of fact, the offline relationship between consumers and sellers has resulted to be inadequate and has led to a new purchase inclination of the customers (Jiang et al., 2010).

Looking at statistics, e-commerce supporting the online purchases have earned more and more popularity in the last years and it is expected to grow also in the future, resulting one of the most growing industries. According to European e-commerce foundation report, the market is forecasted to value 621 billion euros by the end of 2019, with an increasing of 3.6% from last year (E-commerce news, 2019). In the KPI Report 2019, Europe results to have a higher purchasing conversion rate (1,51%) than the US (1,37%). In order for a website to increase its conversion rate, it is important that it has some key features, like design characteristics and interactivity (Agarwal & Venkatesh, 2002). Therefore, playing interactivity a crucial role in the e-commerce websites, the thesis aims at providing e-tailers but also researchers and technology experts with a study of the consumers' intention to use an interactive tool, the chatbot.

1.2 Problem Statement

Artificial Intelligence (AI) technology and Human-Computer Interaction (HCI) advanced rapidly over the years and conversational tool like the chatbot became more sophisticated and natural (Chung et al., 2017). However, although the interest in chatbots is increasing, there is still a lack of research on the field (van Eeuwen, 2017). In particular, the studies that have been developed until know analyzed some specific applications of the chatbot: entertainment and language learning (Atwell & Shawar, 2007), education tool (Kerly et al., 2007), healthcare (Bickmore et al., 2013). The use of the chatbot in e-commerce has been studied as well, but mainly from a technical and design point of view, while the observation of the consumer behavior and the rational of consumer usage in relation with chatbot is still at an embryonic level (Sadeddin et al., 2007) and only little research has been done on user experience and

motivation to use a chatbot that provides customer service (Følstad & Skjuve, 2019). Finally, most of the researches has been done on the Chinese market (Kang et al., 2015; Li et al., 2008), but none on the European consumers. Therefore, it might be interesting to extend the study to the Western cultures, in order to observe if MOA factors and results would be different (Kang et al., 2015*)*.

1.3 Purpose of the study

According to Almansor & Hussain (2019), 80% of the companies forecasted to use chatbots by 2020. Following the previous section, the purpose of this thesis is to understand the consumer intent to adopt and use the chatbot during the online shopping experience and discover what are the main factors that influence this decision. Moreover, the study aims to analyze the linkage between the consumer's decision to use the chatbot and the finalization of the purchase through an online transaction via chatbot. Finally, the results will show which factors have a bigger impact on the consumers' decision, with an exploration of the role of trust in the use of a chatbot.

2. Theoretical Framework

The theoretical foundation of this study is based on MOA Framework, developed and widely spread in the context of new technology adoption and usage. Other theories will be used in order to support the domain and all the main concepts analyzed in the study will be described, by collecting the several definitions found in relevant papers.

2.1 MOA Framework

With the purpose of studying the consumer's intention to adopt the chatbot and the factors that mainly influence this decision while shopping online, the thesis will use the Motivation, Opportunity and Ability framework.

In 1991, the MOA model was developed by MacInnis et al., who studied the relationships between the three factors and stated that the willingness to adopt a specific behavior depends on the motivation, the opportunity and the ability that affect the individual. The three variables are, indeed, considered as the antecedents of behavior (Kettinger, Li, Davis, & Kettinger, 2017). The model was first developed to describe how a person would process a brand information from an advertisement according to his/her motivation, opportunity and ability.

Indeed, the adoption of an innovation, that in this context is the chatbot that assists the online purchase, is firstly affected by factors related to the benefits and values of the innovation (Bao, 2009).

Although the first area of use of the framework was brand information processing, the model has later been widely used in different research domain such as business decision-making, knowledge management, human resources management, sales strategy and technology adoption. However, there is still a big potential for further researches, such as E-commerce and consumer user behavior in general, in the analysis of the influence of motivation, ability and opportunity in the engagement of a particular behavior (Hughes, 2007). Therefore, the current study will apply the framework to this specific research. In addition, the decision to apply the MOA framework is also inspired by the belief that technological innovation is mainly science knowledge used for manufacturing or sales purposes (Capon & Glazer, 1987). Therefore, the market addresses important information for buyers through the e-commerce; thus, the purchase decision is strongly linked to information processing during the process of the adoption of a technology (Weiss & Heide, 1993).

The model claims that the individual's commitment to using the chatbot is affected by their motivation (i.e., willingness to adopt the technological tool), opportunity (i.e., environmental mechanisms that allow action), and ability (i.e., skills and knowledge related to the adoption of the chatbot), enabling them to engage specific shopping behavior

Table 1 shows some of the different domains where the MOA framework has been implemented, aiming to clarify the linkage between the model and the study.

Table 1: Research areas where MOA framework was used

Domain	Author(s), Title, Source	Key results
Information process form advertisement	MacInnis & Jaworski (1989). *Journal of Marketing*	Literature review on the Ability, Motivation and Opportunity framework to analyze the information processing from advertisement.

Brand Information processing from advertisement	MacInnis et al. (1991). *Journal of Marketing*	Level of information processed by an ad, i.e. the communication effectiveness, influenced by the motivation, ability and opportunity of the consumer. The author aimed to prove the validity of the model and claims that the MOA framework is valid in the analysis of the role of the three variables on the customer experience.
Human Resource Management	Garcia et al. (2016). *Intangible capital*	The employee's performance is determined by his/her ability and motivation and by the opportunity to participate given by the employer. The study provides a systematic review to demonstrate that the MOA model is valid. The results show that the model is effective. Moreover, it has been shown that without the variable Opportunity, Ability and Motivation might be meaningless.
Technological Innovation Resistance of Organizations	Bao, Y (2009). *Journal of Business & Industrial Marketing*	The information flow promotes the diffusion of innovation. Innovation resistance and innovation adoption are influenced by contrasting forces expressed by the MTA framework, derived by the MOA Framework
Electronic markets	Strader et al., (1999). *Journal of Electronic Market*	The study uses the MOA Framework in order to better identify the elements that determine the success or the failure of e-markets and to propose a less simplistic view of the consumers. Consumer's motivation, opportunity and ability positively impact the success of an e-market

Sales strategy	Inyang et al., (2019). *Journal of Strategic Marketing*	MOA model used to observe that the outcome control and behavior control are motivating elements in influencing salespeople in the adoption of sales strategies.
Online purchasing	Bigné et al. (2010). *Journal of Air Transport Management*	The results showed that MOA variables are good determinants on the consumer's intention.
Technology adoption	Kang et al., (2015). *Journal of Organizational Computing and Electronic Commerce*	Motivation, ability and opportunity positively affects the usage of Live Chat. Moreover, the usage of Live Chat has also a positive influence on the online transactions.

2.2 Human-Computer Interaction

HCI is a quite widespread topic that has been studied and researched over the years (Nardi, 1995). HCI surfaced in the late 1970s with the advent of personal computing and it investigates computer technology design and use, focusing on interfaces between individuals (users) and computers. HCI is defined as the study of how individuals use complex technological tools that are nowadays permeating their life. Another important focus is how these tools can be designed to make the use easier for the consumer (May, 2001). The communication happens through an interface that can be described as the interaction between the user and the machine and it can be designed in different ways. In May's study, HCI's definition is expanded in new social and organizational areas, like psychology, anthropology and ethnomethodology and the HCI's system is described as composed by social aspects of attitudes, beliefs and experiences.

2.3 Conversational Commerce

Conversational commerce is nowadays a trending topic in digital marketing and it is characterized by the use of AI for the development of messenger chatbots or conversational

agents for commercial aims (van Eeuwen, 2017). Many researches have been made and several definitions have been given to arrive at the collection of some commonalities.
Conversational commerce offers convenience, personalization and assistance in the decision-making process (Baier et al., 2018). According to Messina (2016), the new digital trend adopts chat or other interfaces (e.g. voice) to communicate with people and bots using a natural language. For this thesis' purpose, the reference will be linked to only messaging interfaces, in particular to chatbot-based conversational commerce, which consists in chatting with a chatbot while doing online shopping directly on the e-commerce website. According to Pricilla, Lestari and Dharma (2018), this specific usage of conversational commerce is becoming larger in the industry.

2.4 Chatbot

With an increasing use of personal computers, as stated before, there is a growing inclination toward the possibility to communicate with machines in the same way as with persons (Atwell & Shawar, 2007). The idea of creating a computer that could imitate human behavior comes from the Turing test created by Alan Touring (1950) and it is the basis of the creation of chatbots (Almansor & Hussain, 2019). There are different terms that refer to this tool: chatter bot, virtual agent and conversational agent. In this study, they will be used indifferently to refer to this computer tool that uses natural language technologies to recreate a human-like conversation with the user (Lester et al., 2004). Desaulnieres (2016) added the component of the Artificial Intelligence to the definition of this conversational agent and this thesis will consider it for the research. For the purpose of this research, the chatbot that will be considered is the shopping chatbot, an automated online assistant tool, which is able to have small conversations with the user (Rao et al., 2019). The areas where chatbots have been implemented are various: from entertainment and education, to healthcare and recommendation. However, the current study will focus exclusively on the e-commerce sector, with the aim to explore the use of chatbot for assisting the consumers during their shopping online.

2.5 Technology Usage

There are many theories that have explored the context of technology adoption and have proposed several models to measure it. The first theory that have been implemented was the Theory of Diffusion of Innovations, proposed by Roger in 1995, that founded the research for

innovation acceptance and adoption. His theory mainly focuses on the channels through which the diffusion is communicated (Lai. 2017). However, the aim of this study is not only to understand the consumer intention to adopt a technology, i.e. the chatbot, but to analyze the technology usage of the consumer that shops online. Bhattacherjee (2001) affirmed that, although many studies have mainly focused on the consumers' intention to adopt a new technology rather than its usage, the potential success of IT is linked to technology's continued usage more. In a more recent study, Wu and Du (2012) suggested that more recent study should focus on usage instead of adoption. For this reason, the study applies the MOA framework, that connect the three variables of Motivation, Opportunity and Ability directly to the technology usage.

3. Research model and Hypothesis

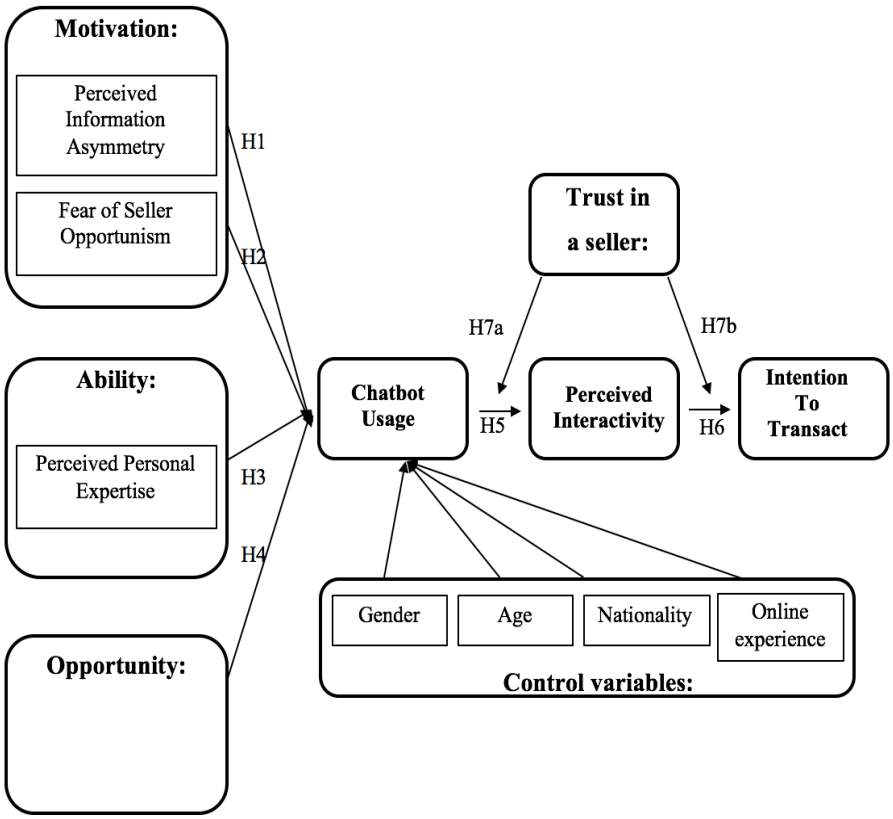

Fig. 1: MOA Model

Figure 1 shows the research model implemented, which illustrate that motivation, ability and opportunity separately have an impact on the use of chatbots by online users. Basing the study on the empirical paper "Understanding the Antecedents and Consequences of Live Chat Use in Electronic markets", by Kang et al. (2015), the research will extend the MOA framework to verify that the use of chatbots positively influences the perceived interactivity of consumers, that will improve their intention to purchase online (Kang et al., 2015).

The three independent variables of the framework are the following:

3.1 Motivation

The term motivation is described as the desire, willingness, the readiness and the interest to adopt a certain behavior and it is an intrinsic reason for the adoption of a technology (MacInnis et al. 1991). Applying the model in this study, motivation will refer to the consumer's willingness and interest to adopt chatbots while purchasing online. In this extent, Kang et al. (2015) consider Perceived Information Asymmetry (PIA) and Fear of Seller Opportunism (FSO) as the components of the Motivation factor.

3.1.1 Perceived Information Asymmetry

PIA is described as the knowledge gap between consumers and seller about the transaction process and the product itself. In the e-commerce sector, the existent perceived information asymmetry is the extent to which consumers perceive that the information offered by the website through images, descriptions, reviews and transaction process is limited (Kang et al. 2015). For this reason, users of e-commerce might not conclude their online transactions (Dimoka et al., 2007). However, a two-way communication via social settings, like live chats or chatbots, allows the customers to control the exchange of information and, therefore, it enables the economic transaction (Chiu et al., 2005). Furthermore, Hwang, Lee, and Kim (2014) added that a transaction on an online marketplace lower the customer uncertainty caused by the asymmetry of information given by the seller compared to a in person transaction. Therefore, the huge amount of information and the perceived asymmetry (Hwang, et al., 2014) might positively affect the use of chatbots.

H1: *Perceived information asymmetry (PIA) positively affects chatbots usage (CU).*

3.1.2 Fear of Seller Opportunism

The other motivational variable is the Fear of Seller Opportunism (FSO) that reflects the eventuality that the seller exploits a transaction for a higher profit, by sending a product that differs from the description (Pavlou et al., 2007). Moreover, customers who perceive opportunism from the seller are more uncertain about the contract outcome (Hwang, et al., 2014). By using a conversational tool, although, the customers would be able to record the conversation and ask detailed information to the chatbot (e.g. reviews, further descriptions and reviews, etc.) (Kang et al., 2015). Finally, the chatbot might be considered as a point of reference during the delivery process in order to track the product. Accordingly, the second hypothesis is claimed.

H2: *Fear of Seller Opportunism (FSO) positively influence the CU.*

3.2 Ability:

Once the motivational factors have been tested, it is necessary to analyze how the ability of each user effects the usage of chatbots. Ability is defined as the skills or knowledge-based experience of the consumers, which enhance their technology usage (Bigné et al., 2010). Specific skills and abilities increase the interrelation between the consumer and the technological tool and the likelihood that he/she will make use of that communication tool (Thompson et al.,1991). Indeed, consumers with such a personal expertise will be more likely to learn how to take advantage of the tool and will gain the ability to use the technology more effectively. Applying the determinant to this domain, ability will refer to the individual's perception of their capacity (Bigné et al., 2010) to use chatbots as virtual assistant during their online shopping. Therefore, perceived personal expertise might have an impact on the consumer's usage of the conversational tool (Kang et al., 2015). For this reason, the following hypothesis has been developed:

H3: *Consumer's perceived expertise (PE) has a positive impact on the intention to use chatbots.*

3.3 Opportunity:

Finally, the third variable "Opportunity" is a necessary condition in order to create the scenario where the consumers can exploit the technology. In fact, opportunity is explained as the "extent

to which an environment or situation is conducive to achieving a goal". According to MacInnis et al., opportunity is the availability of favorable conditions and time for the adoption of the technology (1991). Extending it to the domain of the study, opportunity is offered by the e-commerce that provides a chatbot that assists the users during the purchasing experience, eliminating any online interference in the finalization of the process. According to Kang et al. (2015), the opportunity is given by the technological support of the specific website that the user is surfing to purchase products.

H4: *The opportunity of the e-commerce to provide the chatbot has a positive influence on the adoption of chatbots.*

3.4 Consequences

3.4.1 Perceived Interactivity

While message interactivity is easily achieved by Computer-mediated-Communication (CMC), it is not the same for HCI (Sundar et al., 2014). In Kang et al.'s study, perceived interactivity is defined as the degree to which the user considers the communication with the other person to be reciprocal and bidirectional. However, in HCI, users communicate with a computer system and, for this reason, the definition of interactivity might be slightly different. Interactivity in web-based communication can be conceptualized as the possibility to have a cumulative answer to user's input that expresses a sense of dialogue and contingency (Sundar et al., 2003). Sundar et al. consider interactivity from a contingency point of view at the message level, instead of defining it according to its features (e.g. images, multimedia, …). Finally, contingency is determined as the facilitation of a back and forth communication necessary for a user engagement with the context and, more specifically, as the degree to which the consumer receives an exclusive answer to what he/she asked.

According to the study of Sundar et al. (2014), perceived interactivity has been found a very important determinant of user engagement and behavioral intention to adopt a specific tool or technology. In particular, the presence of a chatbot tool on a website has been considered as most appealing than a human chat and also a determinant of the intension to interact with it. Consequently, this study will analyze how chatbots might influence the perceived interactivity of the e-commerce. Thus, the following hypothesis has been developed:

H5: *CU positively influences the perceived interactivity (PI) of the users.*

3.4.2 Intention to transact

This HCI tool allows the companies to automate the possibility to enable online transactions on their e-commerce (Pavlou et al., 2007).

Thus, the study aims to discover whether the perceived interactivity of an e-commerce might have a positive impact on the final behavioral intention of the user. Exchanges of information in a two-way communication has become really important for the websites and interactivity is considered one of the most effective characteristics of a website, having a strong influence on the behavioral intention of the users (Chiu et al., 2005).

With reference to Kang et al. (2015), perceived interactivity positively affects the intention to transact, that is the intention of the users to complete an online transaction through the chatbot and buy the product. Therefore, the following hypothesis has been stated:

H6*: PI positively affects the intention of the users to transact (IT).*

3.5 Moderator

3.5.1 Trust in a chatbot

The component of trust in e-commerce is really crucial and consumers still perceive online transactions quite uncertain (Kang et al., 2015). Hwang et al. (2014) claims that a lack of trust in the customer might create uncertainty and cause an unsuccessful contract outcome. According to Müller et al. (2019), the lack of trust in tools that exploit artificial intelligence instead of humans prevents the acceptance of chatbots. However, trust has also been considered as the main foundation of e-commerce and it has high weight on the success of the website (Wang et al., 2005). According to Lu et al. (2016), more a website with a communication tool answers to the users with the information needed, more the e-commerce is perceived transparent and the user's behavior will be more trustworthy. Logically, it is important to consider that the users, in order to finalize a transaction, need a high interactivity. However, the final decision to engage the use of chatbot to complete a purchase is moderated by the consumer's trust in a chatbot (Følstad et al., 2018). In fact, it might happen that the customer thinks that a seller is not honest and for this reason he/she might rather use a web-based communication tool where he/she can collect the information needed and evaluate them (Kang et al., 2015). Therefore, trust in a chatbot has a positive influence on both decisions to use the chatbot and intention to commit an online transaction via chatbot. Accordingly, the following hypotheses has been developed:

H7a: *Trust in a chatbot (TC) positively moderates the positive effect of CU on PI.*

H7b: *TC positively moderates the positive effect of PI on consumers' IT.*

3.6 Control Variables

3.6.1 Gender, age, nationality and online experience

The MOA Framework uses some demographic moderators as well. For the purpose of this study, age, gender and nationality are considered as moderators that have an impact on the chatbot usage. Furthermore, online experience is also taken into consideration in the influence on the usage of a technology.

4. Review of Literature

In this section, the study will list the most relevant papers related to the evolution of conversational commerce and chatbots and to the model implemented to answer the research questions.

Table 2: Review of literature

Presence of the chatbot	Author, Year, Published	Contribution
Information Processing from Advertisement: Toward an Integrative Framework	MacInnis, D. J. & Jaworski, B. J., (1989). *Journal of Marketing*	Ability, Motivation and Opportunity framework to analyze the information processing from advertisement. Particular relevant is the definition of Motivation and its effect on consumers' behavior.

Enhancing and Measuring Consumers' Motivation, Opportunity and Ability to Process Brand Information	MacInnis, D. J., Moorman, C. & Jaworski B. J., (1991). *Journal of Marketing*	MOA Framework to explain the linkage between executional cues and outcome of the communication. Level of information processed by an ad, i.e. the communication effectiveness, influenced by the motivation, ability and opportunity of the consumer.
Human-Computer Interaction	May, J., (2001). *International Encyclopedia of Social & Behavioral Sciences*	Definition of Human-Computer Interaction (HCI) as the study of the relationship between users and technological tools. Further development of the topic, with expansion to new domains of HCI (psychology, anthropology, sociology), new European perspective and new system composed by attitudes and beliefs.
Conversational User Interfaces for Online Shops? A categorization of Use Cases	Baier, D., Rese, A., Röglinger, M., (2018). *Thirty Ninth International Conference on Information Systems*	Review of definitions of conversational commerce and chatbots. Results showed indifference from customers with no experience and enthusiasm for customers who were expert in messaging services.
Toward a better understanding of behavioral intention and system usage constructs	Wu, J. & Du, H., (2012) *European Journal of Information Systems*	Behavioral intention is not always a good surrogate for usage. It is not justifiable to assess only intention and not usage. Further researches should focus on system usage.

Mobile Conversational Commerce: Messenger Chatbots as the next Interface between Businesses and Consumers	Van Eeuwen, M., (2017). *University of Twente*	Review of definition of conversational commerce as a technological tool used by companies for commercial purposes. Conversation in a natural language. Millennials respondents resulted to still use their laptop to shopping online and to be acknowledged of messenger chatbots.
How Motivation, Opportunity and Ability can drive Online Airline Purchase	Bigné, E., Hernández, B., Ruiz, C., Andreu, L., (2010). J*ournal of Air Transport Management*	The results showed that MOA variables are good determinants on the consumer's intention.
Organizational Resistance to performance-enhancing technological innovations: a motivation-threat-ability framework	Bao Y., (2009). *Journal of Business and Industrial Marketing*	Innovation resistance and innovation adoption are influenced by contrasting forces expressed by the MTA framework, derived by the MOA Framework
Consumer Opportunity, Ability and Motivation as a Framework for Electronic Market Research	Strader, J. T. & Hendrickson, R. A. (1999). *Electronic Markets*	The study uses the MOA Framework in order to better identify the elements that determine the success or the failure of e-markets and to propose a less simplistic view of the consumers. The results confirm that the consumer's motivation, opportunity and ability positively impact the success of an e-market

Salesperson Implementation of Sales Strategy and its Impact on Sales Performance	Inyang, E.A. & Jaramillo, F. (2019). *Journal of Strategic Marketing*	MOA model used to examine the outcome control and behavior control are motivating elements in influencing salespeople in the adoption of sales strategies. Implementation of sales strategies has a positive impact on sales performance.
Understanding the Antecedents and Consequences of Live Chat Use in Electronic Markets	Kang, L., Wang, X.,Tan, C., Zhao, L. (2015). *Journal of Organizational Computing and Electronic Commerce*	Extension of the Motivation, Ability and Opportunity framework for the analysis of antecedents of using live chat and for the understanding of the intention to transact online, from a trust-oriented perspective. Positive influence of the MOA factors on the usage of Live Chat and, consequently, also on the online transactions. Customers' willingness to adopt a specific behavior depends on their motivation, opportunity and ability.
Website quality and customer's behavioral intention: An exploratory study of the role of information asymmetry	Chiu, H., Y. Hsieh, & C. Y. Kao, (2005). *Total Quality Management*	Information quality and interactivity are significant to positively influence customer's intention in goods or services.
Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective	Paul, A. & Pavlou, A. (2007). *MIS Quarterly*	Negative impact of perceived uncertainty over purchase intentions. Validation of perceived information asymmetry and fears of seller opportunism as antecedents of perceived uncertainty.

Theoretical Importance of Contingency in Human-Computer Interaction: Effects of Message Interactivity on User Engagement	Sundar, S. S., Bellur, S., Oh, J., Jia, H., Kim, H-S., (2014). *Communication Research*	Interactivity as one of the most important factors to evaluate a website. Respondents evaluated the web sites that were offering a Chatbot as the most appealing.
Social Presence, Trust, and Social Commerce Purchase Intention: An Empirical Research	Lu, B., Fan, W., Zhou, Mi, (2016). *Computers in Human Behavior*	Central aspect of trust in economic transactions, especially online. Significant positive influence of trust on purchase intentions on e-commerce.
What makes Users Trust a Chatbot for Customer Service? An Exploratory Interview Study	Følstad, A., Nordheim, B. C., Bjørkli, A. C. (2018). *International Conference on Internet Science*	Trust in a Chatbot is mainly affected by the quality of the communication with the tool, the understanding of requests and advices, its human likeness.

5. Research Questions & Hypotheses

The main research questions of the study are the following:

RQ:1 To what extent do consumers use the chatbot while shopping online on an e-commerce?
RQ3: What are the main factors that influence the decision to use the chatbot?
RQ2: To what extent do consumers finalize an online purchase using the chatbot?

In the table below, the hypotheses developed in order to answer to the research questions have been summarized.

Table 3: Hypotheses	
PIA	H1: *Perceived information asymmetry (PIA) positively affects chatbots usage (CU).*
CU	H2: *Fear of Seller Opportunism (FSO) positively influence the CU.*
PE	H3: *Consumer's perceived expertise (PE) has a positive impact on the intention to use chatbots.*
O	H4: *The opportunity of the e-commerce to provide the chatbot has a positive influence on the adoption of chatbots.*
PI	H5: *CU positively influences the perceived interactivity (PI) of the users.*
IT	H6*: PI positively affects the intention of the users to transact (IT).*
TC	H7a: *Trust in a chatbot (TC) positively moderates the positive effect of CU on PI.* H7b: *TC positively moderates the positive effect of PI on consumers' IT.*

6. Methodology

The study adopted the MOA framework presented in the theoretical section to develop the questionnaire, according to the variables of the model.

A quantitative research approach will be implemented to answer the research questions. Moreover, assuming that respondents might be ignorant about what a chatbot is and how it works, the questionnaire will start with an explanatory video that will show and explain the functioning of the chatbot in the specific scenario that the study will analyze: the e-commerce.

6.1 Sampling

The size of the sample of this questionnaire has been calculated on a 95% confidence level, 5% of margin of error and a population of 20.000. The result is a sample of 377 respondents. This size has been calculated using Raosoft, an online sample size calculation software.

The target groups chosen for this study are the Generation Y and the Generation Z. The former, also named the Millennials, are those persons born between the 1977 and 1995 (Ross et al., ANALI 2018). The selected sample appears to be relevant for the research, since members of Generation Y are the first to be born in a "technologically based world", according to Smola and Sutton (2002). Moreover, according to some researches, the Generation Y is characterized by a high acceptance rate of new technology (Smith & Nichols., 2015). Finally, the framework that will be applied was developed in 1991. The manner, the Generation Z or Centennials, represents the persons born from 1996, which are considered as the generation that better understand and use advanced technology (Ross et al., 2018). Furthermore, this generation has already entered in the workforce and might have already an income that allows them to purchase products online. Therefore, this target group is relevant for the research.

Another variable that will define the target group is the nationality. Indeed, the questionnaire will be addressed to European respondents, because of the lack of researches that analyzed the European chatbot market and because of the ease of collecting responses.

6.2 Research design

For the purpose of the research, a self-administered questionnaire will be developed, using Sphinx software. The main advantages of using an online survey are the cost and time effectiveness of administration, distribution and collection of responses. In addition, Bryman

et al. (2011) asserts that it allows to eliminate the interviewer effect and variability, and it is convenient for the respondents. Furthermore, another reason why this method has been chosen is the impossibility for the author to move to the target geographic area.
The questionnaire is divided into three sections:

1. The first section will present a brief video, explanatory of the tool analyzed, the chatbot, and the scenario where the study is conducted;
2. The second section will collect the demographic information of the sample, acquiring the detail regarding gender, age, nationality, online shopping experience and chatbot experience;
3. Finally, the third part of the questionnaire will have different sections according to the determinants that influence the behavioral intention of the consumer. The determinants are listed in the table 4. The items have been inspired by the research on Live Chat by Kang et al. (2015). The item TC 4 has been adapted from Bankole et al., (2017).

Table 4: Items

Construct	Item	
Chatbot medium Usage (CU)	CU 1	I frequently use the chatbot to filter my research (e.g. I need a black t-shirt).
	CU 2	I frequently use the chatbot to ask information about the price.
	CU 3	I frequently use the chatbot to ask information about the availability.
	CU 4	I frequently use the chatbot to ask information about the product.
Information Filtering (IF)	IF 1	I frequently use the chatbot to filter my research on the e-commerce.
	IF 2	I frequently use the chatbot to look for a specific product.
	IF 3	I frequently use the chatbot instead of the research bar.
Perceived Personal Expertise (PPE)	PPE 1	I feel I've knowledge about chatbots.
	PPE 2	I feel I'm competent with chatbot.
	PPE 3	I feel I'm an expert of chatbot.
	PPE 4	I feel I'm experienced with chatbot.

Perceived Information Asymmetry (PIA)	PIA 1	The chatbot has more information on the characteristics of the product than me.
	PIA 2	The chatbot has more information on the delivery functioning than me.
	PIA 3	The chatbot has more information on the different variants of the product than me.
Fear of Seller Opportunism (FSO)	FSO 1	The seller might send me more misleading information about the products.
	FSO 2	The seller might send me fake products.
	FSO 3	The seller would not show me the best offer.
Perceived Interactivity (PI)	PI 1	The chatbot seems to use a natural language.
	PI 2	The chatbot is a good two-way communication tool.
	PI 3	Any query or question that I have can be answered quickly and efficiently with the chatbot.
	PI 4	The chatbot facilitates feedback from the buyer to the e-commerce.
	PI 5	The chatbot is seen to have good interactivity.
Intention to transact (IT)	IT 1	Given the chance, I intend to purchase through the chatbot.
	IT 2	Given the chance, I predict that I should purchase in the future using the chatbot.
	IT 3	It is likely that I will transact in the near future using the chatbot.
Trust in a Chatbot (TC)	TC 1	I think that the chatbot is a reliable tool.
	TC 2	I think that the chatbot is an honest tool.
	TC 3	I think that the chatbot is trustworthy.
	TC 4	I believe the chatbot adheres to a set of rules which protects my bank details.

Table 4: Items

The questionnaire will be developed in English and then translated in Italian, Spanish, German and French to facilitate the respondents. The translations will be performed by a native or proficient speaker of the mentioned languages and will be checked by a native speaker.

6.3 Procedure

Firstly, a pilot questionnaire will be sent to 5 relevant respondents in order to identify potential flaws, and to test comprehensibility and eventual mistakes and/or misleading questions/statements. Then, the questionnaire will be addressed online, through different social media means (Facebook, Instagram, WhatsApp). With the aim to reach most of the target group involved, the researcher will use snowballing. The questionnaire will present a brief introduction that will claim the purpose of the research, the anonymity of the response and the length of the questionnaire itself, that will not exceed the 8 minutes.

6.4 Scale

The constructs used in the questionnaire will be assessed using a 5-point Likert scale and will be anchored as follows:

1- Strongly disagree
2- Disagree
3- Neither agree or disagree
4- Agree
5- Strongly agree

6.5 PLS-SEM data analysis

In order to conduct the data analysis, the software used is SmartPLS, developed by C. Ringle, Wende, and Will (2005). SEM is considered to be particularly successful for the evaluation of the measurement of latent variables and for testing the validity, reliability and the coherence of the relationship between the variables (Babin et al., 2008). Moreover, SEM fits the situations when the aim of the analysis is to explore the drivers of customer satisfaction, brand image or corporate reputation (Hair Jr, Marko, Hopkins, & Kupperlwieser, 2014). The PLS-SEM technique, which was developed by Wold (1974, 1980, 1982), is characterized by an iterative approach that explains the variance of inner constructs (Fornell & Bookstein, 1982). Furthermore, an interesting advance proposed by PLS-SEM is the possibility to be used with smaller samples and for exploratory studies (Hair, et al. 2014) and to be applied both for formative and reflective outer model (Hair, Sarstedt, Ringle, & Mena, 2012).

Firstly, the calculations run with the software were the PLS Algorithm, Boostrapping and finally, the Multi-group analysis (MGA).

7. Contributions and Limitations

Firstly, the study contributes to the research gap about the consumers' use of an HCI tool, by focusing on the implementation of the chatbot during the shopping online, considering the increased popularity that the mentioned technology is gaining and its development over the last years.

The research aims, on one hand, to contribute from a theoretical point of view, by testing with the model implemented the consumer's intention to use the chatbot, and on the other hand, to be relevant from a practical point of view. In fact, the study intends to present to the companies that are using chatbots on their e-commerce an overview of the behavior of the consumers in relation with the chatbot. Furthermore, the e-tailers might understand what are the main factors that have an influence on the consumers' intention to use chatbot and to purchase products by using it. The results might be interesting also for those other companies who have not engage these tools yet but might be curious on the effects of chatbots on the purchasing decisions of the users. Finally, the research might give inspiration to the developer of the technological tool on the improvement of the chatbot with specific features.

The research presents also some limitations. First, the study considers only some variables of the MOA framework, due to the length constraints when creating a questionnaire. Further researches should consider more variables in the analysis in order to obtain a broader overview of the consumers intention to use chatbots. In addition, the research could have used a qualitative method to have more detailed results. Second, the study does not consider a particular chatbot, but the tool in general. Therefore, the results might not be relevant for all the e-tailers that implement them. Finally, focusing the study only in Europe, the research will cover one area, while a general overview or a comparison between countries might be interesting for further researches.

Plan of work

Dates	***Tasks***	***Phases***	***Stage of Completion***
04/09 – 30/09	Final Exposé	Finalize the following sections: introduction, theoretical framework, research question and hypotheses, methodology, contributions and limitations	Completed
1/10-20/10	Explanatory video and questionnaire design	Creation of an explanatory video about the functionality of a chatbot and the scenario, design of the questionnaire	To follow
21/10-31/10	Launch of the questionnaire	Launch of the online survey and gather data	To follow
1/11-15/11	Buffer and gather data		
16/11-20/12	Analysis of the results and conclusion	Analysis of the results, writing the conclusions and finalize the thesis.	To follow
21/12-12/01	Buffer		

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