

**ARTIFICIAL INTELLIGENCE IN ELECTRONIC COMMERCE:
BASIC CHATBOTS AND THE CONSUMER JOURNEY**

Eliza Nichifor^{1*}, Adrian Trifan² and Elena Mihaela Nechifor³
¹⁾²⁾³⁾ Transilvania University of Braşov, Romania

Please cite this article as:

Nichifor, E., Trifan, A. and Nechifor, E.M., 2021. Artificial Intelligence in Electronic Commerce: Basic Chatbots and the Consumer Journey. *Amfiteatru Economic*, 23(56), pp. 87-101.

DOI: [10.24818/EA/2021/56/87](https://doi.org/10.24818/EA/2021/56/87)

Article History

Received: 30 September 2020

Revised: 10 November 2020

Accepted: 24 December 2020

Abstract

This study aims to empirically cover the impact of the use of artificial intelligence through chatbots on online retail in terms of content implemented in the communication process. The presented research brings a contribution to the specialized literature by analyzing the perceived utility and demonstrating the facility, key concepts of the Technology Acceptance Model. In this sense, ten online stores in Romania were studied, selected according to the number of users, the research being carried out through a non-reactive method - content analysis. The method of data collection was that of the "mysterious client" in order not to generate a change in the behavior of the entities studied. The interpretation of the data obtained through the content grid allowed a horizontal and vertical approach that led to a series of results that confirmed the low level of performance of market leaders, as well as the high potential of this type of technology applied in the field. Regarding the impact of the use of chatbots, it has been shown that poor quality of the content displayed to users affects the consumer's journey, the point of satisfaction not being reached in these conditions.

Keywords: chatbot, artificial intelligence in commerce, customer service, e-commerce, buying behavior, customer engagement

JEL classification: O30, M31, M10

*Corresponding author, **Eliza Nichifor** – e-mail: eliza.nichifor@unitbv.ro

Introduction

Creating a positive experience in providing services to consumers has become a key strategy for gaining competitive advantage (Berry, 1995), and the ever-changing technology and the complex nature of a new society have changed the volume and diversity of activities (Bătăgan, Mărășescu and Pocovnicu, 2010). The development of e-commerce has improved online activity (Voineagu et al., 2016), and as buyer intelligence is accelerated by the use of technology (EY, 2020), retailers are trying to keep pace with the pace of evolution to qualify on the map of consumer perception. In the context of the contemporary market dominated by a “deep electronic phenomenon” (Varga Apăvăloaie, 2015), its use is increasing, it is on the side of customers who have become more and more cautious and informed about the products and services they purchase. Thus, the artificial intelligence technologies used to involve end customers in the retail value chain appear. They focus on interaction at all stages of the consumer: pre-purchase, purchase and post-purchase (Rese, Ganster and Baier, 2020), improved support services and sales support functions (Kaplan and Haenlein, 2019). Given the relatively new nature of the technologies specific to Artificial Intelligence (hereinafter AI) integrated into e-commerce, especially chatbots, the studies present pros and cons regarding their acceptance. Some illustrate meeting user expectations (Chopra, 2019; McLean and Osei-Frimpong, 2019; Chung et al., 2020), but others also argue against them (Xueming et al., 2019; Sheehan, Jin and Gottlieb, 2020). Polarization can be considered the ideal framework for the introduction in the research of the Technology Acceptance Model (hereinafter TAM), first proposed by Davis (1985). Based on Rational Action Theory (TRA), TAM presents determinants of behaviors described as consciously intentional (Rese, Ganster, & Baier, 2020). In other words, a user's behavior is determined by the intention to use computer systems according to the perceived utility, as well as the perceived ease of use. The authors of this study consider that the two concepts underlie the use of AI technology and can be analyzed from the perspective of the behavior of online commerce companies (hereinafter retailers) in the communication process.

Research shows that chatbots are increasingly being implemented in messaging services and are considered an integral part of future consumer services. As a result, 80% of businesses use or are in the process of implementing chatbots to communicate with users 24/7 and solve their customer problems. These are aspects that present real opportunities, and the approach of empirical studies on user satisfaction with chatbots and the intention to continue the interaction in the acquisition process, is becoming increasingly relevant (Ashfaq et al., 2020). One can notice the lack of large-scale empirical research to reveal the consumer experience concerning AI technologies (Ameen et al., 2020), which maintains an uncertainty about how retailers in Romania communicate with users through chatbots. As such, it can be concluded that it is the main limitation of the research, the authors aiming, in particular, to enrich the literature by empirically covering the impact of AI technology by using basic chatbots in the communication between retailers, which carries out the online activity, and users at different stages of the process of creating a stronger consumer experience.

The controversial nature of this type of AI technology is marked by the acceptance by consumers of chat technology, which determines that the paper addresses especially the link between the quality of content transmitted through computer systems and user behavior. Given the fact that 54% of users expressed their reluctance towards chatbots due to impersonal communication, this study aims to determine the quality of the communication process by using AI technology by retailers. Thus, the TAM model is extended, stating that

the two motivations of users, perceived usefulness and perceived ease of use, which mark the process of accepting chatbots, are assessed using the four elements addressed by conducting content analysis: quality, response time, relevance and performance level of basic chatbots. Specifically, the study involves analyzing how the top ten retailers in Romania, chosen based on the number of users (trafic.ro), react to initiatives to communicate with the public, through instant messages from the Facebook Messenger application (hereinafter referred to as basic chatbots). The number of users is considered by the authors a quantitative criterion, chosen to select the most accessed online commerce websites in Romania because the action of visiting this type of website reflects the advantage of using the Internet. Over 67% of the subjects of a study stated that e-commerce services are accessible, easy to use, but especially efficient (Bătăgan, Mărășescu and Pocovnicu, 2010). The results of the analysis led to the conclusion that the ten existing online stores in the top have a poor quality of the content communicated to customers and to the fact that there is a development potential regarding artificial intelligence in e-commerce in Romania.

To achieve this goal, the paper was structured into five sections. Thus, after reviewing the literature, the research methodology was described, the section is followed by a review of the results obtained, the penultimate section including the discussions, and, in the final part, the conclusions and proposals are nominated.

1. Literature review

Given that it is perceived as a relatively new technology, the chatbot application has been around for a long time, and the terms used have varied over time. This was recognized as an automatic conversation system, virtual agent, dialogue system, or chatterbot (Ciechanowski et al., 2019). The first notable appearance in the field is the chatbot ELIZA, developed by Joseph Weizenbaum in 1956 (Smutny and Schreiberova, 2020), which was built using simple word matching techniques, to simulate a psychotherapist, succeeding for the first time. given the interaction between a person and a computer through natural text language (Rese, Ganster and Baier, 2020). Chatbots are currently defined as software tools that interact with users on a specific topic in the most natural way possible, and the message is conveyed in the form of text or voice (Ashfaq et al., 2020; Rese, Ganster and Baier, 2020). To illustrate the applicability of this technology, it is mentioned that chatbots have been introduced in the Facebook platform (2016) with the role of accelerating and facilitating customer service processes, managed by organizations. Since then, they are considered an “important technological trend” (Baier, Rese and Röglinger, 2018), with natural language skills, which can be configured to “converse” with users (Sheehan, Jin and Gottlieb, 2020) and provide information about products and services, or place orders online in real-time (Ashfaq et al., 2020).

Technology is recognized as a smart tactic (Toorajipour et al., 2020), especially from a commercial point of view. Chatbots can be used in the interaction between retailer and customer (Lemon and Verhoef, 2016) both in the pre-purchase process (Forrest and Hoanca, 2015) and in the integrated marketing communication strategy, to revolutionize how interaction with users happens (McLean and Osei-Frimpong, 2019). In both applications, user behavior is influenced by the experience, determining the decision to continue the interaction process or not (Mihart (Kailani), 2012). For this reason, reference is made to the concept of *customer engagement*. According to the literature, it indicates the connection and participation of customers or users with retailers (Hollebeek, 2011). This concept takes the form of a synergy such as bilateral creation between suppliers and users and can be

represented by a component of the marketing strategy to attract new customers, determine the acquisition of purchases and consumer loyalty (Brodie et al., 2011). The introduction of technologies that use artificial intelligence (AI) by an organization, generates the potential for it to involve users while achieving organizational results related to efficiency, satisfaction and commitment (Prentice and Nguyen, 2020). In the same framework is mentioned the model of an *electronic business*, which for carrying out company-specific activities, the organization has electronic resources such as websites adapted to the device, chats, blogs and emails (Sitar-Taut et al., 2009). Therefore, with the development of e-commerce and mobile purchases, retailers are competing for a favorable long-term market position (Souiden, Ladhari and Chiadmi, 2019), trying to satisfy consumers who want information and real-time responses (Reinartz, Wiegand and Imschloss, 2019). It is important to mention in this framework, the estimates that show that globally, the growth rate of e-commerce will increase from 10% at present, to 50% by 2027 (Platon, 2015). To achieve their goal of adapting to evolution, retailers have begun to use AI technologies in various ways to gain a competitive advantage (chatbots, generating relevant content for consumers, etc.). Ameen et al. (2020) mention in their paper that the implementation of AI solutions in the retail sector can reach a percentage of 1% of customers, which are 18 times more valuable than the average customer in the sector, and Mindbrowser (2017) mentions the benefits retailers in the following terms: customer service (95%), sales and marketing (55%) and order processing (48%) and the fact that chatbots can supplement pre-purchase support activities with the help of learning algorithms and predictive modeling. Thus, an instantaneous synchronization of a need presented by the consumer and the accessible products that match his expectations is achieved (Forrest and Hoanca, 2015). The applicability of the service has the effect of reducing the costs related to customer support activities and increasing the speed of response to user questions (IBM, 2017), but also of transport costs (Bătăgan, Mărășescu and Pocovnicu, 2010). Therefore, the duration of receiving a response is one of the significant factors in obtaining their satisfaction. A customer-centric value chain is created, in which connections are built with users who become potential customers, and retailers compete to exceed their expectations to survive in a competitive market (SAP Industries, 2020).

Canhoto and Clear (2020) state that this can improve the efficiency of business processes, but on the other hand, in some cases, these technologies can also destroy the value of the business. In this regard, the situations in which end customers are reluctant when it comes to using chatbots are highlighted. Mention is made of the case of the United States of America, which has a 40% share of consumers who prefer to be approached by a real person (Mindbrowser, 2017; CGS, 2018), and the results of a global sample show that only 34% of subjects they feel comfortable to proactively receive personalized recommendations in the pre-purchase phase via a chatbot (Rese, Ganster and Baier, 2020). A higher percentage is represented by every second online shopper (52%), who expressed antipathy towards chatbots due to an impersonal approach, an immature technology, the lack of a recognized benefit, or the feeling of following through this tool (Smutny and Schreiberova, 2020). Those with a much higher interest in chatbots and their use are representatives of Generation Z and Millennials: at the level of a global sample aged 18 to 34, 25% of subjects choose personalized shopping through a chatbot (Chatbots Magazine, 2018).

Favorable results are obtained by traders' attention to the quality delivered, i.e., "extreme personalization" and "increased involvement based on contextual and behavioral data" (Forbes, 2017). The quality of this type of service is defined by Parasuraman, Zeithaml and Berry (1994), as the difference between the expected and the perceived service, being evaluated concerning

the way consumers perceive the services offered by the retailer. Thus, artificial intelligence transforms the way retailers operate (Pillai, Sivathanu and Dwivedi, 2020), and the quality of implementation of this technology must increase the level of customer commitment to the brand, to reach the level of satisfaction (Prentice and Nguyen, 2020). A chatbot demonstrates a “reliable” performance when it is technically competent to provide the requested information in the form of answers, without encountering problems (Aoki, 2020).

The context described above favors the introduction of a concept regarding the customers’ journey along the marketing funnel, which is marked by the four stages: awareness, consideration, purchase intention and satisfaction (Colicev, Kumar and O’Connor, 2019). Chatbots, through the forces of AI technology act in the middle area of the marketing funnel, in the consideration stage, so that, in the interaction of users with instant messages set by retailers, they show a behavior close to the desire to purchase. At this point, reference is made to the two motivations inherent in the TAM model and the extension of the theory by associating with the qualitative nature of the chatbots content: perceived utility and perceived ease of use being two concepts influenced by the user’s experience about the chatbot implemented by retailer. If chatbots provide high-quality information, positive effects are expected, even loyalty to them. Otherwise, consumers do not move to the next stage and do not reach the desired level of satisfaction. The completion of the process of going through all the stages of the funnel that the user goes through may depend on the experience with the chatbot.

Companies recognize the high potential of chatbots, which are becoming increasingly used in messaging services being described by Koumaras et al. (2018), as an integral part of the future in customer service. It is mentioned that access to technology accelerates consumer intelligence with a speed that would be impossible to conceive for our ancestors (Young, 2014), therefore, consumers’ buying behavior in the online environment presents real challenges for companies. The exploratory marketing research conducted by Stoica, Vegheş and Orzan (2015), shows the percentage distribution of Romania according to the consumer behavior that divides the researched population into digital informants (62%), digital buyers (26%) and hyperstackers (12%). According to the descriptions of the three categories, their common denominator is the high degree of consumer involvement, how they have become increasingly cautious over time regarding the purchases they make, and the quantity and quality. the information they need to reach the final stage of the funnel plays a particularly important role.

Murtarelli, Gregory and Romenti (2020), mention that future research could empirically test aspects from the conversational perspective, which the authors of this paper have done with high interest. As chatbots have recently been widely used, their acceptance is beginning to be increasingly researched (Rietz, Benke and Maedche, 2019) due to the high importance of accepting new technology. According to Fernandes and Oliveira (2020), this is one of the essential steps to success in the future.

2. Research methodology

The behavioral bipolarity mentioned in the literature, regarding the use of chatbots, favored the identification of the gap of the research. This refers to how retailers interact with potential customers and are represented by the analysis of the quality of the content of the messages in the interaction initiated by users. In this study, this fact was approached scientifically, by analyzing text chats, integrated with the instant messaging application, Facebook Messenger.

This application was chosen because it offers a myriad of B2C and B2B links in the sale-purchase process (Xu et al., 2020).

Given that the objective of the empirical study was to analyze the quality of AI solutions implemented by retailers, it was intended to maintain the behavior regarding the positioning of online stores to this type of technology. In order not to influence to some extent the results, it was considered that for the studied context, it is necessary to apply the non-reactive research method - content analysis. According to Krippendorff (2004), this type of analysis is a discrete technique, applied when researchers consider avoiding reactive situations for two reasons: distorting the data, jeopardizing the validity of the study and manipulating the data by the sources or subjects analyzed. By approaching from this perspective, the study was successful: no reaction was generated from online stores and there were no changes in the settings of instant messaging in Facebook Messenger, which led to greater veracity of the data obtained and accuracy of results.

To delimit the existing phenomenon, information was gathered through structured and direct observation, with the help of which ten retailers were carried out from the position of a “mysterious customer”, carrying out their retailing activity in the Romanian online market. This method was approached to identify a new solution for profile websites, embodied in the opportunity to perform a pre-test of a survey before launch, in case of starting a subsequent quantitative study (Columbia Public Health, 2020). The ten retailers were selected based on the public information available on www.traffic.ro, the data provider with the help of which the secondary data related to the ranking of online stores were extracted. The rest of the information that contributed to this study was collected using the Facebook Messenger application and the Facebook platform (for analysis of response time).

The content analysis focused on Romanian retailers that are performing in terms of the number of users. The choice of the Romanian market for conducting the study was based on the development of electronic commerce and the potential for multiplying the transactions made through electronic commerce developed according to the Western model (Bătăgan, Mărășescu and Pocovnicu, 2010). According to the Romanian Association of Online Stores in Romania, the e-commerce sector showed an increase of 20-22% in 2019, compared to 2018, and the average shopping cart value increased from 204 lei in 2018 to 273 lei in 2019, for desktop purchases and an increase from 170 lei in 2018 to 208 lei in 2019, for purchases made with the help of smartphones (GPec, 2020), which must be mentioned considering the impact they have on the Gross Domestic Product of the country (Pantelimon, Georgescu and Posedaru, 2020). Estimates from the iSense Solution study for the GPec 2020 Summit show that the e-commerce market is reaching six billion euros and that in the context of the COVID-19 pandemic, the number of people who shop online has increased by 13% compared to 2019. According to Romania Insider (2020), the average value of online shopping increased by 40%.

The selection of websites was made considering the number of users who visited online stores in August 2020. The choice of criteria is justified by the fact that, in Romania, out of 19.94 million people (INS, 2014), 70% are Internet users (Ecommerce News, 2016). Given this, the authors considered the variable to be a relevant criterion for illustrating the scientific research framework. With the analysis grid, the results obtained provide an overview of the use of basic chatbots, their quality and performance, response time, and the relevance of responses to consumers. The coding of the data (Table no. 1) was performed so that there was a homogeneous analysis of the results.

Table no. 1. Coding of answers in content analysis

Topic	Coding
Using Chatbots	<ol style="list-style-type: none"> 1. Don't use any chatbots 2. Instant replies 3. Chatbot in Facebook Messenger (Full Set Version)
Response time	<ol style="list-style-type: none"> 1. Not publicly visible 2. Very prompt 3. In a few hours 4. Within a day 5. More than a day
Instant Message Quality	
- Information on personalized recommendations	<ol style="list-style-type: none"> 1. Yes 2. No
- Product cost information	<ol style="list-style-type: none"> 1. Yes 2. No
- Information on personalized assistance	<ol style="list-style-type: none"> 1. Yes 2. No
- Information on popular personalized products	<ol style="list-style-type: none"> 1. Yes 2. No
- Information on the availability of products in stock	<ol style="list-style-type: none"> 1. Yes 2. No
- Using a custom addressing formula	<ol style="list-style-type: none"> 1. First name only 2. Last name only 3. First name and last name 4. No first name, no last name
Relevance of replies	<ol style="list-style-type: none"> 1. High 2. Medium 3. Low
Performance	<ol style="list-style-type: none"> 1. Basic sending of automatic messages 2. Proactively recommend content

The data obtained were interpreted based on the results inserted in the horizontal analysis grid (in which the number of occurrences of the codes was determined) and the vertical analysis.

3. Results and discussions

The results of the research led to the main actions that retailers could include in their strategy to become electronic commerce businesses. To understand their relevance, importance and efficiency, the authors present details below regarding content analysis results on the use, quality and performance of chatbots, the response time and relevance replies provided to users. The section is followed by related discussions, namely the integration of research conducted in the literature and aims to provide an overview of the actual context and future perspectives for the entities studied.

3.1. Content analysis results

The research results provide an image of the support services in the pre-purchase phase from the consideration stage of the consumer's journey from the perspective of the marketing funnel, in which the user intends to interact with the provider through Facebook Messenger. The horizontal and vertical analysis approach highlights the argument that 100% of the top retailers (Table no. 2) do not use any full version of a chatbot.

Table no. 2: The Rank of Online Stores in Romania (August)

Place	Website	Users	Visits	Views
1	www.pretzmic.ro	51,904	72,308	269,250
2	www.baterii-lux.ro	43,128	59,857	158,099
3	www.uscatorrufe.ro	25,992	31,429	67,343
4	www.wainertools.ro	25,958	31,763	69,993
5	www.magazin-unelte.ro	19,658	24,002	90,991
6	www.vintagetime.ro	19,408	23,954	64,382
7	www.parfumas.ro	12,367	25,350	248,482
8	www.fabricadelenjerii.ro	11,874	18,720	76,668
9	www.lexservice.ro	11,774	15,343	86,643
10	www.gamestore.ro	11,259	16,279	65,688

Source: Traffic, 2020

The quality of the content was studied from the perspective of the conversations initiated to determine the impact that the content of chatbots has on the buying behavior of final consumers. To present the results as concisely as possible, the analysis of each category integrated in the content analysis was used, as follows:

- *Using chatbots.* Although no online store among the most visited according to the number of users (Figure no. 1) has implemented a full version of a chatbot, the scenario is outlined by the existence of the basic form of a chatbot in all ten cases studied. This form is represented by the automatic messages that retailers have set up and through which the interest is exercised to initiate conversations in the online environment with users using this form of AI technology.

- *Response time.* Regarding this topic, there are significant differences concerning the performance of the studied online stores. To have a homogeneous coding, the following options regarding the response time have been chosen, which users can consult on the public page of online stores on the Facebook platform: “not visible”, “respond very promptly”, “respond in a few hours”, “responds within a day or more”. The analysis reveals that the website with the highest number of users (ranked first in the top) responds in a longer time frame (one day) than the websites ranked seventh, eighth and nine in the ranking, which has a response time of only a few hours. The most common situation is when for five of the ten online stores, the response rate is not visible to users; this is also the case of the second-placed retailer. Although it ranks first in terms of the number of users, the website www.pretzmic.ro shows a response in a long time for consumer satisfaction in the purchase process (one day).

- *The quality of chatbots* was analyzed from the perspective of information provided to users regarding the availability of products in stock, the cost of personalized products, personalized popular products, personalized recommendations, personalized assistance and

information on the use of the first name. In this sense, it emerged that only in one of the cases, was a chance for the user to find out information about the availability of products in stock, represented by the retailer www.fabricadelenjerii.ro, located on the eighth place. IT deficiencies were also encountered in the case of product cost details (aspect set only in six out of ten situations), in the case of “trendy” products (six entities displayed the option), and in the case of information on personalized recommendations (where four entities did not post questions to start a conversation (including the brand in the first place.) The most common option among the ten entities studied is personalized assistance, set by eight of them, which is an argument for the fact that the providers know the importance of personalized assistance functions and want to implement the service. Another evaluation of the quality of automatic messages was made from the perspective of using the first name in the answers provided by retailers. The situation where only the first name was used was not encountered in the ten cases, and in four of them, it was not used any form of custom addressing. The situation of the brand in the first place is noticed, in which case there is a personalized setting for displaying the first name and last name in the automatic answers, but this is completely missing in the case of the other nine situations. Therefore, the lack of attention from companies strengthens a barrier in the retailer-end consumer relationship and has a negative impact during the consumer to the time of purchase, due to the impersonal approach.

- *The relevance of the replies* provided automatically after the selection was coded as low or non-existent. From this perspective, the eighth-ranked retailer was the only one that reacted after the user's interaction through instant messaging, in less than an hour, with a response from a person responsible for the customer relationship. In five cases, the replies were received instantly, with low relevance, and in four cases, the chatbot was not set to answer automatically after choosing a standard question.

- *The performance* was coded in the content analysis through two variants: “sending basic messages” and “recommending content”. In no case studied out of the ten, the situation in which content is recommended to the user was not encountered. All the top retailers sent basic messages, which determines the assignment of basic performance by using the related “basic chatbots”.

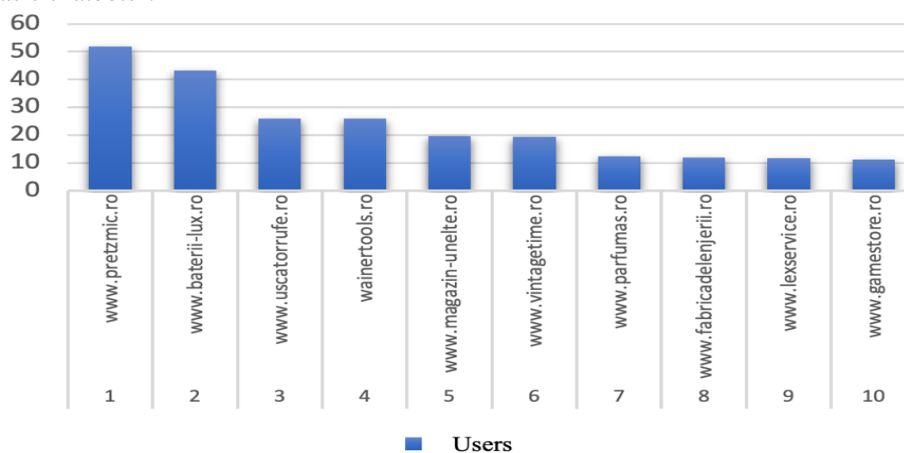


Figure no. 1. Ranking of Online Stores in Romania according to the number of users (August 2020)

Source: Trafic, 2020

3.2. Discussions

Obtaining competitive advantages is a process that can be easily achieved in the context in which the concepts presented in this paper are known. Through their analysis and the extension of the TAM model, the development of e-commerce can continue to improve the online activity referred to by Voineagu et al. (2016) in his paper. The research confirms the presence of a “deep electronic phenomenon” (Varga Apăvăloaie, 2015) in the customer-supplier relationship and conceptually develops the approach for the development of communication through artificial intelligence. Considering that technology is a smart tactic (Toorajipour et al., 2020), it is highlighted that chatbots and their acceptance strongly influence retailers' performance, user satisfaction and commitment. The originality of the paper is marked by the analysis of the quality of the content of the message transmitted in the communication process with the help of chatbots. It is believed that the approach may influence the reduction of the degree of polarization that current studies highlight (Chopra, 2019; McLean and Osei-Frimpong, 2019; Xueming Luo et al., 2019; Chung et al., 2020; Sheehan, Jin and Gottlieb, 2020) and that through the results obtained, at least the retailers included in the study, can improve the relationship developed in the digital environment they have with users. The mention made by Murtarelli, Gregory and Romenti (2020) regarding the future research related to the empirical testing of the conversational perspective, is in perfect synchrony with the purpose of the present study. The authors are concerned about the quality of interaction between retailers and users, expressed through issues related to the use and quality of chatbots, response time, relevance of responses, and performance that can be used to develop sales support chatbots implemented in marketing, sales, technical support or customer service activities, using the Facebook and Facebook Messenger platform. In essence, this is the contribution to the enrichment of the literature.

Consumers become better informed when they seek to make a purchase, being influenced by their experience (Mihart (Kailani), 2012). The study confirms that retailers must meet the requirement of users to communicate efficiently and in real-time. To benefit from the use of AI technology to obtain the development opportunities outlined above (Reinartz, Wiegand and Imschloss, 2019; Souiden, Ladhari and Chiadmi, 2019; Prentice and Nguyen, 2020), as well as to become an efficient online business (Sitar -Taut et al., 2009), an organization has the opportunity to consider the results of the study and to implement a series of measures to eliminate specific barriers (de Bellis and Venkataramani Johar, 2020). Therefore, instant messages in the Facebook Messenger application must take the form of interaction as personalized as possible, by using the first name as a form of address at the beginning of the message sent. This action has a positive impact on the population who have expressed their antipathy towards this technology, due to the impersonal approach. Another measure that companies can implement is to increase the quality of instant messages sent to users who have shown a desire to communicate. To this end, the standard set of questions should include information on personalized recommendations, the cost of products, their availability in stock, information on popular products and personalized assistance. Also, organizations that want to develop their relationships with consumers must make the settings of Facebook pages so that the response time is publicly visible. In this way, users who want to initiate a dialogue can quickly recognize the performance of the provider in this regard. A short response time encourages users to communicate with the provider, knowing that they will receive a response as soon as possible. Therefore, the link between the quality of chatbots, the information provided in customer support and sales support services, but also the response time influences the consumer's behavior, in the sense that, in case of satisfaction, he decides to continue the

purchase process. Otherwise, if the user stops in the consideration phase, there is a risk that the brand promoted by the retailer will be removed from the map of consumer perception.

Conclusions

The article contributes to the specialized literature through the detailed information obtained regarding the activity of retailers practicing retail in the online environment in Romania. By addressing the Technology Acceptance Model (Davis, 1985), the paper presents a new perspective by extending the two inherent elements, perceived utility and perceived ease of use, by applying measures to achieve a high degree of interaction in the process. communication via chatbots. The poor quality of the content displayed through the basic chatbots generates consumer dissatisfaction, especially in the pre-purchase stage, when users - potential customers - are interested in communicating in real-time with retailers. The article warns that chatbots are in an early stage of development (Smutny and Schreiberova, 2020), with a lack of personalization of messages, inappropriate timing of responses and less relevant texts to request customers in different stages related to the marketing funnel. Following the results, the authors consider that although implemented at a basic level, artificial intelligence can help improve personalized support functions, if chatbots are technically competent to continue the conversation at the request of users and if the response time is publicly visible on retailers' Facebook pages, which increases users' commitment to them. The academic environment can play a particularly important role by encouraging entrepreneurial education for students, from the perspective of using new technologies for a competent and sustainable entrepreneurial ecosystem of the future.

It can be concluded that the managerial implications are represented by the development actions that retailers must initiate within the organization. The authors recommend to the organizations from the economic environment the monitoring of the stages in which the target public is and the analysis of the level of acceptance of the use of the new technologies within the course undertaken by the potential clients. From this point of view, the general conclusion of the paper is outlined around the scenario in which online stores in Romania must apply AI technology solutions through basic chatbots, to deliver information on the following issues: availability and cost of products in stock, products personalized, personalized assistance and popular products, transmitted by approaching a form of personalized addressing, by using the first name.

The main limitation of the research is the analysis of retailers in terms of the number of users, which led to the inclusion in the analysis of a small number of subjects, depending on the classification made by the data provider. It can be deduced that certain retailers operating exclusively online were not included in the study, as they are not part of the top mentioned. This is also the case of online stores such as Emag.ro, Elefant.ro, Fashiondays.ro, Evomag.ro or Epiesa.ro, which do not appear to be the most visited according to trafic.ro, but have a significant dimension (PinBud, 2020). Another limitation of the research is that the study shows the approach of the perspective of the "mysterious client" and not consumers belonging to the public. Future research can be developed starting from considering the nominated limits, first, in the form of a quantitative study, to analyze on a national scale the opinion and attitude of consumers towards AI technology. Second, the results of the research can be capitalized by using them to start a survey, based on the variables mentioned in the paper, and finally, the research can be extended by taking into account the views of market leaders, which present a figure of significant business for the industry.

References

- Ameen, N., Tarhini, A., Reppel, A. and Anand, A., 2020. Customer experiences in the age of artificial intelligence. *Computers in Human Behavior*, [e-journal] 114, 106548. <https://doi.org/10.1016/j.chb.2020.106548>.
- Aoki, N., 2020. An experimental study of public trust in AI chatbots in the public sector. *Government Information Quarterly*, [e-journal] 37(4), 101490. <https://doi.org/10.1016/j.giq.2020.101490>.
- Ashfaq, M., Yun, J., Yu, S. and Loureiro, S., 2020. I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. *Telematics and Informatics*, [e-journal] 54, 101473. <https://doi.org/10.1016/j.tele.2020.101473>.
- Baier, D., Rese, A. and Roeglinger, M., 2018. *Conversational user interfaces for online shops? A categorization of use cases*. [pdf] Available at: <<https://www.fim-rc.de/Paperbibliothek/Veroeffentlicht/822/wi-822.pdf>> [Accessed 4 December 2020].
- Bătăgan, L., Mărășescu, A. and Pocovnicu, A., 2010. Consumer rights in digital economy. Case study of Romanian e-commerce usage. *Theoretical and Applied Economics*, 9(550), pp. 79-96.
- Berry, L.L., 1995. Relationship marketing of services: growing interest, emerging perspectives. *Journal of the Academy of Marketing Science*, 23(1), pp. 236-245.
- Brodie, R.J., Hollebeek, L.D., Jurić, B. and Ilić, A., 2011. Customer engagement: Conceptual domain, fundamental propositions, and implications for research. *Journal of Service Research*, 14(3), pp. 252-271.
- Canhoto, A.I. and Clear, F., 2020. Artificial intelligence and machine learning as business tools: A framework for diagnosing value destruction potential. *Business Horizons*, 63(2), pp. 183-193.
- CGS, 2018. *Chatbots deliver speed, but consumers still want humans. Are we moving too quickly to automation?* [pdf] Available at <https://www.cgsinc.com/sites/default/files/media/resources/pdf/CGS_Consumer%2BCustServ%2Binfographic%2B2018.pdf> [Accessed 30 November 2020].
- Chatbots Magazine, 2019. *Chatbot report 2018: Global trends and analysis*. [online] Available at: <<https://chatbotsmagazine.com/chatbot-report-2019-global-trends-and-analysis-a487afec05b>> [Accessed 30 November 2020].
- Chopra, K., 2019. Indian shopper motivation to use artificial intelligence. *International Journal of Retail & Distribution Management*, 47(3), pp. 331-347.
- Chung, M., Ko, E., Joung, H. and Kim, S.J., 2020. Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, 117(1), pp. 587-595.
- Ciechanowski, L., Przegalinska, A., Magnuski, M. and Gloor, P., 2019. In the shades of the uncanny valley: An experimental study of human–chatbot interaction. *Future Generation Computer Systems*, 92(1), pp. 539-548.
- Colicev, A., Kumar, A. and O'Connor, P., 2019. Modeling the relationship between firm and user-generated content and the stages of the marketing funnel. *International Journal of Research in Marketing*, 36(1), pp. 100-116.
- Columbia Public Health, 2020. *Content analysis method and examples*. [online] Available at: <<https://www.publichealth.columbia.edu/research/population-health-methods/content-analysis>> [Accessed 28 November 2020].

- Davis, F.D., 1985. *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Ph.D. Massachusetts Institute of Technology.
- de Bellis, E. and Venkataramani Johar, G., 2020. Autonomous shopping systems: identifying and overcoming barriers to consumer adoption. *Journal of Retailing*, 96(1), pp. 74-87.
- Ecommerce News, 2016. *Ecommerce in Romania*. [online] Available at: <<https://ecommercenews.eu/e-commerce-in-europe/e-commerce-romania/>> [Accessed 30 November 2020].
- EY, 2020. *How to accelerate online direct to consumer strategies beyond COVID-19*. [pdf] Available at: <https://www.ey.com/en_gl/consumer-products-retail/how-to-accelerate-online-direct-to-consumer-strategies-beyond-covid-19> [Accessed 30 November 2020].
- Fernandes, T. and Oliveira, E., 2020. Understanding consumers' acceptance of automated technologies in service encounters: Drivers of digital voice assistants adoption. *Journal of Business Research*, 122(1), pp. 180-191.
- Forbes, 2017. *Extreme personalization is the new personalization: How to use AI to personalize consumer engagement*. [online] Available at: <<https://www.forbes.com/sites/briansolis/2017/11/30/extreme-personalization-is-the-new-personalization-how-to-use-ai-to-personalize-consumer-engagement/>> [Accessed 30 November 2020].
- Forrest, E. and Hoanca, B., 2015. *Trends and Innovations in Marketing Information Systems*. Greece: Alexander Technological Educational Institute of Thessaloniki.
- GPeC, 2020. *Raport GPeC E-Commerce România 2019: Cumpărături online de peste 4,3 miliarde de euro, în creștere cu 20% față de 2018*. [online] Available at: <<https://www.gpec.ro/blog/raport-gpec-e-commerce-romania-2019>> [Accessed 30 November 2020].
- Hollebeek, L.D., 2011. Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management*, 27(7-8), pp. 785-807.
- IBM, 2017. *How chatbots can help reduce customer service costs by 30%*. [online] Available at: <<https://www.ibm.com/blogs/watson/2017/10/how-chatbots-reduce-customer-service-costs-by-30-percent/>> [Accessed 30 November 2020].
- INS, 2014. *Comunicat de presă nr. 155 din 30 iunie 2014: Populația rezidentă*. [pdf] Available at: <<https://insse.ro/cms/ro/content/popula%C5%A3ia-rezident%C4%83-la-1-ianuarie-2019-%C5%9Fi-migra%C5%A3ia-interna%C5%A3ional%C4%83-%C3%AEEn-anul-2018>> [Accessed 20 November 2020].
- Kaplan, A. and Haenlein, M., 2019. Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), pp. 15-25.
- Koumaras, V., Foteas, A., Foteas, A., Kapari, M., Sakkas, C. and Koumaras, H., 2018. 5G Performance Testing of Mobile Chatbot Applications. In: *IEEE, 23rd International Workshop on Computer-Aided Modeling and Design of Communication Links and Networks (CAMAD)*. Barcelona, Spain, 17-19 September 2018. Spain: Institute of Electrical and Electronics Engineer.
- Krippendorff, K., 2004. *Content Analysis: An Introduction to Its Methodology*. 2nd ed. London: SAGE.
- Lemon, K.N. and Verhoef, P.C., 2016. Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), pp. 69-96.

- McLean, G. and Osei-Frimpong, K., 2019. Chat now... Examining the variables influencing the use of online live chat. *Technological Forecasting and Social Change*, 146(1), pp. 55-67.
- Mihart (Kailani), C., 2012. Modeling the influence of integrated marketing Communication on consumer behaviour: an approach based on the hierarchy of effects concept. *Procedia - Social and Behavioral Sciences*, 62(1), pp. 975-980.
- Mindbrowser, 2017. 5 learnings from our 'Chatbot Survey-2017'. *Chatbots Journal*, [online] Available at <<https://chatbotsjournal.com/5-learnings-from-our-chatbot-survey-2017-72a6a4fc209c>> [Accessed 21 November 2020].
- Murtarelli, G., Gregory, A. and Romenti, S., 2020. A conversation-based perspective for shaping ethical human-machine interactions: The particular challenge of chatbots. *Journal of Business Research*, [e-journal] <https://doi.org/10.1016/j.jbusres.2020.09.018>.
- Pantelimon, F.-V., Georgescu, T.-M. and Posedaru, B.-Ș., 2020. The Impact of Mobile e-Commerce on GDP: A Comparative Analysis between Romania and Germany and how Covid-19 Influences the e-Commerce Activity Worldwide. *Informatica Economica*, 24(2), pp. 27-41.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L., 1994. Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research. *Journal of Marketing*, 58(1), pp. 111-124.
- Pillai, R., Sivathanu, B. and Dwivedi, Y.K., 2020. Shopping intention at AI-powered automated retail stores (AIPARS). *Journal of Retailing and Consumer Services*, [e-journal] <https://doi.org/10.1016/j.jretconser.2020.102207>.
- PinBud, 2020. *Statistici comerț online România 2017*. [online] Available at: <<https://www.ksd.ro/cat-e-de-profitabil-comertul-online-din-romania/>> [Accessed 1 December 2020].
- Platon, O.-E., 2015. The evolution of e-commerce in Romania. *Procedia Economics and Finance*, 23(1), pp. 1446-1450.
- Prentice, C. and Nguyen, M., 2020. Engaging and retaining customers with AI and employee service. *Journal of Retailing and Consumer Services*, [e-journal] <https://doi.org/10.1016/j.jretconser.2020.102186>.
- Reinartz, W., Wiegand, N. and Imschloss, M., 2019. The impact of digital transformation on the retailing value chain. *International Journal of Research in Marketing*, [e-journal] 36(3), pp. 350-366. <https://doi.org/10.1016/j.ijresmar.2018.12.002>.
- Rese, A., Ganster, L. and Baier, D., 2020. Chatbots in retailers' customer communication: How to measure their acceptance? *Journal of Retailing and Consumer Services*, [e-journal] <https://doi.org/10.1016/j.jretconser.2020.102176>.
- Rietz, T., Benke, I. and Maedche, A., 2019. *The impact of anthropomorphic and functional chatbot design features in enterprise collaboration systems on user acceptance*. [pdf] Available at: <https://chatbotresearch.com/wp-content/uploads/2019/02/wi2019_2.pdf> [Accessed 4 December 2020].
- Romania Insider, 2020. *Study: Romania's e-commerce market up 40% to EUR 6 bln in 2020*. [online] Available at: <<https://www.romania-insider.com/ro-ecommerce-isense-nov-2020>> [Accessed 28 November 2020].
- SAP Industries, 2020. *The intelligent enterprise for the automotive industry*. [online] Available at: <<https://www.sap.com/documents/2016/03/2e5a77d0-627c-0010-82c7->

- eda71af511fa.html> [Accessed 30 November 2020].
- Sheehan, B., Jin, H.S. and Gottlieb, U., 2020. Customer service chatbots: Anthropomorphism and adoption. *Journal of Business Research*, 115(1), pp. 14-24.
- Sitar-Taut, D.A., Stanca, L.M., Buchmann, R. and Lacurezeanu, R., 2009. A case study on usability metrics applied in Romanian E-commerce environment. *WSEAS Transactions on Information Science and Applications*, 6(10), pp. 1697-1706.
- Smutny, P. and Schreiberova, P., 2020. Chatbots for learning: A review of educational chatbots for Facebook Messenger. *Computers and Education*, [e-journal] <https://doi.org/10.1016/j.compedu.2020.103862>.
- Souiden, N., Ladhari, R. and Chiadmi, N.E., 2019. New trends in retailing and services. *Journal of Retailing and Consumer Services*, 50(1), pp. 286-288.
- Stoica, I., Vegheş, C. and Orzan, M., 2015. Statistical exploratory marketing research on Romanian consumer's behavior regarding smartphones. *Procedia Economics and Finance*, [e-journal] 32(1), pp. 923-931. [https://doi.org/10.1016/S2212-5671\(15\)01549-X](https://doi.org/10.1016/S2212-5671(15)01549-X).
- Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P. and Fischl, M., 2020. Artificial intelligence in supply chain management: A systematic literature review. *Journal of Business Research*, 122(1), pp. 502-517.
- Trafic, 2020. *Top siteuri general*. [online] Available at: <www.trafic.ro> [Accessed 26 September 2020].
- Varga Apăvăloaie, E., 2015. France regarding e-commerce. *Acta Electrotehnica*, 56(1-2), pp. 83-89.
- Voineagu, V., Vasilache, S.N., Şerban, D., Cristache, S.E. and Begu, L.S., 2016. An analysis of the Romanian e-commerce trade trends in European perspective, economic computation and economic cybernetics studies and research. *Faculty of Economic Cybernetics, Statistics and Informatics*, 50(1), pp. 235-252.
- Xu, Y., Shieh, C.H., van Esch, P. and Ling, I.L., 2020. AI customer service: Task complexity, problem-solving ability, and usage intention. *Australasian Marketing Journal*, [e-journal] 24(4), pp. 189-199. <https://doi.org/10.1016/j.ausmj.2020.03.005>.
- Xueming, L., Tong, S., Fang, Z. and Qu, Z., 2019. Machines versus humans: The impact of AI chatbot disclosure on customer purchases. *Marketing Science*, 38(6), pp. 937-947.
- Young, E., 2014. *How to copilot the multichannel journey key global contacts*. [online] Available at: <<https://www.slideshare.net/SandraThevenaz/eyconsumersonboard-49320356>> [Accessed 3 December 2020].