
The Use of Artificial Intelligence in E-Commerce Customer Communication

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Abstract:

Purpose: The aim of the article is to address the issue of using artificial intelligence tools to communicate with customers in e-commerce. The first part of the study analyzes theoretical approaches to artificial intelligence. The second part describes the research methodology, presents the results and analysis of own research.

Design/Methodology/Approach: The purpose of the article was achieved through an argumentative review of the literature, providing a foundation for the methodological assumptions for further research. The main research method was a diagnostic survey. The use of a combination of qualitative and quantitative methods made it possible to find out the opinions of respondents on the issue under study. This made it possible to formulate conclusions and recommendations.

Findings: In view of the unquestionable presence of artificial intelligence in various areas of social life, an attempt was made to solve the research problem concerning the application of the Chatbot artificial intelligence tool in customer communication in the e-commerce sector. The analysis of the extensive literature on the subject and the results of survey research indicate that there are numerous controversies related to the use of artificial intelligence and its practical applications.

Practical Implications: The conclusions of the research should serve as guidelines for improving the design of a communication tool such as Chatbot. They also suggest directions for the development of the competence of managers responsible for communication in the company, paying particular attention to modern tools and technologies.

Originality/value: The originality of the article lies in taking up a topic that has not been widely covered in the literature so far. The analysis conducted made it possible to identify contemporary trends in the perception of artificial intelligence and its applications. The growing interest of consumers in Metaverse-related products and services, including e-commerce, and their increasing activity in virtual spaces was noted. The thesis was put forward that although communication with Chatbot in e-commerce is not without its flaws, it supports the process of making purchasing decisions and improves the effectiveness of customer interactions.

Keywords: Artificial intelligence, communication, e-commerce, virtual reality

JEL classification: M12, M54, J53.

Paper Type: Research article.

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1. Introduction

Those unfamiliar with the topic associate artificial intelligence with charismatic computers or human-like robots, such as those depicted in science fiction. Others, when thinking about artificial intelligence, envision mysterious computers locked in research laboratories or superintelligent machines.

The above-mentioned visions seem distant and intangible. Maybe it is so because they are only a fraction of the capabilities and diversity which AI makes possible. The development of technology has made the participation of artificial intelligence in human space commonplace (Auzina *et al.*, 2023).

Another issue is whether people are aware that they use artificial intelligence. Artificial intelligence often works behind the scenes (Trunfio, 2022). Contemplating the future of artificial intelligence, expert opinions are highly divergent. There is no consensus either on the time scale or on the forms that artificial intelligence may eventually take (Bostrom and Yudkowsky, 2014; Müller, 2014; Remmers, 2019; Sullins, 2006; Toosi *et al.*, 2021; Tyagi *et al.*, 2023; Velinov *et al.*, 2023).

Over the span of many years, periods of fascination and reduced popularity of artificial intelligence, called "winter periods", have been observed (Floridi, 2020; Schuchmann, 2019; Walch, 2019), which determine the interest taken by the researchers of AI. The capabilities of artificial intelligence are almost limitless. The problem, however, is not its capabilities but issues related to the control, ethics, and legislation of its use. On account of certain circumstances, AI can be perceived as a moral subject, which implies placing emphasis on the refinement of AI used, among others, in relations with humans.

Changes in consumer and business behaviour are often associated with changes in the meta-world, one element of which is artificial intelligence. The aim of the study is to address the issue of using artificial intelligence tools to communicate with the customer in e-commerce, which has been detected as a research gap. The analysis and conclusions obtained from the research aim to optimise the design or selection of AI tools used to contact customers in the e-commerce sphere.

2. Artificial Intelligence Identification

Nowadays, artificial intelligence is the subject of interest in many scientific fields, ranging from computer science to psychology, sociology, philosophy, and economics. Accordingly, there are many approaches to defining it. Artificial intelligence is a term proposed by John McCarthy as early as in 1955. It was defined by him as the engineering of creating intelligent machines that use language, create abstractions and concepts, and solve problems currently reserved for humans (McCarthy *et al.*, 1955).

Presently, John McCarthy (2007a; 2007b) describes artificial intelligence as the science and engineering of creating intelligent machines, especially intelligent computer programmes. McCarthy's modern ideas boldly proceed towards the possibility of comparing AI to human intelligence.

Artificial intelligence is also referred to as the science of creating machines that have some of the characteristics inherent in the human mind, such as the ability to understand language, recognise images, solve problems, and learn (Cambridge Dictionary, 2023). The Cambridge Business English Dictionary compares AI to computer technology which allows something to be done in a similar way to how a human would do it. Put another way, artificial intelligence is defined as "the ability of machines to exhibit human skills such as reasoning, learning, planning, and creativity" (Europarl.eu, 2023).

In another sense, artificial intelligence has been described as "the study of computations which make possible perception, reasoning, and action" (Winston, 1992, p. 8). Balcerzyk (2024) defines AI as non-human intelligence, measured by the ability to replicate human mental skills such as pattern recognition, natural language understanding (NLP), adaptive learning from experience, strategy development or reasoning.

Despite the fact that artificial intelligence is currently a popular concept it is often treated as a remedy for the shortcomings of the current socio-economic model, or conversely, it is branded as enemy number one (Eager *et al.*, 2020; Zhuang *et al.*, 2017). However, it seems to be a concept insufficiently explained, researched and understood.

3. Classification of Artificial Intelligence

Stuart Russell and Peter Norvig (2016, pp. 2-5) distinguish between two approaches to artificial intelligence which differentiate between computer systems on the basis of rationality and thinking as opposed to action:

- *Human approach: systems thinking like humans, systems acting like humans;*
- *Ideal approach: systems reasoning in a rational way, systems acting in a rational way.*

In the field of information sciences, there is a division between two types of artificial intelligence: weak and strong.

The first one - weak artificial intelligence, also termed narrow AI - is trained and used to perform specific tasks. It finds significant applications, for example, in Apple's Siri, Amazon's Alexa assistant, IBM Watson, and autonomous vehicles. Weak (or narrow) artificial intelligence is limited to narrow tasks, such as product

recommendations on Amazon and Google in response to keywords entered by the user. A weak AI programme does not engage in conversation, recognise emotions, or learn for the sake of learning; it simply does what it has been designed to do (Rose, 2020).

The second type of artificial intelligence is strong artificial intelligence. Owing to strong artificial intelligence, a machine exhibits all of the behaviours that can be expected from a person. Some computer scientists define strong artificial intelligence as general artificial intelligence - broad intelligence which is not applied to only one narrow task (Rose, 2020).

Going further, the building blocks of strong artificial intelligence are: Artificial General Intelligence (AGI) and Artificial Super Intelligence (ASI). General artificial intelligence (AGI) is a theoretical form of artificial intelligence in which it is assumed that a machine would have intelligence equal to that of humans, self-awareness with the ability to solve problems, learn, and plan for the future. Artificial super intelligence (ASI) would surpass the intelligence and capabilities of the human brain. It should be emphasised that strong artificial intelligence is still only theoretical, and its examples are only in the realm of science fiction (Gurkaynak *et al.*, 2016, pp. 3-5; IBM, 2023).

Artificial intelligence can be classified in many ways. The classification based on the functionality allows for distinguishing:

- Reactive machines, which are one of the basic forms of artificial intelligence. They are characterised by no memory of the past and thus cannot use information from the past as information for future actions. For instance, the IBM chess programme that defeated Garry Kasparov in the 1990s.
- Limited memory - artificial intelligence systems that can use past experiences to make future decisions. The use of selected decision-making functions in autonomous cars.
- Theory of mind. This type of artificial intelligence is not yet sufficiently developed. It is assumed that it should be able to understand people's emotions, beliefs, thoughts, expectations and be able to interact socially.
- Self-awareness - artificial intelligence which comprehends itself as a conscious, super intelligent and sensitive complete entity. Of course, this type of bot does not exist either, and if it is achieved, it will be one of the milestones in the field of artificial intelligence (Kumar, 2018).

4. Applications of Artificial Intelligence

It should be emphasized that artificial intelligence is already ubiquitous. Many applications of artificial intelligence technology and techniques have become so

commonplace that we do not consider these applications to be related to artificial intelligence.

The application of artificial intelligence is practised when using specific methods, i.e.:

1. Machine Learning (ML) is a method in which a goal is defined, and the steps to achieve this goal are learned by the machine itself through learning (gaining experience). For example, in order to identify a simple object.
2. Natural Language Processing (NLP) is broadly defined as the automatic manipulation of natural language, such as speech and text, by software. One well-known example thereof is spam detection in e-mails.
3. Machine vision is a field which allows machines to see. Machine vision - it captures and analyses visual information using a camera, analogue and digital conversion, as well as digital signal processing. It can be compared to human sight, but it lacks human limitations, which, for example, do not allow for seeing through walls or in the dark. An example of this technology is ViDi Suite, which consists of three different tools. ViDi Blue, which searches for and detects one or more features in an image. The tool locates and identifies complex functions and objects by learning from annotated images. ViDi Red detects anomalies by learning the normal appearance of an object, including its variations. This tool also segments specific regions in images. ViDi Green learns to separate different classes based on a collection of labelled images to classify an object (Hardin, 2017).
4. Autonomous vehicles. At the moment, the Society of Automotive Engineers (SAE 2023) defines 6 levels of driving automation, from 0 - fully manual to 6 - fully autonomous (1 - No Driving Automation, 2 - Driver Assistance, 3 - Partial Driving Automation, 4 - Conditional Driving Automation, 5 - High Driving Automation, 6 - Full Driving Automation). This area of artificial intelligence arouses great interest. The list of vehicles includes cars, buses, trucks, trains, ships, submarines, aerial drones with autopilot, etc.
5. Robotics, which is a field of engineering focused on the design and production of robots. Robots are most often used to perform tasks which are difficult for humans to perform or are monotonous, and robots perform them consistently. Examples of applications include car assembly lines, serving meals and preparing meals in hotels, cleaning, patrolling agricultural areas, and even as police officers.

Particularly noteworthy is the use of machine learning to build robots which interact socially – humanoid robots, an example of which is Sophia (Hanson 2023). Hanson declares that he designs robots and AI to be as human-like as possible, as holistic AI platforms that serve as general-purpose robotic platforms for learning and performing tasks similar to human ones.

The application of AI robots is possible in the fields of industry, military service, medicine, exploration and entertainment, etc. AI robots need methods to navigate different settings, interact with people, and cope with circumstances that require complicated semantics.

The use of artificial intelligence is already a thing of the present day. We participate in an unprecedented invasive dissemination of technologies based on artificial intelligence. Examples of applications can be found in specific activities supporting various areas of human life.

Amongst them, specific applications are noted (Russell, 2016; Luxton, 2016; Emmert-Streib *et al.*, 2020; Kanari *et al.*, 2022; Rose, 2020, Sejnowski, 2018; Ako-Nai *et al.*, 2022; Gebert *et al.*, 2003), speech recognition, customer service, image classification, autonomous vehicles, fraud detection systems, cybersecurity, transport, machine translation, bipedal (or quadrupedal) motion and question answering systems, expert systems, neuroscience, legal support, e-commerce, military operations, etc.

There are many applications of AI technologies similar to those mentioned above, as well as completely new ones that are waiting to be discovered. The only limitation is ourselves (Bostrom, 2014; Hutson, 2023; Muller, 2014; Ocampo, 2023; Simonite, 2015; Yudkowsky, 2012). Because at the moment, technology is accelerating much faster than our ability to understand and regulate it.

5. Research Methodology

The implementation of the research problem undertaken required a combination of theoretical methods aimed at determining the current state and empirical methods. The method of literature analysis allowed for detecting a research gap pointing to the need for carrying out research. Critical analysis of the literature dealing with the research subject allowed the construction of theoretical foundations and preparation of a research tool.

Contemporary trends in the approach to artificial intelligence and issues of its application were identified. It was noticed that consumers increasingly select Metaverse products and services and participate in virtual worlds, to which e-commerce services also belong. A thesis was put forward, according to which the use of communication with Chatbots in e-commerce is fraught with imperfections, but it has a positive effect on the purchase decision and increases the effectiveness of communication.

The research was focused on detailed research questions. Finding an answer to the following question was an important issue: What advantages and disadvantages do consumers perceive in a relationship with the Chatbot? Questions were also asked: Do the respondents willingly use the service which consists in communication with

Chatbots? What impact does communication with Chatbots have on decision-making? How do they assess issues such as time or credibility of information provided by Chatbots? What is their assessment of Chatbots as a human substitute? The key problem was also the assessment of the impact of communication with Chatbots on the effectiveness of communication.

In order to learn about the consumer's position on the tool that is Chatbot, the diagnostic survey method was used. In the survey, a questionnaire was used, and the research questions contained in it were verified during a pilot study. This paper presents a fragment of broader research addressing trust in artificial intelligence. Empirical research was carried out at the beginning of 2023. The survey method was carried out using an online tool in which 320 respondents took part.

Among the respondents, women accounted for 66.67%, while the remaining 33.33% were men. The data from the research results indicates that representatives of various management tiers in organizations took part in it. Senior management constituted a small percentage of 1.88%. The next level - middle management accounted for 21.88%, lower-level management - 11.88% and employees - 64.38%. The job seniority of the respondents was taken into account as well.

According to the data, employees with the seniority of over 20 years constituted 7.50%, then 16-20 years 5.63%, 11-15 years 13.13% and 6-10 years 20%. Employees with job seniority of 0-5 years constituted the highest percentage share of 53.75%.

It was assumed that in the analysis of the research problems, educational background of the respondents would also be an important indicator. The highest percentage of the respondents, i.e., 77.50%, were people with first-cycle higher education holding a bachelor's degree, then 13.75% had secondary education and people with second-cycle higher education holding a master's degree constituted the lowest percentage share of 8.75%.

The variables investigated had no statistical impact on correlations and the relative uniformity of the sample was its limitation. The research sample consisted mainly of Generation Z representatives who are at the beginning of their professional career. The main criterion in the process of selecting was the experience of that generation with Metaverse and the world of the Internet.

The study made use of the concept of Metaverse understood as a new virtual shared space in which people can interact with each other, while the basic environment remains consistent for all visitors (Mozumder *et al.*, 2022). At the same time, the research also assumed the proficiency and customer experience of Generation Z in e-commerce and the potential reflection skills acquired in this relationship.

6. Results of the Research

The pilot study conducted among the young people of Generation Z showed that they are not overly eager to communicate with Chatbots. They were asked the following question: are they willing to communicate with Chatbots? 37.50% of the respondents answered positively, while the majority of them, that is 62.50%, replied that they were reluctant to use this method of communication.

An important issue that was raised in the questionnaire concerned the advantages and disadvantages that respondents noticed in their communication with Chatbots. For this purpose, the respondents were offered multiple-choice answers prepared by analysing the literature on the problem. The answers contained 10 advantages of which the respondents could choose any set they considered the most vital. The data obtained from the answers to those questions is included in Table 1.

Table 1. The advantages of communication with Chatbots according to the respondents

No.	Response categories	n	ranking
1.	I can obtain information quickly	79	1
2.	I do not have to wait for a call or an e-mail response from the website service	64	2
3.	I obtain comprehensive information	42	4
4.	I can ask for details which are not included on the website	52	3
5.	I obtain accurate information	33	7
6.	I can trust Chatbots	8	8
7.	Chatbots make decision-making easier for me	38	5
8.	I appreciate the interest / attention given to me	8	8
9.	Chatbots are free from prejudice and stereotypes	36	6
10.	I do not see any advantages	6	9

Source: Own research.

The data obtained as a result of the respondents' answers shows that the advantage indicated by the largest number of respondents (79 indications) noticed in communication with Chatbots was that “they can obtain information quickly”. The second most frequently indicated advantage (64 indications) was that the respondents “do not have to wait for a phone or an e-mail response from the website service”.

The third most frequently indicated advantage (52 indications) was “the possibility to ask about details which are not included on the website”. The fourth most frequently indicated advantage (42 indications) was “the possibility to obtain comprehensive information”.

The next - the fifth - most frequently indicated advantage (38 indications) concerned

“the facilitation of the decision-making process”. The sixth position in the ranking of the most frequently indicated advantages (36 indications) was the statement that “Chatbots are free from prejudice and stereotypes”. Another advantaged signified the respondents' appreciation of “obtaining accurate information” (33 indications). The eighth position in the ranking was held *ex aequo* by the following statements: “I can trust Chatbots”, and I appreciate the interest / attention given to me (8 votes per answer).

Both statements relate to the emotional level of the relationship with artificial intelligence. The lowest number of indications among the respondents was awarded to the statement: “I do not see any advantages” (6 indications).

In conclusion, the respondents indicated mostly these advantages that allow them to save their time, as well as quickly and efficiently obtain or supplement information about products. The other advantages constitute a group which favoured easier decision-making, among other things, due to the issues in the acquisition of information. It was also pointed out that Chatbots are impartial and objective, which guarantees greater comfort in relationship with them and thus increases trust in this form representing AI.

Table 2 presents the data derived from answers to the question about the disadvantages that the respondents perceive in communication with Chatbots. Just as above, 10 multiple-choice answers were prepared for the respondents. The respondents were asked to indicate those disadvantages that they found absolutely vital.

Table 2. *Disadvantages of communication with Chatbots according to respondents*

No.	Response categories	n	ranking
1.	I cannot trust the information provided by Chatbots	47	7
2.	I would rather talk to a human	89	1
3.	Chatbots do not understand my questions	86	2
4.	The replies provided do not answer my questions	86	2
5.	Chatbots provide answers containing unnecessary information	66	3
6.	Chatbots provide unclear answers	59	4
7.	Chatbots provide inadequate answers	49	6
8.	Chatbots are not flexible enough	57	5
9.	Chatbots do not read emotions, which makes communication difficult	66	3
10.	I do not see any disadvantages	1	8

Source: Own research.

Most respondents indicated the fact that “they would rather talk to a human” (89 votes) as the most vital disadvantage. In the second position, *ex aequo*, the respondents indicated the problem that Chatbots have with reading and

understanding information – “Chatbots do not understand my questions” - and the issue that may result from that, namely “the replies provided by Chatbots do not answer my questions” (86 votes per answer). the third position among the disadvantages provided obtained two following statements: “the answers provided by Chatbots contain unnecessary information” and “Chatbots do not read emotions, which makes communication difficult” (66 votes per answer). In the fourth position, among the disadvantages indicated, the respondents indicated that Chatbots “provide unclear answers”(59 votes).

Another disadvantage indicated by the respondents was that “Chatbots are not flexible enough” (57 votes). The next statement in the ranking was that Chatbots “give inadequate answers” (49 votes). One of the last indicated disadvantages was that the respondents “cannot trust the information provided by Chatbots” (47 votes). Yet only one indication of the respondents proved that “they do not see any disadvantages of communication with Chatbots”.

It must be noted that the disadvantages identified by the respondents to a great extent concerned problems with receiving and interpreting information received by Chatbots, which translated into providing the respondents with wrong answers. These include problems with communication skills of the Chatbots that the respondents had to deal with. The implication of this conclusion is a suggestion that this element of AI software, communicating with customers, should be improved.

The decisions regarding the choice of a Chatbot model used to communicate with customers are made by managers of a given company. Attention should be paid to the issue of developing managers' competences in the area of new technologies, as well as identification of key competences based on the knowledge management process in an organisation (Balcerzyk, 2020; 2021).

An important point is the advisability of using Chatbots in communication with customers. This matter is essential for improving the process of communication. The question is, which areas are to be improved. There are two important areas which are appreciated by customers. The first one is time savings. The respondents were asked for their opinion on this issue. The data obtained from their responses is presented in Table 3.

Table 3. The evaluation of the time spent communicating with Chatbots, in the respondents' opinion

No.	Response categories	n	%
1.	It saves my time	150	46.87
2.	It wastes my time	78	24.38
3.	None of the above	92	28.75
	Total	320	100

Source: Own research.

According to almost half of the respondents (46.87%), communication with Chatbots “saves their time”. Approximately one-fourth of the respondents 24.38% believe that this communication “wastes their time”. Nearly one-third of respondents, as 28.75% concluded that communication with Chatbots neither saves nor wastes their time.

The second essential function in improving the communication process is providing assistance in making purchase decisions. The respondents were asked about what influence communication with Chatbots exerts on their decision-making in their opinions. Respondents were asked to select the most appropriate answer. The data obtained is presented in Table 4.

Table 4. *The impact of communication with Chatbots on the decision-making, in the respondents' opinion*

No.	Response categories	n	%
1.	It does not affect decision-making	172	53.75
2.	It facilitates decision-making	100	31.25
3.	It complicates decision-making	48	15.00
	Total	320	100

Source: Own research.

In the opinion of 53.75% of respondents, communication with Chatbots “has no impact on decision-making”. About one-third of the respondents believe that it “facilitates decision-making”. Meanwhile, 15% are of the opinion that communication with Chatbots “hampers decision-making”.

The research includes the emotional aspect of interpreting Chatbots, which can have two facets. The first one is impartiality and objectivity - considered to be an advantage conducive to building trust. The second one is the absence of emotions, an inability to read emotions, contexts or indifference, etc.

Chatbots, as an AI tool, are intended to serve as a human substitute. One may agree or disagree with this statement. It is a subject of considerations, particularly from psychosocial perspectives. Reflections on the topic of whether one can befriend a robot become increasingly often found in literature (Archer, 2021).

People want to feel certain that if someone is to replace them, they have to fulfil their duties perfectly. The research attempted to explore the opinions of the younger generation on this issue. The respondents were asked to choose a statement about Chatbots with which they agree.

Among the provided statements were: it tries to ineptly replace a human being, it replaces a human being successfully, and none of the above. The data obtained from the study is included in Table 5.

Table 5. *The respondents' opinion regarding Chatbots as a human substitute*

No.	Response categories	n	%
1.	It tries to ineptly replace a human being	135	42.19
2.	It replaces a human being successfully	48	15.00
3.	None of the above	137	42.81
	Total	320	100

Source: Own research.

The interpretation of the data obtained is not easy. The smallest percentage of respondents, 15%, believe that Chatbots “successfully replace a human being”. A significant percentage of 42.19% of respondents think that Chatbots “try to ineptly replace a human being”.

A similar percentage share of 42.81% gave the "none of the above" answer. Can this statement be interpreted to be evasive, one that does not consider Chatbots as a human substitute? It may not be an exaggeration if the researcher ventures to interpret this response as an average rating of Chatbots as a human substitute - neither the best, nor the worst.

The essence of utilizing modern tools is the improvement of effectiveness. The respondents were asked for their opinions regarding the impact of communication with Chatbots on the effectiveness of communication. The data on this subject is presented in Table 6.

Table 6. *The impact of communication with Chatbots on communication effectiveness in the respondents' opinions*

No.	Response categories	n	%
1.	It does not affect the effectiveness of communication	109	34.06
2.	It reduces the effectiveness of communication	85	26.56
3.	It increases the effectiveness of communication	126	39.38
	Total	320	100

Source: Own research.

The opinions of 39.38% of the respondents confirm the “increase in communication effectiveness” when using an AI tool, such as a Chatbot. However, a slightly smaller percentage of respondents, namely 34.06%, believe that Chatbots “have no impact on communication effectiveness”. Meanwhile, 26.56% of respondents think that Chatbots actually “reduces the effectiveness of communication”.

7. Conclusion

Addressing the topic of artificial intelligence, the author treated this issue as another technological achievement which is supposed to make human life easier. A review of the extensive literature on the subject reveals many disputed issues related to

artificial intelligence. The intended length of this article would not accommodate all of the diverse positions of AI researchers. Of course, these positions range from enthusiasm to concerns related to the utilization of AI by humans. Given the indisputable presence of AI in various spheres of society, an attempt was made to address the research problem which focused on the use of the artificial intelligence tool - the Chatbot - for customer communication in the e-commerce space. Due to limitations, the results presented are a fragment of broader research on this issue.

The respondents included in the research were representatives of Generation Z. In short, for the purposes of the discussed subject, this generation can be described as "natives" in the sphere of technology and the Metaverse. Thus, it was surprising to read the data from the research results that did not demonstrate awareness of interacting with AI. Empirical research demonstrates that representatives of Generation Z:

- reluctantly engage in communication with Chatbots,
- believe that Chatbots ineptly attempt to replace the human being.

In addition, among the disadvantages of communicating with Chatbots, they mention problems with receiving and interpreting information processed by Chatbots, which translates into errors in the responses given. At the same time, they notice the advantages of communication with Chatbots. Generally, among the most significant, those related to the customer's time should be mentioned:

- time savings,
- direct contact,
- quick provision of information,
- the possibility of obtaining additional information.

Also noteworthy is the frequently indicated advantage of Chatbots, which is their impartiality and objectivity. A Chatbot being free from prejudices and stereotypes positively impacts the effectiveness of customer relations. Despite all these advantages, paradoxically, a significant part of the respondents (about half) believes that communication with Chatbots does not impact the decisions they make. This result can be interpreted as social feelings underpinned by the desire for self-determination. Especially considering that among the advantages, the respondents pointed to facilitation in decision-making.

The use of an AI tool, such as the Chatbot, should have its significant justification. This is found in the opinion of the respondents, who believe that communication with Chatbots increases the effectiveness of communication process in the e-commerce space.

The results of theoretical and empirical research conducted and presented in the article allow for formulating the most significant conclusion, namely that

communication with Chatbots increases the effectiveness of the communication process in the e-commerce space. Thus, the thesis formulated, which assumed that the use of communication with Chatbots in e-commerce is associated with imperfections, but it positively affects purchase decisions and increases the effectiveness of communication was positively verified.

The conclusions from the research should serve as guidelines for improving the design of the communication tool which the Chatbot is. They also suggest directions for developing the competences of managers responsible for corporate communication, paying particular attention to modern tools and technologies.

The author would like to mention that the research conducted was a pilot study, which means that the research results cannot be applied to the entire Generation Z in Poland. The author of the article intends to conduct research taking into account the criterion of representativeness, incorporating necessary changes in the research tool. The method of literature analysis has revealed a research gap which requires further investigation.

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