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POLISH CONSUMERS' ATTITUDES TO THE USE OF CHATBOTS IN LOGISTICS CUSTOMER SERVICE[1]

Summary

Purpose – This article aims to identify, analyze, and characterize consumer attitudes to chatbots in logistics customer service and the factors determining these attitudes.

Research method – The empirical study on the attitudes of Polish consumers to the use of chatbots in logistics consumer service was conducted on a research sample of 553 consumers in March 2024 and covered the entire area of Poland.

Results – The study suggests that most respondents are open to using chatbots in logistics customer service, seeing them as useful for improving service speed and efficiency. They mainly use chatbots occasionally on websites and phone lines, preferring their text-based versions for tracking shipments and receiving technical support. The key positive factors include 24/7 availability and quick responses. Concerns involve the misinterpretation of questions, incorrect responses, a lack of human support, and limited functionality. Non-users often mention a lack of opportunity to try chatbots and a preference for human interaction.

Originality/value/implications/recommendations – The research subject is unique, rarely studied in Polish literature, even though up-to-date knowledge of consumer attitudes to the use of chatbots in logistics consumer service is particularly important for business strategies.

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1. Introduction

In recent years, increasing attention has been paid to artificial intelligence (AI) and its possible uses. AI also plays a more important role in many areas and industries, such as marketing, education, entertainment, and healthcare [Adamopoulou et al., 2020, p. 373], as well as banking, insurance, and telecommunications [Silva et al., 2021; Nicolescu et al., 2022, p. 8; p. 457]. In logistics, it is applied in: demand forecasting, route planning and optimization, warehouse management, data analysis and process optimization, fleet monitoring and shipment tracking, automation and robotics support, as well as risk and safety management, among others [Menti et al., 2023, p. 2]. It is also seen as a promising technology for service providers as it ensures automated customer service.

Although the use of AI has been quite common for many years, its dynamic development occurred in the last two years of the COVID-19 pandemic, and 2021 was a decisive year for the inclusion of this technology in customer service activities [Nicolescu et al., 2022, p. 2]. Its application is predominantly evidenced in the deployment of virtual assistants and chatbots. AI conversational agents (chatbots) are interactive systems in which human–computer interaction takes place and can communicate using natural language. The latest achievements in AI in recent years have contributed to the use of this type of technology on a wider scale. Currently, chatbots provide quick answers to customer questions, speed up the service process, enable the tracking of shipments, provide information on stock status, and help in handling complaints. Consumers encounter them at various stages of the purchasing process [www 1; www 2].

It is expected that these new technologies will be used more and more widely every year to improve customer experiences. However, it should be noted that using chatbots is beneficial for companies when they are associated with a positive customer experience [Nicolescu et al., 2022, p. 2].

Previous studies focused on finding factors influencing customer experience with chatbots [Nicolescu et al., 2022], the functionality of this technology in the context of improving service efficiency, and meeting customer expectations [Misischia et al., 2022; Wang et al., 2023], its usefulness during the pandemic [Huang et al., 2021], and its acceptance by consumers [De Cicco et al., 2022]. In Polish literature, most attention was paid to the opportunities of enterprises to use this technology [Kucharska, Malinowska, 2021; Panasiuk, 2022; Sira, 2022].

Therefore, research on chatbots is of great importance. It is also worth knowing what the attitudes of Polish consumers to the use of AI in logistics customer

service are. The topic is important, up to date and engaging for both academic researchers specializing in various fields of science and for practitioners.

It is worth adding that the research results will be important particularly for industries operating in the B2C model, where the frequency and quality of customer service are important. Identifying customer expectations of chatbots can give software engineers clear directions on how to create their essential features and thus improve service quality.

Therefore, to obtain a comprehensive view of the problem, the author decided to answer several research questions: do Polish consumers have a positive attitude to the use of chatbots in logistic customer service? Where do they use these technologies most often? What do they use them for? What concerns do they have about them? What factors have the greatest impact on their attitudes to chatbots? And why (on the other hand) might they not use them?

Six research hypotheses were proposed, based on the literature on the subject:

H1: It is hypothesized that most consumers have a positive attitude to using chatbots in logistics customer service.

H2: It is hypothesized that consumers use chatbots mostly on business websites, telephone lines, and mobile applications.

H3: It is hypothesized that consumers use chatbots mostly to track the shipment status of purchased goods.

H4: It is hypothesized that the misinterpretation of questions and incorrect answers are the most important concerns of chatbot users.

H5: It is hypothesized that the most important factors determining consumers' positive attitudes to chatbots in logistics customer service are quick contact, response accuracy, and problem solving.

H6: It is hypothesized that some consumers do not use chatbots primarily because they do not believe in their effectiveness and are concerned about cybersecurity.

The theoretical and cognitive goals of this article are to identify, analyze, and characterize consumer attitudes to chatbots in logistics customer service and the factors determining these attitudes. The practical goal is to formulate recommendations that can be used by enterprises using chatbots in logistics customer service.

The work is divided into several sections. The first one contains a review of literature related to the research subject. The second one is devoted to the research methodology and data collection, and the third one describes and discusses the empirical results obtained. It should be noted, however, that owing to the unique

nature of the research subject, there are not many studies that could be used for comparative purposes. The conclusions summarize the study and indicate where the research results can be applied. The limitations of the study and further research directions are also pointed out.

2. Literature review

A chatbot is an example of an AI system and one of the most elementary and widespread examples of intelligent human–computer interaction. It is a software application that is designed to mimic human conversation through text or voice interactions and which understands one or more human languages through natural language processing. Chatbots are also referred to as intelligent bots, interactive agents, digital assistants, and artificial conversational entities [Adamopoulou, Moussiades, 2020b, p. 1].

Logistics customer service is one of the most important processes in an enterprise, in which most employees of the marketing and logistics departments participate. The tasks and activities they perform complement each other, making customers satisfied with the company's efforts [Szydełko, 2012]. In the broad sense, logistics customer service includes all activities performed to meet customer requirements, continuous monitoring of the services based on metrics, as well as the approach of the company, which is obliged to put customer satisfaction first [Coyle et al., 2002, p. 155]. Customer service is based on constantly developing marketing and contact with consumers, which is why three phases of service are indicated in the customer service process: pre-transaction, transaction, and post-transaction (Table 1).

In terms of quality and efficiency, logistics customer service allows organizations to build strong brands that stand out from the competition and allow them to attract more repeat customers, which in the long run allows them to increase profits, as well as to gain and maintain a competitive advantage in the market. In this context, AI and AI-based tools such as chatbots significantly improve the quality of this service. This technology primarily enables the automation of customer service by providing information about product availability, order status, tracking shipments and answers to frequently asked questions. The speed of responses to customer inquiries (24/7) and personalization of service are its characteristic feature. Chatbots are also often used to collect opinions and feedback about customers [Menti et al., 2023, p. 3]. Therefore, they can be used in every phase of customer service mentioned above.

Phases of logistic customer service and its sample components

Pre-transaction components	Transaction components	Post-transaction components
– Development of customer service standards – Organization and flexibility of the delivery system – Adaptation of the organizational structure – The company's written declarations regarding customer service policy – Adaptation of procedures and provision of customer service training	– Order processing time – Facilities used to place orders – Stock availability of appropriate products – Delivery time and methods of transporting goods – Ability to obtain emergency supplies – Convenience and precision of deliveries – Scope of product substitution	– After-sales service – Repairs – Spare parts – Complaints – Returns

Source: own study based on: [Strojny, 2008; Kempny, 2001, pp. 19–27].

This subject was discussed by Nicolescu and Tudorache [2022], among others, who focused on identifying the main factors influencing customer experience with chatbots and determining the resulting dimensions of customer experience (such as perceptions, attitudes, and feelings, as well as reactions and behaviors). Analysis using the systematic literature review method made it possible to identify the main factors influencing customer experience with chatbots. Chatbot-related, customer-related, and context-related factors have been distinguished. It has been noted that the multitude of factors that influence customer experience results in positive or negative customer attitudes and feelings towards the company using these technologies. The most important factors are response accuracy and problem solving, which usually result in customer satisfaction, a greater likelihood of continued use of chatbots, and purchases and product recommendations.

The role of chatbots in customer service was also discussed by Misischia et al. [2022], who focused primarily on the functionality of this technology in the context of improving service efficiency and meeting customer expectations. It has been shown that the open, empathetic, and trustworthy manner of chatbots increases the quality of interactions with customers and, therefore, the efficiency of services. In addition, AI that can personalize service and follow the latest trends can contribute to better meeting customer expectations.

Huang and Kao [2021] also studied the usefulness of chatbots in the context of the pandemic. In their article entitled *Chatbot Service Usage During a Pandemic: Fear and Social Distancing*, they showed that American consumers appreciate the usefulness of chatbots especially in situations when they want to avoid infection with diseases from social contact. Therefore, their functionality is positively assessed, particularly in the healthcare industry.

Even though some chatbot functions resemble those performed by humans, the consumer–chatbot interaction is a new service experience. What is of particular importance are the emotional and affective aspects of customer contact with AI-based self-service technology, which may differ from experiences with a real human being. Wang et al. [2023] conducted pilot studies that focused on emotional experiences and the shaping of consumer trust in the process of interacting with chatbots and human service. The results showed that consumer–chatbot service interactions automatically attracted more consumer attention at the subconscious stage compared to consumer–human service interactions, but consumers intentionally expended more energy on regulating negative emotions evoked by chatbots at the conscious stage. It was also shown that consumers had much less trust in chatbots than in the humans who served them.

Consumer perceptions of chatbots were investigated by de Cicco et al. [2022]. Their study, based on the extended technology acceptance model, examined the impact of factors such as trust, compatibility, and perceived enjoyment on positive attitudes and the intention to use chatbots. N. Gümüş and Ö. Çark [2021] obtained similar results.

In Polish literature, the topic of using chatbots has been discussed in the context of automating advertising activities in the e-commerce industry, which is particularly useful in personalizing content and offers. The importance of chatbots for both marketers and customers is emphasized. Unattended 24/7 customer service and saving the customer service department's time in answering routine questions are the advantages for marketers that are most frequently mentioned. On the other hand, quick contact and easily obtained answers to standard inquiries are the main advantages of using chatbots for customers [Panasiuk, 2022, p. 158].

Kucharska and Malinowska [2019] identified virtual solutions used by retailers in customer service and discussed the most interesting practices in this area. They also presented and analyzed selected components of consumer behavior when faced with the virtualization of the customer service process. For this purpose, they used secondary sources of information and conducted direct research

among representatives of Generation Y. The research showed that in addition to facilitating purchase and sale transactions, the virtualization of customer service serves to build relationships with customers and contributes to the involvement of consumers in the organization's activities. Virtual solutions around the basic components of customer service were most important to the surveyed consumers because they were the components used most often.

Sira [2022] also discussed using AI in e-commerce. The article focused on presenting AI as a tool that increases the efficiency of processes and reduces costs, as well as a tool that improves the quality of customer service. It was emphasized that it is useful in providing better personalized products and services to customers.

The article of Brzozowska et al. [2023] on AI-based customer service management in the logistics industry is most closely related to the topic discussed. The authors focus primarily on the perception of the future implications of AI for last-mile logistics customer service. It has been shown that various forms of solutions based on AI (chatbots, voicebots, and voice assistants) are already used in logistics customer service. Customers evaluate these solutions positively, particularly in terms of efficiency, competence, and service quality. Moreover, they are aware that these technologies are applied and know that their use will be extended in the future.

3. Research methods

The main goals of the study were to identify, analyze, and characterize consumer attitudes to chatbots in logistics customer service.

To achieve these goals and verify the hypotheses, a diagnostic survey method using a questionnaire was used in the research process. The study was conducted using the computer assisted web interview (CAWI) technique. The sample came from an online panel. Direct quantitative research covered individual consumers over 18 years of age. Purposive and quota-based sampling was performed with the intention of reaching many respondents who used chatbots at least occasionally, to identify statistical dependencies. As a result, they accounted for nearly 80% of the research sample. Using the electronic version of the survey made it possible to collect 553 effective (complete) questionnaires. The study was conducted in March 2024 throughout Poland. The goals and scope of direct research determined the choice of the research method, the sampling technique, and the method of analyzing the collected information.

The questionnaire consisted of a short introduction, instructions for respondents, eight important questions and respondents' personal data (Table 2). The survey involved 51.4% of women and 48.6% of men. One-quarter of the respondents were aged 18 to 24, and approximately 20% were aged 25 to 34, 35 to 44, and 45 to 54. The smallest group included people aged 60 and over, which may be due to their limited digital competence. Most respondents lived in a city (71.4%) and had secondary education (46.1%) or higher education (30.6%). Nearly 60% of the surveyed people assessed their income situation as at least good.

TABLE 2

Characteristics of the research sample (n = 553)

Variables	Characteristics
Sex	Female: 51.4% Male: 48.6%
Age	18–24 years: 25.0% 25–34 years: 20.4% 35–44 years: 18.8% 45–54 years: 20.8% 55–59 years: 7.2% 60–64 years: 4.9% 65 years and over: 2.9%
Place of residence	City: 71.4% Rural areas: 28.6%
Education	Primary: 4.2% Middle school: 1.4% Vocational: 17.7% Secondary: 46.1% Higher: 30.6%
Income situation	Very good: 8.8% Good: 51.2% Mediocre: 35.8% Bad: 2.2% Very bad: 2.0%

Source: own study based on the survey.

It should be noted that it was impossible to ensure that respondents gave independent answers in an online survey and so the study results should be treated with some caution.

4. Results and discussion

To understand how consumers perceive the use of chatbots in logistics customer service, a study was conducted on their attitudes to this technology (Chart 1). A positive attitude (definitely positive, positive, or somewhat positive) was declared by 51.2% of respondents, 20.6% had a negative attitude, and almost one-third (28.2%) had a neutral attitude. This is a significant adoption rate, which suggests that many people see the benefits of using chatbots. At the same time, there are those who are not convinced that this technology is useful in their everyday lives for various reasons discussed below.

Nicolescu and Tudorache [2022] also emphasized that in many industries, chatbots work very well in the area of customer service and are positively perceived by consumers, particularly when performing less complex tasks.

CHART 1

Respondents' attitudes to chatbots in logistics customer service (n = 553)
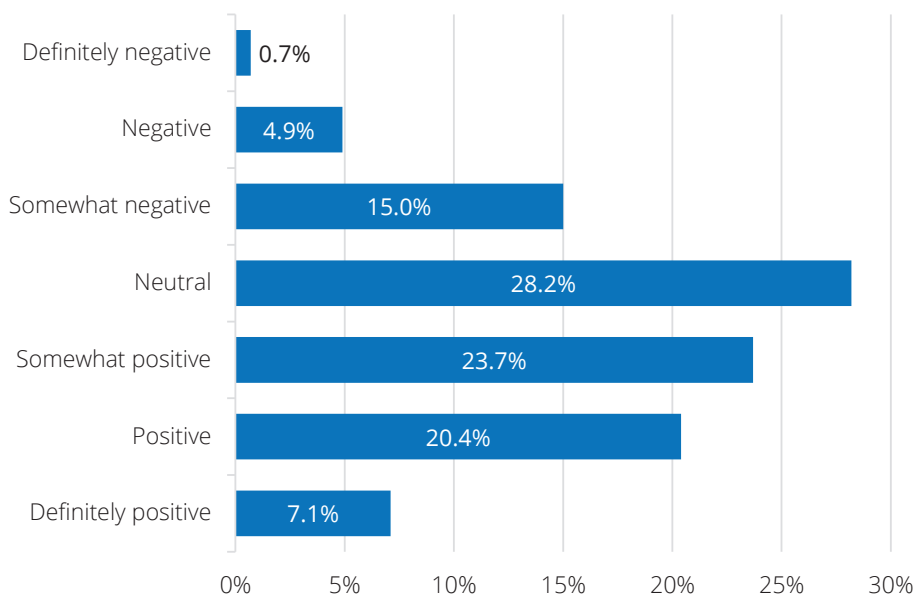
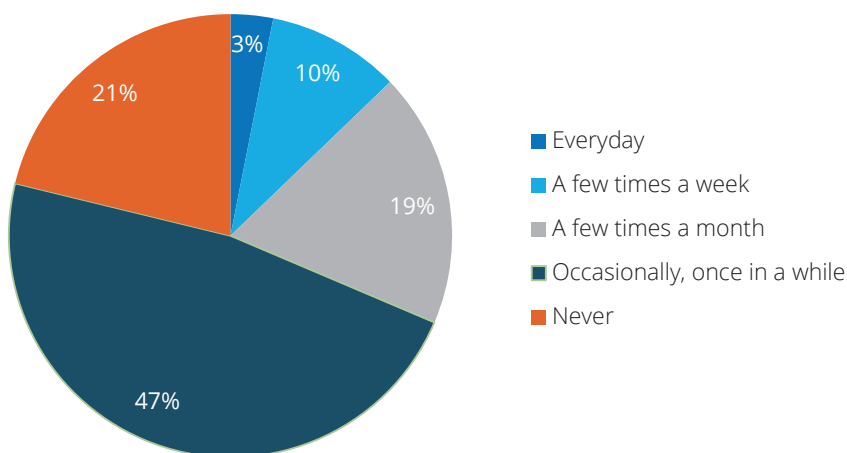Source: own study based on the survey.

Most of the surveyed consumers used chatbots "occasionally, once in a while" (47.4% of responses). Only 3.1% of respondents had daily contact with this technology, 9.7% used it several times a week, and 18.6% – several times a month.

About one-third declared that they did not use it at all. The results are presented in Chart 2.

Even though many consumers are positive about using chatbots and that they are gaining popularity, there is still a significant group of people who are not regular users of this technology. At the same time, it is worth noting that in 2022, 88% of users engaged in at least one conversation with a chatbot, and only 9% were against companies using chatbots [Cherniak, 2024].

CHART 2

Frequency of chatbot use in logistics customer service (n = 553)

■ Everyday
■ A few times a week
■ A few times a month
■ Occasionally, once in a while
■ Never

Source: own study based on the survey.

As technology develops, chatbots are becoming increasingly common in various communication channels. Namely, 43% of them are on websites, and this number is constantly increasing, and 48% are in social media messengers [Stoilova, 2021, p. 2]. The survey results show that respondents use chatbots most often on websites (37.4%), telephone lines (30.9%), instant messengers, such as Messenger and WhatsApp (25.1%), mobile applications (23.1%), social networking sites (14.6%) and emails (11.6%). Chart 3 presents the distribution of respondents' answers.

The popularity of chatbots depends on the specificity of a given channel. Websites and telephone lines are dominant, which may result from their more formal and functional nature. Instant messaging and mobile applications are also often mentioned, which may be related to the growing popularity of these technologies in consumers' everyday lives.

CHART 3

Places where chatbots are used in logistics customer service (n = 553)
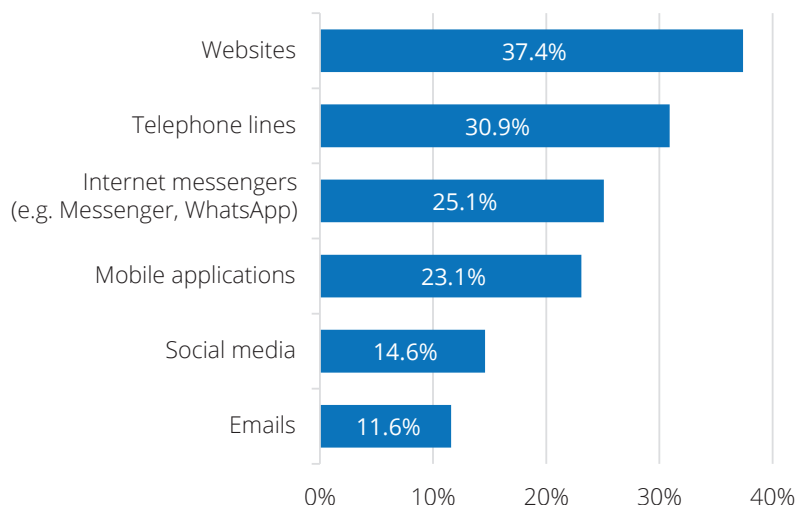
Source: own study based on the survey.

Chatbots provide support in many areas of an organization's operations [Adamopoulou, Moussiades, 2020, p. 373]. Respondents use chatbots most often to track shipment status (43.4%), obtain technical support (32.9%), and solve problems and complaints (28.6%). Moreover, 26.6% use this technology when first contacting customer service to obtain answers to frequently asked questions or to be redirected to an appropriate customer service department that will solve their problems. In addition, 25.1% of respondents use chatbots to receive information about products and services offered by a company, and 21.2% to order and reserve logistics services (for example, to order a shipment of goods or to book warehouse space). For 5.1% of respondents, chatbots are useful for document management (Table 3).

Other studies have also confirmed that customers most often use chatbots to track shipments, check product information, file complaints, receive answers to frequently asked questions and purchase products [Klamerek, Semaniuk, 2021, p. 47].

Despite a generally positive attitude of respondents to the use of chatbots in logistics customer service, the majority of them declared that they prefer talking to a company employee rather than interacting with a chatbot (45.2% in total). Only slightly over one-third preferred interacting with a chatbot to talking to

an employee (33.2%). Moreover, 21.6% of respondents had no opinion on this matter. The results suggest that while chatbots can be a useful tool in customer service, they will not fully replace human interaction and support.

TABLE 3

Purposes of using chatbots in logistics customer service (n = 553)

Purpose	Replies	Share
Tracking shipment status	240	43.4%
Obtaining technical assistance	182	32.9%
Solving problems and complaints	158	28.6%
Making the first contact with customer service to obtain answers to frequently asked questions or to be redirected to an appropriate customer service department	147	26.6%
Obtaining information about products and services offered by the company	139	25.1%
Ordering and booking logistics services (e.g. ordering a shipment of goods or booking warehouse space)	117	21.2%
Managing documentation	28	5.1%

Source: own study based on the survey.

This is also confirmed by research conducted by Li and Zhang [2023], according to whom customers prefer to receive help directly from a company employee, particularly in the case of high-severity service events, because chatbots are not flexible enough to meet complex needs and do not have an empathetic approach to the customer's situation.

Consumers' previous experiences with this technology play a huge role in shaping their attitudes to the use of chatbots. Those satisfied with chatbots are more likely to use them for further contact with companies [Gümüş, Çark, 2021, p. 420]. It has also been shown that user satisfaction, perceived usefulness, and subjective evaluation are the most important factors influencing consumers' willingness to reuse chatbots [Silva et al., 2023, p. 469].

The study has shown that the respondents' experiences with using chatbots in logistics customer service were mostly good or very good (46.8% in total). Only 16.5% of users had bad or very bad experiences. Neutral experiences were declared by 36.7% of respondents.

It is worth noting that the most important factors influencing customer attitudes to chatbots in logistics customer service are as follows: immediate 24/7 availability (55.7%); quick responses (42%); intuitive, easy and pleasant interface (16.3%); the possibility of multitasking, i.e. servicing several clients at the same time (15.4%); problem solving (13.7%); response accuracy (11.6%); and personalization, i.e. matching user preferences and history (11.4%). The results are presented in Chart 4.

CHART 4

Factors influencing positive customer attitudes to chatbots
in logistics customer service (n = 553)
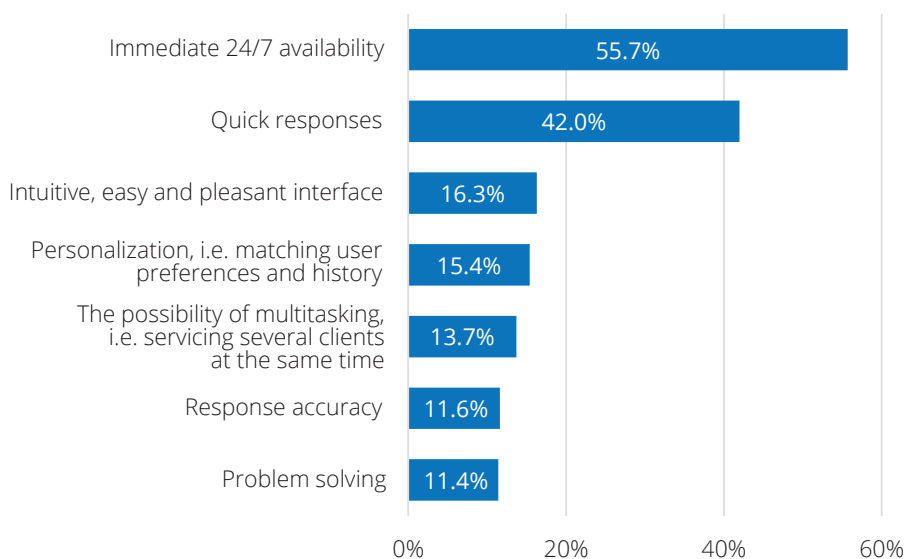
Source: own study based on the survey.

Brzozowska et al. [2023] have shown that respondents value interaction with chatbots most for effectiveness, helpfulness, competence, and empathy. These were followed by communication skills, quick responses, response accuracy, the quality of service, competence in providing information, an attractive offer, and understanding the customer's situation. Similar factors were mentioned in a study by Nicolescu and Tudorache [2020], where response accuracy and problem solving were the most important factors in shaping a positive customer contact with a company.

A discrepancy in the research results can therefore be noticed because effectiveness understood as "problem solving" or "response accuracy" in this study was the least important factor influencing customer attitudes to chatbots in logistics

customer service. Respondents paid much more attention to other factors, such as helpfulness, competence, empathy, communication skills, and the speed of responses.

Respondents may consider these features to be more important because they are directly related to the quality of interaction with chatbots and the level of customer satisfaction. Consequently, while response accuracy and effectiveness may be important, other factors such as empathy or communication may be more significant to the overall customer experience.

It should be noted that most respondents prefer text-based chatbots (46.1% of responses), 13.1% prefer voice solutions, and it does not matter for nearly 41%. The results show that despite the growing popularity of voice assistants in logistics, the use of text-based interactions is still preferred, although it does not matter for a significant number of respondents, which may indicate that the functionality and effectiveness of service are crucial for them, regardless of the form of communication.

Respondents were asked to rate the statements regarding chatbots on a scale of 1–5 (where 1 meant "definitely yes" and 5 meant "definitely no"). According to over 59.2% of respondents, chatbots are useful tools for logistics customer service. Only 12.8% had the opposite opinion. While 67.2% of respondents believed that chatbots can improve the efficiency and speed of customer service in the logistics industry, 12% disagreed with this statement. Slightly over 40% of respondents had no opinion on the positive impact of interactions with chatbots in logistics customer service on the overall customer experience, about one-third agreed with this opinion, and nearly 25% disagreed with it. Only 31.6% of respondents believed that chatbots in logistics services can provide more personalized customer experiences. Most of the respondents had no opinion (38.1%) or disagreed with this statement (30.2%). According to 30.3% of respondents, interaction with chatbots in logistics services does not affect customer loyalty to a company, 27% believed just the opposite, and the rest (42.7%) had a neutral attitude to this statement.

While 58.6% of respondents believed that using chatbots in logistics services facilitates communication between customers and a company, only 12.8% were of the opposite opinion.

Assessments of the statement that chatbots can effectively replace traditional customer service methods, for example in the logistics industry, were very divided, with opponents, supporters, and neutral people accounting for about 30–35% each. The same applies to the statement regarding the accuracy of answers to customer questions on logistics processes. Namely, 67.4% of respondents believed that chatbots in logistics services can effectively provide information about new products, promotions, or special offers. While 47.7% perceived the use of chatbots in logistics services as always intuitive and easy to use, 21.6% were of the opposite opinion. The results are presented in Table 4.

Consumer attitudes to various forms of using chatbots
in logistics customer service (n = 553)

Statement	1 Definitely yes	2 Yes	3 No opinion	4 No	5 Definitely no
Chatbots are useful tools for logistics customer service.	11.4%	47.8%	28.0%	11.0%	1.8%
Chatbots can improve the efficiency and speed of customer service in the logistics industry.	11.9%	55.3%	20.8%	9.6%	2.4%
Interaction with chatbots in logistics positively affects the overall customer experience.	6.0%	30.7%	40.1%	19.9%	3.3%
Chatbots in logistics services can provide a more personalized customer experience.	4.7%	26.9%	38.1%	25.7%	4.5%
Interaction with chatbots in logistics services affects customer loyalty to a company.	4.9%	22.1%	42.7%	26.0%	4.3%
Using chatbots in logistics services facilitates communication between customers and a company.	8.1%	50.5%	28.6%	9.9%	2.9%
Chatbots can effectively replace traditional customer service methods, for example in the logistics industry.	5.6%	27.9%	31.3%	27.1%	8.1%
Chatbots in logistics services can effectively provide you with information about new products, promotions or special offers.	12.1%	55.3%	23.9%	6.3%	2.4%
Using chatbots in logistics services is always intuitive and easy.	5.4%	42.3%	30.7%	18.5%	3.1%
Chatbots always effectively answer customer questions regarding logistics processes.	5.6%	30.4%	34.9%	21.3%	7.8%

Source: own study based on the survey.

The study suggests that consumers may have some concerns about using chatbots. Among the most frequent concerns related to the use of chatbots in logistics customer service, the respondents of this study mentioned: the misinterpretation of questions and incorrect answers (60.2%); a lack of human support, i.e. the opportunity to speak with a real person if necessary (48.5%); limited functionality, for example, in unusual, complicated situations (42.9%); data security issues, privacy breaches, personal data leakage (27.3%); a lack of personalization (19.9%); and difficulties in interacting with chatbots resulting from an unfriendly interface (18.8%) (Chart 5). Other concerns included a lack of knowledge of the exact names of chatbots, which may easily lead to confusion (particularly by users aged over 50, 60, or 70 and, in extreme cases, even people aged over 30).

CHART 5

Users' concerns related to the use of chatbots in logistics customer service
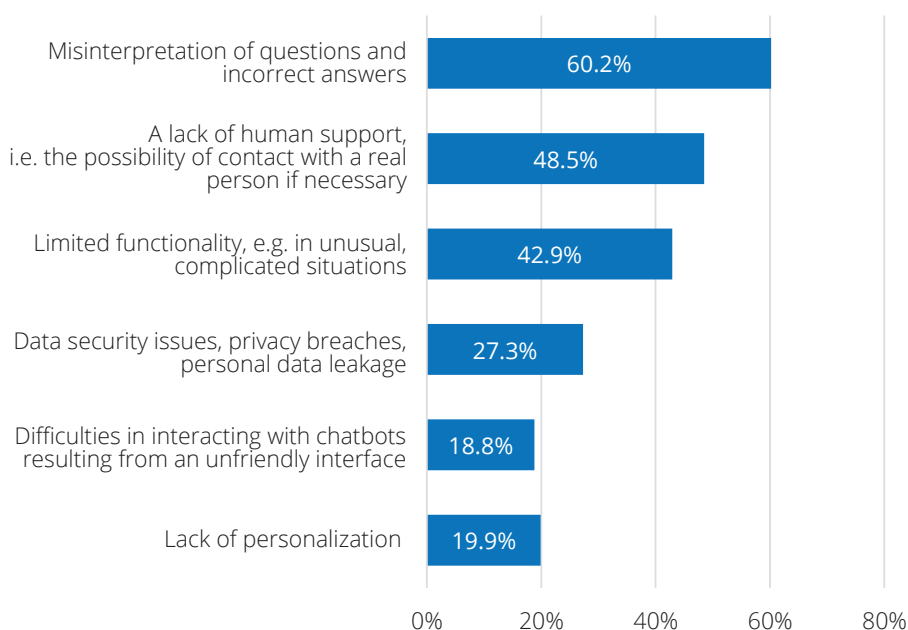
Source: own study based on the survey.

Other studies have shown that young Generation Z consumers, growing up with digital transformation around the world, are especially afraid of violations of privacy and data security [Oudejans, Rezkallah, 2022, p. 26]. Rese et al. [2020]

also noted that concerns about privacy and technology immaturity had the most significant impact on chatbot use intention and frequency. In turn, Cheriyan et al. [2022] have pointed out that chatbots need to be more intelligent and learn different scenarios as they currently do not provide the best solutions to customers.

A large group of respondents did not use chatbots. The most important reasons included: a lack of opportunity to try them (33.3%); they preferred interacting with people (22.2%); a lack of confidence in their effectiveness and the quality of customer service (11.1%); the opinion that chatbots cannot answer their questions and solve all problems (10.3%). Moreover, 6.8% did not believe at all that chatbots can solve more complicated problems, 6% expected a more individual approach, and 4.3% were not familiar with the technology. While 3.4% of respondents were concerned about the security of their data, 1.7% believed that chatbots are difficult to use or have a complicated interface, and 0.9% of respondents had other reasons for not using chatbots. They pointed out that they are underdeveloped and give inadequate answers, leaving the user in a state of deep irritation, preferring a hotline or live contact with an employee of the institution or company. The results are presented in Table 5.

TABLE 5

Respondents' reasons for not using chatbots (n = 117)

Reason	Answers	Share
I have not had a chance to try it.	39	33.3%
I prefer interacting with people.	26	22.2%
I am not sure of their effectiveness and quality of customer service.	13	11.1%
I do not think they can answer my questions and solve all my problems.	12	10.3%
I do not believe they can solve more complicated problems.	8	6.8%
I expect an individual approach.	7	6.0%
I am not familiar with what chatbots are and how they work.	5	4.3%
I am concerned about the security of my data.	4	3.4%
I find them difficult to use or think they have a complicated interface.	2	1.7%
Other.	1	0.9%

Source: own study based on the survey.

It is worth adding that Kwangsawad and Jattamart [2022] have shown that what is a particularly important barrier to consumers using chatbots is the so-called technological anxiety, which is a personal feature manifested by fear and anxiety about discovering new technologies and resistance to changes and new experiences.

Despite many factors that discourage potential users of chatbots, 39.3% of them believed that this tool can be useful in logistics customer service. About one-third were of the opposite opinion. Therefore, the study proves that raising awareness of the benefits of new technologies can alleviate the detected barriers, which has also been confirmed by other researchers, such as Kwangsawad and Jattamart [2022].

5. Conclusions

This study aimed to identify, analyze, and characterize consumer attitudes to chatbots in logistics customer service and the factors determining these attitudes.

The survey results suggest that most respondents are open to the use of chatbots in logistics customer service and perceive them as a useful tool in this area that can improve the efficiency and speed of customer service. Almost all the surveyed people use them occasionally, mainly on websites and telephone lines. They prefer text-based chatbots. They use them most often to track shipment status and to receive technical support. Immediate 24/7 availability of chatbots and their quick responses are the most important factors determining the respontens' positive attitudes to this technology. However, people who took part in the survey are afraid of misinterpretation of questions and incorrect answers, a lack of human support and their limited functionality. Among the most common reasons mentioned by the respondents who did not use chatbots, there were the lack of opportunity to try them and a preference for interacting with people.

The study enabled a positive verification of the research hypotheses (Table 6) and the formulation of practical recommendations for the business community. It should be noted that although not all users use chatbots regularly, the growing number of positive reviews and adoption of this technology indicate its significant potential in the future. This means the need to invest in improving the quality and usability of these solutions, as well as educating consumers about the benefits of using them. It is also important to collect feedback from users to constantly improve chatbot features to make them more attractive and useful in everyday

life. Particular attention should be paid to the misinterpretation of questions, response accuracy, data security issues and more accurate personalization, as well as human support in unclear, more complicated situations.

TABLE 6

Verifying research hypotheses

Hypothesis	Verification
H1: It is hypothesized that most consumers have a positive attitude to using chatbots in logistics customer service.	Positive
H2: It is hypothesized that consumers use chatbots mostly on business websites, telephone lines, and mobile applications.	Somewhat positive – the study has shown that consumers use chatbots in instant messengers more often than in mobile applications.
H3: It is hypothesized that consumers use chatbots mostly to track the shipment status of purchased goods.	Positive
H4: It is hypothesized that the misinterpretation of questions and incorrect answers are the most important concerns of chatbot users.	Positive
H5: It is hypothesized that the most important factors determining consumers' positive attitudes to chatbots in logistics customer service are quick contact, response accuracy, and problem solving.	Somewhat positive – the study has shown that the most important factors influencing customer attitudes to chatbots in logistics customer service are as follows: immediate 24/7 availability, quick responses, and an intuitive, easy and pleasant interface.
H6: It is hypothesized that some consumers do not use chatbots primarily because they do not believe in their effectiveness and are concerned about cybersecurity.	Somewhat positive – the study has shown that the most important reasons for not using chatbots are as follows: a lack of opportunity to try them, preferences for interacting with people and the lack of confidence in the effectiveness and quality of customer service.

Source: own study based on the survey.

In further research, it is worth considering the socioeconomic profiles of consumers, which will enable the development of technologies that are more tailored to user preferences in terms of functionality and interface. The limitations of the study include the limited nature of the survey questionnaire.

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