Purpose and advantage of chatbots
Gasimov Teymur

Abstract

Digital technologies, in particular chatbots, are becoming a key element of interaction between companies (brands) and consumers, performing various functions, replacing a person and imitating his behavior. They find new functional areas related to the current activities of the organization, acquire new competencies that affect the level of market flexibility of the business and its operational efficiency. Chatbots can guide shoppers through transactional steps, saving them cognitive effort and time, and become an asset that differentiates a company or brand from its competitors. The authors believe that the personalized diversification of chatbots across economic sectors and market sectors will increase the level of maturity of companies and brands in the digital environment, aimed at public recognition and universal socialization.

Keywords: dialog box, artificial intelligence, communications, consumers, chatbots.

Chatbots, which means "chat robot" in Turkish, are algorithm-based software that interact through conversational interfaces and automatically perform certain tasks. Users can communicate with chatbots in writing or voice. After a user asks a question, the chatbot uses artificial intelligence algorithms to analyze the question and provide a logical answer.

Chatbots; It is often used in various fields such as healthcare, finance, education, marketing, entertainment and websites. Chatbots have not only informative but also entertaining functions. While efficiency is the most important motivation for chatbot users, entertainment and social factors are also among the important factors that determine user preference. They have also become quite common in the business world as they reduce maintenance costs and can serve many clients at the same time. Chatbots are more friendly and engaging for users than searching for static content in frequently asked questions (FAQ) lists. Chatbots save users time by answering user questions directly [2].

Chatbots, which are one of the tools that can be preferred to quickly communicate with users, save time. Chatbots, which are becoming increasingly popular today, are coming to the fore in business activities. In this context, the use of chatbots in terms of marketing and customer relations is growing every day. With the help of chatbots, it becomes much easier to reach a large customer base[4].
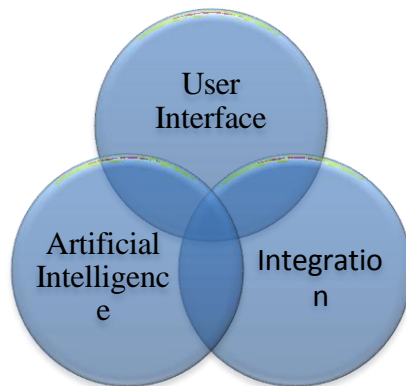

Figure 1. The chatbot consists of 3 combinations

User interface. The user interface allows interaction between the user and the chatbot. Interface; includes text font, background color or theme, animations, images, and navigation tools.

Artificial Intelligence. Artificial intelligence (AI) refers to the transfer of how the human brain works to a machine using software and algorithmic techniques. Machine learning, a branch of artificial intelligence,

performs the functions of comparison, problem solving, perception, planning, and inference, just like how human intelligence works.

Machine learning gives customer service chatbots the ability to detect emotions and also connect with customers emotionally, just like human agents do. The development and analysis of intelligent software and hardware, called intelligent agents, are becoming more and more integrated into everyday life. Intelligent agents perform a variety of tasks, from simple to complex operations. Chatbot, which is a typical example of an artificial intelligence system; communicates with users through messaging apps, websites, mobile apps or phone. Chatbots are one of the simplest and most common examples of human-computer interaction (HCI) [8].

In chatbot software, the process begins with understanding the sentence submitted by the user. The sentence submitted by the user is analyzed using Natural Language Processing (NLP) to understand what the user means. Thus, as a result of analyzing the proposal, artificial intelligence makes a decision like a person and transmits to the user the most appropriate answer to the question. Some chatbots powered by machine learning learn more and become smarter as they interact with users. Below are some concepts of chatbot software: [6].

• Natural Language Processing (NLP). NLP is the ability of a system or machine to take what is said, break it down into parts, understand its meaning, determine appropriate actions, and respond in a language that the user understands. NLP allows computers to read text, hear and interpret speech, and measure emotions. Some of the main tasks of NLP are parsing, stemming, grammatical marking, language perception, and identifying semantic relationships. In general, NLP combines natural language understanding (NLU) and natural language generation (NLG).

• Natural Language Understanding (NLU). This is a form of artificial intelligence located in the natural language processing subsystem. In an NLU system, the goal is to interpret a piece of text. NLU is responsible for what concepts a word corresponds to and how to connect them meaningfully. To do this, the system performs meaning extraction and cognitive analysis. Despite common human errors such as mispronunciation, transposition of letters or words, NLU goes beyond understanding words and interpreting their meaning. However, its main goal is to create chat and conversation-enabled bots that can effectively communicate with a human without supervision.

• Natural Language Generation (NLG*). *NLG, which allows the generation of natural language through a computer representation, converts data into a "natural language representation" that humans can easily understand. Some of the most common NLG applications are; written analysis for business intelligence dashboards, business data/analysis reporting, personalized customer communications via email and in-app messaging, Internet of Things (IoT) device maintenance reports, individual customer financial portfolio summaries and updates , descriptions of e-commerce products. and category landing page content [1].

• Multimodal neurons in artificial neural networks (Multimodal neurons). Multimodal neurons; These are artificial neural network blocks that can display the shape of an object and understand and interpret it in various formats, such as text and speech.

• Generative Pre-Trained Transformer (GPT). It is a machine learning model that uses unsupervised and supervised learning techniques to understand and generate human language.

• Pre-training without a teacher. It is a machine learning technique in which a model is trained on a large data set without any classification.

• Supervised fine-tuning. This is a machine learning technique in which a pre-trained model is trained on a smaller set of data to improve its performance on a specific task [1].

Integration. Integration with other applications or systems expands the capabilities of chatbots. Chatbots that can obtain additional or supportive content and information by integrating with another system improve user experience and satisfaction. Integration, although not as important as artificial intelligence, also plays an important role in increasing the usefulness of a chatbot [4].

In a business environment, a chatbot helps solve problems related to communicating with users or customers, especially in terms of service and user experience. Therefore, a chatbot is very effective for solving specific and predictable problems. With the rapid development of businesses, chatbot is becoming an alternative solution that can help customers connect and interact with a business.

The goals of using chatbots in various business areas can be summarized as follows:
Provides basic information about the company's products and services in finance, travel, tourism, retail and commerce. It helps retain users by sending notifications, reminders, and personalized offers that help automate simple transactions, bookings, or refunds. Thus, they increase engagement, brand awareness and activity on social media. Chatbots for marketing and sales; It organizes customer participation through the company's website or social media channels, increases visitor activity and generates increased sales of products or services. Chatbots also conduct short surveys about a company's products, offer discounts or new offers, attract newsletter subscribers, negotiate sales contracts or customer reviews, and even provide potential customers with information about the features of the products and services offered. In some cases, this helps companies reach a wider audience and attract new followers by providing information about the company culture. All this improves the customer experience and strengthens the relationship with the brand. Customer service and support enable companies to instantly resolve their customers' problems and complaints to better respond to their customers' expectations of 24/7 service. Chatbots help their users instantly solve simple problems or submit queries, get answers to frequently asked questions, book an appointment with a human representative, and scale their services at a low cost. In this way, bots act as first-line assistants in solving simple and repetitive problems, thereby helping an organization's support team solve problems that are more complex. Data mining and inventory management help companies process large volumes of data and sort them into predefined categories and criteria. Thus, the method helps experts extract stocks in user-friendly formats, easily analyze trends and make predictions through chain tracking. Legal services chatbots guide people and help them prepare and complete basic legal documents. Medical chatbots provide basic reliable information about diseases. It offers a service where they read patients' symptoms, ask questions, analyze data stored in medical databases, and then guide them to the right course of treatment recommended by the doctor. Chatbots also remind people about prescriptions or help people manage their mental health. HR department chatbots; It is used to pre-screen job applicants and provides basic information during orientation and recruitment. In addition, they maintain information on employee satisfaction and productivity, answer frequently asked questions about human resources, book travel, assist with administrative tasks such as payroll, annual and sick leave, and facilitate internal training [2]. IT services, where chatbots can act as a help desk and create/assign information technology (IT)-related statuses, notify users of important updates, or answer basic questions.

Information or FAQ chatbots designed to provide users with predefined information available from a fixed source. These bots, whose goal is to properly respond to a user's request, are either voice or text. Data crawling bots help deal with the large volume of data collected today and allow users to easily categorize their data for further analysis. Examples of such data: word frequency, cluster data, descending/ascending hierarchical classification, etc. are given. Chatbots collect data from various sources (websites, social media, text, images or data banks, etc.) and convert it into easy-to-read formats, reviewing and comparing. Entertainment chatbots developed for the entertainment of users or for media consumption purposes. Some examples of this type of bots can listed as follows: V program guide bot that allows users to follow channels of each category or service provider. A quiz bot that provides easy access to quiz questions and gives quick answers based on the correct answers at the end. A mystery bot that engages customers in various marketing games and directs them to the company website to find more information or make a purchase. Kinobot,

which allows customers to read movie reviews, browse different genres and categories, or book tickets.News and media bots that help users practically access various news from different areas and sources. Users can access YouTube, Messenger, WhatsApp, etc. social media bots that help users navigate apps and content,

Podcast bots that help users easily find interesting information on a topic that interests them or subscribe to a podcast and receive regular updates [7].

Educational chatbots allow students to browse various courses and learning materials offered by educational institutions around the world. Some chatbots provide detailed information about course fees, duration, application deadlines, etc. and thus help guide students properly. On the other hand, other chatbots act as effective teaching assistants and help students better understand course content, increase interaction and participation during class, and complete assigned assignments. Some even participate in the assessment process or act as self-learning tools.

While there are many benefits to using chatbots, the benefits achieved vary greatly depending on how companies and stakeholders use chatbots to improve customer experience [5].

The most important benefits of using chatbots can be summarized as follows:

• Cost savings. In today's increasingly competitive world, the need for businesses to have a strong customer service department is ever increasing. Using advanced chatbots allows companies to handle a large number of customer queries in a shorter time. Although implementing a chatbot requires some initial investment, it is less expensive compared to the traditional customer service model, which includes infrastructure, salaries, training, and many other resources.

• Offering AI-powered contextual *support to website visitors.* Contrary to popular belief that the main benefit of a chatbot is simply answering queries and providing customer support, chatbots provide value-based and contextual support that can significantly help a business. An AI-powered chatbot uses data to provide users with a personalized experience.

• Improved customer data analysis. With chatbot analytics, companies can analyze the bot's performance in terms of business and sales performance, as well as get detailed information about how people interact with the business and their requests [3].

• Increased customer engagement and sales. Chatbots are essential to increase customer engagement and sales and keep customers engaged. The flexible structure of chatbots makes them easier to integrate with other systems and, in turn, increases customer interaction [3].

• Better attraction, qualification and nurturing of potential clients. The chatbot is designed to ask necessary and relevant questions, convince customers and quickly attract potential customers. This ensures that the chat process is moving in the right direction to achieve higher levels of interaction. Besides generating leads, another benefit of a chatbot is that it helps you score leads using certain key performance indicators (KPIs), including timeline, budget, interest level, resources, and more.

• Time saving. One of the benefits of chatbots is that they strengthen businesses and save time by resolving basic queries. Only complex requests that require human intervention are escalated to helpdesk managers. By quickly resolving customer issues and automating queries based on knowledge, chatbots can spend more time on critical issues that require staff support and significantly reduce operational costs, time and manpower required to complete processes [3].

References

[1] Elmas, Çetin, Yapay Zeka Uygulamaları, Seçkin Yayıncılık 4.Baskı Ankara 2018 s:25-104. Gartner Customer 360 Summit [Электронный ресурс] // Gartner. – Mode of access: https://www.gartner. com/imagesrv/summits/ docs/na/customer-360/C360_2011_brochure_ FINAL.pdf. – Data of access: 13.09.2019.

[2] Güvenoğlu Erdal, Bil 632 Kodlu Bilgisayarlı Görme Ders Notları, Maltepe Üniversitesi, 2017. Monwar, M., Machine Learning Techniques in Pain Recognition, The University of Northern British

Columbia December, 2016.

[3] Nabiyev, V.V., Yapay Zeka:Ġnsan - Bilgisayar EtkileĞimi, Seçkin Yayınevi, 5.Baskı, Ankara 2016 s:27

[4] Смыслова Л. В. Чат-бот как современное средство интернет-коммуникаций / Л. В. Смыслова // Молодой ученый. – 2018. – № 9. – С. 36-39.

[5] Суворова А.А. Цифровизация операционных процессов хозяйствующих субъектов сферы производства и обращения / В сборнике: Молодежь и наука: шаг к успеху. Сборник научных статей 3-й Всероссийской научной конференции перспективных разработок молодых ученых