Chatbots: A Popular Customer Experience Tool

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Abstract

In today's competitive landscape, customer experience is essential for businesses to succeed. Technology is reshaping service, customer experiences, and customer relationship management. AI-powered chatbots play a vital role in enhancing customer experience by providing quick, convenient, and personalized service.

This article reviews 4 peer-reviewed journal publications in the marketing field to examine the influence of AI-based chatbots on customer experience. The findings suggest that marketing journals have paid less attention to intelligent agents within the field of customer experience. Additionally, most of the research on chatbots and customer experience in the two databases reviewed was conducted between 2020 and 2021, indicating a recent surge in interest in this area.

Keywords: Artificial Intelligence, Machine Learning, 24/7 Availability, Efficiency, Customer Experience

1. INTRODUCTION

Chatbots are machine agents that can interact with users in natural language. They are increasingly being used for customer service because they are accessible, easy to implement, and cost-efficient.

According to a recent industry report, 31% of managers overseeing customer communication have either integrated chatbots or have intentions to do so soon. The report also estimated that by 2025, customer service chatbots could increase operational efficiency by 25%.

In other words, chatbots are a popular and growing customer service tool that can help businesses save money and improve their efficiency.

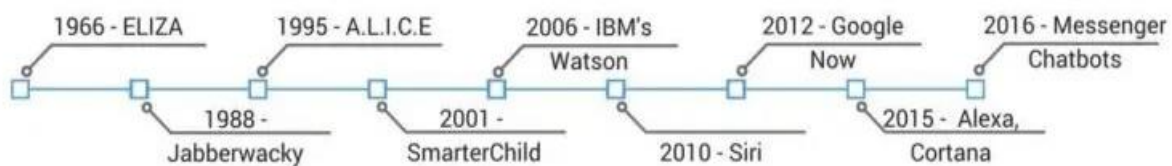## 1.1. A Brief Historical Account for Chatbot

Fig 1: History Of Chatbots

The history of chatbots started from the early days of artificial intelligence research. In 1966, Joseph Weizenbaum created ELIZA, a chatbot that could simulate conversations by matching keywords to preprogrammed responses. Eliza was not an actual AI, but she was able to fool many people into thinking they were interacting with a real human.

In the 1970s and 1980s, other chatbots were developed, including PARRY, ALICE, and Jabberwacky. These chatbots were more sophisticated than Eliza and could have complex conversations. However, the technology of time still limited them.

In the 1990s and 2000s, chatbots were generally developed. This is due to the rise of the Internet and the development of more powerful computer hardware. Chatbots were used on websites and chat rooms to help customers and answer questions.

Over the past few years, the increasing sophistication and intelligence of chatbots can be attributed to advancements in artificial intelligence and machine learning. Chatbots are now better able to understand natural language than ever before, and can be used for a variety of industries, including customer service, education and entertainment

Here are some of the major milestones in the history of chatbots.

Year	Names and Context
1966	Joseph Weizenbaum created the first chatbot, ELIZA.
1973	Kenneth Colby creates PARRY, a chatbot that mimics the personality of a dangerously schizophrenic patient.
1995	Richard Wallace created ALICE, a chatbot that uses artificial intelligence to simulate conversations.
1997	Rollo Carpenter created Jabberwocky, a chatbot known for its humor.
2001	Kevin Lennard created Mitsuku, a chatbot that has won the Loebner Award for the most human-like four-T chatbot
2010	Apple released Siri, the first virtual assistant to be integrated into a smartphone.
2014	Amazon releases Alexa, the first virtual assistant to be integrated into a smart speaker.
2016	Google launches LaMDA, a large language model that can be used to create chatbots that can understand and respond to complex language.

1.2 Design Technique / Procedure

1. Understand your customers.

This step is essential because it allows you to design a customer experience that meets the needs of your target audience. You can learn about your customers by conducting surveys, interviews, and focus groups. You can also analyze customer data to identify trends and patterns.

2. Map out the customer's journey.

The customer journey is the path that customers take when they interact with your company. It starts with the customer's awareness of your product or service and ends with them becoming loyal customers. By mapping out the customer journey, you can identify all of the touchpoints where customers interact with your company and identify opportunities to improve the customer experience.

3. Identify opportunities for improvement.

Once you understand the customer's journey, you can start to identify opportunities for improvement. This could involve making changes to your product or service, your customer support process, or your website

or app. For example, if you find that customers are having trouble finding the information they need on your website, you could make changes to the navigation or add a search function.

4. Design and implement improvements.

Once you have identified opportunities for improvement, you need to design and implement them. This may involve working with your product team, marketing team, and customer support team. It is important to test any changes that you make before implementing them on a large scale.

5. Measure and iterate.

Once you have implemented improvements, you need to measure the impact on customer experience. You can use customer surveys, customer satisfaction scores, and other metrics to measure customer experience. You can then use this data to iterate on your improvements and make sure that you are delivering the best possible customer experience.
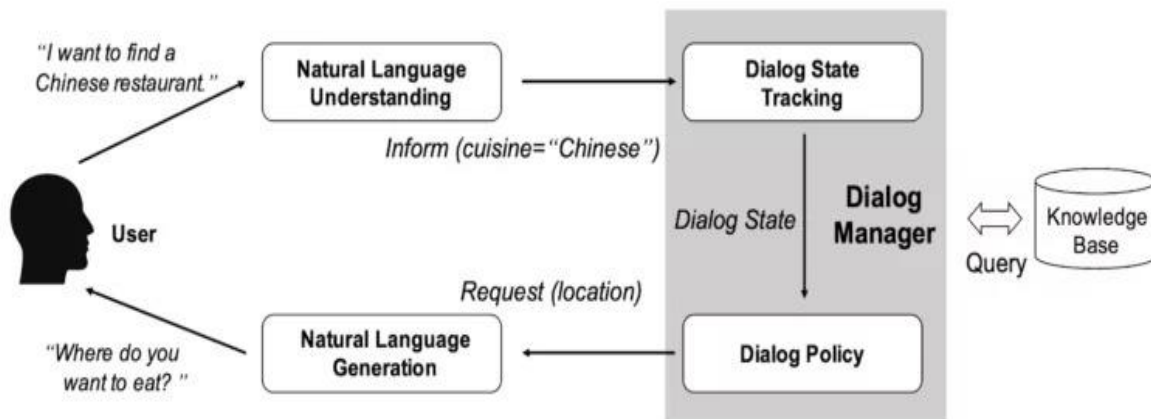
2. Architecture of Chatbot

Fig2: Architecture of Chatbot

The main components of a chatbot are:

1. User interface: This is the part of the chatbot that the user interacts with. It can be a text-based interface, a voice-based interface, or a graphical user interface.
2. Natural language processing (NLP): This component is responsible for understanding the user's input and converting it into a format that the chatbot can process.
3. Dialogue manager: This component is responsible for managing the conversation between the user and the chatbot. It keeps track of the context of the conversation and decides what the chatbot should say or do next.
4. Knowledge base: This component contains the knowledge that the chatbot needs to answer the user's questions. The knowledge base can be a database, a set of rules, or a machine learning model.
5. Natural Language generator: This component is responsible for generating the chatbot's responses. It takes the output of the dialogue manager and generates a response that is appropriate for the context of the conversation.

The different components of the chatbot architecture interact with each other as follows:

1. The user interacts with the chatbot through the user interface.
2. The NLP component converts the user's input into a format that the chatbot can process.
3. The dialogue manager uses the NLP output to determine what the chatbot should say or do next.

4. The dialogue manager accesses the knowledge base to get the information that it needs to respond to the user.
5. The response generator generates a response based on the output of the dialogue manager.
6. The response is sent to the user through the user interface.

Chatbots can be used for a variety of purposes, including customer service, education, and entertainment. By understanding the architecture of a chatbot, you can better understand how chatbots work and how they can be used to improve the customer experience.
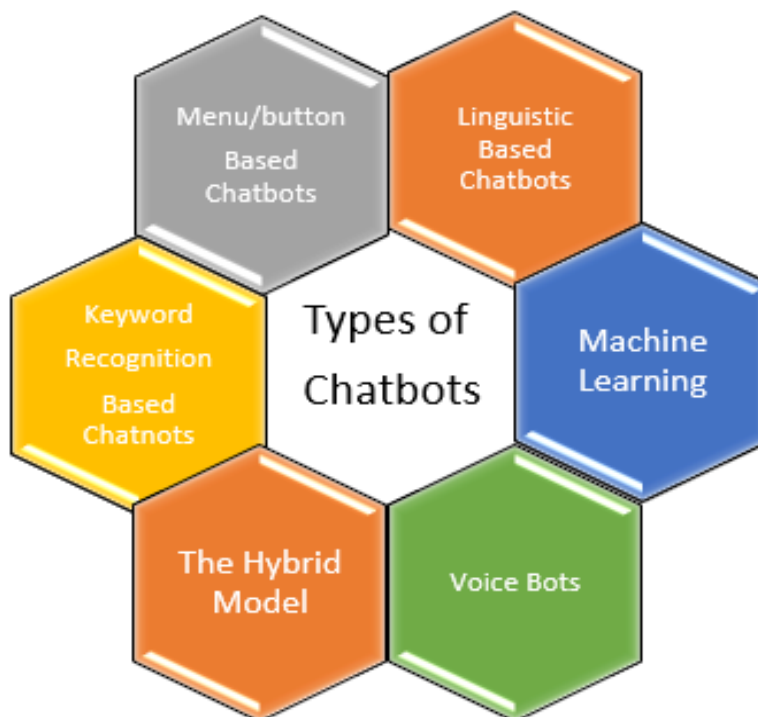
2.1 Types of Chatbot

Fig3: Types of Chatbots

2.2. The different types of chatbots

1. Menu or button-based chatbots: These chatbots use a menu or buttons to allow users to interact with them. They are typically the simplest type of chatbot and are often used for customer service tasks, such as answering questions about products or services.
2. Rules-based chatbots: These chatbots use a set of rules to determine how to respond to user input. They are more complex than menus or button-based chatbots and can be used for a wider variety of tasks, such as providing product recommendations or scheduling appointments.
3. AI-powered chatbots: These chatbots use artificial intelligence to understand and respond to user input. They are the most complex type of chatbot and can be used for a wide variety of tasks, such as providing customer support, generating creative content, and even having conversations with users.

Chatbots are becoming increasingly popular as a way to interact with businesses and services. They can provide several benefits, including:

1. Convenience: Chatbots are available 24/7 and can be accessed from anywhere. This makes them convenient for users who need help or support outside of regular business hours.
2. Efficiency: Chatbots can handle multiple conversations simultaneously, which can help to reduce wait times for users.
3. Personalization: Chatbots can be personalized to meet the needs of individual users. For example, a chatbot could learn a user's preferences and recommend products or services accordingly.
4. Cost-effectiveness: Chatbots are relatively inexpensive to implement and maintain. This makes them a cost-effective way for businesses to provide customer service and support.

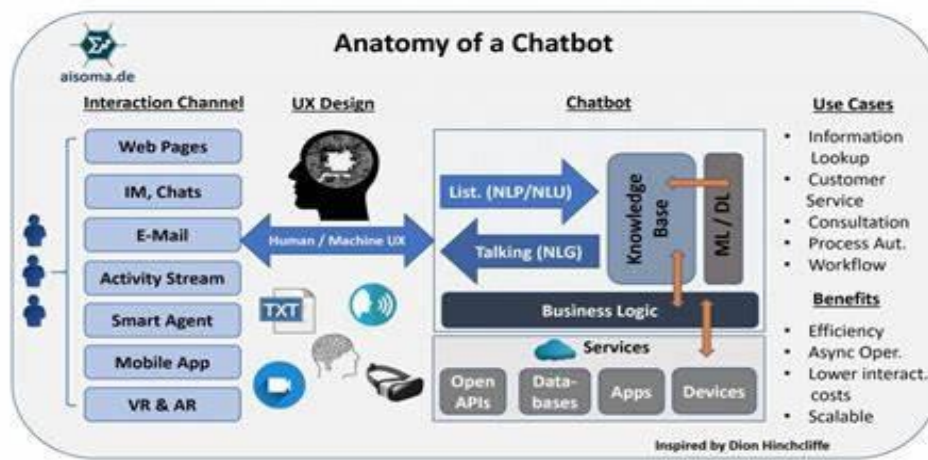## 2.2 Chatbot Engineering and Design Approaches

Fig4: Anatomy of Chatbot

There are two main approaches to chatbot engineering and design:

Rule-based chatbots: Rule-based chatbots use a set of predefined rules to determine how to respond to user input. These rules are typically manually created by developers or domain experts. Rule-based chatbots are relatively simple to develop and deploy, but they can be limited in their ability to understand and respond to complex user requests.

Machine learning-powered chatbots: Machine learning-powered chatbots use artificial intelligence (AI) to understand and respond to user input. These chatbots are trained on a large dataset of text and code, which allows them to learn the patterns of human language and conversation. Machine learning-powered chatbots are more complex to develop and deploy than rule-based chatbots, but they are also more capable of understanding and responding to complex user requests.

The design process typically involves the following steps:

1. Requirements gathering: The first step is to gather requirements from the business users and stakeholders. This will help to ensure that the chatbot is designed to meet the needs of the target audience and achieve the desired business outcomes.
2. Design: Once the requirements have been gathered, the chatbot can be designed. This includes defining the chatbot's architecture, user interface, and conversation flow.
3. Development: Once the chatbot has been designed, it can be developed. This involves implementing the chatbot's architecture and conversation flow and training the chatbot (if it is a machine learning-powered chatbot).

4. Testing: Once the chatbot has been developed, it needs to be tested to ensure that it meets the requirements and works as expected.
5. Deployment: Once the chatbot has been tested, it can be deployed to production. This involves making the chatbot available to users.

Chatbot Engineering and Design:

1. Focus on the user experience: The most important thing to consider when designing a chatbot is the user experience. The chatbot should be easy to use and navigate, and it should provide users with the information and assistance they need in a timely and efficient manner.
2. Use natural language processing: Natural language processing (NLP) is a key technology for chatbots. NLP enables chatbots to comprehend and reply to human language in a manner that mimics natural conversation.
3. Use machine learning: Machine learning can be used to improve the performance of chatbots in a number of ways. For example, machine learning can be used to train chatbots to understand and respond to new user requests, and to improve the accuracy of their responses.
4. Monitor and improve: Once a chatbot has been deployed, it is important to monitor its performance and make improvements as needed. This can be done by collecting feedback from users and analyzing chatbot logs.

3. Platform to Build Chatbot

There are two main types of chatbot platforms:

1. No-code/low-code platforms: These platforms allow users to build chatbots without having to write any code. They typically provide a drag-and-drop interface and a variety of pre-built chatbots that can be customized to meet the user's needs.
2. Coding platforms: These platforms require users to write code in order to build chatbots. They provide more flexibility and control than no-code/low-code platforms, but they also require more technical expertise.

Some of the most popular chatbot platforms include:

1. No-code/low-code platforms: Dialogflow, Rasa, Amazon Lex, Google Cloud Dialogflow, Driftbot, ManyChat, Botsify
2. Coding platforms: Microsoft Bot Framework, IBM Watson Assistant, Wit.ai by Facebook

The best platform for you will depend on your needs and expertise. If you are looking for a quick and easy way to build a chatbot, then a no-code/low-code platform is a good option. If you need more flexibility and control, then a coding platform is a better choice.

Fig6: Best Chatbots Platforms 2022

Here are some additional factors to consider when choosing a chatbot platform:

1. **Features: What features are important to you? Are you looking for a platform that is capable of accommodating various languages? Do you need a platform that can be integrated with your CRM system?**

The most important features for me in a chatbot platform are:

a. Multilingual support: I need a platform that can support multiple languages, so that I can reach a wider audience and provide better customer service.

b. CRM integration: I need a platform that can be integrated with my CRM system, so that I can keep track of customer interactions and provide more personalized service.

c. Natural language processing (NLP): I need a platform that uses NLP to understand and respond to natural language in a way that is like a human.

d. Machine learning: I need a platform that uses machine learning to improve its performance over time.

e. Ease of use: I need a platform that is easy to use, both for me and my customers.

2. **Pricing: How much are you willing to spend on a chatbot platform? Certain platforms offer free access, while others require a monthly or yearly subscription payment.**

a. The amount the spender willing to spend on a chatbot platform depends on the features that it offers and the value that it can provide to my business, would be willing to pay premium for a platform that is easy to use, offers robust features, and can help me to improve customer service and sales.

b. However, be aware that there are several free and open source chatbot platforms available. These platforms can be a good option for businesses that are on a tight budget or that want to have more control over the development and deployment of their chatbot.

c. Ultimately, the best way to decide how much to spend on a chatbot platform is to consider your specific needs and budget. If you are not sure which platform is right for you, the recommendation is that you try out a few different platforms before planning.

3. Support: Does the platform offer good support? Can you receive assistance when you require it?

a. It is important to choose a chatbot platform that offers good support. This is because chatbot development can be complex, and you may need help from time to time, especially if you are new to chatbot development.

b. Be clear and concise when describing your problem. The more information you can provide, the better the support team will be able to help you.

c. Include screenshots or videos if possible. This can help the support team to better understand your problem and provide a solution.

d. Be patient and understanding. The support team may need some time to investigate your problem and come up with a solution.

4. Advancement in Chatbot and Filed Chatbot Used

Chatbot technology has made significant advancements in recent years, thanks to the rapid development of artificial intelligence (AI) and machine learning (ML). Chatbots are now able to understand and respond to human language more naturally and accurately than ever before.

One of the most important advancements in chatbot technology has been the development of generative pre-trained transformer (GPT) models. GPT models are a type of AI language model that can generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way. GPT models are trained on massive amounts of text data, which allows them to learn the patterns of human language and conversation.

Another important advancement in chatbot technology has been the development of reinforcement learning (RL) algorithms. RL algorithms allow chatbots to learn from their interactions with users and improve their performance over time. RL algorithms are often used to train chatbots to perform specific tasks, such as customer service or sales.

Advancements in chatbot technology have led to a wider range of applications for chatbots. Chatbots are now being used in a variety of industries, including:

1. Customer service: Customer support can be offered around the clock with the assistance of chatbots. Chatbots can answer customer questions, resolve problems, and even provide personalized recommendations.

2. Sales: Chatbots can be used to generate leads, qualify prospects, and close deals. Chatbots can also be used to provide customer support after the sale.

3. Education: Chatbots can be used to provide personalized learning experiences to students. Chatbots can answer student questions, provide feedback on assignments, and even help students to learn new concepts.

4. Healthcare: Chatbots can be used to provide healthcare information and support to patients. Chatbots can answer patient questions, schedule appointments, and even provide medical advice.

Chatbot technology is still in its early stages of development, but it has the potential to revolutionize the way we interact with businesses and services. Chatbots can help us to save time, get the information and support we need more quickly and easily, and have more personalized experiences.

Here are some examples of how chatbots are being used in the field today:

1. Customer service: Many companies are using chatbots to provide customer service support. For example, the travel company Booking.com uses a chatbot called Genie to help customers with their bookings and answer their questions.

2. Sales: Chatbots are also being used to generate leads and qualify prospects. For example, the marketing automation platform HubSpot uses a chatbot called Chatbot to help businesses generate leads and qualify them for sales.

3. Education: Chatbots are also being used in education. For example, the language learning platform Duolingo uses a chatbot called Duolingo English Bot to help students learn English.

4. Healthcare: Chatbots are also being used in healthcare. For example, the healthcare company Babylon Health uses a chatbot called Babylon Health Chatbot to answer patient questions and provide medical advice.

5. TELEGRAM CHATBOT FOR SMART WORKSPACE BASED IOT WITH ARTIFICIAL INTELLIGENCE: The concept of IoT (Internet of things) allows us to take advantage of internet connectivity continuously. IoT has abilities that include sharing data, remote control, and controlling several electronic devices on the workspace through the internet, such as a lamp, fan, AC, washing machine, electrical outlet, and temperature check. This research was carried out using ESP 8266 remote control devices to access local control using Artificial Intelligence CHATBOT by using Telegram Messenger. This streamlined the process for employees to manage multiple electronic devices in their individual workspaces using smartphones or PCs, eliminating the need to manually toggle devices on or off and eliminating the necessity to return to the office for light control. Consequently, this environment is referred to as a Smart Workspace.

These are just a few examples of how chatbots are being used in the field today. As chatbot technology continues to develop, we can expect to see chatbots being used in even more ways in the future.

5. Counclusion

Chatbots are a powerful tool that can be used to improve customer experience (CX). Chatbots can provide customers with 24/7 support, resolve issues quickly and efficiently, and personalize the customer experience.

Customer Experience can be more effective and more efficient with the use of Chatbots, chatbots can have a significant impact on CX by providing customers with a convenient, accessible, and personalized way to get the help they need. As chatbot technology continues to develop, chatbots are likely to play an even greater role in CX. Companies that are looking to improve their CX should consider implementing chatbots.

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