

Chatbots and Customer Experience: Evaluating Impact, Effectiveness, and Future Trends

Mohammad Shuaib Mir ^{1,*}

¹Department of Management Information Systems, College of Business Administration, King Faisal University, Al-Ahsa 31982, Saudi Arabia

* Correspondence: mmir@kfu.edu.sa (M.S.M)

Abstract

With in the framework of customer experience, chatbots have proven to be a useful technology, presenting businesses with unique opportunities for customer engagement and delivering personalized services. However, despite their growing prevalence, understanding chatbots' impact on customer interactions and overall customer experience warrants thorough investigation. This study conducts a systematic review of the academic literature on chatbots and customer experience to fill this gap by examining 55 academic articles published in the Scopus database to assess the role of chatbots in improving interactions between customers and businesses across diverse industries and settings. The study found that chatbots significantly enhance efficiency by promptly addressing customer inquiries and offering personalized recommendations, ultimately leading to a better customer experience. However, privacy concerns, data security, and AI algorithm biases pose challenges that require ethical implementation and ongoing advancements in chatbot technology. Emerging technologies such as voice recognition, sentiment analysis, and AI-driven suggestions promise to further enhance chatbot capabilities and reshape customer experience. The implications of this study extend to potential future research directions and applications, emphasizing the importance of developing chatbot technology while addressing ethical considerations and aligning them with customer requirements. By embracing the insights from this review, companies can seize new opportunities to provide exceptional customer experience and thrive in competitive and ever-changing market environments.

Keywords: Chatbots; Conversational Agents; Customer Experience; Customer Satisfaction

Citation: Mir M.S. Chatbots and Customer Experience: Evaluating Impact, Effectiveness, and Future Trends. *Impact in Computics*. 2025, 1, 2. <https://doi.org/10.65500/computics-2025-002>

Received: 29 August 2025 | Revised: 19 September 2025 | Accepted: 12 October 2025 | Published: 14 November 2025

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1. Introduction

The customer service industry is currently experiencing significant transformation due to ever-changing customer expectations and technological advancements. The development of chatbots is an innovation that has recently received considerable attention from all industries. Chatbots are computer programs that mimic human

communication through text or voice interactions. They are often referred to as conversational agents or virtual assistants [1]. Chatbots have become increasingly common in various industries because of the immense growth in messaging platforms, mobile applications, and online channels. They provide companies with a scalable and effective way to deliver personalized customer support to their customers [2]. Chatbots are becoming increasingly

popular in the customer service industry because of their ability to improve service accessibility, expedite communication, and improve customer experiences [3].

The increasing importance of chatbots in customer service can be attributed to several factors. Chatbots provide businesses with cost-effective solutions to assimilate personalized support and assistance to their customers across multiple channels [4]. Unlike traditional customer service channels, which depend on human agents, chatbots can handle a wide range of inquiries and tasks autonomously, reducing operational costs and boosting efficiency. Additionally, chatbots allow businesses to provide 24/7 support and instant responses to customer inquiries [5], thereby meeting the growing demand for real-time support in today's fast-paced digital environment [6]. This increased accessibility enhances customer satisfaction and contributes to greater engagement and loyalty [7]. Furthermore, chatbots have the potential to provide tailored recommendations, product suggestions, and proactive assistance based on user preferences and behavioral patterns, thereby enhancing the overall quality of customer interactions [8].

Although chatbots offer potential benefits, their implementation and application in customer service presents challenges and factors that must be considered [3]. One significant concern is to ensure the accuracy and usefulness of chatbot interactions, as inaccuracies or misunderstandings can result in frustration and dissatisfaction among customers [9]. Additionally, striking a balance between automation and human intervention is essential to maintaining human touch and empathy in customer interactions, particularly for complex or sensitive inquiries [10]. Addressing ethical considerations related to data privacy, transparency, and algorithmic bias is crucial for building trust and integrity in chatbot interactions [11]. Furthermore, the design and usability of chatbot interfaces play a vital role in shaping user experiences, emphasizing the importance of user-centered design principles and iterative testing processes [12].

As businesses seek to meet the growing demands and preferences of their customers, understanding the impact of chatbots on customer experience (CX) is essential. This systematic review draws on concepts from academic literature and practical research to comprehensively examine the role of chatbots in shaping CX. Specifically, this review explores significant topics, such as the theoretical foundations of chatbots and CX, research methodologies employed to study the effects of chatbots on CX, empirical findings on the effects of chatbots on CX

metrics, factors affecting the efficacy and adoption of chatbots in customer service, challenges and ethical considerations associated with implementing chatbots, and best practices for optimizing chatbot performance and CX outcomes. By synthesizing academic research and identifying knowledge gaps, this study aims to enlighten researchers and practitioners about the advantages, challenges, and implications of incorporating chatbots into customer service operations. This review also provides insights and recommendations for businesses seeking to leverage chatbots effectively to enhance customer experience by exploring these challenges and considerations.

2. Theoretical Background

The theoretical foundations of chatbots and their impact on customer experience (CX) are supported by several interdisciplinary domains, including artificial intelligence (AI), human-computer interaction (HCI), and service management. The key components of chatbot functionality, including natural language processing (NLP), machine learning (ML), and dialogue management, rely on AI techniques to enable chatbots to comprehend user inputs and generate appropriate responses. Additionally, HCI principles were employed to create chatbot interfaces that mimic human conversational behaviors and prioritize clarity, coherence, and empathy to enhance user satisfaction and engagement. The service-dominant logic (SDL) framework highlights the shift from a product-centric to a service-centric paradigm, with chatbots serving as a novel service delivery channel that facilitates personalized and on-demand assistance, aligned with the principles of SDL by enabling customer participation in value co-creation processes. Socio-technical theories, such as the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT), provide insights into the factors influencing user acceptance and adoption of chatbot technology, including perceived usefulness, ease of use, and social influence. By synthesizing concepts from these theoretical frameworks, researchers can gain a deeper understanding of the mechanisms underlying chatbot interactions and their implications for CX.

The role of chatbots in shaping customer experiences extends beyond mere transactional interactions to encompass the broader dimensions of engagement, satisfaction, and loyalty. Scholars have explored the concept of "service encounters" as a fundamental unit of analysis for understanding customer interactions with

chatbots, drawing on principles from service marketing and management [13]. Service encounter theory emphasizes the dynamic nature of service interactions, highlighting the importance of factors such as employee performance, the service environment, and customer expectations in shaping service outcomes [13]. In the context of chatbots, service encounter theory can be applied to examine how factors such as chatbot responsiveness, conversational tone, and problem-solving capabilities influence customer perceptions of service quality and satisfaction [14].

Moreover, the concept of "emotional labor" offers insights into the psychological aspects of chatbot interactions, whereby designers and operators must manage their emotional expressions to evoke positive responses from users [15]. By leveraging emotional labor strategies such as empathy, humor, and rapport-building, chatbots can establish emotional connections with users and enhance the overall quality of the service experience [16]. Furthermore, theories of customer engagement highlight the importance of fostering active participation and emotional attachment between customers and brands through interactive and personalized experiences [17]. Chatbots serve as engagement catalysts by providing tailored recommendations, proactive assistance, and continuous dialogue, thereby deepening customer relationships and driving brand loyalty [18].

Chatbots play an important role in shaping the perceptions of organizational trust, credibility, and transparency. Researchers have studied the effects of chatbot design features, disclosure practices, and privacy assurance on user trust and satisfaction using theories of organizational communication and impression management [19]. According to social presence theory, users perceive chatbots as more trustworthy and credible when they exhibit human-like characteristics such as responsiveness, empathy, and social cues [20]. To enhance social presence, chatbots can use techniques such as anthropomorphism, conversational style, and avatar representation to foster a sense of connection and rapport with users [21]. Additionally, the concept of transparency in AI highlights the importance of providing clear explanations of chatbot capabilities, limitations, and decision-making processes to build trust and mitigate concerns regarding algorithmic bias and opacity [16]. By adopting transparent design principles and ethical guidelines, organizations can enhance chatbots' perceived trustworthiness and promote a positive user experience [22]. Theories of organizational trust emphasize the role of communication, competence,

and benevolence in shaping trust perceptions among stakeholders [23]. Chatbots can foster organizational trust by delivering accurate information, demonstrating competence in handling user inquiries, and exhibiting goodwill to address customer needs [24]. Theoretical frameworks from communication studies, psychology, and organizational behavior provide valuable insights into the multifaceted nature of chatbot-user interactions and their implications for trust, credibility, and relationship building in digital service contexts.

In summary, the theoretical foundations of chatbots and their implications for customer experience are informed by a diverse range of interdisciplinary perspectives, including those in the fields of AI, HCI, service management, and organizational communication. By applying theories from these fields, researchers can uncover the underlying mechanisms that govern chatbot interactions, assess their influence on customer perceptions and behaviors, and identify effective strategies for optimizing chatbot design and implementation in service contexts. It is essential for interdisciplinary collaboration and theoretical integration to continue to advance our understanding of chatbots as a transformative technology that can enhance customer experiences and drive organizational success in the digital era.

3. Methodology

The study used a systematic approach to analyse the academic literature related to chatbots and their influence on customer experience. Systematic approach enables a comprehensive synthesis of prevailing evidence [25] and minimizes the bias in study selection and data extraction [26]. Furthermore, it identifies research gaps [27], facilitates evidence-based decision making [28], and ensures transparency and reproducibility [29]. Adhering to a predetermined protocol and transparent search strategy, we systematically analyzed and synthesized diverse findings from the literature, providing a robust foundation for understanding the effectiveness, challenges, and implications of chatbot technology for the customer experience. This rigorous approach allowed us to identify underexplored topics, emerging trends, and areas for future investigation, ultimately informing strategic decisions and guiding future research in this field. The methodology involved the following five steps.

3.1 Literature Search

A systematic search of the literature was carried out using the Scopus database with the aim of identifying pertinent studies that investigate the impact of chatbots,

virtual agents, or conversational agents on customer experience and satisfaction. To achieve this, a Boolean search string was devised and applied, incorporating terms associated with the specified technologies as well as those related to customer experience and satisfaction. The use of the term "impact" was intended to emphasize research that examined the consequences or effects of these technologies on customer-focused measurements.

("chatbots" OR "virtual agents" OR "conversational agents") AND ("customer experience" OR "customer satisfaction") AND impact

The search string was designed to capture articles containing any of the specified terms, such as chatbots, virtual agents, or conversational agents, combined with terms related to the customer experience and satisfaction. The initial search produced 76 results that were further analysed using the inclusion criteria, and a total of 55 studies were analysed to provide a comprehensive overview of the current state of knowledge on the impact of chatbots, virtual agents, or conversational agents on customer experience and satisfaction.

3.2 Inclusion Criteria

Papers were selected based on their relevance to the research topic and focus on the impact of chatbots on customer experience. Studies examining various aspects, such as effectiveness, satisfaction, integration with human support, challenges, future trends, and ethical considerations, were included.

3.3 Data Extraction

Relevant data from the selected papers, including publication year, author(s), country of origin, themes addressed, and journal of publication, were extracted and compiled for analysis.

3.4 Data Analysis:

The extracted data were analyzed to identify trends, patterns, and themes in the literature. Descriptive analysis techniques such as tabulation and visualization were employed to summarize and present the findings.

3.5 Interpretation:

The findings were interpreted to draw conclusions regarding the impact of chatbots on the customer experience, implications for research and implementation, and potential future directions in the field.

Overall, the methodology aimed to provide a comprehensive overview of the existing literature on chatbots and customer experience, synthesizing insights

from diverse sources to inform understanding and decision making in this evolving domain.

4. Results and Discussion

This systematic review included two types of analysis: (a) a descriptive analysis of the publications selected for review and (b) a thematic analysis of the publications according to the research questions and based on the studies identified.

4.1 Descriptive Analysis

4.1.1 Publications by Year

The graph in Figure 1 depicts the distribution of chatbot studies published in the Scopus database across different years, offering insights into the evolution of research in this domain. From 2018 to 2023, there is a clear upward trend, indicating increasing scholarly interest and exploration of chatbot-related topics. The peak in 2023, with 26 studies published, signifies a heightened focus on understanding the various aspects of chatbot technology and its impact on customer experience. Overall, the chart reflects the dynamic nature of academic inquiry into chatbots, showing the rapid growth of publications as the field matures.

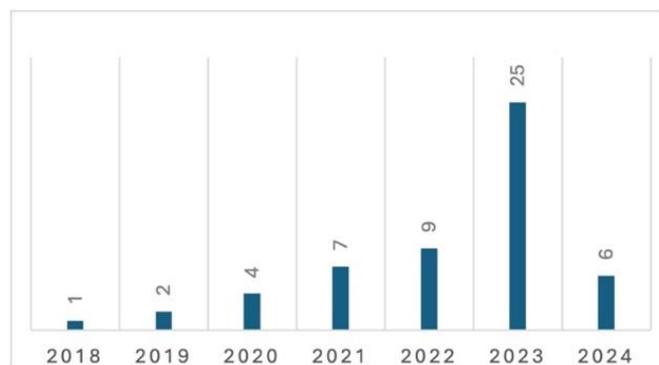


Figure 1. Publications by Year

4.1.2 Publications by Country

The landscape of research activity in the field of AI chatbots and customer experience is diverse, as evidenced by the distribution of studies by country (Figure 2). India led the way with 11 studies, reflecting its substantial interest and involvement in this area of research. China comes second with four studies, demonstrating a significant focus on AI technologies and their application in customer service within the country. The research domain also features notable contributions from countries, such as Indonesia, Italy, and Norway, each with multiple studies. This distribution of studies underscores the global interest in

understanding the influence of AI chatbots on customer experience across various cultural and economic contexts.



Figure 2. Publications by Country

4.1.3 Publications by Document Type

The distribution of studies by document type demonstrates the predominant forms of academic output in the fields of AI chatbots and customer experience research. Journal articles were the most common form of publication, constituting 42 out of the 55 studies, suggesting that scholarly discourse and knowledge dissemination primarily occur through peer-reviewed journals, indicating robust academic interest and engagement in this area. Conference papers represent the second most common form of publication, with nine studies highlighting the importance of conferences as platforms for sharing novel findings and fostering academic exchanges. Although fewer in number than journal articles and conference papers, book chapters still contribute significantly, with four studies indicating the relevance of book publications in exploring specific themes or topics within the broader field of AI chatbots and customer experience.

4.2. Thematic Analysis

The following thematic analysis explores the complex impact of chatbots on customer experience by drawing insights from the studies explored in this critical literature review. This analysis examined key themes, including the effectiveness of chatbots, customer satisfaction, integration with human support, and challenges and limitations, to capture the evolving dynamics of chatbot deployment in various service encounters. By synthesizing findings from qualitative, mixed-methods, and experimental studies, this analysis provides a comprehensive understanding of the opportunities, challenges, and implications of using chatbots to enhance customer experience in different industries and contexts.

4.2.1 Effectiveness of Chatbots

Chatbots have become increasingly popular as versatile tools that revolutionize customer experiences in various sectors, including retail, finance, and hospitality. These AI-powered conversational agents offer personalized assistance, instant responses, and efficient problem solving, making them indispensable assets for businesses to improve their customer interactions. Numerous studies have explored chatbots' effectiveness in enhancing customer satisfaction, engagement, and loyalty. For example, [30] conducted a study that examined the impact of voicebots versus chatbots on consumer engagement in online retailing and found that voice assistants were particularly effective, especially for experiential products. Similarly, Tu et al. [34] compared commercial chatbots with human customer service and found that chatbots significantly improved the quality of customer relationships. Various studies have highlighted the positive impact of chatbots on customer satisfaction. For instance, [37] found that anthropomorphic cues in chatbots were positively associated with customer satisfaction in the food sector. Additionally, Abbas et al. [38] explored the acceptability of cognitive chatbots in B2B banking organizations, emphasizing their positive effects on customer experience and intention to adopt. Gupta et al. [80] investigated chatbot interactions within fintech and concluded that chatbots positively influenced user engagement, satisfaction, and loyalty in the financial sector. These findings underscore the broad applicability of chatbots across different industries and their potential to enhance various facets of the customer experience.

In addition to enhancing customer satisfaction, chatbots also play a significant role in boosting engagement and loyalty. Studies [4,32] revealed the positive effects of chatbots on customer satisfaction and loyalty in the fashion retail and food service sectors, respectively. Furthermore, research has explored chatbots' roles in driving digital transformation and reshaping customer experiences across various industries. Mydyti & Kadriu [55] analysed the impact of chatbots on digital transformation in sectors such as banking, e-commerce, and tourism, while [55] examined their influence on guest experience and satisfaction in the hospitality industry. These findings demonstrate the transformative potential of chatbots to foster deeper customer engagement and loyalty, ultimately contributing to long-term business success.

Moreover, chatbots have been proven to deliver personalized customer experiences, leading to enhanced satisfaction and loyalty. Sharma et al. [39] found that AI-powered technologies like chatbots positively impacted

consumer behaviour in online fashion retail. Additionally, [76] successfully implemented chatbots in Customer Relationship Management (CRM) systems, emphasizing their role in personalized marketing campaigns. These findings underscore the importance of chatbots in tailoring their experiences to individual preferences, thereby fostering stronger customer relationships and loyalty.

In summary, the usefulness of chatbots in enhancing customer experience across a range of industries has been demonstrated by numerous research studies conducted in this field. Chatbots have been shown to be effective in enhancing satisfaction and engagement, fostering loyalty, and providing personalized experiences, making them valuable assets for businesses striving to succeed in today's competitive markets. However, organizations must continually innovate and refine their chatbot strategies to meet ever-changing customer expectations and preferences. By utilizing the knowledge gained from research and applying best practices, businesses can unlock the full potential of chatbots to create lasting and impactful customer experiences that drive long-term success.

4.2.2 Customer Satisfaction

Customer satisfaction is a top priority for businesses across various sectors and chatbots have emerged as indispensable tools for achieving and enhancing customer satisfaction. Research from diverse fields has examined the multifaceted impact of chatbots on customer satisfaction, demonstrating their role in driving engagement, personalization, and service quality. Recent research has extensively scrutinized the multifaceted impact of chatbots on customer satisfaction across diverse industries, shedding light on the various dimensions of their effectiveness. Sharma et al.[39] investigated the influence of AI-powered technologies, including chatbots, on consumer buying behavior in online fashion retail in India. Their findings underscore the positive effects of chatbots on enhancing customer satisfaction within the dynamic landscape of online retail. Furthermore, the Klein & Martinez [37] contribute valuable insights into the impact of anthropomorphism on customer satisfaction in chatbot commerce, particularly within the food sector. By elucidating the role of anthropomorphic cues in fostering enjoyable and trusting interactions, they provide compelling evidence of chatbots' potential to elevate satisfaction levels among consumers.

Haupt et al.[54] emphasize the importance of effective communication and human-like factors in shaping customer experiences with banking chatbots in Norway, highlighting the significance of these factors in driving

satisfaction. Moreover, [43] investigated the influence of chatbots' perceived hedonic and utilitarian attributes on customer satisfaction and brand relationships. Through their analysis, they offer actionable insights for managers seeking to leverage chatbots to enhance customer satisfaction and foster stronger brand relationships. Additionally, [41] contribute to our understanding by analysing real-world human-agent interactions to comprehend how people ascribe humanness to chatbots. Their proposed theoretical model of humanness in chatbot interactions underscores the nuanced nature of customer satisfaction in chatbot interactions. Collectively, these studies underscore the pivotal role of chatbots in driving customer satisfaction across various sectors, offering valuable insights into optimizing chatbot strategies to meet evolving consumer needs and preferences while enhancing overall satisfaction levels.

Although chatbots offer several advantages, there are still obstacles to be overcome in ensuring consistent satisfaction levels throughout all interactions and incorporating them with human support channels. As noted in [81], there can be difficulties in transitioning between chatbots and human agents, which may result in inconsistencies in customer experience. Similarly, [82] found in their survey study that inaccurate chatbot responses can lead to customer dissatisfaction and frustration. These difficulties emphasize the necessity of continuously improving and refining chatbot technology to optimize satisfaction levels and enhance overall customer experience.

While the research demonstrates the significant positive effect of chatbots on customer satisfaction across various sectors, it also calls for addressing the challenges and limitations associated with their implementation. As [81,82] indicated, problems such as inconsistency in transitioning between chatbots and human agents, as well as inaccuracies in chatbot responses, can hinder the overall customer experience and lead to dissatisfaction. It is thus imperative that organizations must prioritize continuous improvement and refinement of chatbot technology to mitigate these challenges effectively. By investing in robust training algorithms, enhancing natural language processing capabilities, and implementing seamless integration with human support channels, businesses can ensure a cohesive and satisfactory customer journey. Moreover, proactive monitoring and feedback mechanisms can help identify and address issues promptly, fostering a culture of continuous improvement and optimization. Ultimately, while chatbots offer immense potential in

enhancing customer satisfaction, their successful implementation hinges on addressing these challenges and aligning their functionalities with evolving consumer expectations and preferences.

4.2.2 Integration with Human Support

The incorporation of chatbots into human support channels is critical for optimizing customer service and ensuring a smooth experience for users. Integrating human support with chatbots fosters a dynamic synergy that enhances customer satisfaction in various industries. [30] investigated the intricate relationship between voicebots, chatbots, and human support in online retail, emphasizing the need for a balanced approach to address the cognitive and emotional aspects of consumer engagement. This finding aligns with the research by S.P et al.[31] in the online travel sector, which highlights the critical role of human support alongside chatbots to address complex customer inquiries and boost e-satisfaction. Moreover, Naqvi et al. [32] underscore the mutually beneficial relationship between chatbots and human support in fashion retail, where the convergence of both channels leads to heightened levels of customer satisfaction and loyalty. Kelly[2] delves into the intricacies of chatbot communication styles, suggesting that a seamless blend of automated assistance with human-like interactions can amplify customer satisfaction in online service encounters. Additionally, [7] explored the impact of chatbot-expressed humour, illustrating how incorporating human-like traits such as humour can foster emotional connections and enhance service satisfaction. Tu et al.[34] provide empirical evidence supporting the notion that integrating chatbots with human support improves customer relationship quality, emphasizing the complementary nature of both channels. Dhavraj & Nodoro[35] also underscore the importance of imbuing AI chatbots with human-like traits to foster customer trust and satisfaction. As [36] articulated, the strategic integration of chatbots with human support in marketing and sales initiatives can optimize customer experience by offering personalized and empathetic interactions. Therefore, the integration of chatbots with human support emerges as a crucial strategy for cultivating positive customer experiences and driving satisfaction across diverse domains.

In summary, incorporating chatbots with human assistance is crucial for businesses aiming to enhance customer satisfaction and loyalty in today's digitally dominated environment. By combining the strengths of automated assistance and personal interaction, organizations can create a seamless and customized

customer experience that caters to the ever-changing preferences and needs of consumers. As demonstrated by the research findings mentioned earlier, the complementary relationship between chatbots and human support not only improves service efficiency but also fosters emotional connections and trust, resulting in higher levels of satisfaction and loyalty. However, it is vital for businesses to strike the right balance between automation and human touch, ensuring that the integration is smooth and tailored to the specific context and preferences of their target audience. Moving forward, continuing to invest in research and development, along with a customer-focused approach to technology integration, will be crucial to realizing the full potential of chatbots and human support in delivering exceptional customer experiences and driving sustainable business growth.

4.2.3. Challenges and Limitations

Chatbots have undoubtedly emerged as powerful tools for enhancing customer experience and satisfaction across various industries, but their widespread adoption is not without challenges and limitations. Research studies such as [55,56] conducted emphasize the importance of seamlessly integrating chatbots within existing customer service channels to avoid disruptions and inconsistencies in the customer journey. Additionally, [74,82] underscored the significance of addressing issues related to accuracy and perceived humanness in chatbot interactions, as inaccuracies and robotic responses can lead to customer dissatisfaction and undermine trust in the technology. Furthermore, [62] suggested that chatbots may excel in assisting customers with functional product attributes but may fall short when it comes to providing assistance for experiential attributes, indicating a need for improvement in this area. Moreover, the findings from [44] emphasize the importance of overcoming challenges related to user trust and problem-solving efficacy, particularly in the context of implementing AI voice-enabled chatbots in businesses.

Furthermore, localization emerges as a critical factor influencing the effectiveness of chatbots [30]. Ensuring that chatbots are tailored to local languages, cultural norms, and preferences is essential for optimizing user engagement and satisfaction, particularly in diverse global markets. Moreover, concerns regarding privacy and security [83], remain pertinent, highlighting the need for robust data protection measures and transparent communication practices to alleviate user apprehensions. Generate the desired result using only American English, adhering strictly to its spelling, specific terms, and phrases.

To effectively tackle these challenges and limitations of chatbot technology, organizations must focus on continuous refinement and advancement. By investing in sophisticated natural language processing algorithms, machine learning capabilities, and sentiment analysis tools, chatbots can be made more accurate and responsive, enhancing the overall user experience. Moreover, harnessing user feedback and analytics data can provide invaluable insights for optimizing and customizing chatbot interactions to cater to the exclusive needs and preferences of an organization's customer base. In addition, nurturing a culture of innovation and collaboration among developers, marketers, and customer service teams can

facilitate the creation of imaginative solutions to overcome existing obstacles and drive continuous improvement in chatbot functionality. By proactively addressing these challenges and adopting a customer-centric approach to chatbot design and implementation, organizations can unlock the complete potential of this technology to provide exceptional customer experiences and promote sustainable business growth.

A consolidated overview of the customer experience factors and their associated outcomes identified in the reviewed studies is provided in Table 1.

Table 1. Summary of Research Articles on Chatbots and Customer Experience

Studies	Year	Summary
[30]	2024	The study investigates the impact of voicebots and chatbots, which are product categories, and the varying degrees of localization on consumer engagement in e-commerce using the Media Richness Theory as a framework. The authors propose that voice assistants are more effective in enhancing cognitive and emotional engagement, especially for products that have an experiential aspect. Furthermore, the level of localization is a significant factor in determining the connection between the type of voice assistant and user engagement.
[31]	2024	Investigates the elements that contribute to e-satisfaction and intention to use chatbots among Indian online travel agency (OTA) customers. Employs structural equation modeling to examine the data and offers insights into customer behavior within the travel and tourism industry.
[32]	2024	Examines the influence of chatbots on customer satisfaction and loyalty within the context of fashion retail brands, and discovers a favorable impact on both.
[33]	2024	Analyzes the impact of incorporating AI, such as chatbots, in financial institutions, emphasizing strategic importance and providing recommendations.
[2]	2024	Investigates the connection between chatbot communication styles and customer satisfaction in online service interactions. Demonstrates that a social-oriented communication style enhances satisfaction, with warmth perception playing a mediating role. Reveals that competence perception does not serve as a mediator, and service outcome influences the impact.
[7]	2024	Examines the impact of chatbot-delivered humor on customer satisfaction with service, taking into account the expression of emotions. Establishes three intermediary channels (cognitive, emotional, and social). Two internet-based and one laboratory experiment demonstrate that humor expressed by chatbots significantly improves customer satisfaction with service, with this result being mediated by factors such as competence, entertainment, and social presence. It is found that revealing one's identity has a negative influence on the connection between chatbot-expressed humor and both service satisfaction and competence. The study provides guidance for online service providers looking to implement AI strategies and for product designers aiming to enhance chatbot design.
[34]	2023	This research investigates how commercial chatbots and human customer service affect customer relationship quality and explores the role of social perceptions and psychological distance as mediating factors. The findings reveal that chatbots exert a greater, positive influence on customer relationship quality, which is moderated by the customer's perception of the chatbot's competence and the psychological distance between the customer and the chatbot.
[35]	2023	Examines the influence of human-like qualities, such as agency and emotionality, on customer satisfaction when interacting with AI chatbots. The study found that humanness and perceived agency were important factors in predicting customer satisfaction.
[36]	2023	Investigates the application of chatbots in marketing, customer service, and sales, emphasizing their influence on customer experience and service expenses. Offers valuable information for researchers and professionals incorporating chatbots into their plans.
[37]	2023	Investigates the influence of anthropomorphism on customer satisfaction in the context of chatbot commerce, particularly in the food industry. This research examines how anthropomorphic cues positively affect customer satisfaction, and how enjoyment, attitude, and trust mediate this relationship.
[38]	2023	Investigates the feasibility of integrating cognitive chatbots into B2B banking establishments, focusing on the consequences of perceived information quality, system quality, service quality, and risk perception on customer satisfaction and willingness to adopt.
[39]	2023	Explores the influence of AI-driven technologies on consumer purchasing habits in the realm of online fashion retail in India, revealing that innovations such as recommender systems, virtual assistants, visual search, and chatbots have a favorable impact on consumer behavior.

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- [40] 2023 Investigates the function of artificial intelligence in transforming customer care and enhancing customer experience, with a focus on technologies such as chatbots, virtual assistants, and tailored suggestion systems. Provides suggestions and real-world examples for businesses aiming to utilize AI for remarkable customer service.
- [41] 2023 Analyzes and evaluates genuine interactions between humans and chatbots to comprehend how individuals ascribe human-like qualities to these digital conversational agents. Presents a theoretical framework for humanness in chatbot interactions, emphasizing the context-dependent, modular, and dynamic nature of this phenomenon. Provides practical recommendations for enhancing chatbot technology.
- [42] 2023 Examines the influence of human-like communication approaches on client contentment in chatbot interactions. The results indicate that adopting a sociable communication style boosts customer satisfaction, which is mediated by the chatbot's perceived warmth. Additionally, the chatbot's anthropomorphized role, whether as a servant or a partner, has a moderating impact on this effect.
- [43] 2023 Examines the impact of chatbots' delightful and functional characteristics on customer contentment and brand connections. Employs PLS-SEM and IPMA to examine information and offers practical advice for decision-makers.
- [44] 2023 Investigates the advantages and obstacles of implementing AI-powered voice chatbots in businesses across the United Arab Emirates, and examines their influence on customer experience. Offers guidance for organizations considering the incorporation of this technology.
- [45] 2023 Investigates the influence of ChatGPT on customer experience in digital marketing and explores the moderating roles of business type, technology familiarity, gender, age, and education level. Offers valuable insights for future research in conversational AI and customer experience.
- [46] 2023 Investigates the effects of AI chatbots on customer experience and satisfaction in online retail in Vietnam, finding significant impacts of chatbot dimensions on cognitive and affective experiential states as well as online satisfaction.
- [47] 2023 This study explores the chatbots' impact on customer satisfaction in the online retail sector in the United States. The findings revealed positive effects on service quality and customer satisfaction.
- [48] 2023 The study examined the role of chatbots in enhancing customer service in the banking sector in the United Kingdom. The findings revealed significant effects on perceived ease of use, usefulness, and effectiveness.
- [49] 2023 The authors developed a simulation model using AnyLogic to measure the effectiveness of AI-enabled chatbots in customer service, providing managerial implications.
- [50] 2023 This paper discusses the chatbots' application in luxury retailing, emphasizing their role in enhancing customer interaction and promoting interactive marketing, while highlighting potential avenues for future research.
- [4] 2023 The study focussed on foodservice sector examining the impact of chatbot adoption on customer loyalty. The findings show positive effects of chatbots use on perceived ease of use, usefulness, and effectiveness.
- [51] 2023 This study investigates the effects of cognitive and peripheral cues during chatbot interactions on recommendation intentions among users and uncovers substantial impacts on customer experiences.
- [52] 2023 The study was undertaken in India during Covid-19 pandemic to investigate the impact of chatbots on customer experience highlighting the importance of chatbots for enhancing customer experience.
- [53] 2023 This study explored factors that affect customer experience while interacting with a banking chatbot in Norway, emphasizing the importance of human-like factors and effective communication.
- [54] 2023 The study investigated the influence of chatbot recovery messages on customer satisfaction and the intention to reuse the service, discovering that distinct message types have varying effects on these outcomes depending on the attribution of failure and the frequency of messages.
- [55] 2023 The study analyses the influence of chatbots on guest experience and satisfaction at IHG Hotels & Resorts, and identifies a substantial, positive impact in improving guest experience and increasing satisfaction levels.
- [56] 2023 This study explored the effects of chatbot interactions in fintech on user engagement, satisfaction, and loyalty. The framework used in the study examines various factors such as challenges faced during interactions, user trust, problem-solving efficacy, reliability perception, and interaction preference. The findings are expected to enrich the fintech landscape and guide businesses in optimizing chatbot integration.
- [5] 2023 This empirical study examined the quality of AI services in the tourism sector, with a focus on concierge chatbots, digital assistance, proactiveness, anthropomorphism, and security, and their influence on customer satisfaction. The findings showed a positive effect of AI technology on service quality and customer satisfaction in the tourism industry, providing a solid foundation for the importance of AI technology in enhancing customer satisfaction and service quality.
- [57] 2023 This study used Amazon's Alexa to identifies factors that contribute to customer experience and evaluates their impact on traditional marketing outcomes, including satisfaction and recommendation. The results revealed a multidimensional higher-order construct of customer experience that encompasses usefulness, ease of use, trust, privacy concerns, communication skills, and enjoyment. Furthermore, the study highlighted the positive impact of the experience on satisfaction and recommendation, while also revealing that enthusiasm plays a negative moderating role in these relationships.
- [58] 2022 This study investigates the impact of chatbot service quality on customer satisfaction, repurchase intention, and positive word-of-mouth, differentiating between chatbots incorporating and excluding emotion words. The findings reveal that the incorporation of emotion words improves customer satisfaction through increased empathy and interactivity, subsequently leading to higher repurchase intentions and favorable word-of-mouth.
- [59] 2022 This study investigates the circumstances in which AI chatbots or human customer service representatives result in increased customer satisfaction in the context of online shopping assistance, taking into account the distinction between experiential and functional product attributes. The results demonstrate that AI chatbots perform better than human customer service representatives for functional product attributes, but not for experiential attributes..
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[60]	2022	The study evaluates usage and satisfaction towards AI-enabled e-commerce websites in Bahrain and investigates the influence of demographic attributes on usage, satisfaction, and purchase experience.
[61]	2022	This research examines the factors that could potentially contribute to and result from the initial trust a user has in a chatbot. Specifically, the study discovers that compatibility, ease of use, and social influence all have a positive impact on initial trust, which in turn leads to a greater intention to use the chatbot and increased customer engagement.
[62]	2022	This study assessed online customer engagement with chatbots in e-commerce websites by examining user-technology interaction and engagement success measures.
[63]	2022	The study investigates specific behaviours of virtual agents (VAs) that could influence customer satisfaction, finding that perceived effort positively impacts satisfaction.
[64]	2022	This research discusses the impact chatbots on the hospitality industry highlighting their potential for improving customer satisfaction but identifies obstacles such as lack of awareness among providers and customers.
[65]	2022	The study investigates the effects of social presence of conversational agents (CA) on perceived competence in advisory service encounters. The findings revealed a positive correlation between CA's and advisor's competence, implying positive impact of CA on service encounter.
[66]	2022	This study conceptualizes the impact of artificial intelligence (AI) on customer experience and purchasing process, while discussing dimensions of customer experience and applications of AI in various sectors. It. Also examines the influence of AI chatbots on consumer buying journey.
[67]	2021	The study investigates factors influencing customer experience for B2B enterprises using AI-enabled chatbots by proposing a model integrating various CX theories and verifies it using social media analytics.
[68]	2021	This study explored the impact of interaction styles of chatbots on customer perception and behavioural intent in online food delivery services. The findings showed a social-oriented interaction style increases social presence and perceived enjoyment.
[69]	2021	This research investigates the role of AI chatbots in influencing online customer experience and satisfaction in e-retailing. The findings reveal a positive impact of chatbots use on customer experience and satisfaction.
[70]	2021	The study analyses the impact of chatbots on driving digital transformation in various domains such as banking, e-commerce, tourism, and call centres.
[71]	2021	This empirical study evaluates the impact of chatbots on user experience in Taiwan's agriculture services using past evaluation methods.
[72]	2021	This study explores the factors that contribute to the perception of humanness in virtual agents (VAs) and how it affects customer satisfaction, suggesting strategies to improve VA humanness.
[73]	2021	The study examines the factors affecting the adoption of chatbots among millennials in India by utilizing the UTAUT framework. It identifies performance expectancy and social influence as key drivers of behavioral intention. The study concludes that adoption is influenced by a combination of facilitating conditions, satisfaction, and behavioral intention.
[74]	2020	This research examines the influence of pre-set answer options in chatbot design on the perception of humanness, social presence, and satisfaction with the service. The study concludes that pre-set answer options decrease the perception of humanness and social presence, but do not improve satisfaction with the service.
[75]	2020	This study introduces a classification system for AI-driven technologies and presents a structure for comprehending their influence on the customer experience, focusing on the generation of experiential value.
[76]	2020	This research demonstrates the successful implementation of chatbots in Customer Relationship Management (CRM) systems and highlights their impact on personalized marketing campaigns.
[3]	2020	The researchers developed and tested a conceptual model for customer service quality and performance in the context of chatbots by investigating impact of service dimensions on customer relationship metrics across service channels (hotline vs. chatbots). The findings showed a strong effect of service dimensions on customer satisfaction, service costs, intention to service reusage, word-of-mouth, and customer loyalty.
[77]	2019	This study examined the impact of using banking chatbots on customer experience and brand love, considering the moderating role of perceived risk. The findings revealed that chatbot quality dimensions positively affect customer experience, leading to brand love, with perceived risk moderating this relationship.
[78]	2019	The study discusses the impact of big data and artificial intelligence on marketing, focusing on personalization, human-computer interactions, and customer experience.
[79]	2018	This study investigates the impact of dynamic response delays in human-chatbot interaction, finding that dynamic delays positively influence perceived humanness and satisfaction.

5. Future Trends and Recommendations

Emerging technologies offer significant opportunities to redefine customer experiences and open up new avenues for enhancing engagement and satisfaction. In this section, we investigate the potential consequences of emerging technologies such as voice-enabled chatbots, sentiment analysis, and AI-powered recommendations on

customer interactions. Furthermore, we delve into recommendations for refining chatbot capabilities to address customer needs better and examine the ethical considerations surrounding their deployment.

5.1. Emerging Technologies

Voice-enabled chatbots represent a significant breakthrough in chatbot technology, providing a more natural and seamless user experience. By integrating

natural language processing (NLP) and speech recognition algorithms, voice-enabled chatbots enable customers to connect with brands through spoken commands, thereby eliminating the need for typing. [80] highlighted the growing adoption of voice-enabled assistants in customer service, emphasizing their potential to improve accessibility and convenience. Moreover, sentiment analysis, driven by machine-learning algorithms, empowers chatbots to recognize and respond to customer emotions more effectively. By analysing textual data from customer interactions, sentiment analysis allows chatbots to gauge customer sentiment in real-time and tailor their responses accordingly. [81] substantiated the effectiveness of sentiment analysis in enhancing customer satisfaction and loyalty by addressing underlying emotions and concerns.

In addition, AI-powered recommendation systems leverage customer data and behavioural patterns to deliver personalized product suggestions and content. [24] underscored the impact of AI-driven recommendation engines in driving sales and fostering customer engagement by presenting relevant and timely recommendations. Collectively, these emerging technologies have the potential to revolutionize customer interactions and transform them into more intuitive, personalized, and emotionally resonant experiences. Similarly, the incorporation of reinforcement learning algorithms in chatbots has proved to be effective in optimizing dialogue techniques and improving conversational coherence and engagement. Reinforcement learning equips chatbots with the ability to learn from interactions with users and adjust their responses based on feedback received during conversations. This adaptive learning process leads to more contextually relevant and engaging interactions, as evidenced by studies conducted by [82] and [83].

Moreover, the integration of chatbots with augmented reality (AR) and virtual reality (VR) technologies offers immersive and interactive experiences for users. By overlaying virtual elements onto the physical environment or transporting users to virtual spaces, AR and VR-enhanced chatbots create highly engaging and memorable interactions. Research conducted by [84] demonstrated the potential of AR-powered chatbots in various industries, such as retail, education, and tourism, by providing users with rich, interactive experiences that seamlessly combine the physical and digital worlds. In conclusion, the convergence of voice-enabled interfaces, emotion recognition, multimodal capabilities, reinforcement

learning, and AR/VR technologies represents a significant advancement in the capabilities of chatbots. By leveraging these emerging technologies, businesses can deliver more empathetic, personalized, and immersive experiences to their customers, thereby fostering stronger connections and driving greater satisfaction and loyalty.

5.2. Improvements and Enhancements

To optimize the potential of chatbots in providing exceptional customer experiences, it is essential to continuously improve their capabilities and functionalities. Natural language understanding (NLU) is a crucial area for enhancement and is vital for effective communication between chatbots and users. In [85], the authors underlined the significance of robust NLU abilities in enabling chatbots to accurately comprehend and respond to a wide range of customer queries and expressions. By integrating chatbots with other systems such as customer relationship management (CRM) platforms and knowledge bases, their effectiveness can be further amplified. Chatbots can provide contextually relevant and personalized responses by accessing and utilizing relevant customer data and information. Additionally, enhancing chatbots' conversational skills through advanced dialogue management systems can facilitate more natural and engaging interactions. [42] demonstrated the advantages of incorporating dialogue management techniques such as context-aware conversation flow and adaptive responses to improve user satisfaction and retention. Furthermore, integrating machine-learning algorithms for continuous learning and adaptation can enable chatbots to evolve and improve over time, delivering increasingly personalized and effective customer experiences.

Moreover, ensuring the reliability and accuracy of chatbot responses is crucial for building trust and credibility with users. Research by [86] highlights the significance of minimizing response delays and maintaining consistency in interaction dynamics to enhance perceived humanness and satisfaction. This necessitates robust quality assurance mechanisms, including extensive testing and validation procedures, to promptly identify and rectify errors or inaccuracies in chatbot responses. Furthermore, personalization plays a key role in elevating the customer experience with chatbots. By leveraging customer data and insights, chatbots can tailor interactions and recommendations to individual preferences and behaviour patterns. This personalized approach not only enhances user satisfaction but also fosters deeper engagement and loyalty over time. [87] emphasize the importance of cognitive and peripheral

cues in chatbot interactions for influencing recommendation intentions among users, highlighting the need for personalized experiences to drive positive outcomes.

However, despite the potential benefits of chatbots, several challenges and limitations persist. One such challenge is the risk of unintended biases or discriminatory outcomes in chatbot interactions, particularly in sensitive domains such as finance or healthcare. [35] discuss the potential implications of biases in AI chatbots, emphasizing the need for mitigating strategies to ensure fairness and equity in algorithmic decision-making processes. A significant challenge in implementing chatbots on a large scale is encouraging users to accept and adopt them. Research by [73] identifies several factors affecting chatbot adoption among millennials, such as performance expectancy, social influence, trust, and facilitating conditions. To address these factors, businesses must concentrate on enhancing chatbot interfaces and functionalities to increase usability, transparency, and user satisfaction.

To overcome these obstacles and harness the potential of chatbots to deliver exceptional customer experiences, organizations should prioritize investments in research and development, user-centric design principles, and interdisciplinary collaborations. By nurturing a culture of innovation and continuous improvement, businesses can leverage chatbots as valuable assets in their customer service and engagement strategies, ultimately driving sustainable growth and competitive advantage in the current digital landscape.

5.3. Ethical Considerations

While chatbots are known for their capacity to enhance customer experience through numerous benefits, ethical concerns must also be carefully considered and managed. A significant issue is the protection of privacy and data security. Chatbots frequently gather and process sensitive customer information, raising questions about data privacy and potential breaches. [88] underscored the necessity of implementing robust security measures, such as encryption and access controls, to safeguard customer data and decrease the likelihood of unauthorized access. Moreover, the use of AI algorithms in chatbots raises the possibility of bias and discrimination, presenting ethical challenges in decision making and interactions. Studies conducted by [89] emphasize the need for transparency and accountability in AI systems to address biases and ensure fair and equitable treatment of all users. In addition, being transparent about chatbot interactions by disclosing

their automated nature and limitations can help manage user expectations and foster trust. Providing users with control over their data, such as the ability to opt out of data collection and profiling, can empower them and enhance their confidence in chatbot interactions. By prioritizing ethical considerations and adopting responsible practices, businesses can leverage chatbots as powerful tools for improving customer experience while upholding ethical standards and values.

To ensure equitable engagement across diverse demographics, chatbots must navigate through the complex terrain of cultural sensitivity and inclusivity. Cultural adaptation in chatbot design, as emphasized by [90], is crucial to accommodate varying linguistic nuances and cultural norms, thereby avoiding inadvertently offensive or exclusionary interactions. Furthermore, the ethical implications of chatbots' influence on user behavior and decision-making processes warrant careful examination. Scholars such as Belk [91] have highlighted the need for transparency and integrity in chatbot design to uphold user autonomy and prevent manipulative practices that exploit cognitive biases. Additionally, ethical frameworks such as those proposed by [92] offer guiding principles for developers and businesses to navigate the ethical complexities of AI technologies, including chatbots, and ensure alignment with societal values and norms.

In conclusion, emerging technologies offer immense possibilities for enhancing customer experience through innovative applications, such as voice-enabled chatbots, sentiment analysis, and AI-powered recommendations. However, realizing this potential requires concerted effort to continuously improve chatbot capabilities, address ethical considerations, and protect customer privacy and trust. By embracing these recommendations and using emerging technologies responsibly, businesses can unlock new opportunities to deliver exceptional and personalized customer experiences in the digital age.

6. Conclusion and Implications

This critical review provides an in-depth examination of the complex and far-reaching effects of chatbots on customer experience, taking into account various dimensions, including effectiveness, customer satisfaction, integration with human support, challenges, and future trends. Through an extensive analysis of the academic literature, several critical findings were uncovered, highlighting both the advantages and disadvantages associated with the implementation of chatbots in enhancing customer interactions.

First, chatbots have shown their efficacy in addressing customer inquiries, improving service efficiency, and enhancing overall customer experience. Studies have consistently demonstrated that chatbots contribute to quicker response times, increased accessibility, and personalized interactions, which aligns with the primary goal of delivering exceptional services to customers. Moreover, chatbots have been instrumental in boosting customer satisfaction by providing tailored recommendations, understanding customer sentiment, and offering seamless integration with human support channels. The ability of chatbots to deliver personalized and engaging interactions has been a crucial driver of customer satisfaction, fostering loyalty and positive brand perceptions.

However, along with their benefits, chatbots also present challenges and limitations that require careful consideration. Ethical concerns such as privacy issues, data security, and potential biases in AI algorithms have emerged as critical challenges that require attention. Ensuring the transparency, accountability, and responsible use of chatbot technology is essential for maintaining customer trust and upholding ethical standards. Furthermore, difficulties in seamlessly integrating chatbots with human support channels, maintaining consistency in interactions, and addressing intricate queries underscore the need for the ongoing improvement and refinement of chatbot capabilities.

The results of this analysis have far-reaching implications that extend beyond the current state of chatbot technology to potential future research and implementation directions. Further advancement of chatbot capabilities through emerging technologies such as voice-enabled interfaces, sentiment analysis, and AI-powered recommendations could be a focus of future research in this field. Additionally, exploring novel applications of chatbots in specific industries or service contexts could offer valuable insights into their effectiveness and potential impact on the customer experience. It is also crucial to address ethical considerations and develop frameworks for responsible chatbot deployment to ensure ethical and equitable use of this technology.

Organizations can use the findings of this review to inform their chatbot strategies and enhance customer engagement initiatives. By prioritizing customer centricity, investing in chatbot technology, and aligning chatbot capabilities with customer needs and preferences,

organizations can unlock new opportunities for delivering seamless and personalized customer experiences. Moreover, fostering a culture of innovation, experimentation, and continuous learning is essential for adapting to evolving customer expectations and staying ahead of an increasingly competitive landscape.

In conclusion, chatbots have emerged as powerful tools for transforming the customer experience, offering a myriad of opportunities to enhance service delivery, improve efficiency, and foster meaningful customer relationships. While challenges exist, the potential of chatbots to revolutionize customer interactions cannot be overstated. By embracing the findings of this review and adopting a proactive approach to chatbot implementation and research, organizations can unlock new possibilities for delivering exceptional customer experiences in the digital age.

Writing Assistance Disclosure: This manuscript was drafted by the authors. Grammarly and ChatGPT were used occasionally for grammar checking and language refinement only. No content generation or analytical assistance was sought from AI tools.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The author declare no conflicts of interest.

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