

Conversational AI and Chatbot Implementation in E-Commerce Customer Experience: A Semi-Systematic Literature Review

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ABSTRACT

The rapid development of Conversational AI and chatbots has transformed the landscape of business interactions within the e-commerce ecosystem. Although the adoption of this technology has grown significantly, the relationship between specific chatbot features, dimensions of customer experience (CX), and implementation challenges has not been adequately synthesized in the literature. This study aims to identify key chatbot features, synthesize their impact on CX and customer satisfaction, and classify implementation challenges for the period 2021–2026. The method used is a semi-systematic literature review (semi-SLR) that combines the transparency of systematic selection with the flexibility of thematic analysis. Through a screening process based on inclusion and exclusion criteria in the Google Scholar database, 30 Scopus-indexed international scientific articles were successfully selected and analyzed as the final corpus. Research findings based on RQ1 reveal eight key chatbot features, with Natural Language Processing (NLP) as the most fundamental foundation, followed by personalization and 24/7 service availability, as well as emerging trends based on Large Language Models (LLM). Regarding RQ2, the use of chatbots was found to have a positive impact on all dimensions of CX (cognitive, emotional, relational, behavioral) and customer satisfaction, where the aspect of trust acts as a key mediator in driving repurchase intent and electronic word-of-mouth (eWOM). Meanwhile, the findings of RQ3 classify nine main challenges into technical categories (NLP limitations and LLM hallucinations), privacy (data concerns and trust deficits), and customer experience (expectation-performance gaps). In conclusion, the success of chatbots in enhancing e-commerce satisfaction requires a balance between strengthening NLP quality, ensuring privacy transparency, and managing user expectations. Future research is recommended to focus on longitudinal studies and cross-cultural analyses in Southeast Asia.

Keywords: Conversational AI, AI Chatbot, Customer Experience, Customer Satisfaction, E-Commerce

INTRODUCTION

Growth of Conversational AI in E-Commerce

The rapid development of artificial intelligence (AI) has transformed how businesses interact with customers in the digital environment. Conversational AI, a subfield of AI that enables machines to simulate human-like dialogue through natural language processing (NLP) and machine learning, has become one of the most widely adopted technologies in the e-commerce ecosystem (Lopez-Lopez & Iniesta, 2025). AI-based chatbots are widely used on online retail platforms to handle product inquiries, order tracking, personalized recommendations, and large-scale after-sales services (Gouveia & Santos, 2024).

Academic interest in this topic has grown significantly, with Scopus-indexed publications on chatbots and Conversational AI peaking between 2021 and 2025 (Alharbi et al., 2025; Bălan, 2023). The emergence of generative AI and large language models (LLM) such as ChatGPT is further accelerating this adoption, as these technologies demonstrate far superior contextual understanding and personalization capabilities compared to

previous rule-based systems (Go & Kim, 2025). Nevertheless, the relationship between specific chatbot features and customer experience outcomes has not yet been adequately synthesized in the literature.

Customer Experience in Digital Commerce

Customer experience (CX) is a multidimensional construct that encompasses customers' cognitive, emotional, and behavioral responses across all touchpoints in the purchasing journey (Mittameedi et al., 2025). In e-commerce, CX is a key driver of customer satisfaction, loyalty, and competitive advantage, particularly in the absence of physical interaction (Peruchini et al., 2024). Chatbots contribute to CX through functional dimensions such as response speed and service availability, as well as experiential dimensions such as social presence, personalization, and conversation quality (Castillo & Farrugia Caruana, 2025).

Customer satisfaction, a construct closely linked to CX, reflects the extent to which a chatbot's performance meets or exceeds customer expectations, as explained by Expectation-Disconfirmation Theory (Oliver, 1980, as cited in Chau et al., 2025). Existing studies consistently show that a chatbot's responsiveness, accuracy, and ease of use are significant predictors of customer satisfaction, whereas failures in these aspects result in negative affect and reduce the intention to use the service again (Nicolescu & Tudorache, 2022; Wut et al., 2023).

Research gap

Although research on chatbot adoption and satisfaction outcomes has grown, three gaps remain unaddressed. First, there is no synthesis that specifically maps chatbot features onto customer experience dimensions within the e-commerce context. Second, chatbot implementation challenges such as trust deficits, privacy concerns, and NLP limitations are more often treated as side findings rather than primary research objects. Third, most existing reviews use broad cross-domain corpora, which can obscure nuances specific to the e-commerce context (Alharbi et al., 2025; Castillo & Farrugia Caruana, 2025). This study addresses these gaps through a semi-systematic approach focused on three research questions.

Research objectives

This study aims to: (1) identify and categorize the most frequently implemented chatbot features in e-commerce; (2) synthesize the impact of chatbot usage on dimensions of customer experience and customer satisfaction; and (3) classify the main challenges of chatbot implementation as reported in the literature from 2021 to 2026.

Research questions

RQ1: What conversational AI/chatbot features or characteristics are most frequently implemented in e-commerce?

RQ2: How does the use of chatbots impact the dimensions of customer experience and customer satisfaction in e-commerce?

RQ3: What are the main challenges faced by customers or companies in using chatbots in e-commerce according to current literature?

LITERATURE REVIEW

Conversational AI and Chatbots

Definition of Conversational AI

Conversational AI refers to AI systems designed to engage in human-like dialogue through the integration of NLP, dialogue management, and natural language generation (Lopez-Lopez & Iniesta, 2025). Unlike traditional rule-based automation, Conversational AI is capable of interpreting semantic intent, maintaining contextual

coherence in multi-turn conversations, and generating contextually appropriate responses capabilities that make it particularly well-suited for customer-facing applications in e-commerce (Bălan, 2023).

Definition of a chatbot

A chatbot is a software application that conducts automated text- or voice-based conversations with users, typically used for customer service, information retrieval, and facilitating purchases (Alharbi et al., 2025). In e-commerce, chatbots serve as an always-available point of interaction throughout the customer journey, from prepurchase inquiries to post-sale support (Gouveia & Santos, 2024). Castillo and Farrugia Caruana (2025) note that although chatbot adoption rates are rising, many customers still report unsatisfactory experiences, primarily due to unmet expectations regarding responsiveness and personalization.

Types of Chatbots

The literature distinguishes three main chatbot architectures. Rule-based chatbots follow predefined decision-tree scripts and are suitable for narrow, structured tasks, but their performance declines when user questions deviate from anticipated patterns. Retrieval-based chatbots select responses from a curated database using similarity matching, with accuracy rates that can exceed 90% for well-defined domains (Illescas-Manzano et al., 2021). LLM-powered generative chatbots dynamically generate new responses and represent the most advanced architecture today, though they carry risks of hallucination and contextual inconsistency (Alharbi et al., 2025; Go & Kim, 2025).

Natural Language Processing (NLP)

NLP serves as the technological foundation of all chatbot systems, enabling intent recognition, named entity recognition, sentiment analysis, and dialogue state tracking (Alharbi et al., 2025). The quality of NLP is a critical determinant of chatbot performance: poor intent classification and loss of conversational context are the most frequently reported causes of negative customer experiences in chatbot interactions (Castillo & Farrugia Caruana, 2025). Advances in transformer-based architectures have substantially improved NLP accuracy, enabling chatbots to handle ambiguous questions and emotionally charged language more effectively.

The E-commerce Landscape

The Concept of E-commerce

E-commerce encompasses the digital buying and selling of goods and services, characterized by the absence of physical interaction, the operational requirement of 24/7 availability, and a rich behavioral data environment (Mittameedi et al., 2025). These structural characteristics create both a need and an opportunity for Conversational AI: the scarcity of human agents necessitates scalable automated services, while the wealth of data enables personalization at the individual level. The growth of mobile-based commerce and social commerce platforms has expanded the contexts in which chatbots serve as the primary customer touchpoint (Gouveia & Santos, 2024).

Digital customer service

Digital customer service in e-commerce has shifted from human-operated live chat to AI-powered interaction systems. Chatbots enable businesses to handle high service volumes at low marginal cost while maintaining consistent responses (Bălan, 2023).

Chau et al. (2025), using the UTAUT framework and the Expectation-Confirmation Model, found that perceived responsiveness and ease of use significantly predict customer satisfaction and the intention to continue using the service in the context of AI-based services, although this relationship is moderated by task complexity and prior experience with chatbots.

Online Consumer Interactions

Online consumer interactions are becoming increasingly dialogic through the implementation of chatbots, carrying emotional content and relational meaning that go beyond mere transactional data exchange (Ashfaq et al., 2024). Social Presence Theory explains that chatbots displaying human-like linguistic cues such as turntaking, backchanneling, and empathetic acknowledgments generate a higher perception of social presence, which in turn fosters positive affect and trust in the brand (Wut et al., 2023). Crucially, Wut et al. (2023) found that in efficiency-oriented cultural contexts, functional competence is more dominant than experiential warmth as a driver of perceived service quality.

Customer experience

Definition

Customer experience is defined as the subjective and holistic response experienced by customers throughout all direct and indirect interactions with a company across the entire purchase journey (Mittameedi et al., 2025). In the context of e-commerce, CX encompasses all stages from product discovery to post-purchase services, shaped by trust, personalization, user autonomy, and engagement (Mittameedi et al., 2025). Peruchini et al. (2024) identified chatbots and voicebots as the most frequently studied AI technologies at the intersection of AI and CX, reflecting the centrality of both in digital experience design.

Dimensions of Customer Experience

Four dimensions of CX are consistently identified in the reviewed literature. The cognitive dimension encompasses functional evaluations of chatbot usability and the quality of information constructs central to TAM-based adoption studies (Alharbi et al., 2025). The emotional dimension reflects affective responses including trust, satisfaction, enjoyment, and frustration; Go and Kim (2025) identified adaptive responsiveness, immersive realism, and participatory interaction as features of LLM chatbots that generate positive emotional gratification. The relational dimension represents perceived social connections and brand intimacy, which Ashfaq et al. (2024) linked to verbal embodiment features in conversations. Finally, the behavioral dimension encompasses purchase intent, repurchase intent, loyalty, and electronic word-of-mouth (eWOM) as downstream outcomes of accumulated CX quality (Wut et al., 2023; Gouveia & Santos, 2024).

Customer Satisfaction

Definition

Customer satisfaction is conceptualized as an evaluative judgment of whether the service experience meets prior expectations, grounded in Expectation-Disconfirmation Theory (Oliver, 1980, as cited in Castillo & Farrugia Caruana, 2025). In chatbot research, satisfaction is operationalized through functional outcomes (task completion accuracy, response speed) as well as experiential outcomes (perceived enjoyment, naturalness of conversation). Alharbi et al. (2025) identified satisfaction as one of the most frequently studied dependent variables in chatbot adoption research, serving both as an outcome of perceived chatbot quality and as a predictor of continued usage intent.

Relationship with Customer Experience

Satisfaction and CX are related yet distinct constructs: CX is a broader experiential process throughout the customer journey, while satisfaction is a specific evaluative assessment at a particular touchpoint or the end of a specific interaction (Mittameedi et al., 2025). Functional CX dimensions accuracy and response speed are the most consistent proximal drivers of satisfaction in transactional chatbot interactions (Chau et al., 2025). Personalization moderates this relationship, as chatbots that tailor responses to individual preferences generate disproportionately higher satisfaction relative to their baseline functional performance (Gouveia & Santos, 2024; Alharbi et al., 2025).

Theoretical Relationships Between Chatbots, Customer Experience, and Customer Satisfaction

Three theoretical frameworks underpin the chatbot-CX-satisfaction relationship in the reviewed literature. The Technology Acceptance Model (TAM; Davis, 1989, as cited in Alharbi et al., 2025) states that perceived usefulness and perceived ease of use determine behavioral intent toward chatbots, and has been expanded with the constructs of trust, anthropomorphism, and social presence to better capture the experiential dimensions of AI-mediated interactions.

Expectation-Disconfirmation Theory (EDT; Oliver, 1980) explains satisfaction as a function of the gap between pre-interaction expectations and perceptions of actual performance, which explains why satisfaction outcomes are sensitive not only to the chatbot's capabilities but also to expectations shaped by

By integrating these three frameworks, chatbot features influence CX through both cognitive pathways (shaping perceptions of usefulness and information quality) and affective pathways (generating trust, enjoyment, or frustration).

The resulting CX then determines satisfaction through the process of confirming or disconfirming expectations, and satisfaction subsequently predicts downstream behavioral outcomes including loyalty, intent to reuse, and eWOM. This integrated model serves as the theoretical foundation for interpreting the empirical findings presented in the following section.

RESEARCH METHODOLOGY

Research Design

This study employs a Semi-Systematic Literature Review (semi-SLR) approach, a literature review method that combines the transparency of the selection process from a systematic review with the flexibility of thematic analysis from a narrative review (Snyder, 2019).

This approach was chosen because the topics of Conversational AI and customer experience in e-commerce are interdisciplinary and rapidly evolving, thus requiring a method capable of capturing diverse perspectives while remaining focused on the established research questions.

Unlike a systematic literature review, which requires full visualization of the PRISMA selection flow, a semi-SLR allows researchers to integrate a systematic screening process with a more interpretive analytical synthesis (Tranfield et al., 2003).

Literature Search Strategy

The literature search was conducted in the Google Scholar database as the primary source, given its broad scope and accessibility to relevant multidisciplinary articles. The search used the following structured Boolean query:

"AI Chatbot" OR "Conversational AI" AND "Customer Experience" OR "Customer Satisfaction" AND "E-Commerce" OR "Online Shopping"

The search was limited to the years 2021 through 2026 to ensure the relevance of the findings to current technological developments, particularly the emergence of generative AI-based chatbots and large language models. There were no restrictions based on geographic location or primary research methodology to maximize the range of perspectives that could be analyzed.

Article Selection Criteria

Article selection was conducted based on inclusion and exclusion criteria established before the screening process began, as shown in Table 1.

Table 1. Inclusion and Exclusion Criteria for Article Selection

Aspect	Inclusion Criteria	Exclusion Criteria
Year of Publication	2021–2026	Before 2021
Main Topic	Discusses AI Chatbots or Conversational AI	Does not discuss chatbots or conversational AI
Relevance	Related to Customer Experience or Customer Satisfaction in e-commerce	Topic is not relevant to CX/CS in e-commerce
Article Type	Indexed journal articles and scientific proceedings	Duplicate articles, opinions without empirical basis, industry reports
Accessibility	Full text available	Full text not available

Article Screening Process

The article selection process was conducted in stages to ensure that only truly relevant articles were included in the analysis. From the initial search results, 688 articles were obtained based on the predefined query. Subsequently, two sequential screening stages were conducted:

1. **Title Screening:** The 688 search results were filtered based on the relevance of their titles to the main research topic, namely AI chatbots/Conversational AI in the context of e-commerce and customer experience. Articles with irrelevant titles or those outside the scope of the study were eliminated at this stage.
2. **Abstract Screening:** Articles that passed the title screening were then evaluated based on their abstracts. Articles were retained if their abstracts demonstrated relevance to at least one of the three research questions (RQ1, RQ2, or RQ3). Articles for which the full text was inaccessible or that were duplicates were also eliminated at this stage.

After these two screening stages, 30 final articles that met all inclusion criteria were obtained and used as the analysis corpus in this study. The entire article selection process flow is summarized as follows:

Initial Search Results: 688 articles
↓ Title Screening
After Title Screening: articles relevant to the topic
↓ Abstract Screening
Final Articles: 30 articles (used in the analysis)

Article Distribution and Quality

All 30 selected articles were sourced from Scopus-indexed international scientific journals, with a quartile ranking distribution as shown in Table 2. The majority of articles (96.7%) were from Q1 and Q2 quartile journals, reflecting the quality and credibility of the literature used as the basis for the synthesis in this study.

Table 2. Distribution of Articles Based on Scopus Quartiles

Category	Number of Articles	Percentage (%)
Scopus Q1	18	60.0%
Scopus Q2	11	36.7%
Scopus Q4	1	3.3%
Total	30	100%

RESULTS AND DISCUSSION

Overview of the Analyzed Studies

Based on the selection process described in the methodology section, a total of 30 articles met the inclusion criteria and were analyzed in this review. These articles cover the period from 2021 to 2026, are sourced from Scopus-indexed international journals in the Q1–Q4 quartiles, and employ a variety of methodologies ranging from systematic literature reviews, bibliometric analysis, quantitative surveys, experiments, to case studies. All articles are summarized in Table 1 below.

Table 3. Summary of Analyzed Articles

No	Author (Year)	Research Focus	Method	Key Findings	RQ1	RQ2	RQ3
1	Mouammine (2026)	AI in CX & digital marketing	Bibliometric & thematic review (191 articles)	Conversational AI dominates CX research; nonvisual sensory aspects remain under-explored	✓	✓	–
2	Utami & Aimin (2026)	AI Personalization, Privacy & CXM	SLR (59 studies, PRISMA)	AI personalization increases satisfaction and loyalty, but is influenced by privacy and transparency issues	✓	✓	✓
3	Peruchini et al. (2024)	AI and customer experience	Bibliometrics & LR	Chatbots and ML are the most widely used AI technologies for CX in e-commerce	✓	✓	–
4	Khosravi et al. (2023)	The Development of Chatbots and ChatGPT	Bibliometric & SLR	ChatGPT is a major trend with potential in education, healthcare, and e-commerce	✓	✓	–
5	Bălan (2023)	Chatbots & voice assistants	SLR (41 articles)	Research is dominated by quantitative approaches; crossnational studies remain limited	✓	✓	✓

6	Mittameedi et al. (2025)	CX in e-commerce and the role of AI	SLR (82 articles, PRISMA)	AI supports personalization; trust, autonomy, and engagement are key factors in CX	✓	✓	–
7	Leschanowsky et al. (2024)	Privacy, security & trust in CAI	SLR (100 privacy studies; 58 trust studies)	Trust, privacy, and risk perception are key factors in CAI adoption	✓	✓	✓
8	Calvaresi et al. (2023)	Multi-agentbased chatbot	SLR (38 studies)	Adaptive and scalable MAS chatbot, but faces privacy and standardization issues	✓	✓	✓
9	Balaskas (2026)	Agentic AI in e-commerce	Evidencemapping systematic review (47 studies)	Trust and user control are key factors; excessive AI autonomy triggers rejection	✓	✓	✓
10	Nicolescu & Tudorache (2022)	Customer service chatbot	SLR (40 empirical studies)	Response relevance and problem resolution most influence satisfaction and trust	✓	✓	✓
11	Følstad & Taylor (2021)	Chatbot interaction UX	Design science & case studies	The relevance of responses, comprehensibility, and dialogue flow determine the quality of the chatbot UX	✓	✓	✓
12	Bergner et al. (2023)	Verbal embodiment of CAI & brand	Four experimental studies	Human-like conversations strengthen brand affinity and drive customer loyalty	✓	✓	✓
13	Khoi & Phuc (2026)	Generative AI in retail/e-commerce	Bibliometric (445 articles)	GenAI is growing rapidly; focus on agentic AI, RAG, and conversational AI	✓	✓	–
14	Olujimi & Ade-Ibijola (2023)	NLP for customer service	SLR (73 articles)	Chatbots and pretrained LMs improve service efficiency; accuracy & context remain challenges	✓	✓	✓
15	Gabashvili (2023)	Impact and Applications of ChatGPT	SLR of Reviews & Bibliometrics	ChatGPT has great potential; challenges regarding accuracy, bias, and ethical use	✓	✓	✓
16	Lopez-Lopez & Iniesta (2025)	CAI & consumer decisionmaking	SLR (78 articles) & cluster analysis	CAI influences decisions via engagement, trust, personalization, and sentiment	✓	✓	✓

17	Akdemir & Bulut (2024)	Chatbots, satisfaction & purchase intent	Survey & SEM (210 respondents)	Chatbot communication quality → satisfaction → purchase intent and repeat usage intent	✓	✓	✓
18	Kim & Priluck (2025)	GenAI chatbot vs. search engine	Experiment (211 participants)	Consumers still prefer search engines; AI chatbots are perceived as more objective	✓	✓	✓
19	Mittameedi & Dogra (2026)	CX AI in e-commerce (TAPE)	Survey & CB-SEM (400 respondents)	trust, personalization, autonomy, and engagement positively influence CX & loyalty	✓	✓	–
20	Jattamart et al. (2026)	Chatbot acceptance & rejection	Survey & PLS-SEM (400 respondents)	Anthropomorphism increases acceptance, but can simultaneously trigger objections	✓	✓	✓
21	Dogan & Gurcan (2024)	Hybrid chatbot for e-business	Case study & survey (210 respondents)	Hybrid chatbots improve response accuracy (>90%) and customer satisfaction	✓	✓	✓
22	Arce-Urriza et al. (2025)	Adoption of GenAI retail chatbots	Two-wave survey & PLS-SEM	GenAI enhances usability and human-like qualities; privacy concerns also increase	✓	✓	✓
23	Madanchian (2024)	AI marketing & e-commerce sales	Critical review (50 documents)	Chatbots and personalization boost marketing; ethical and data privacy challenges arise	✓	✓	✓
24	Chau et al. (2025)	AI customer service in e-commerce	Survey & PLS-SEM (552 respondents)	Confirmation of expectations and perceived usefulness drives satisfaction, reuse, and purchase intent	✓	✓	✓
25	Nogueira et al. (2025)	AI in consumer behavior	Bibliometric (561 publications)	AI & consumer behavior research is growing rapidly; focus on meeting needs and CX	✓	✓	✓
26	Gouveia & Santos (2025)	The Impact of AI on the Customer Journey	SLR (101 articles)	AI brings personalization and efficiency; barriers of privacy, security, and trust remain	✓	✓	✓
27	Castillo & Farrugia Caruana (2025)	Customer expectations of chatbots	SLR (91 empirical studies)	Customer expectations encompass functional and experiential aspects,	✓	✓	✓

				influenced by personal and situational factors			
28	Go & Kim (2025)	User satisfaction with LLM chatbots	Survey (249 users)	Adaptive responsiveness is the most important factor for satisfaction and behavioral intent	✓	✓	–
29	Alharbi et al. (2025)	Factors influencing the adoption of AI chatbots	PRISMA SLR (84 articles)	TAM and UTAUT are dominant; adoption is influenced by technological, psychological, social, and privacy factors	✓	✓	✓
30	Salih et al. (2025)	Generative AI in digital marketing	SLR (44 articles) & case studies	GenAI boosts customer engagement; ethical, privacy, and quality-of-results issues arise	✓	✓	✓

RQ1: The Most Commonly Implemented Features and Characteristics of Conversational AI in E-Commerce

An analysis of 30 articles identified eight key features or characteristics most frequently reported in Conversational AI and chatbot implementations in e-commerce environments. These findings are summarized in Table 2.

Table 4. Most Commonly Found Conversational AI Features/Characteristics

No	Feature/Characteristic	Supporting Articles	Frequency	Description
1	Natural Language Processing (NLP)	Alharbi et al. (2025); Olujimi & Ade-Ibijola (2023); LopezLopez & Iniesta (2025); Castillo & Farrugia Caruana (2025); Bălan (2023); Chau et al. (2025); Nicolescu & Tudorache (2022)	27/30	Most fundamental features; include intent recognition, NER, and sentiment analysis
2	Personalization & Recommendations	Utami & Aimin (2026); Mittameedi et al. (2025); Gouveia & Santos (2025); Alharbi et al. (2025); ArceUrriza et al.(2025); LopezLopez & Iniesta (2025)	25/30	The chatbot tailors its responses based on customer preferences and history
3	24/7 availability	Castillo & Farrugia Caruana (2025); Nicolescu & Tudorache (2022); Gouveia & Santos (2025); Chau et al. (2025); Bălan (2023); Akdemir & Bulut (2024)	23/30	Uninterrupted service with no operational hour restrictions
4	Sentiment Analysis	Lopez-Lopez & Iniesta (2025); Olujimi & AdeIbijola (2023);	20/30	Ability to detect customer emotions and conversation tone

		Alharbi et al. (2025); Salih et al. (2025); Bergner et al. (2023)		
5	Adaptive & Contextual Responses	Go & Kim (2025); Følstad & Taylor (2021); Bergner et al. (2023); Chau et al. (2025); Dogan & Gurcan (2024)	20/30	Maintaining the context of multiturn dialogues
6	Human-like Conversation Interfaces	Bergner et al. (2023); Jattamart et al. (2026); Arce-Urriza et al. (2025); Castillo & Farrugia Caruana (2025)	19/30	Use of turntaking, backchanneling, and empathetic tone
7	Multi-Platform Integration	Bălan (2023); Gouveia & Santos (2025); Salih et al. (2025); Mittameedi et al. (2025)	17/30	Chatbots integrated into web, mobile, and social media
8	Generative Capabilities (LLM-based)	Go & Kim (2025); ArceUrriza et al. (2025); Kim & Priluck (2025); Tran (2026); Salih et al. (2025)	16/30	Chatbots generate dynamic responses using large language models

Natural Language Processing (NLP) emerges as the most fundamental feature, mentioned in 27 of the 30 articles. NLP encompasses capabilities such as intent recognition, named entity recognition, and sentiment analysis, which are prerequisites for the operation of other chatbot functions (Alharbi et al., 2025; Olujimi & Ade-Ibijola, 2023). Without reliable NLP, all other dimensions including personalization and adaptive responses cannot function effectively.

Personalization and recommendation systems rank second (25 out of 30 articles). A chatbot's ability to tailor responses based on purchase history and customer profiles is consistently reported as a significant driver of satisfaction and loyalty (Utami & Aimin, 2026; Gouveia & Santos, 2025). Recent trends indicate that LLMbased generative capabilities (16 out of 30) are increasingly becoming a key differentiator, as LLM chatbots can generate more dynamic and natural responses compared to rule-based or retrieval-based chatbots (Go & Kim, 2025).

RQ2: The Impact of Chatbot Use on Customer Experience and Customer Satisfaction

The literature synthesis identifies the impact of chatbots on four main dimensions of customer experience (cognitive, emotional, relational, and behavioral) as well as two dimensions of customer satisfaction (functional and behavioral). Table 3 presents a mapping of these impacts along with supporting articles.

Table 5. The Impact of Chatbots on Customer Experience and Customer Satisfaction

Dimension	Impact Indicator	Direction of Impact	Supporting Articles	Notes
CX – Cognitive	Perceived usefulness	Positive	Alharbi et al. (2025); Chau et al. (2025); Arce-Urriza et al. (2025)	Strongest predictor of usage intention in the TAM/UTAUT model
CX – Cognitive	Information quality and response accuracy	Positive	Nicolescu & Tudorache (2022); Følstad & Taylor (2021); Dogan & Gurcan (2024)	Accuracy >90% for hybrid chatbots in defined domains

CX – Emotional	Trust	Positive	Leschanowsky et al. (2024); Balaskas (2026); Gouveia & Santos (2025); Jattamart et al. (2026)	Trust mediates between chatbot quality and purchase intent
CX – Emotional	Pleasure & enjoyment	Positive	Go & Kim (2025); Kim & Priluck (2025); Bergner et al. (2023)	LLM chatbots generate immersive and participatory affordances
CX – Relational	Brand intimacy	Positive	Bergner et al. (2023); Mittameedi & Dogra (2026)	Verbal embodiment enhances consumer–brand closeness
CX – Relational	Perception of social presence	Positive	Castillo & Farrugia Caruana (2025); Gouveia & Santos (2025)	Human-like language enhances the perception of a chatbot’s social presence
CS – Functional	Overall satisfaction	Positive	Akdemir & Bulut (2024); Chau et al. (2025); Dogan & Gurcan (2024)	Chatbot communication quality is a direct predictor of satisfaction
CS – Behavioral	Purchase intention	Positive	Jattamart et al. (2026); Akdemir & Bulut (2024); Chau et al. (2025)	Satisfaction mediates the relationship between chatbot quality and purchase intention
CS – Behavioral	Reuse intention	Positive	Alharbi et al. (2025); Nicolescu & Tudorache (2022); Chau et al. (2025)	Expectation confirmation drives continuance usage intention
CS – Behavioral	Electronic word-of-mouth (eWOM)	Positive	Gouveia & Santos (2025); Mittameedi & Dogra (2026)	High satisfaction drives positive online recommendations

In the cognitive dimension, perceived usefulness consistently emerges as the strongest predictor of chatbot usage intention, consistent with the Technology Acceptance Model (Alharbi et al., 2025; Chau et al., 2025). On the emotional dimension, trust is the most frequently studied mediating factor Leschanowsky et al. (2024) and Balaskas (2026) concluded that trust is a prerequisite for customers to be willing to delegate purchasing decisions to AI systems. Go and Kim (2025) identified adaptive responsiveness as the LLM chatbot feature most strongly associated with generating positive emotional gratification.

In the relational dimension, Bergner et al. (2023) demonstrated that verbal embodiment the use of conversational cues such as turn-taking and grounding signals significantly enhances the perceived humanlike qualities of a chatbot and strengthens brand intimacy. On the customer satisfaction dimension, Akdemir and Bulut (2024) demonstrated that chatbot communication quality directly influences satisfaction, which in turn mediates online purchase intent and repeat usage intent.

RQ3: Key Challenges in Chatbot Implementation in E-Commerce

From 23 articles relevant to RQ3, thematic analysis identified nine key challenges grouped into three categories: technical, trust and privacy, and customer and business/organizational experience. The mapping of challenges is presented in Table 4.

Table 6. Key Challenges in Conversational AI Implementation in E-Commerce

Category	Challenge	Supporting Articles	Frequency	Implications
Technical	Limitations of NLP (misinterpretation, context loss)	Alharbi et al. (2025); Olujimi & Ade-Ibijola (2023); Castillo & Farrugia Caruana (2025); Følstad & Taylor (2021)	20/23	Primary causes of chatbot failure and negative customer experiences
Technical	LLM hallucinations and inconsistencies	Go & Kim (2025); Arce-Urriza et al. (2025); Tran (2023)	14/23	Risk of incorrect responses that lower user trust
Technical	System integration limitations	Calvaresi et al. (2023); Dogan & Gurcan (2024); Bălan (2023)	13/23	Difficulty connecting the chatbot to existing backend systems
Trust & Privacy	Data privacy concerns	Leschanowsky et al. (2024); Utami & Aimin (2026); Arce-Urriza et al. (2025); Gouveia & Santos (2025)	19/23	Data collection by chatbots causes customer discomfort
Trust & Privacy	User Trust Deficit	Balaskas (2026); Alharbi et al. (2025); Jattamart et al. (2026); LopezLopez & Iniesta (2025)	18/23	Low trust hinders adoption and the delegation of decisions to AI
Customer Experience	Lack of a human touch	Nicolescu & Tudorache (2022); Castillo & Farrugia Caruana (2025); Kim & Priluck (2025)	17/23	Customers find interactions unsatisfying without human empathy
Customer Experience	Expectation–performance gap	Castillo & Farrugia Caruana (2025); Chau et al. (2025); Alharbi et al. (2025)	16/23	High expectations resulting from exposure to ChatGPT are difficult for ordinary chatbots to meet
Business & Organizations	Development and maintenance costs	Calvaresi et al. (2023); Madanchian (2024); Salih et al. (2025)	12/23	Initial investment and ongoing updates burden companies
Business & Organizations	Ethical and regulatory issues in AI	Salih et al. (2025); Madanchian (2024); Tran (2023); Utami & Aimin (2026)	13/23	There are no clear regulatory standards for AI in customer service

NLP limitations are the most dominant technical challenge (20/23 articles). Misinterpretation of ambiguous questions and loss of context across sessions are the primary causes of negative customer experiences (Castillo & Farrugia Caruana, 2025; Følstad & Taylor, 2021). As LLM chatbots become more widespread, the risk of hallucinations is emerging as a new and urgent challenge to address (Go & Kim, 2025).

Data privacy concerns (19 out of 23 articles) are the second-strongest barrier. Leschanowsky et al. (2024) concluded that customers’ awareness that chatbots collect personal data creates discomfort that reduces the chatbots’ effectiveness. Utami and Aimin (2026) emphasized that transparency in data management is a necessary condition for AI personalization to generate satisfaction rather than rejection.

The expectation performance gap (16 out of 23 articles) has become a structural challenge that is intensifying as the use of ChatGPT expands. Customers use their experiences with consumer AI as a benchmark for expectations, while most e-commerce chatbots still operate on more limited architectures, creating negative

disconfirmation even though the chatbots function technically correctly (Castillo & Farrugia Caruana, 2025; Alharbi et al., 2025).

RESEARCH IMPLICATIONS

Academic Implications

This study makes a theoretical contribution by mapping chatbot features onto CX dimensions that are systematically affected, a gap rarely addressed in previous literature. Findings regarding the role of trust as a universal mediator support the development of a more comprehensive adoption model beyond TAM/UTAUT.

Practical Implications

For e-commerce practitioners, these findings suggest that investing in NLP quality and personalization yields the highest returns in customer satisfaction and loyalty. Companies are advised to manage customer expectations transparently regarding the capabilities of the chatbots used, and to implement seamless human handoff mechanisms when chatbots are unable to resolve complex queries (Nicolescu & Tudorache, 2022). Regarding privacy, giving customers control over their personalization preferences is a prerequisite for trust that cannot be overlooked.

Future Research Opportunities

Several research directions should be prioritized: (1) longitudinal research on changes in user satisfaction and trust in chatbots over time; (2) direct comparative studies between rule-based, retrieval-based, and LLM-based chatbots within the same e-commerce context; (3) cross-cultural research in the Southeast Asian context, where technological literacy and trust norms differ from those in Western contexts; and (4) a systematic review of the challenges of LLM hallucinations in e-commerce customer service, which remain very limited in the reviewed corpus.

CONCLUSION

This study synthesized 30 international scientific articles (2021–2026) through a semi-systematic literature review to address three research questions regarding the implementation of Conversational AI and chatbots in e-commerce.

Regarding RQ1, eight key chatbot features were identified, with Natural Language Processing as the most fundamental foundation (27 out of 30 articles), followed by personalization and recommendations (25 out of 30), and 24/7 availability (23 out of 30). LLM-based generative capabilities (16/30) have emerged as the latest trend increasingly defining the standards of modern chatbot capabilities (Alharbi et al., 2025; Go & Kim, 2025).

Regarding RQ2, the use of chatbots has a positive impact on all dimensions of the customer experience cognitive, emotional, relational, and behavioral as well as on customer satisfaction and behavioral intent. Trust serves as a key mediator between chatbot quality and behavioral outcomes such as purchase intent, repeat usage intent, and eWOM, while personalization has proven to be the most consistent driver of satisfaction (Mittameedi et al., 2025; Akdemir & Bulut, 2024).

Regarding RQ3, nine major challenges are classified into three categories. Technically, NLP limitations and the risk of LLM hallucinations are the greatest obstacles. From a trust perspective, data privacy concerns and a deficit in user trust constitute persistent structural barriers. From an experiential perspective, the gap between continuously rising customer expectations and actual chatbot performance is the most difficult systemic challenge to mitigate (Castillo & Farrugia Caruana, 2025; Leschanowsky et al., 2024).

This study contributes by presenting a systematic mapping of chatbot features, CX dimensions, and implementation challenges in a single synthesis focused on the e-commerce context. Key limitations of this study include the use of a single database (Google Scholar) and the lack of a formal quality appraisal. Future research

is recommended to conduct direct comparative studies between different chatbot architectures, explore Southeast Asian cultural contexts, and examine the challenges of LLM hallucinations more systematically.

REFERENCES

1. Mouammine, Y. (2026). AI in customer experience and digital marketing: A bibliometric and thematic review (2004–2025) with a sensory marketing lens. *Cogent Business & Management*, 13(1), 2–26. (Accessed May 30, 2026 <https://doi.org/10.1080/23311975.2026.2613596>)
2. Utami, R. D., & Aimin, W. (2026). Balancing personalization, privacy, and value: A systematic literature review of AI-enabled customer experience management. *Information*, 17(2), 3–25. (Accessed May 11, 2026 <https://doi.org/10.3390/info17020115>)
3. Peruchini, M., da Silva, G. M., & Teixeira, J. M. (2024). Between artificial intelligence and customer experience: A literature review on the intersection. *Discover Artificial Intelligence*, 4(1), Article 4. (Accessed May 11, 2026 <https://link.springer.com/article/10.1007/s44163-024-00105-8>)
4. Khosravi, H., Shafie, M. R., Hajiabadi, M., Raihan, A. S., & Ahmed, I. (2023). Chatbots and ChatGPT: A bibliometric analysis and systematic review of publications in the Web of Science and Scopus databases. *Journal of Industrial and Management Systems Engineering*, 1(1), 1–15. (Accessed May 11, 2026 <https://arxiv.org/abs/2304.05436>)
5. Bălan, C. (2023). Chatbots and voice assistants: Digital transformers of the company–customer interface— A systematic review of the business research literature. *Journal of Theoretical and Applied Electronic Commerce Research*, 18(2), 995–1019. (Accessed May 11, 2026 <https://doi.org/10.3390/jtaer18020051>)
6. Mittameedi, S. R., Dogra, V., & Sayal, A. (2025). Customer experience in e-commerce: A systematic review of metrics, models, and the role of AI. *IEEE Access*, 13, 154420–154437. (Accessed May 11, 2026 <https://doi.org/10.1109/ACCESS.2025.3600729>)
7. Leschanowsky, A., Rech, S., Popp, B., & Bäckström, T. (2024). Evaluating privacy, security, and trust perceptions in conversational AI: A systematic review. *Computers in Human Behavior*, 159, Article 108344. (Accessed May 11, 2026 <https://doi.org/10.1016/j.chb.2024.108344>)
8. Calvaresi, D., Eggenschwiler, S., Mualla, Y., Schumacher, M., & Calbimonte, J.-P. (2023). Exploring agentbased chatbots: A systematic literature review. *Journal of Ambient Intelligence and Humanized Computing*, 14(9), 11207–11226. (Accessed May 11, 2026 <https://doi.org/10.1007/s12652-023-04626-5>)
9. Balaskas, S. (2026). From recommendations to delegation: A systematic review mapping agentic AI in e-commerce and its consumer effects. *Information*, 17(5), 1–151. (Accessed May 11, 2026 <https://www.mdpi.com/2078-2489/17/3/2229>)
10. Nicolescu, L., & Tudorache, M. T. (2022). Human-computer interaction in customer service: The experience with AI chatbots—A systematic literature review. *Electronics*, 11(10), Article 1579. (Accessed May 11, 2026 <https://doi.org/10.3390/electronics11101579>)
11. Følstad, A., & Taylor, C. (2021). Investigating the user experience of customer service chatbot interaction: A framework for qualitative analysis of chatbot dialogues. *Quality and User Experience*, 6(1), Article 6. (Accessed May 11, 2026 <https://doi.org/10.1007/s41233-021-00046-5>)
12. Bergner, A. S., Hildebrand, C., & Haubl, G. (2024). Machine talk: How verbal embodiment in conversational AI shapes consumer–brand relationships. *Journal of Consumer Research*, 50(4), 742–764. (Accessed May 11, 2026 <https://academic.oup.com/jcr/article/50/4/742/7067749>)
13. Khoi, H. M., & Phuc, T. T. (2026). Mapping the intellectual structure of generative AI research in retail and e-commerce: A bibliometric review. *SSR Journal of Artificial Intelligence (SSRJAI)*, 3(5), 1–25. (Accessed May 11, 2026 <https://doi.org/10.5281/zenodo.20072313>)
14. Olujimi, P. A., & Ade-Ibijola, A. (2023). NLP techniques for automating responses to customer queries: A systematic review. *Discover Artificial Intelligence*, 3(1), Article 15. (Accessed May 11, 2026 <https://doi.org/10.1007/s44163-023-00061-1>)
15. Gabashvili, I. S. (2023). The impact and applications of ChatGPT: A systematic review of literature reviews. *Aurametrix Preprint*. (Accessed May 11, 2026 <https://arxiv.org/abs/2305.18086>)

16. Lopez-Lopez, D., & Bara Inieta, M. (2025). The impact of conversational AI on consumer decision-making: A systematic review and cluster analysis. *International Journal of Engineering Business Management*, 17, 1–15. (Accessed May 11, 2026 <https://doi.org/10.1177/18479790251351889>)
17. Akdemir, D. M., & Bulut, Z. A. (2024). Business and customer-based chatbot activities: The role of customer satisfaction in online purchase intention and intention to reuse chatbots. *Journal of Theoretical and Applied*
18. *Electronic Commerce Research*, 19(4), 2961–2979. (Accessed May 11, 2026 <https://doi.org/10.3390/jtaer19040142>)
19. Kim, S., & Priluck, R. (2025). Consumer responses to generative AI chatbots versus search engines for product evaluation. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), Article 93. (Accessed May 11, 2026 <https://doi.org/10.3390/jtaer20020093>)
20. Mittameedi, S. K., & Dogra, V. (2025). Customer experience in AI-driven e-commerce: An empirical model of drivers and strategic outcomes. *Information*, 16(X), xxx–xxx (Accessed May 11, 2026, <https://www.mdpi.com/2078-2489/17/5/414>)
21. Jattamart, A., Nusawat, P., & Kwangsawad, A. (2026). Dual customer responses to AI chatbots in online shopping: An integrated AIDUA-SOR framework. *Journal of Theoretical and Applied Electronic Commerce Research*, 21(5), 146–170. (Accessed May 11, 2026 <https://doi.org/10.3390/jtaer21050146>)
22. Dogan, O., & Gurcan, O. F. (2024). Enhancing e-business communication with a hybrid rule-based and extractive-based chatbot. *Journal of Theoretical and Applied Electronic Commerce Research*, 19(3), 1984–1999. (Accessed May 11, 2026 <https://doi.org/10.3390/jtaer19030097>)
23. Arce-Urriza, M., Chocarro, R., Cortiñas, M., & Marcos-Matás, G. (2025). From familiarity to acceptance: The impact of Generative Artificial Intelligence on consumer adoption of retail chatbots. *Journal of Retailing and Consumer Services*, 84, Article 104234. (Accessed May 11, 2026 <https://doi.org/10.1016/j.jretconser.2025.104234>)
24. Madanchian, M. (2024). The impact of Artificial Intelligence marketing on e-commerce sales. *Systems*, 12(10), Article 429. (Accessed May 11, 2026 <https://doi.org/10.3390/systems12100429>)
25. Chau, H. K. L., Ngo, T. T. A., Bui, C. T., & Tran, N. P. N. (2025). Human-AI interaction in E-Commerce: The impact of AI-powered customer service on user experience and decision-making. *Computers in Human*
26. *Behavior Reports*, 19, Article 100725. (Accessed May 11, 2026 <https://doi.org/10.1016/j.chbr.2025.100725>)
27. Nogueira, E., Lopes, J. M., & Gomes, S. (2025). The new era of Artificial Intelligence in consumption: Theoretical framing, review, and research agenda. *Management Review Quarterly*. (Accessed May 11, 2026 <https://link.springer.com/article/10.1007/s11301-025-00531-7>)
28. Gouveia, J., & Santos, S. (2025). Rethinking the customer journey: Impact of AI for consumers and businesses—A systematic literature review and research agenda. *International Journal of Consumer Studies*. (Accessed May 11, 2026 <https://onlinelibrary.wiley.com/doi/full/10.1111/ijcs.70136>)
29. Castillo, D., & Caruana, L. F. (2025). Unveiling customer expectations of chatbot interactions: A systematic literature review and research agenda. *International Journal of Human–Computer Interaction*. (Accessed May 11, 2026 <https://doi.org/10.1080/10447318.2025.2588815>)
30. Go, E., & Kim, T. (2026). Mapping user gratifications in the age of LLM-based chatbots: An affordance perspective. *Computers in Human Behavior: Artificial Humans*, 7, Article 100240. (Accessed May 11, 2026 <https://doi.org/10.1016/j.chbah.2026.100240>)
31. Alharbi, N., Din, F. U., Paul, D., & Sadgrove, E. (2025). Driving AI chatbot adoption: A systematic review of factors, barriers, and future research directions. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(2), Article 100590. <https://doi.org/10.1016/j.joitmc.2025.100590>
32. Salih, S., Husain, O., Almohamedh, R. M., Tajelsier, H., Hashim, A. H. A., Elshafie, H., & Motwakel, A. (2026). From ideation to execution: Unleashing the power of generative AI in modern digital marketing and customer engagement—A systematic literature review and case study. *Array*, 29, Article 100630. (Diakses 11 Mei 2026 <https://doi.org/10.1016/j.array.2025.100630>)