

How May “AI” Help You? Analyzing the Role of AI-Backed Chatbot Interactions in Customer Services

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Abstract

Purpose : The paper empirically investigated the impact of the interaction between AI-enabled chatbots and consumers on engagement dimensions and engagement outcomes in e-commerce platforms. The study aimed to understand the outcomes that can be derived from the interactions during customer services to help marketers leverage AI technologies efficiently.

Design : Convenience sampling was employed to collect 311 cross-sectional data, which was analyzed through structural equation modeling using AMOS to test the hypotheses.

Findings : The results revealed that AI-backed chatbot interaction is a multidimensional construct that significantly and positively impacted all customer engagement dimensions; however, it also reported that AI-enabled interaction failed to induce advocacy intention among consumers. Furthermore, the results unveiled a significant mediating role of affective and behavioral engagement in chatbot interaction and advocacy intention relationship, whereas the mediating effect of cognitive engagement was not supported.

Research Implications : The results extended practical and theoretical implications by identifying the dimensions defining AI-backed chatbot interaction and investigating its impact on customer outcomes. It highlighted the role and limitations of AI-based chatbots and underscored the need for broader yet cautious implementation of such technologies in generating favourable outcomes in customer service systems.

Originality : The study uncovered the role of chatbot interactions in driving cognitive, affective, and behavioural engagement and customer advocacy. It is one of the few studies that identified and acknowledged the importance of integrating these chatbots into customer services, along with the limitations that accompany it.

Keywords : AI-backed chatbot interaction, customer engagement, advocacy intention, e-commerce

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In the digital era, customers increasingly rely on online platforms for their purchasing needs, encountering challenges in their retail journey that necessitate efficient customer support. AI-backed chatbots have emerged as a transformative tool in addressing these issues, effectively substituting traditional human service agents. These computer-enabled programs leverage artificial intelligence (AI), natural language processing

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(NLP), and machine learning (ML) to simulate human-like conversations, enabling them to understand customer queries, provide instant responses, and resolve concerns (Li & Wang, 2023).

The growing adoption of chatbots in customer service is driven by their ability to deliver cost-effective, time-efficient, and scalable solutions (Adam et al., 2021; Li & Wang, 2023). Their human-like conversational abilities not only enhance customer satisfaction but also contribute to brand loyalty, making them a pivotal tool for businesses (Lajante & Del Prete, 2020). As e-commerce platforms increasingly rely on chatbots to replace traditional voice-based support, it becomes critical to explore the broader implications of chatbot-customer interactions on organizational outcomes such as engagement and advocacy.

Customer engagement has emerged as a cornerstone of modern marketing (Srivastava, 2019), with cognitive, affective, and behavioral dimensions being recognized as key drivers of organizational success (Prentice & Nguyen, 2020). These dimensions influence critical outcomes like customer loyalty, firm performance, and shareholder value. Similarly, customer advocacy—defined as voluntary behaviors like endorsing a brand, generating positive word-of-mouth, and offering recommendations—has been identified as a vital factor in competitive markets where consumers have numerous options (van Tonder & de Beer, 2018). The research highlights that advocacy not only drives profitability but also enhances brand reputation, making it a focal point for marketers (Vander Schee et al., 2020).

Despite these insights, the literature lacks a comprehensive understanding of how AI-backed chatbots contribute to these crucial outcomes. Recent studies underscore the need for such exploration, with Oracle reporting that 82% of consumers would consider switching brands due to dissatisfaction with customer service (Shores, 2019). This statistic underscores the urgency of optimizing chatbot interactions to achieve enhanced customer engagement and advocacy.

To address this gap, the present study investigates how AI-backed chatbot interactions influence cognitive, affective, and behavioral dimensions of customer engagement, as well as their subsequent impact on advocacy intention. Furthermore, the study examines the mediating role of engagement dimensions in the relationship between chatbot interactions and advocacy. Overall, the study deals with the following research questions:

🔗 **RQ1** : How do AI-backed chatbot interactions impact customers' cognitive, affective, and behavioral engagement?

🔗 **RQ2** : How do customers' cognitive, affective, and behavioral engagement influence their advocacy intention?

🔗 **RQ3** : Do cognitive, affective, and behavioral engagement dimensions mediate the relationship between AI-backed chatbot interactions and advocacy intention?

This study integrates insights from recent research and extends the theoretical framework to provide actionable recommendations for using AI technologies in customer service.

Theoretical Background

The uses and gratifications theory postulates that audiences utilize media to satisfy their needs and fulfill gratification (Gupta & Sharma, 2021). This theory underscores the active involvement of audiences in decision-making and goal-oriented behaviors. Individual goals and priorities dictate the consumption of information and the preferred means of consumption.

The proliferation of Internet users has spurred numerous studies on the uses and gratifications theory concerning Internet usage. The advent of online technologies has reignited interest in applying the theory to new media. In the Internet age, technical satisfaction holds significant importance as it precedes e-commerce activity (Wang et al., 2021). It pertains to whether individuals can efficiently and accurately achieve their desired

outcomes using provided technology, particularly evident in the Chatbot-to-human interaction. The uses and gratifications theory has been utilized in various surveys, such as assessing people's acceptance of Internet information services and understanding the motivations behind virtual goods usage (Kaur et al., 2020). This theory focuses on how individuals utilize media, including Chatbots, underscoring the importance of individual selection.

Hypotheses Development

AI - Backed Chatbot and Customer Engagement

Chatbots have gained significant popularity in recent years, and advancements in AI, NLP, ML, and deep learning have played a pivotal role in their growth (Lee et al., 2011). A chatbot is an AI software designed to engage in conversations with customers using natural language. With the increasing adoption of the Internet and smart mobile devices, more and more consumers are drawn to seek better and personalized customer service provided by these chatbots (Othayoth & Khanna, 2024). The chatbots are equipped with enhanced intelligence and impeccable responsiveness, ensuring that customers receive instant and efficient service (Følstad et al., 2018). According to Araujo (2018), the use of chatbots has become integral to customer dialogue systems and has also attracted attention in consumer behavior studies (Luo et al., 2019; Zarouali et al., 2018). Since chatbots are powered by NLP, they enable communication in human language, serving as conversational agents that enhance customers' perceptions of service quality. The convenience offered by chatbots allows online customers to inquire about customer support, payment details, and other queries without the need to endure long queues, as often experienced in human and telephonic support.

Customer engagement represents an important behavioral component in terms of involvement or commitment (Al-Dmour et al., 2019) that extends to the affective and cognitive commitment of the customer toward the brand (Kosiba et al., 2020). It is the result of favorable evaluations or attitudes toward the service (Sahoo & Pillai, 2017). As a vital marketing outcome, it has attracted significant attention in academic research as it exhibits customers' involvement with the brand. Although customer engagement has been a widely investigated customer outcome, its conceptualization as a unidimensional or multidimensional construct remains debatable (Nandi & Prasad, 2024). van Doorn et al. (2010) proposed a perception of customer engagement that encompasses cognitive, emotional, and behavioral dimensions, hereby endorsing customer engagement as a multidimensional construct. Hollebeek et al. (2014) also shared this viewpoint and defined customer engagement as “the level of a customer's motivational, brand-related, and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in brand interactions” (p. 151). This comprehensive understanding of customer engagement has gained significant acceptance in the existing literature (Hollebeek et al., 2014; Hollebeek et al., 2018; Kunz et al., 2017; Leckie et al., 2016), and henceforth, we conceptualize and adopt customer engagement as a multi-dimensional construct consisting of behavioral, cognitive, and affective engagement in our study.

Prior research that has examined the impact of chatbots on customer behavior indicates that satisfied customers are more likely to become loyal customers, thereby increasing the likelihood of profit for firms (Van den Broeck et al., 2019). Henceforth, chatbots have emerged as a crucial tool for companies wanting to improve customer interaction and the entire experience for their customers. With digital transformation, AI-backed chatbots promise augmented customer experiences through personalized interactions (Nguyen et al., 2022), which reasons the wide application of chatbots to achieve customer engagement (Youn & Jin, 2021). Several empirical studies have illustrated that consumer engagement is significantly shaped by how customers perceive various types of interactions with a brand (Ahn & Back, 2018; Head et al., 2013). From a psychological perspective, customer-

brand engagement is captured through affective engagement (Hollebeek, 2011) since customers may develop an emotional bond with the brand, which is based on their positive feelings. According to Hari et al. (2021), interaction with chatbots can influence usage intention, which is a reflection of behavioral engagement. Similarly, since chatbots are a technology-based interactive medium, they may also contribute to the cognitive aspect of customer engagement. In this regard, Roy et al. (2023) highlighted that while interacting on digital platforms, customer engagement can be witnessed when they invest effort (behavioral) during interactions, when they are mentally engrossed (cognitive) during their interactions, and when they are vigorously and enthusiastically inspired (affective) during their interaction. This shows that interaction has a bearing on engagement dimensions and, therefore, the relationship between AI-backed chatbot interaction and all three aspects of customer-brand engagement needs to be explored in AI interaction research. Therefore, we hypothesize the following:

✎ **H1** : AI-backed chatbot interaction has a significant positive impact on customers' cognitive engagement.

✎ **H2** : AI-backed chatbot interaction has a significant positive impact on customers' affective engagement.

✎ **H3** : AI-backed chatbot interaction has a significant positive impact on customers' behavioral engagement.

Customer Engagement and Customer Advocacy

Customer advocacy is a key engagement behavior that represents the willingness of consumers to endorse an organization to their friends and family (Sharma et al., 2023). It occurs when customers indulge in promotional behaviors, defense-oriented behaviors, or word-of-mouth behaviors (Ogunmokun & Timur, 2022). It is established through various studies that brand advocacy plays a crucial role in the success of a brand, serving as a vital component in various marketing activities such as referrals to potential customers, including friends and family (Goswami & Balasubramanian, 2022; Hudson et al., 2015). According to Chaudhary and Sharma (2022), advocacy is directly linked to a firm's profitability, thereby underscoring its relevance in the competitive environment. When consumers actively engage with a brand online, they are more likely to perceive the brand as a reflection of themselves, leading to a personal association that can result in them advocating the brand (Kemp et al., 2012). With customers having access to immense new media where they can vocalize their thoughts, it becomes imperative for brands to use customer advocacy-based strategies. These advocates exhibit strong loyalty, repeatedly purchasing the brand and publicly demonstrating their commitment, which can positively influence others' perceptions of the brand (Roy, 2015). Therefore, failing to foster customer brand advocacy and utilizing the influence of brand advocates might put brands in a disadvantageous position.

A construct that seems to be closely related to brand advocacy is customer brand engagement. Customer engagement is defined as a psychological state characterized by dynamism, commitment, engagement, and interaction, which are also evident in the brand advocacy literature (Heinonen, 2018). Chatbots could revolutionize the way businesses interact with their customers, making for more dynamic and captivating experiences (Naqvi et al., 2024). Interactive experiences as a result of customer engagement with a brand enhance brand loyalty (Brodie et al., 2013), boost sales (Lee et al., 2011), and foster positive word-of-mouth communication (Libai et al., 2010). Consumer engagement with social chatbots is propelled by trust and the personification of chatbots, leading to the cultivation of relationships (Xie et al., 2023). Therefore, by engaging with customers in a meaningful way, chatbots facilitate the establishment of emotional connections that go beyond transactional relationships. Such emotional connection and interaction enhance customer advocacy as customers become enthusiastic endorsers and supporters of the company. Customer advocacy involves not only positive word-of-mouth but also resistance to negative information about the firm (Coelho et al., 2019). Thus, high engagement of consumers with a brand would enable customers to think positively about the brand (cognitive),

feel attracted to the brand (affective), spread positive word of mouth, and refer the brand to others just like a brand ambassador (behavioral). Based on the above discussion, we propose the following hypotheses:

- ✦ **H4** : Customer's cognitive engagement has a significant positive impact on advocacy intention.
- ✦ **H5** : Customer's affective engagement has a significant positive impact on advocacy intention.
- ✦ **H6** : Customer behavioral engagement has a significant positive impact on advocacy intention.

AI-Backed Interaction and Customer Advocacy

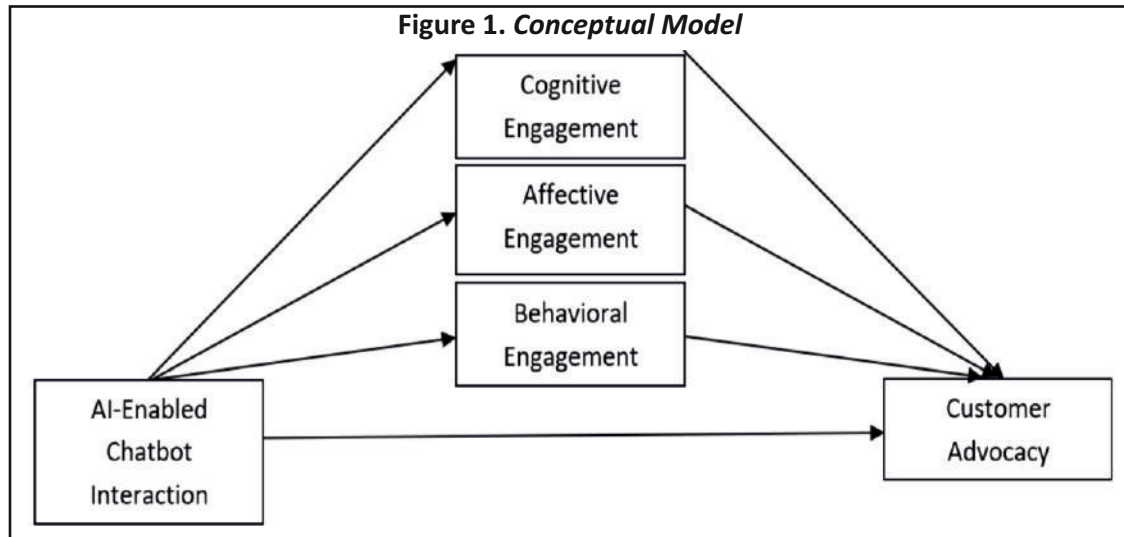
According to Alnawas and Hemsley-Brown (2019), the effectiveness of interaction within the consumer experience is identified as a crucial element that can stimulate consumers' intention to advocate for a brand. On the e-commerce platform, service providers engage with consumers to provide information, address their concerns and inquiries, and support them throughout their shopping journey. This approach allows companies to encourage advocacy, as suggested by Roy (2015). By leveraging virtual interactions, organizations have the opportunity to foster meaningful relationships that can motivate consumers to become enthusiastic advocates for the company (Sashi et al., 2019). With chatbots offering personalized and efficient assistance, customers are more likely to have positive interactions, which in turn contributes to fostering brand loyalty, leading to advocacy (Chen et al., 2023). Liu et al. (2021) also affirmed that effective social interactions encourage the intention to advocate for the brand, and hence, it is hypothesized that:

- ✦ **H7** : AI-backed chatbot interaction has a significant positive impact on customer advocacy.

Mediating Role of Customer Engagement Dimensions

In response to this evolving digital landscape, chatbots have emerged as indispensable tools that can enhance customer experience, foster engagement, and create strong customer advocacy. By leveraging chatbot technology, companies can provide exceptional service and build lasting relationships with their customers, ultimately leading to a loyal and supportive customer base. Since there exists a positive association between AI-backed interactions and customer engagement dimensions, as well as between customer engagement dimension and customer advocacy, as contended in preceding hypotheses, it is plausible to assume that the dimensions of customer engagement (cognitive, affective, and behavioral) can mediate the relationship between AI-backed interaction and customer advocacy. By empirically validating the mediating role of the three dimensions of customer engagement, Helme-Guizon and Magnoni (2019) put forth that customer engagement is a key variable in steering the relationship between the customers and the company. Existing literature holds that engaged customers are strong advocates of the company (Aljarah et al., 2024; Bilro et al., 2018) and, therefore, factors that are antecedent to customer engagement dimensions would indirectly influence customer advocacy behavior as well, thereby attributing to a mediating relationship. Moreover, the mediating role of customer engagement on the relationship between customer perception and behavioral outcome has been validated by Yen et al. (2020) as well; therefore, we hypothesize the following:

- ✦ **H8** : Customer's affective engagement mediates the relationship between chatbot interaction and advocacy intention.
- ✦ **H9** : Customer's behavioral engagement mediates the relationship between chatbot interaction and advocacy intention.



✎ **H10 :** Customer's cognitive engagement mediates the relationship between chatbot interaction and advocacy intention.

Based on the above hypotheses, the conceptual model for the study has been developed and depicted in Figure 1.

Methodology

The study undertakes exploratory research where it gathers data from respondents and further analyzes them to ascertain the various hypotheses proposed in the study. The subsections below highlight the key elements of the robust methodology employed that serve as the basis of the study's results and interpretation.

Sampling

To assist with the objective of the study, an online survey was undertaken with consumers who have interacted with AI-enabled chatbots on e-commerce platforms. Convenience sampling was employed to collect cross-sectional data over two months (November–December 2024), for which Google Forms was used. The data was collected from only those users from India who have interacted with AI chatbots, as they possess the experience needed to evaluate the chatbot's customer service. The sampling process was done in two phases: the initial sample of 126 was used to test the construct's reliability and validity, and the second survey was used for hypothesis testing using SPSS and AMOS. Responses that contained extreme or abnormally consistent rating patterns were eliminated, and a sample of 311 was considered for testing the study hypothesis.

Questionnaire Design

In the study, all the items of the scale were adapted from existing studies, except for customer engagement, which was adopted as it is from a study by Hollebeek et al. (2014) (Table 1). These items were measured on a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*).

Table 1. Scales

Construct	Scale Source
AI-Backed Chatbot Interaction	Hari et al. (2022), Pelau et al. (2021)
Customer Engagement	Hollebeek et al. (2014)
Customer Advocacy	Harrigan et al. (2021), Roy (2015)

Data Analysis

For data analysis, a pilot study was conducted for item purification and testing for reliability and validity of the constructs through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA was administered using varimax rotation to determine and confirm the dimensions that define the constructs of the study. This was followed by CFA using AMOS to check the psychometric properties and to test the measurement model of the study. Additionally, the study examined the discriminant validity based on the Fornell and Larcker (1981) criteria by comparing the average variance extracted (AVE) values to the square of correlation.

Analysis and Results

Exploratory Factor Analysis

EFA was first administered on AI-enabled chatbot interaction using varimax rotation, which resulted in the extraction of two component factors that define it. All the factors, except one, loaded significantly on either of the components with values above 0.060 (Table 2). After the removal of the item, the KMO values turned out to be 0.887, and Bartlett's test was significant at the 0.000 level, with components explaining a total variance of 70.60%. Items 1, 2, 3, and 5 loaded on one factor named chatbot responsiveness, which is defined as the

Table 2. Results of EFA and CFA

Items	Dimensions Extracted	Factor Loading	Cronbach's Alpha	SRW Estimate	AVE	Composite Reliability
AI Interaction	Chatbot	0.733	0.885	0.835		
1. The AI-backed chatbot processes information quickly.	Responsiveness					
2. The AI-backed chatbot answers my questions quickly.		0.876		0.91		
3. Getting information from the AI-backed chatbot is very fast.		0.851		0.783		
4. The AI-backed chatbot processes my input quickly.		0.805	0.90	0.717	0.66312575	0.886551

5. The AI-backed chatbot has a friendly interface to communicate needs.	Chatbot Communication	0.810		0.838		
6. Interaction with the AI-backed chatbot is efficient for getting the desired services.		0.825		0.836		
7. Interaction with the AI-backed chatbot can be easily done.		0.759		0.768		
8. The AI-backed chatbot effectively gathers customer feedback.		0.778		0.708		
9. The AI-backed chatbot makes me feel that it wants to listen to its customers.		0.808		0.809		
10. The AI-backed chatbot facilitates two-way communication.		0.748		0.702	0.6065855	0.901995
Customer Engagement						
1. Using the e-commerce platform makes me think about it.	Cognitive	0.833	0.761	0.644		
2. I think about this e-commerce platform a lot when I am using it.		0.783		0.879		
3. Using the e-commerce platform stimulates my interest in learning more about it.		0.696		0.839	0.63043267	0.834219
4. I feel very positive when I use this ecommerce platform.	Affective	0.755	0.925	0.92		
5. Using this		0.845		0.866		

e-commerce platform makes me happy.				
6. Using this platform makes me feel good.	0.883		0.817	
7. I'm proud to use this e-commerce platform.	0.840		0.888	0.76309725 0.927854
8. Compared to other platforms, I spend a lot of time using this platform.	0.769	0.864	0.841	
9. Whenever I am using an e-commerce platform, I use this one.	0.869		0.86	
10. This e-commerce platform is the one I use for my buying needs.	0.867		0.804	0.69776567 0.873749
Customer Advocacy				
1. I would recommend the e-commerce platform to someone who seeks advice.	0.833	0.910	0.873	
2. I encourage my friends and relatives to use this platform.	0.931		0.941	
3. I say positive things about the platform.	0.914		0.914	
4. I share my experience with the e-commerce platform with family and friends.	0.858		0.765	
5. I ask people to try the e-commerce platform on their own.	0.823		0.719	0.7170384 0.926142

promptness and timely responsiveness of the chatbots. Items 6, 7, 8, 9, 10, and 11 loaded on the second component named chatbot communication, which is defined as the chatbot's ability to communicate and receive information for assisting efficient transactions. This was followed by testing for the multidimensionality of customer engagement. The results showed that all the items loaded significantly on their respective constructs, namely, cognitive, affective, and behavioral engagement. The resultant KMO value turned out to be 0.881, and Bartlett's test was significant at the 0.000 level, with components explaining a total variance of 81.43%. At last, EFA was administered on customer advocacy and items loaded significantly with values above 0.06. The KMO was at 0.872, and Bartlett's test was significant at the 0.000 level, with total variance explained at 77.888%.

Confirmatory Factor Analysis

CFA was administered using AMOS to test the psychometric properties of the constructs. The standard regression weight was above > 0.60 for all the items (Table 2). The AVE was also above 0.50, the composite reliability exceeded 0.70 for all the constructs, and the convergent validity was hence confirmed. The measurement model showed an adequate fit with the following values: SRMR 0.0596, IFI 0.927, TLI 0.913, CFI 0.926, CMIN/DF 1.728, and RMSEA 0.076.

CFA was then conducted on the two second-order constructs, AI-enabled chatbot interaction and customer engagement (Table 3). For AI interaction, both the dimensions, chatbot communication and chatbot responsiveness, loaded significantly onto the second-order constructs (AI interaction) with values of 0.623 and 1.001, respectively. Similarly, the dimensions of customer engagement, namely cognitive, affective, and behavioral engagement, loaded significantly on the customer engagement construct with the values 0.811, 0.754, and 0.798, respectively. The internal consistency reliability exceeded 0.9, and the AVE values of the constructs were found to be 0.695065 and 0.621013667. The construct reliability was above 0.8, and the convergent validity was hence confirmed.

Table 3. CFA for Second-Order Construct

Second-Order Construct	First-Order Construct	CFA Loading	Cronbach's Alpha	AVE	Composite Reliability
AI - Enabled Interaction	Chatbot Responsiveness	1.001	0.905	0.695065	0.812189
	Chatbot Communication	0.623			
Customer Engagement	Cognitive	0.811	0.911	0.621013667	0.830828
	Affective	0.754			
	Behavioral	0.798			

Table 4. Discriminant Validity

Construct	Chatbot Responsiveness	Chatbot Communication	Cognitive	Affective	Behavioral	Customer Advocacy
Chatbot Responsiveness	0.66312575					
Chatbot Communication	0.344569	0.6065855				
Cognitive	0.094864	0.276676	0.63043267			
Affective	0.133225	0.398161	0.461041	0.76309725		
Behavioral	0.020736	0.099225	0.219024	0.389376	0.69776567	
Customer Advocacy	0.064516	0.158404	0.148225	0.4624	0.589824	0.7170384

Finally, following Fornell and Larcker (1981), we tested discriminant validity by comparing the AVE values to the squared correlation between each factor. The results showed that the value of AVE was greater than the square of the correlation in Table 4, and discriminant validity was hence confirmed. The squared correlations are represented in off-diagonal terms, and AVE values are represented in diagonal terms.

Hypotheses Testing

To test the hypotheses and the model fit of the study, the data was subject to structured equation modeling (SEM) using AMOS to test the direct relationships between the constructs. The results presented good model fit indices with SRMR of 0.0380, IFI 0.978, TLI 0.968, CFI 0.978, CMIN/DF 2.978, and RMSEA of 0.080. The results further reveal that AI-backed chatbots have a significant positive effect on all the dimensions of customer engagement, namely, cognitive engagement ($\beta = 0.881, p = 0.000$), affective engagement ($\beta = 0.948, p = 0.000$), and behavioral engagement ($\beta = 0.821, p = 0.000$). Therefore, H1–H3 are accepted (Table 5). However, the impact of AI-backed chatbot interaction on customer advocacy intention is found to be insignificant ($\beta = 0.17, p = 0.962$), and H7 is subsequently rejected. The results also find that out of the three, two dimensions of customer engagement, namely, affective ($\beta = 0.429, p = 0.005$) and behavioral ($\beta = 0.730, p = 0.000$), have a significant bearing on customer advocacy, where behavioral engagement is the stronger predictor of advocacy. However, the cognitive dimension could not exhibit a significant association with customer advocacy ($\beta = 0.156, p = 0.182$), and therefore, while H5 and H6 are accepted, H4 is not supported.

To extend the contribution of the study, the mediating role of customer engagement dimensions on the relationship between AI-backed chatbot interaction and customer advocacy is investigated using PROCESS macro 4 with 5,000 bootstrap samples. The results show a significant mediating effect of affective engagement ($\beta = 0.3240, p = 0.000$) (LLCI = 0.2173, UCLI = 0.4306) and behavioral engagement ($\beta = 0.4386, p = 0.000$) (LLCI = 0.3564, UCLI = 0.5208) on the relationship between AI-backed interaction and customer advocacy. However, the mediating role of cognitive engagement in this relationship is found to be insignificant ($\beta = 0.089, p = 0.8438$) (LLCI = -0.0802, UCLI = 0.0981) (Table 6). Thus, H9 and H10 are accepted, and H8 is not supported.

Table 5. Hypotheses Testing

Hypotheses	Standardized Estimates	P value	Result
H1. Chatbot Interaction → Customer's Cognitive Engagement	0.881	***	Supported
H2. Chatbot Interaction → Customer's Affective Engagement	0.948	***	Supported
H3. Chatbot Interaction → Customer's Behavioral Engagement	0.821	***	Supported
H4. Cognitive Engagement → Customer Advocacy	0.156	0.182	Not Supported
H5. Affective Engagement → Customer Advocacy	0.429	**	Supported
H6. Behavioral Engagement → Customer Advocacy	0.730	***	Supported
H7. Chatbot Interaction → Advocacy Intention	0.17	0.962	Not Supported

Note. *** $p < 0.000$; ** $p < 0.005$.

Table 6. Hypotheses Testing : Mediation Analysis using PROCESS 4 Macro

Hypotheses	Estimate	Lower Limit	Upper Limit	P value	Results
H8. Customer's cognitive engagement as a mediator between chatbot interaction and advocacy intention.	0.089	-0.0802	0.0981	0.8438	Not Supported
H9. Customer's affective	0.3240	0.2173	0.4306	0.0000	Supported

engagement as a mediator
between chatbot interaction
and advocacy intention.

H10. Customer's behavioral engagement as a mediator between chatbot interaction and advocacy intention.	0.4386	0.3564	0.5208	0.0000	Supported
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Note. *** $p < 0.000$; ** $p < 0.005$.

Discussion

The study presents a novel understanding of AI and human interactions in the customer service context of e-commerce platforms. The study first uncovers the dimensions that define AI-backed chatbot interaction, namely chatbot responsiveness and chatbot communication, thereby conceptualizing chatbot interaction as a multidimensional construct. Subsequently, the results of the hypotheses testing, where all the hypotheses, except H4, H7, and H8, were accepted, establish a research model elucidating how AI-backed chatbot interactions influence various customer-related outcomes, which can provide managers with insights on favorably leveraging AI-backed chatbots.

To examine AI-backed chatbots' impact on customer engagement, the study adopts a multidimensional view—cognitive, affective, and behavioral—of customer engagement to uncover a holistic account of effective customer perception (Helme-Guizon & Magnoni, 2019). The positive influence of AI-backed chatbot interaction on all the dimensions of customer engagement (H1–H3) reinforces the relevance of AI technologies in recent times. It promotes the need for effectively integrating AI-backed chatbots in the e-commerce platform to achieve cognitive, affective, and behavioral engagement since these dimensions have a significant bearing on vital consumer behaviors and subsequent firm performance (Das et al., 2022). In this regard, Adam et al. (2021) also underlined that AI chatbots benefit service providers with not just the cost and time-saving opportunities but also the ability to engage customers. This result calls for and justifies the wide application of AI technologies in assisting customer services.

Furthermore, to investigate the relationship between customer engagement dimensions and customer advocacy, the study analyses the individual effect of each dimension to generate broader insights for managers to direct their focus for a more targeted and effective marketing strategy rather than studying them as a whole like prior studies have. The results reveal that the affective and behavioral dimensions of customer engagement have a significant positive impact on the customers' willingness to advocate for the firm (H5, H6). The emotional aspect of engagement (affective engagement) is highly effective in building a strong brand because emotionally engaged customers positively advocate for the brand and are resilient toward negative information (Bilro et al., 2018). Similarly, concerning behavioral engagement, they highlight that customer advocacy is one of the fundamental components that result from behavioral engagement. Since customer engagement is a consumer's behavioral manifestation beyond purchase in terms of co-creation through referrals or word-of-mouth (Youssef et al., 2018), it backs our finding that behavioral engagement is the stronger predictor of customer advocacy. The study also finds that the same dimensions significantly mediate the relationship between chatbot interactions and advocacy (H9, H10), thus highlighting that customers who are behaviourally and effectively engaged via interactions will favorably advocate for the brand or as Bilro et al. (2018) highlighted, engaged customers are like brand ambassadors who support and promote the brand. Overall, these results emphasize the importance of affective and behavioral engagement in, directly or indirectly, enabling favorable outcomes like advocacy. It suggests the need for managers to generate strong emotional connections and drive participation and involvement among

consumers. This is because while affective engagement charters attraction and motivation, behavioral engagement through participation and involvement charters intended and unintended positive behaviors (Johnston & Taylor, 2018), and such participation can further improve the financial and non-financial outcomes of the firm (Anning-Dorson et al., 2018).

The notable findings of this study are the relationships that were not supported (H4, H7, and H8). The incapacity of AI-backed chatbot interaction to induce advocacy (H4) raises questions about AI technologies' ability to always generate positive customer-related outcomes, which further questions the substitution of human agents with chatbots. This finding is supported by Munnukka et al. (2022), who stressed the need to carefully consider the expected goals to be achieved through interactions with chatbots and the use of AI-powered technologies for relationship-oriented objectives. These results voice caution in integrating chatbots at a time when chatbots are increasingly replacing human agents in customer services. It is important to acknowledge that AI technologies lack interpersonal relationship competencies (Lou et al., 2022), which are key requisites to inducing advocacy behaviors, hereby explaining the insignificant association between chatbot interaction and advocacy. The inability of AI chatbots raises the need to update their design process, which can enable them to deliver valuable suggestions and solutions that are prerequisites to meeting the requirements of customer services (Alagarsamy & Mehroliya, 2023). This counterintuitive result suggests the need to revisit established relationships that may vary with changing times and technologies. Furthermore, the insignificant relationship between cognitive engagement and advocacy, along with their inability to mediate the relationship between AI-backed interaction and advocacy, an exhibit that mere attention to or comprehension of interaction won't guarantee success, but rather engagement in terms of emotional connect participation and involvement will motivate consumers to become strong advocates for the company.

Implications

Theoretical Implications

This study advances the theoretical understanding of AI and human interactions in e-commerce platforms by conceptualizing chatbot interaction as a multidimensional construct comprising responsiveness and communication. By adopting a multidimensional perspective on customer engagement—cognitive, affective, and behavioral—the research enriches user and gratification theory by demonstrating how AI technologies shape diverse customer perceptions and behaviors. The findings underscore the pivotal role of emotional and participatory dimensions in driving advocacy while challenging the assumption that AI technologies are universally effective in achieving customer-related outcomes. Specifically, the inability of chatbot interactions to directly foster advocacy emphasizes the importance of humanlike interpersonal competencies, suggesting a need to re-evaluate the role of AI in contexts requiring relationship-oriented goals.

Managerial Implications

From a managerial perspective, the study offers critical insights for effectively integrating AI-backed chatbots in e-commerce platforms. Managers should strategically deploy chatbots to enhance cognitive, emotional, and participatory engagement while acknowledging their limitations in building interpersonal relationships. To overcome these challenges, chatbot designs must evolve to deliver more humanlike relational competencies and valuable, personalized solutions that drive advocacy. Furthermore, the findings highlight the significance of fostering affective and behavioral engagement, which necessitates prioritizing emotional connections and active customer participation. While AI chatbots provide substantial cost and time efficiencies, their integration should

complement rather than replace human agents in customer service contexts to ensure robust relationship-building and long-term advocacy outcomes.

Conclusion

Overall, the study not only addresses the role of AI-backed chatbot interactions in customer services but also extends the marketing literature by analyzing each dimension of customer engagement, thereby providing valuable marketing insights. The results affirm that the multidimensional AI-backed chatbot interaction can engage customers interactively and conversationally by creating experiences for customers, which can lead to higher levels of cognitive, affective, and behavioral engagement. In the digitally driven world, the significance of customer engagement cannot be overstated, and the results show that an AI-backed chatbot is an invaluable tool empowering companies of all sizes and industries to undertake tasks that ensure favorable outcomes like engagement. It also highlights that even though chatbot interaction fails to bring advocacy intention, if it can engage customers, it will lead to favorable endorsements from customers. This paradigm shift in customer service capabilities opens new opportunities and efficiencies for businesses to better serve their clientele. However, it is important to acknowledge the limitations that accompany AI-backed chatbots, as the results also show that these interactions fail to drive advocacy intentions that can arise from deficient interpersonal competence. Thus, the study endorses the wide yet cautious application of chatbot facilities and calls for further improvements in AI chatbots to meet customer service requirements. Subsequently, the results highlight the importance of affective and behavioral engagement and the incapacity of mere knowledge or attention (cognitive engagement) in enabling customers to advocate for the organization, hereby voicing the need to involve and emotionally engage the consumers. These results impart theoretical knowledge and also present managerial implications that can be leveraged for conducive outcomes.

Limitations of the Study and Scope for Future Research

Despite these contributions, the study presents certain limitations that can serve as future research avenues in the area of marketing research. The study exhibits sectoral and geographical limitations by covering only the e-commerce sector in India, which can restrict the generalization of the findings. Since chatbots have been integrated into various industries like banking, hospitality, education, tourism, etc., future research should also focus on these areas and beyond national boundaries. Since chatbots and human agents coexist in e-commerce platforms, a comparative analysis of human versus AI interaction can provide deeper insights into how both forms of interaction impact customer outcomes. Finally, the study covers limited antecedents, and therefore, future studies can investigate the impact of chatbot interactions on various vital customers and financial outcomes that are relevant to the organization.

Authors' Contribution

Sunanjita Mahajan, along with Dr. Mansi Gupta, conceived the idea and developed a quantitative design to undertake the empirical study. Prof. Vinay Chauhan supervised the methodology and verified the analytical methods of the study. The data was collected by Sunanjita Mahajan and was filtered by Dr. Mansi Gupta. Dr. Mansi Gupta did the numerical computations on SPSS, while Sunanjita Mahajan and Prof. Vinay Chauhan undertook the AMOS analysis. All the authors compiled the writing, and Prof. Vinay Chauhan consistently supervised the flow of the paper.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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