

# Navigating the Customer Experience Landscape: Unraveling the Dynamics of AI-driven Chatbot Services for FMCG Retailers

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**Abstract:** This paper evaluates the impact of AI-based chatbot services on fast-moving consumer goods (FMCG) retail sector's customer satisfaction. The data of 615 respondents were collected from FMCG customers in organized retail shops in and around Albaha region of Saudi Arabia. The study acquired data from consumers who used chatbot services for the purchase of FMCG products. Seven hypotheses were formulated and tested to explain the relationships between these variables. It was found that responsiveness is related to customer satisfaction and affects the conversational tone. Further, the adopted conversational tone also influenced customer satisfaction, and the customers were able to process it better. Privacy concerns have an important role in how customers communicate online. This study contributes to the choice of FMCG retailers as far as customizing the chatbot services to ensure that their conversational tone is responsive and mindful of privacy matters in an attempt to increase satisfaction. Further, this study can be generalized in other geographic regions with similar setup in order to understand the consumer behavior.

**Keywords:** chatbots, AI, privacy concerns, customer satisfaction, AI-driven chatbot service, FMCG retailers

## 1. Introduction

In the fast-paced and dynamic landscape of fast-moving consumer goods (FMCG) retail, the integration of artificial intelligence (AI) technologies, particularly in the form of chatbots, has become increasingly prevalent [1, 2]. As FMCG retailers strive to enhance customer engagement and satisfaction, understanding the intricate dynamics between AI-driven variables and customer experience is imperative. The global retail environment is witnessing a paradigm shift, with the consumers increasingly favoring digital channels for their shopping experiences [3]. FMCG retailers, in particular, are leveraging AI-driven chatbots to provide personalized and efficient services to their customers [4]. As these technologies become integral to the customer experience, it is essential to explore the nuanced factors that contribute to or detract from customer satisfaction in an international context.

In the rapidly evolving landscape of FMCG retail, where consumer expectations are continually on the rise, the integration of AI and, specifically, AI-driven chatbots have emerged as a pivotal strategy for enhancing customer satisfaction [1, 3]. The significance of these AI-powered tools lies in their ability to revolutionize and personalize the customer experience in ways that were previously unattainable [5]. To evaluate how committed

your customers are, you should gather feedback to understand their level of trust and how much value they perceive you offer [6].

How do AI-driven chatbots provide consumers with instantaneous assistance, enabling them to promptly address queries, obtain product information, and navigate through various stages of the purchasing journey? In a sector where speed and efficiency are paramount, the real-time support offered by chatbots contributes significantly to overall customer satisfaction [3]. Through advanced algorithms and machine learning, AI-driven chatbots have the capability to analyze customer preferences and behaviors [7]. This enables them to offer highly personalized recommendations, promotions, and content tailored to individual preferences. The result is a more engaging and satisfying shopping experience for consumers in the FMCG sector, where personalization is a key. Unlike human customer service representatives, AI-driven chatbots operate 24/7, providing round-the-clock assistance to customers across different time zones [8]. This constant availability ensures that customers can access support whenever they need it, contributing to increased satisfaction and a positive perception of the brand. AI-driven chatbots excel at efficiently resolving customer issues and inquiries. These chatbots help reduce waiting times and customer frustration by streamlining the resolution process. In the FMCG retail sector, where quick problem resolution is crucial, the efficiency of AI-driven chatbots significantly influences customer satisfaction [5, 7]. The data generated by AI-driven chatbot interactions offer invaluable insights into customer preferences,

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pain points, and trends. Retailers can leverage this data to make informed decisions, optimize their product offerings, and tailor their services to better meet customer needs [2, 3]. The use of data-driven insights enhances the overall customer experience and contributes to higher satisfaction levels [1, 9]. AI-driven chatbots engage customers in natural and conversational interactions, creating a more interactive and enjoyable shopping experience. These chatbots contribute to brand loyalty by fostering a connection between the consumer and the brand, leading to sustained satisfaction and repeat business [10].

Why is understanding the customer experience landscape important? Understanding the customer experience landscape is paramount in the contemporary business landscape for several compelling reasons. Firstly, the customer journey has evolved into a complex and interconnected ecosystem where interactions span various touchpoints, both online and offline [1, 3]. A nuanced comprehension of this landscape allows businesses to identify critical moments of engagement, enabling them to strategically allocate resources and efforts to areas that most significantly impact customer satisfaction. Furthermore, by analyzing customer feedback, sentiments, and behaviors, businesses can unearth valuable insights into consumer preferences and expectations, informing product development, marketing strategies, and service enhancements [11]. In a marketplace characterized by heightened competition, organizations that prioritize understanding the customer experience landscape can proactively adapt to emerging trends, ensuring they remain agile and responsive to the evolving needs of their customer base. In times of uncertainty, such as a pandemic, successful online retailers can adopt innovative strategies to maintain and grow their customer base [12]. Ultimately, by cultivating a holistic understanding of the customer journey, businesses can not only meet but also exceed customer expectations, fostering loyalty and advocacy that are indispensable for long-term success.

This research paper identifies a significant research gap in the existing literature pertaining to AI-driven chatbot interactions within the FMCG retail sector. While AI-driven technologies have gathered attention for their transformative potential in customer service across various industries, there is a notable lack of focused investigation into the specific dynamics and challenges within FMCG retail. The unique characteristics of FMCG, such as the fast-paced nature of transactions, frequent product releases, and dynamic consumer preferences, necessitate a dedicated examination of how AI-driven chatbots function in this context. This study aims to bridge this gap by providing a tailored exploration of AI-driven chatbot services in FMCG retail, uncovering insights that can inform strategies and practices unique to this sector. By doing so, the research contributes to a more comprehensive understanding of the role of AI-driven technologies in shaping customer experiences within the FMCG retail landscape.

## 2. Literature Review

### 2.1. Responsiveness

The level of reactivity exhibited by chatbots can greatly influence the degree of consumer satisfaction experienced by FMCG businesses. The quality and effectiveness of chatbots can have an impact on customer happiness, service costs, the intention to reuse the service, word-of-mouth recommendations, and customer loyalty [10]. Research conducted by Jiang et al. [7] as well as Haupt and Rozumowski [13] has demonstrated that the effectiveness and promptness of chatbots have a notable influence on customer contentment within the FMCG retail sector. In a study conducted by Ruan and Mezei [1], it was discovered that the usability of chatbots had a beneficial effect on the

external values of customer experience, while the responsiveness of chatbots had a favorable effect on the internal values of customer experience. Moreover, there exists a positive relationship between the online customer experience and consumer satisfaction. To optimize customer satisfaction, FMCG retailers must prioritize the responsiveness and user-friendliness of their chatbots. By implementing this strategy, businesses can enhance customer loyalty and retention, hence resulting in a boost in sales and revenue [5, 14]. A further study demonstrated that chatbots have the potential to reduce service expenses [15], but they may also diminish customer happiness as a result of providing unsatisfactory responses and exhibiting non-human-like behavior. Nevertheless, chatbots have the capability to respond to consumer inquiries within a mere five seconds of initial contact [3], in contrast to the fifty-one seconds it takes for a human adviser [16]. This rapid response time may result in faster resolution of issues and increased customer satisfaction. Chatbots offer a unique and captivating method for interacting with consumers, providing valuable data, and placing the consumer's voice and objectives at the forefront of innovation. Hence, the following hypothesis is put forth:

**Hypothesis H1(a):** Chatbot service's responsiveness has a significant impact on customer satisfaction for FMCG retailers.

**Hypothesis H1(b):** The chatbot service's responsiveness has a significant impact on conversational tone for FMCG retailers.

### 2.2. Conversational tone

The conversational tone of a chatbot service can greatly influence consumer satisfaction for FMCG businesses [7]. A new study suggests that selecting the appropriate communication style, either social-oriented or task-oriented, for chatbots might enhance customer satisfaction [2]. Employing a communication style focused on social interaction enhances customer satisfaction [17]. Additionally, the sense of warmth towards the chatbot plays a role in mediating this impact [14]. FMCG merchants must carefully analyze the design of chatbots to offer optimal customer service experiences [8]. Brands are progressively employing chatbots to complement and perhaps substitute human operators in service engagements [8, 11]. Hence, the following hypothesis is put forth:

**Hypothesis H2(a):** Chatbot service's conversational tone has a significant impact on customer satisfaction for FMCG retailers.

**Hypothesis H2(b):** The conversational tone of chatbot service significantly moderates the relationship of responsiveness and customer satisfaction for FMCG retailers in such a way that as the conversational tone increases the impact of responsiveness on customer satisfaction decreases.

**Hypothesis H2(c):** The conversational tone of chatbot service significantly moderates the relationship of privacy concerns and customer satisfaction for FMCG retailers in such a way that as the conversational tone increases the impact of privacy concerns on customer satisfaction decreases.

### 2.3. Privacy concerns

Chatbots possess the capability to provide services akin to those of human agents, while also presenting several advantages, including ease, round-the-clock availability, prompt responses, and cost savings for brands [3]. Nevertheless, consumers continue to harbor skepticism and reluctance towards engaging with chatbots,

as evidenced by research indicating a greater inclination for human engagement over chatbot-based discussions [5]. Finally, FMCG merchants should carefully consider their chatbots' communication approach in order to ensure positive customer support encounters. A communication style that focuses on social interactions can improve service satisfaction for consumers with high levels of anxious attachment [9]. However, this approach is not effective for customers with low levels of anxious attachment. Privacy concerns during chatbot interactions can greatly influence users' opinions and their willingness to follow the chatbot's advice [3]. Hence, the following hypothesis is put forth:

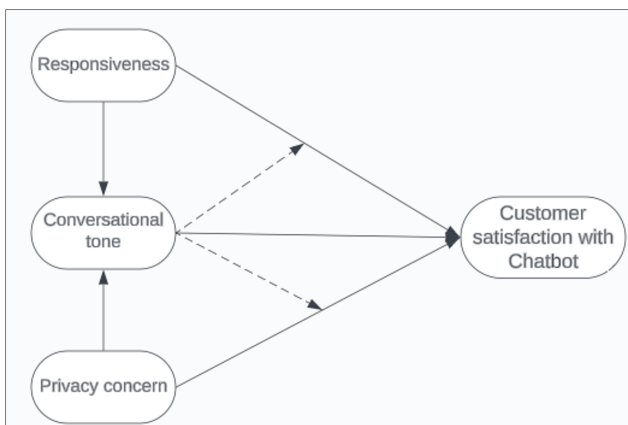
**Hypothesis H3(a):** Chatbot service's privacy concerns have a significant impact on customer satisfaction for FMCG retailers.

Privacy concerns during chatbot conversations might greatly influence users' opinions and their willingness to follow the chatbot's advice [3]. There has been a recent upsurge of interest in AI's capacity to transform the online advertising landscape [18]. Some studies have revealed that when interacting with a chatbot that resembles a human, individuals are more likely to share information and follow recommendations [3, 19]. The perception of the chatbot as human-like influences this effect, thereby reducing worries about privacy [17, 20]. In contrast, a chatbot that appears more machine-like does not have the same impact [13, 20]. Nevertheless, the research also revealed that the feeling of being creepy, the perception of risk, and the need for seclusion largely impact apprehensions over privacy [5]. It is important to note that one's acquaintance with chatbots does not influence privacy concerns [21]. Privacy concerns among FMCG retailers can greatly influence the impact of conversational tone of chatbot services on consumer happiness. The rise in privacy concerns inversely affects the influence of conversational tone on customer satisfaction [21, 22]. Hence, the following hypothesis is put forth:

**Hypothesis H3(b):** Chatbot service's privacy concerns have a significant impact on conversational tone for FMCG retailers.

Based on the above-mentioned review of literature, it has been noted that the following conceptual model can be formulated (Figure 1).

**Figure 1**  
Conceptual model



### 3. Methodology

#### 3.1. Research design

The current study focused on investigating the dynamics of AI-driven chatbot services for FMCG retailers. AI technology, specifically chatbots, is becoming more common [3, 17] in the fast-paced and ever-changing world of FMCG retail. To improve customer engagement and satisfaction, it is crucial for FMCG merchants to have a deep grasp of the complex relationship between AI-driven factors and customer experience [3, 17]. There is a significant change happening in the global retail industry, as consumers are increasingly preferring digital channels for [14] their buying experiences. FMCG merchants are using AI-driven chatbots to offer customized and efficient services to their customers. Therefore, the data were collected from FMCG customers in organized retail shops in and around the Albaha region of Saudi Arabia. The study collected data from consumers who used chatbot services to purchase FMCS products.

#### 3.2. Participants

The study acquired data from consumers who used chatbot services in the retail sector for the purchase of any good or service in the past six months. The participants were residents of the southern region of Saudi Arabia, namely Al-Baha city. The data was collected via a structured questionnaire between March and June 2023 in the Arabic language using a method called stratified random sampling. The questionnaire was translated to English, and accuracy was ensured using the back translation method. Similar methods of translation were used for studies collecting data in other languages. We surveyed a total of 700 people and collected, processed, and validated 615 responses for further research. The response rate of 87.85% achieved in this study is considered to be high according to the recommended standards [23, 24]. We determined the required minimum sample size to be 326, based on a medium projected effect size of 0.23 [25], a desired statistical power level of 0.8, and a significance level of 0.05. The size of our sample exceeds the acceptable sample size. The questionnaire was constructed using a five-point Likert scale due to its greater flexibility in social science research [26, 27]. The descriptive analysis shows that the sample consists of a higher proportion of females (57.88%) compared to males (42.11%). Regarding educational status 37.88% are below bachelors, 40.48% are bachelors, master, and above 21.62%. In terms of marital status, 60.16% of the respondents were not married, while 39.83% were married. The age groupings of 20–30 years accounted for 20.48% of the population, while the 30–40 age group made up 37.56% (Table 1).

#### 3.3. Instruments

In the SERVQUAL model [28] served as the inspiration for the scales used to assess SQ. The model consists of four components: responsiveness, conversational tone, privacy issue, and consumer satisfaction with chatbots (Table 2). Each component is rated on a scale of 1 to 5. In order to assess responsiveness and the conventional tone, the items were adapted from the studies of Sweetser and Kelleher [29] as well as Yang and Lim [30]; privacy concerns were adapted from de Cosmo et al. [31]; and customer satisfaction was derived from the works of Ruan and Mezei [1].

**Table 1**  
**Demographic characteristics of the data (615 responses)**

Characteristics	N	%
Gender		
Males	259	42.11
Females	356	57.88
Educational status		
Below bachelors	233	37.88
Bachelors	249	40.48
Master’s and above	133	21.62
Marital status		
Married	245	39.83
Unmarried	370	60.16
Age		
Less than 20 years	98	15.93
20–30 years	126	20.48
30 to 40 years	231	37.56
40 and above	160	26.01

## 4. Results

### 4.1. Measurement model results

For this study, the data were collected from the customers in one go, therefore, there could be a problem of common method bias. To address this issue, Harman’s single-factor test is employed in social sciences studies. Similarly, for this study, the Harman’s single-factor test was conducted and the results revealed that single factor accounts for 40.15%, which is well below the permitted limit of 50% [32]. In past similar studies, this method was employed to test the single method bias in similar kinds of studies [33, 34]. The measurement model analysis includes the computation of convergent and

discriminant validity to ensure the robustness of the methods used to analyze the model [35]. In this study, responsiveness and the conversational tone related to the chatbots are considered to be the first-order reflective constructs. The two dimensions, namely responsiveness and the conversational tone, impact customer satisfaction with the chatbot. There is presumed moderation of privacy concern for the relationship between responsiveness and customer satisfaction with the chatbots on the one hand and between responsiveness and customer satisfaction with the chatbot.

The convergent validity test includes the analysis of Cronbach’s alpha, the average variance extracted (AVE), factor loadings, and composite reliability (CR) (Table 3). In the process of exploratory factor analysis, five items (RSP6, CT6, PC4, PC5, and CS5) were deleted because of the higher cross-loadings and the values were lower than the cutoff value of 0.5 [36]. The obtained values of AVE, Cronbach’s alpha, and CR were found to be higher than the cutoff levels of 0.5, 0.7, and 0.7, respectively [37] see Figure 2.

The study tested discriminant validity at three different levels. First, through the cross-loadings values, where the loadings (Table 4) of the related constructs are required to be higher than the others [38, 39]. The second criteria was the Fornell-Lacker criterion [40, 41], where the squared values of AVE should be higher than each diagonal value (Table 5). The third criteria was the heterotrait-monotrait ratio where the accepted level of values lower than 0.9 (Table 6) confirms the discriminant validity of the measurement model [41, 42]. In this case, all three measures ensured the discriminant validity.

### 4.2. Structural model

To measure the impact of independent variables on the dependent variables, Smart PLS software was used. It was found that responsiveness ( $\beta = 0.427, p < 0.01$ ) and conversational tone

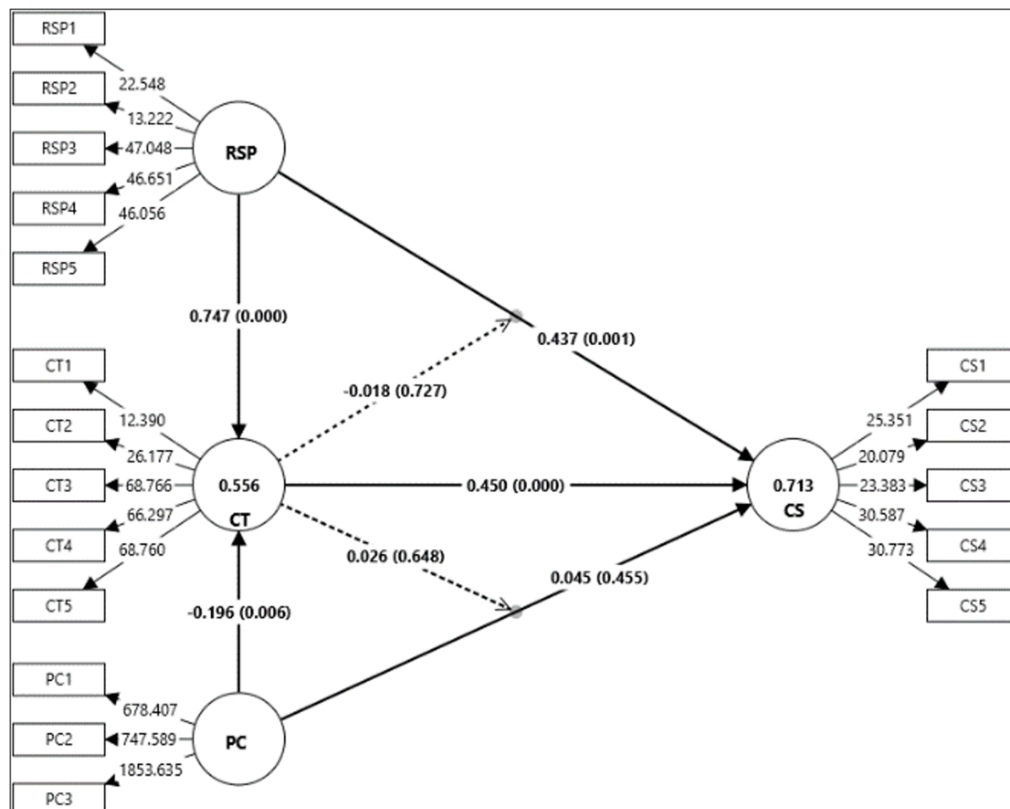
**Table 2**  
**Measurement model items**

Constructs	Items	Source
Responsiveness (RSP)		
RSP1	This company’s chatbot service agent provides prompt feedback to customers’ comments.	[29, 30]
RSP2	This company’s chatbot service agent makes an adequate change based on customers’ feedback.	
RSP3	This company’s chatbot service agent addresses customers’ complaints in a timely manner.	
RSP4	This company’s chatbot service agent is sensitive to customers’ needs at the moment.	
RSP5	This company’s chatbot service agent addresses customers’ complaints positively.	
Conversational tone (CT)		[29, 30]
CT1	This company’s chatbot service agent treats its customers as real communication partners.	
CT2	This company’s chatbot service agent respects customers’ perspectives or opinions	
CT3	This company’s chatbot service agent avoids dominating the conversation with customers.	
CT4	This company’s chatbot service agent invites customers to an open dialogue.	
CT5	This company’s chatbot service agent tries to establish a common ground of understanding with customers.	
Privacy concern (PC)		[31]
PC1	I am concerned that the information I submit via chatbots could be misused.	
PC2	I am concerned about submitting information via chatbots, because of what others might do with it.	
PC3	I am concerned about submitting information via chatbots, because it could be used in a way, I did not foresee.	
Customer satisfaction (CS)		[1]
CS1	I am satisfied with the chatbot service agent.	
CS2	I am content with the chatbot service agent.	
CS3	The chatbot service agent did a good job.	
CS4	The chatbot service agent did what I expected.	
CS5	I am happy with the chatbot service agent.	

**Table 3**  
**Analysis of measurement model**

Constructs	Items	Loadings	VIF	Cronbach's alpha	CR	AVE
Customer satisfaction (CS)	CS1	0.853	1.531	0.926	0.944	0.772
	CS2	0.842	1.552			
	CS3	0.862	1.500			
	CS4	0.916	1.421			
	CS5	0.918	1.331			
Conversational tone (CT)	CT1	0.771	1.252	0.939	0.955	0.809
	CT2	0.862	1.100			
	CT3	0.951	2.431			
	CT4	0.948	2.110			
	CT5	0.951	1.011			
Privacy concern (PC)	PC1	0.998	1.030	0.999	0.999	0.997
	PC2	0.979	2.210			
	PC3	0.986	1.710			
Responsiveness (RSP)	RSP1	0.836	1.920	0.933	0.950	0.793
	RSP2	0.790	1.100			
	RSP3	0.940	1.721			
	RSP4	0.938	2.190			
	RSP5	0.937	2.17			

**Figure 2**  
**Path analysis results**



( $\beta = 0.471, p < 0.01$ ) positively influence customer satisfaction. Further, it was found that responsiveness ( $\beta = 0.747, p < 0.01$ ) and privacy concerns ( $\beta = 0.437, p < 0.01$ ) have significant positive influence on customer trust. Further, it was found that there is no significant impact of privacy concerns on the customer

satisfaction ( $\beta = 0.035, p > 0.05$ ). Moreover, for the moderation effect, it was found that there is no significant moderation of conversational tone for responsiveness – customer satisfaction and privacy concern – customer satisfaction relationships. The R-square value of 0.556 for conversational tone indicates

**Table 4**  
Cross loadings values

	CS	CT	PC	RSP
CS1	0.853	0.691	0.075	0.532
CS2	0.842	0.655	0.106	0.675
CS3	0.862	0.510	0.017	0.521
CS4	0.916	0.679	0.034	0.655
CS5	0.918	0.678	0.034	0.654
CT1	0.548	0.771	-0.018	0.661
CT2	0.552	0.862	-0.073	0.553
CT3	0.651	0.951	-0.109	0.591
CT4	0.652	0.948	-0.112	0.592
CT5	0.651	0.951	-0.109	0.591
PC1	0.052	-0.098	0.998	0.131
PC2	0.068	-0.091	0.999	0.146
PC3	0.059	-0.087	0.999	0.136
RSP1	0.575	0.527	0.046	0.836
RSP2	0.516	0.661	0.132	0.790
RSP3	0.655	0.592	0.152	0.940
RSP4	0.653	0.589	0.150	0.938
RSP5	0.654	0.594	0.146	0.937

**Table 5**  
Fornell-Lacker criteria

Constructs	CS	CT	PC	RSP
CS	0.879			
CT	0.578	0.900		
PC	0.060	0.092	0.999	
RSP	0.584	0.519	0.139	0.891

**Table 6**  
Heterotrait-monotrait ratio

	CS	CT	PC	RSP
CS	-	-	-	-
CT	0.825	-	-	-
PC	0.062	0.097	-	-
RSP	0.834	0.751	0.145	-

**Table 7**  
Path coefficients and the interactions between variables

Hypothesis	Constructs	Original sample (O)	Sample mean(M)	St. dev.	t-statistics (O/St. dev)	P-values	Results
H1(a)	RSP → CS	0.427	0.429	0.110	3.866	0.000	Accepted
H1(b)	RSP → CT	0.747	0.749	0.053	14.016	0.000	Accepted
H2(a)	CT → CS	0.471	0.464	0.101	4.672	0.000	Accepted
H2(b)	CT × RSP → CS	-0.018	-0.011	0.052	0.349	0.727	Rejected
H2(c)	CT × PC → CS	0.026	0.030	0.058	0.456	0.648	Rejected
H3(a)	PC → CS	0.035	0.034	0.056	0.628	0.530	Rejected
H3(b)	PC → CT	0.437	0.442	0.130	3.376	0.001	Accepted

that these two variables can explain the 55.60% of variance and the R-square value for customer satisfaction is 0.713 which shows that it can explain 71.3% of variance (Table 7).

**4.3. Interaction effect analysis**

The parallel lines indicate that there is no moderation (interaction) effect. As in this case, the lines intersect; therefore, it means that moderation of CT does not exist for both RSP and PC (Figure 3). We do not rely on p values for interaction effect, rather we rely on the simple slopes for interaction effect. Therefore, there is no interaction effect of CT for RSP and PC (Figure 4).

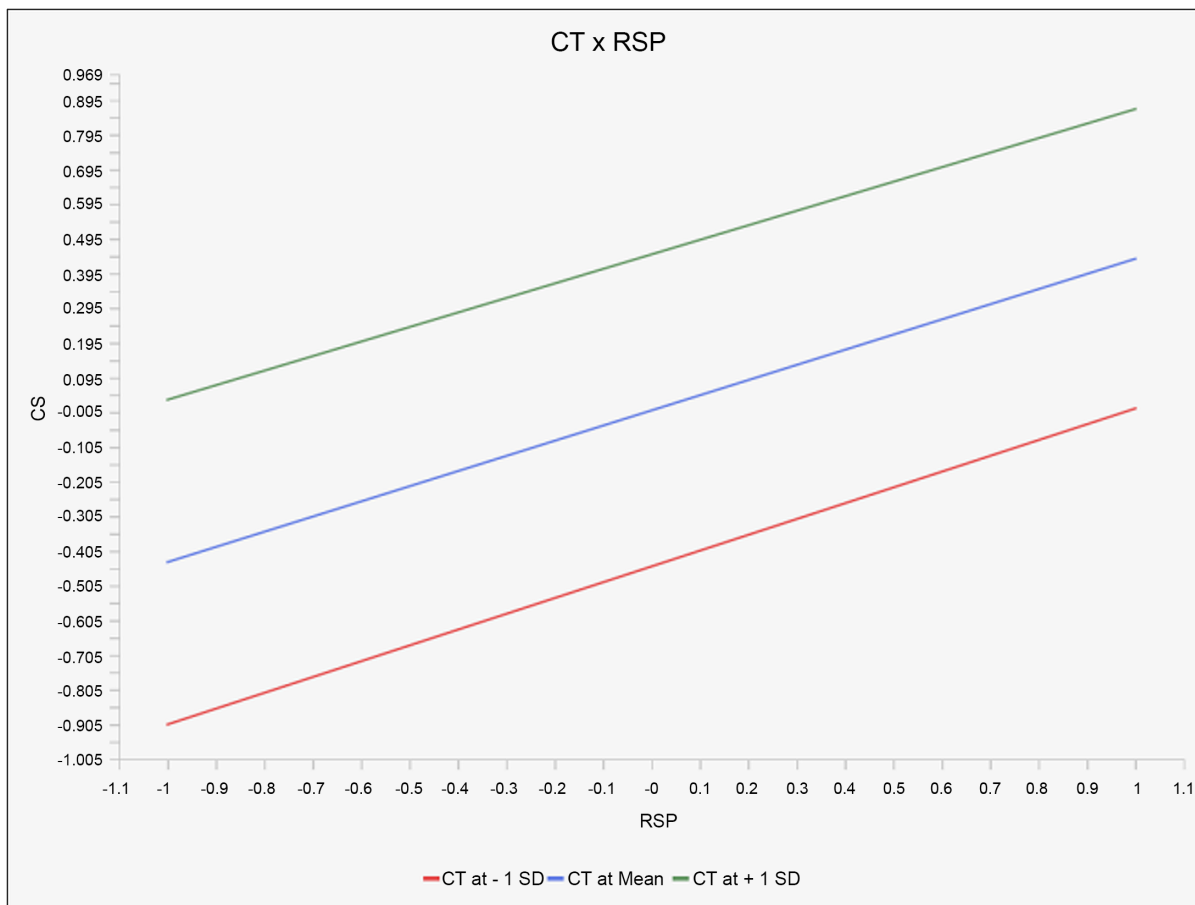
**5. Discussion**

This research explores the impact of AI-driven chatbot services (responsiveness, conversational tone, and privacy concerns) on customer satisfaction for FMCS retailers. In this study, there were seven hypotheses. In all four hypotheses, H1(a), H1(b), H2(a), and H3(b) were accepted whereas three hypotheses H2(b), H2(c), and H3(a) were rejected.

Based on the review of literature, we hypothesized H1(a) that there is a significant positive impact of responsiveness of AI-based chatbot services on the customer satisfaction for FMCG retailers. This hypothesis was accepted confirming the significant positive impact of responsiveness on customer satisfaction. This result corroborates with the previous studies where the authors have established a similar significant positive relationship [7, 43]. The confirmation of our hypothesis emphasizes the crucial significance of responsiveness in influencing consumer perceptions and experiences within the framework of AI-based chatbot engagements. As AI-driven services become more popular, customers have higher expectations for quick and useful replies. Our study emphasizes the significance of achieving these expectations to create good satisfaction results. The results of our research align with earlier studies that have discovered a comparable positive relationship between responsiveness and customer satisfaction in different sectors [1, 43]. The consistent outcomes indicate that the impact of responsiveness on customer satisfaction is strong and remains valid in many situations.

The hypothesis H1(b) related to the significant impact of responsiveness on the conversational tone was accepted. The hypothesis H1(b) reflects the fact that the presence of responsiveness in a communication with AI-based chatbots has a fundamental role in shaping the way user perceives a chatbot and their engagement rate with the service. Our research findings corroborate with the past studies related to chatbots [7, 43].

Figure 3  
CT-RSP interaction effect



Hence, the research indicates that by being very receptive, meaning that the chatbots provide quick answers to the questions and concerns of users, the whole tone is enhanced positively. It does this by establishing a bond between the user and the chatbot, thus a sense of satisfaction. Users tend to be more inclined to communicate in a casual and relaxed manner when they see the chatbot as a responsive and attentive persona that caters to their intentions, which elevates the user experience and by the same token, confirms trust in AI technologies.

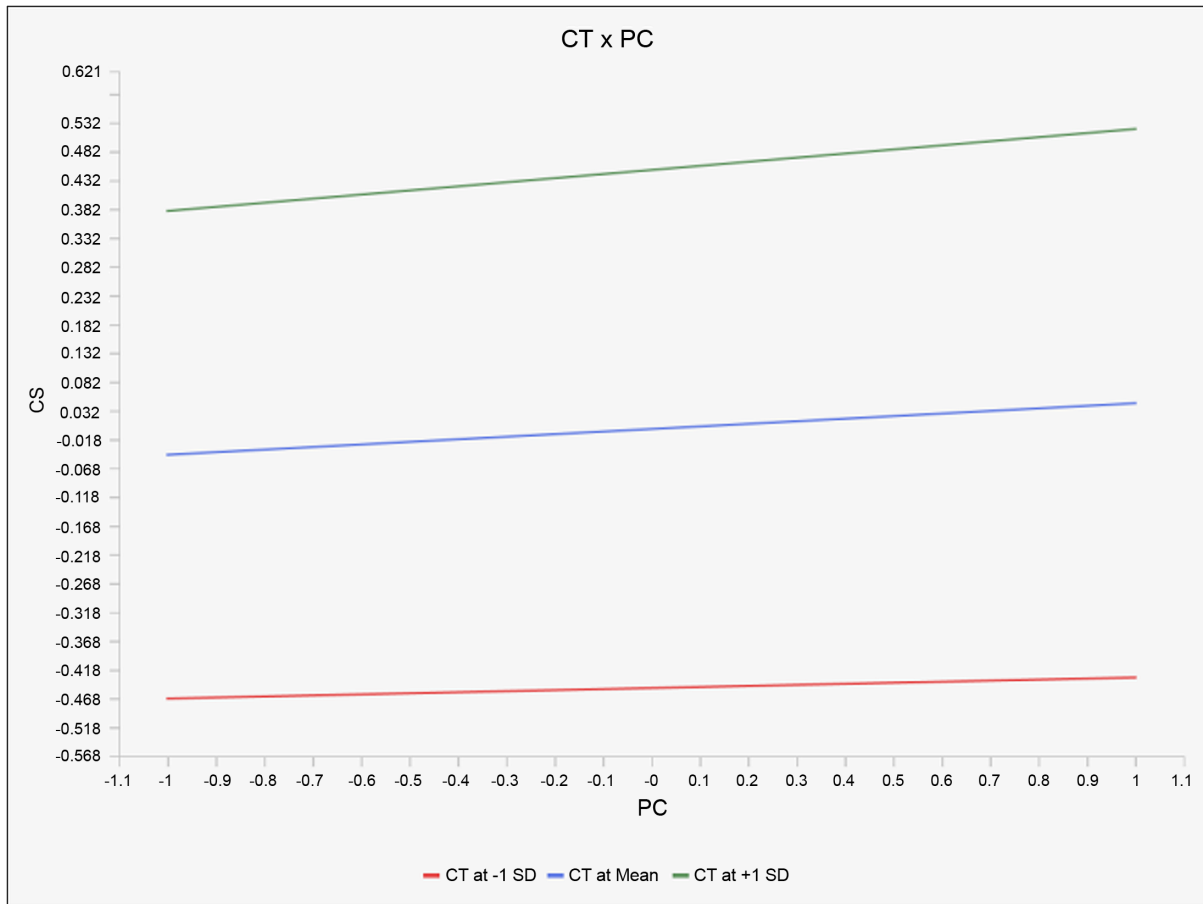
Based on the review of literature, we hypothesized that there is a significant positive impact of conversational tone of AI-based chatbot services on the customer satisfaction for FMCG retailers H2(a). This hypothesis was accepted confirming the significant positive impact of conversational tone on customer satisfaction. This result is in line with the previous studies where the authors have established a similar significant positive relationship [7, 29]. The acceptance of this hypothesis highlights the importance of conversational tone on customer satisfaction for the FMCG firms. The importance of our research for FMCG retailers is enormous. Using a conversational approach in AI-powered chatbot encounters may improve customer engagement and give more customized experiences, leading to more enjoyment and maybe greater loyalty. By incorporating natural language and conversational characteristics into their interactions, retailers may

strengthen their consumer relationships and differentiate themselves in a competitive market.

The hypothesis H2(b) related to the interaction of conversational tone for the impact of responsiveness on customer satisfaction is rejected. These results contradict previous researchers [7, 29]. The fact that this hypothesis was rejected, which relates to the impact of the conversational tone and responsiveness on user's satisfaction from an AI-based conversation, presents an exciting side of AI-based user perception within a chatbot. Even though the responsiveness factor is relevant for very general markers of the conversational tone, this finding illustrates that the causal relationship between the degree of responsiveness and the level of satisfaction may not be significantly affected by the variances of the conversational tone. Then, these factors shall be subjected to more detailed research to find out whether accuracy of the given responses, ease of use in a given context, and the overall effectiveness of the chatbot's features are the main contributors to customer satisfaction. These complex dynamics should be well understood to polish chatbot design that makes use of AI to boost customer care services.

The hypothesis H2(c) related to the interaction of conversational tone for the impact of privacy concern on customer satisfaction is rejected. The rejection of the H2(c) hypothesis,

Figure 4  
CT-RSP interaction effect



which insists that the combination of conversational tone with the privacy concerns issue, leads to the conclusion that an important factor of the AI-based chatbot customer satisfaction level exists. Having established the notable contribution of privacy concerns on conversational tone, results imply that those variations in conversational tone have little impact on the relationship between privacy issues and customer satisfaction. these results are different from the previous researches [19, 22, 43]. This finding paves the way to further research on other aspects that have a role in customer satisfaction with privacy including the clarity of privacy policies, data handling practices, and the transparency of information-sharing protocols. The complexities of these interactions must be taken into account when designing Chabot and increasing user satisfaction with privacy-sensitive interactions in mind.

Further, the Hypothesis H3(a) states that there is significant impact of privacy concerns on the customer satisfaction for the AI-powered chatbot services. The rejection of the hypothesis implies that through customers' concerns for the privacy they have with AI-powered chatbot interactions do not have a great impact on their overall satisfaction with the service based on what research shows [3, 21]. In relationship with the growing credence and value placed by people to data privacy and digital security, it may be questionable that this phenomenon goes

unnoticed. In some cases, however, this implies the complexity of the factors that are responsible for customer satisfaction in the environments where AI is used. Besides being construed in varying ways, privacy concern's insignificant influence on customer satisfaction has a shade of doubt (also). On the other hand, consumers may disregard privacy as the number one consideration because of accomplishment, satisfaction, the estimation of the service. In the context of FMCG retail where speed and convenience are the key, customers may be inclined to focus on these factors and ignore the privacy issues when they evaluate the chatbot interactions. Moreover, the style of the creation and optimization of intelligent chatbots should also be evaluated in the process of the research. Indicators such as observance of privacy, testament to information security, and commitment to regulations are factors that can give customers relief regarding their privacy and help them feel more comfortable with various services. As a result, although there may be some privacy concerns, these will be countered by the implementation of privacy-related policies and practices that are clearly explained and managed. The consequences of that detection are tremendous for customer care using AI chatbots from an FMCG retailer. However, the fact that our study does not demonstrate privacy concerns being the major factor behind customer satisfaction, retailers must understand that privacy and



confidentiality of data are such pillars of their services. Transparency, clearly showing the data management procedures, and strictly following the privacy laws remain the main factors in building and preserving customer trust.

The hypothesis related to the significant impact of privacy concerns on conversational tone H3(b) was accepted. In this respect, the acceptance of the thesis points out that one of the urgent tasks is privacy concern solving in the process of design and introduction of AI-based chatbots. These results are in line with previous researchers [3, 5, 43]. Perceived risks to privacy influence the style of interaction with others, usually leading to speech that is more reserved, formal, or reserved due to the change. This shift in mood is due to the fact that users are concerned about data security, and they want to keep their private information under safekeeping. Importantly, AI chatbots' privacy concerns are having a major impact on the quality of conversation, something that needs to be addressed if AI chatbots are going to become popular. However, by pointing out these issues trust and quality of user interaction with the AI technology can be increased.

### 5.1. Implications

The consequences of our findings for FMCG companies are substantial. By allocating resources towards AI-powered chatbot services that prioritize promptness, merchants may not only boost customer happiness but also elevate the whole customer experience and foster loyalty. Moreover, our research highlights the significance of consistently monitoring and enhancing chatbot response to match the changing customer expectations and preferences. The acceptance of these hypotheses offers significant managerial implications for the FMCG retailers planning to offer the best customer experiences through the AI, chatbot services. First, it is seen that the results of analysis show that the increased level of responsiveness is related to the increased level of customer satisfaction, and this suggests that chatbots must respond quickly and satisfactorily. For the retailers, it is imperative that those AI systems are used that offer high quality and that react quickly in such a way that they can assist the buyer instantly. Secondly, for FMCG retailers to improve the conversational tone, responsiveness should focus on enabling the chatbot to engage customers in a more natural and solution-oriented manner. By incorporating features that prompt the chatbot to quickly address customer inquiries, the overall quality of the conversation will be enhanced.

Therefore, considering the information that reveals the fact of a positive attitude of customers towards a conversational tone, it will be possible to state that it is not only content that chatbots provide but also the way the content is delivered. It is recommended that retailers should capture the art of designing and developing chatbots as friendly, considerate, and always providing the right attitude to the customer. Lastly, learning from an example of specificity of writing style in connection with an increased focus on privacy issues in defining con underscores the role of perceiving privacy issues as transparent and effective. Retailers need to devote more attention to issues concerning privacy, and privacy concerns must be well-represented and well-explained to users, and therefore, users will always be secure in their dealings with chatbots. In this regard, a focus on the following aspects of the retail sector can greatly benefit the FMCG retailing sector and take the sector's average customer satisfaction to a notch higher and create stronger customer-retailer bonds, and therefore customer loyalty.

## 6. Conclusion and Policy Recommendations

These findings offer crucial insights into the major determinants of customer satisfaction with AI-assisted chatbot services in the FMCG retail market. The acceptance of the hypotheses H1(a), H1(b), H2(a), and H3(b) emphasizes the role of an adaptive and conversational approach in creating positive user experiences. For the FMCG retailers, this calls for bots that are not only quick in getting responses but also can keep an interactive and natural communication. The rejection of hypotheses H2(b), H2(c), and H3(a) shows the complexity of the customer satisfaction decision process. Although conversational tone is an important determining factor in relation to customer satisfaction, it has no meaningful effect on the connection between privacy concerns and customer satisfaction. This indicates that it may be of greater value to ensure that privacy measures are in place rather than investing much in conversational tone, which is likely to have a greater impact on overall customer satisfaction levels. Consequently, FMCG retailers will need to work on bringing multiple functionalities in chatbots to create a balance between the perceptions of responsiveness, a conversational mood, and concern for privacy. Ultimately, this will lead to an improved customer experience and brand loyalty that will be long-term.

### 6.1. Limitations and future research directions

Although our study offers useful insights into the correlation between responsiveness and customer satisfaction, it is necessary to do future research to investigate other elements that could influence or mediate this relationship. Furthermore, conducting longitudinal research might offer a more profound understanding of the enduring impacts of responsiveness on consumer satisfaction in the FMCG retail industry. Nonetheless, while our study sheds light on the importance of conversational tone in connection to consumer satisfaction, additional elements warrant attention in future research. Examining the nuances of conversational tone and its impact on different customer segments or product categories in the FMCG business may provide a more in-depth knowledge of its efficacy.

### Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

### Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

### Data Availability Statement

The data that support this work are available upon reasonable request to the corresponding author.

### Author Contribution Statement

**Adil Zia:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision. **Abdulaziz Alotaibi:** Conceptualization, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization.

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