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Conversational AI in E-Commerce: Strategic Implications of Voice-Based Chatbots for Consumer Engagement and Trust

Moaz Gharib[1], Vibha Trivedi[2], Ashish Trivedi[2]*

[1]College of Commerce and Business Administration, Dhofar University, Salalah, Oman, [2]O.P. Jindal Global University, Sonipat, Haryana, India. *Email: at.iccmrt@gmail.com

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ABSTRACT

AI-powered chatbots are disruptive innovations with great potential for easing online business communication. This study aims to empirically investigate the influence of the voice mode of chatbot technology on consumer continuance intention toward e-commerce websites by examining the role of perceived technological optimism (PTO), cognition-based trust (CBT), and perceived customer care (PCC). A 2X2 factorial design is employed for a between-subjects laboratory experiment. ANOVA was used to test the treatments' comparative effects, and the final analyses were done using Hayes PROCESS Macro in SPSS. The results reveal consumer preference for the voice mode of chatbots over the text mode when seeking service assistance. It empowers consumers by giving them greater control over their interaction with technology and the problem-solving process. With a seamless interaction with a virtual assistant, consumers develop CBT in the technology, leading to positive PCC and, eventually, continuance intention toward the website. The study offers recommendations on how to save a firm's resources by retaining its customers rather than spending on new acquisitions. Firms need to implement a competent technology that allows customers to express themselves using autonomy, thereby building trust and continued engagement.

Keywords: Chatbots; Continuance intention; Experiment; E-commerce; Trust
JEL Classifications: M

1. INTRODUCTION

Modern-day consumers seek quick and convenient solutions that are available to them anytime and anywhere. To meet the growing demands of consumer-centric marketing, companies are constantly seeking avenues to provide prompt solutions to their customers' needs. Increased automation and efficiency through the utilization of AI have fostered customer engagement in service encounters (Shah et al., 2023). Through the utilization of machine learning (ML) and artificial intelligence (AI), traditional semi-intelligent chatbots have evolved into advanced, personalized, and intelligent chatbots. These modern chatbots serve as automated and highly efficient customer care tools, enhancing the overall customer experience. Chatbots find applications in different domains for various purposes, including customer service, medicine, training, and education (Smutny and Schreiberova, 2020). Human-to-chatbot conversations typically contain fewer words per message, but the duration of the conversation is considered to be longer. Several studies have compared various aspects of human-to-chatbot conversations (Luo et al., 2019; Zhou et al., 2023). Their integration with customer relationship management platforms warrants more efforts toward making these AI applications more deterministic (Jiang et al., 2023). Much of the extant research is focused on examining the role of trust and its various dimensions that drive human-computer interactions (Hoff and Bashir, 2015). User adoption of technology for continuous use is highly probable once trust and satisfaction have been established (Keiningham et al., 2007). It further leads to a sense of increased control over the interaction and perceived competence in problem-solving.

Chatbots simulate human-like conversations (Hill, Ford, et al., 2015; Mittal et al., 2016; Yin et al., 2021). Chatbots' characteristics, such as anytime-anywhere accessibility, personalized query handling mechanism, and ability to make problem-solving an easy task affect customer perception of value and behavioral intentions (Li et al., 2023). Overall, firms aim to make chatbot experiences more human-like by embedding humanistic behavioral patterns and language styles (Jiang et al., 2023). Though firms employ chatbots to help their customers, the service value derived from chatbot-customer interaction is dominantly produced due to customer participation in that value co-creation process. Hence, the quality of these interactions determines the value perception of the customer and their eventual behavioral intentions (Li et al., 2023). A qualitative study revealed that a striking feature of a text-mode chatbot for handling health-related queries and medical assistance was helping users while they were sitting in the comfort of their homes (Siddiqi et al., 2024). Another study also reported the advantages of using text-based chatbots in the community science field by engaging visitors in caring for the land, creating a monitoring system for recreational activities, gathering data, managing natural resources, and sustainably using recreational sites (Lia et al., 2023). Further, with growing technological innovations in the field, AI-based voice assistants are also available and preferred because of their quick responses to voice commands. Conversely, text-based chatbots lack the ability to engage in verbal communication and physical cues, which can potentially diminish the quality of user interaction and lead to a less satisfactory experience (Rapp et al., 2021). Text-heavy pages increase the cognitive load of the users, leading to aversion to reading the message (Zhao et al., 2023). Voice assistants have advantages but pose privacy and security concerns. Text chatbots can be comfortable for expressing emotion but lack visual and auditory cues (Rapp et al., 2021). Given the divergent opinions regarding consumers' preferred mode of chatbot communication, it becomes crucial to examine the relative influence of chatbot modes on consumers' continuance intention towards the provider website. Despite the existence of numerous studies that employ experimental methodologies to establish causality in the domains of chatbots, new technologies, and AI-based systems (Cheng et al., 2022; Nguyen et al., 2022; Zhou et al., 2023), the specific impact of voice versus text mode of chatbots on the continuance intention, through varied psychological mechanisms, towards a firm's website remains largely unexplored. Therefore, the study aims to address the following research questions:

- Which chatbot mode is preferred by consumers for their customer care issues with e-commerce websites: voice or text modes of chatbots?
- Does this preference have any impact on consumer continuance intention for the website?
- What are the potential mediators and moderators?

The rest of the paper is as follows. Section 2 presents the literature review and the conceptual model. Section 3 explains the adopted method and contains information about the research design, participants, and procedures. It is followed by Section 4 which reports results and analyses. The theoretical and managerial implications are discussed in Section 5 and Section 6 concludes the study.

2. LITERATURE REVIEW

2.1. Chatbots-Text versus Voice

Chatbots use AI algorithms and Natural Language Processing (NLP) to provide relevant responses to input queries (Smutny and Schreiberova, 2020). Users may interact with chatbot assistants either in text mode, voice or through multiple modes (Yin et al., 2021). A significant proportion of chatbots are currently programmed to provide automated responses that can be selected with a button click (Smutny and Schreiberova, 2020). Further, they can be task-oriented, and capable of activities such as booking flights, placing food orders, reading emails, and so forth (Baha et al., 2022; Smutny & Schreiberova, 2020; Uthamaputhran, Shuaib, et al., 2022; Yin et al., 2021). A recent study revealed that consumer trusts chatbots more for objective tasks due to different emotional experiences (Wang et al., 2023). Another recent study also examined the trust-driven adoption and continued usage of chatbots and revealed that human-like chatbots were preferred over tailored responses in the case of creative task performance (Jiang et al., 2023). FAQ (Frequently Asked Questions) webpage and FAQ chatbots were also compared to see their differential impact on the students' learning experience (Han and Lee, 2022). Positive customer perception of human-machine interactions is enhanced by chatbots' empathy and friendliness (Niemand and Mai, 2018). Alternatively, text-based chatbots are perceived to be unempathetic for giving standard answers (Cheng et al., 2022). They are considered to be more humanistic (Lee and Yeo, 2022). Hence, the comparative impact of text versus voice chatbots on consumer continuance intention of the firm's website offers a research opportunity.

2.2. Perceived Technological Optimism

Perceived Technological Optimism (PTO) is a significant dimension of technological readiness that refers to an individual's inclination to use technology with the expectation of achieving a better quality of life, both personally and professionally (Parasuraman, 2000). The term has a positive meaning, indicating hope and optimism. It is based on the idea that the use of technology can help achieve goals such as gaining more control, flexibility, and efficiency in different areas of life (Parasuraman, 2000). Further, perceived control positively impacts the trusting belief (Rodríguez-Priego et al., 2023). It is plausible to suggest that chatbot communication in voice mode may evoke positive emotions, including a sense of control over the interaction and processes, as it is less cognitively demanding compared to text-based conversations. These factors can collectively contribute to a higher level of perceived technological optimism in consumers leading to the continuance intention for the technology (Rezaei et al., 2014). Hence, it is posited:

H_1: Chatbot conversation's voice mode (vs. text mode) leads to higher perceived technological optimism in consumers.

2.3. Moderation Impact of Perceived Task-solving Competence

Perceived task-solving competency (PTSC) indicates users' cognitive evaluation of chatbots' functional ability as an intelligent technology (Aaker et al., 2010). An intelligent technology is one that

can handle real-world problems quickly and effectively. The voice mode of chatbots, with its natural language and intonation, seems to have the potential to create a more engaging and emotionally resonant interaction with the users (Youn & Jin, 2021). Users may perceive voice-based chatbots as more proficient, which fosters greater technological optimism. When users perceive chatbots as highly competent in solving their problems, they are more likely to trust the technology and believe that it can effectively meet their needs. However, chatbot evaluation and adoption are not solely determined by its technological features but also by its ability to effectively meet user expectations (Jiang et al., 2023). Consumers' expectation of a rich interactive experience is rarely met with a passive mode of communication for addressing objective problems (Wang et al., 2023). However, if firms wish to level up their game of automated service encounters, they need to improve chatbots' subjective problem-solving capabilities, leading to positive emotional experiences (Youn & Jin, 2021). Additionally, increased anthropomorphism is also reported to have a positive impact on the users' PTSC toward chatbots (Kim et al., 2019). Overall, when users perceive the voicebot as highly competent, it is likely to have a positive effect on technological optimism. Therefore, we posit:

H_2: Higher (vs. low) perceived task-solving competence positively moderates the relationship between the voice (vs. text) mode of the chatbot and perceived technological optimism.

2.4. Mediation through Cognition-based trust (CBT)

Cognition-based trust, often referred to as cognitive trust, is based on rational assessments and cognitive evaluations (Wang et al., 2016). It reflects users' trust in the technology's ability to perform the given tasks. Chatbot technology's competence and perceived warmth, like humans', positively affect consumer trust in technology (Cheng et al., 2022). Several chatbot-human interactions have resulted in a sense of well-being due to optimism received through the trust-based relationship (Skjuve et al., 2021). Customer care refers to the firms' efforts to satisfy consumers' expectations and needs (Serravalle and Pantano, 2023). When an e-retailer invests in care management, it positively affects the consumer's perceived customer care by enhancing their sense of perceived control and trust regarding self-disclosure (Rodríguez-Priego et al., 2023). Furthermore, based on the TAM (Technology Acceptance Model) and Innovation Diffusion Theory, individuals who hold high levels of technological optimism are more likely to view technology, such as chatbots, as helpful and advantageous. Optimistic individuals are likely to view the voice-bots as efficient and user-friendly technology based on their relative advantage and compatibility due to having human-like conversational ability (Ayanwale and Ndlovu, 2024; Rese et al., 2020). Additionally, when they have positive expectations about the capabilities of chatbots, they are more likely to trust them and believe that the chatbot is genuinely concerned about their needs and able to address them. This can ultimately lead to a higher level of consumer's perceived customer care. As optimism is a cognitive experience and CBT is a trust in the cognitive abilities of the technology, hence we posit:

H_3: Users' cognition-based trust in chatbots positively mediates the relationship between the perceived technological optimism of users and perceived customer care.

2.5. Mediation through Perceived Customer Care (PCC)

When consumers have a positive outlook on chatbot-based support, they are more likely to expect that the website will provide a seamless and satisfying transaction experience (Shim et al., 2002b). These positive expectations can lead consumers to perceive the retailer's website as being more responsive and thus can contribute to higher perceived customer care. Proper care management strategies have been significant in improving the consumer experience in physical stores (Raggiotto et al., 2023). Even in the online shopping context, consumer cognitive evaluations are positive when their problems are effectively resolved by the website (Luo and Chea, 2018). Consequently, perceived customer care has a positive impact on satisfaction, trust, and perceived control (Rodríguez-Priego et al., 2023), and that contributes to a consumer's intention to continue using the retailer's website.

2.6. Continuance Intention

Continuance intention refers to the intention of a consumer to continue using a retailer's website for future transactions (Trivedi et al., 2023; Yang and Lin, 2015). Consumers' proclivity to participate and connect with chatbots increases when they perceive AI-based human-like virtual agents as competent problem solvers, this perception of competence contributes to the development of stronger trust in the chatbot (Kim et al., 2019). Further, trust and customer care are positively related (Rodríguez-Priego et al., 2023) and customer care activities also impact consumer patronage intentions (Vannucci et al., 2023). Increased efforts to ease consumer problem-solving can positively affect consumer continuance toward e-retailers. Research says that chatbots with an informal language style offer consumers the freedom to unconsciously respond the way they do to humans, which greatly matters to them (Li and Wang, 2023). Designing such a chatbot enhances user's perceptions of the chatbot and the company. The way e-service provider handles consumer issues, consumers accordingly cognitively appraise the encounter (Luo and Chea, 2018). Appraisal represents an evaluation of how a stimulus situation impacts an individual's well-being, as well as that of a person with unique needs, goals, abilities, and resources (Lazarus, 1982). Hence, we posit:

H_4: The perceived technological optimism of the chatbot positively impacts the consumer continuance intention toward the retailer's website.

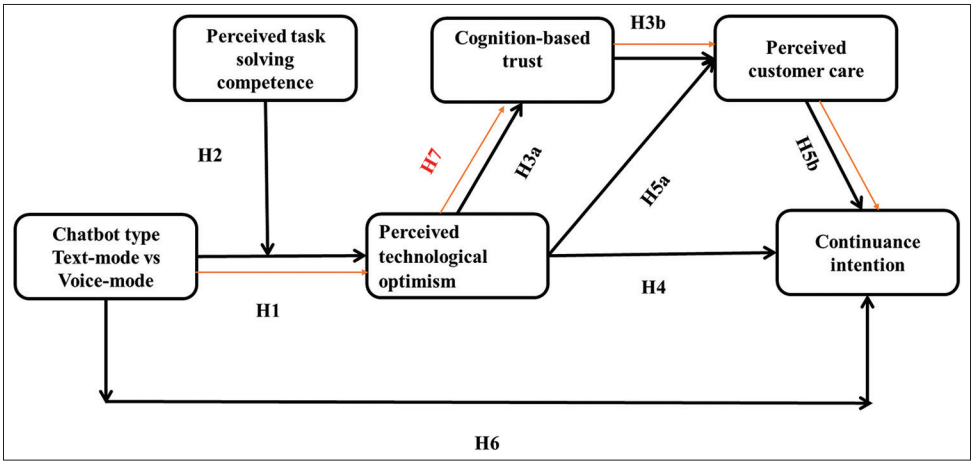
H_5: Perceived customer care mediates the relationship between Perceived technological optimism and the consumer continuance intention toward the retailer's website.

H_6: The voice (vs. text) mode of the chatbot positively impacts the consumer continuance intention toward the retailer's website.

H_7: Perceived technological optimism, Cognition-based trust, and perceived customer care serially mediate the relationship between chatbot mode and continuance intention.

All the hypothesised variables and their relationships amongst themselves have been visually presented in the conceptual model provided in Fig. 1 below.

Figure 1: Conceptual framework



3. METHODS

3.1. Research Design

The present study is aimed at examining the causal path between the chatbot mode and the continuance intention toward the firm's website. The mediating roles of perceived technological optimism, cognition-based trust, and perceived customer care have also been examined between the chatbot mode and consumer continuance intention toward the website. Additionally, the moderating role of the perceived task-solving competency of the chatbots has also been investigated on the relationship between chatbot mode and perceived technological optimism. A 2 (Chatbot mode: voice mode vs. text mode) × 2 (Perceived task solving competency: high vs. low) between-subjects experiment was conducted as it ensures more robust findings for such causal relationships (Trivedi et al., 2023; Trivedi et al., 2023). The difference between the impact of the treatment is measured by having larger between-group variability that guarantees the positive impact of the treatment even in the presence of random errors (Mitchell and Jolley, 2014).

3.2. Participants and Procedures

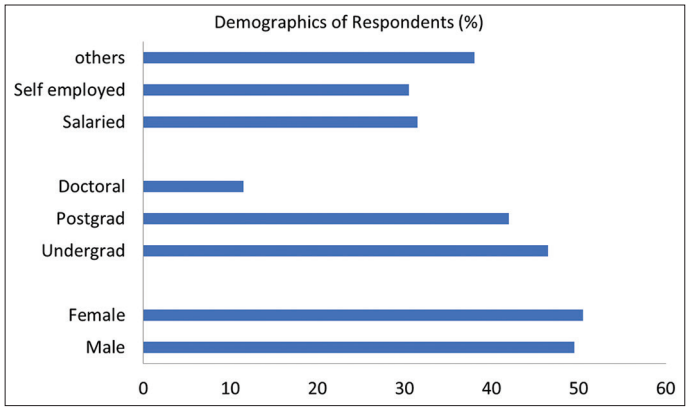
A total of 240 participants from the national capital region, India, were initially contacted for the study. However, 14 participants' responses were excluded from the final data analysis as they failed to pass the attention check question. The attention check question used was: "What is the color of the sky? Even though the correct answer is "blue," please choose "red" for this question." The final dataset of 200 participants, after removing the outliers, was used for further analyses. The modal age of respondents was between 32 and 39, and there were 49.5% males). There are different views on compromising the internal validity for representativeness and generalizability. Campbell (1957) suggests that representativeness can be sacrificed for internal validity, whereas another study makes it situation-dependent (Viglia and Dolnicar, 2020). In the present case, internal validity was more important to preserve as to establish causality and that was preserved by using random selection and a controlled environment so that the clear impact of our treatment condition is visible. Hence, the main study was conducted in laboratory conditions, wherein the research objective was clearly explained to the participants before obtaining their consent. Each participant was randomly assigned to one of the four scenarios of chatbot mode conditions and perceived task-solving competency levels. Overall, random selection and allocation of participants to the treatment and control groups assures higher internal validity (Mitchell and Jolley, 2014). Both the chatbot mode and perceived task-solving competency were manipulated at two levels: voice versus text, (independent variable) and high versus low perceived task-solving competency (moderating variable).

The study involved an online survey administered in a lab condition. In the study, participants were asked to imagine themselves on an airline booking website page, specifically seeking customer care support for a delayed flight-related issue. They were instructed to envision having a conversation with a virtual assistant provided on the website page. To foster their imagination, a scenario of a conversation between participants as airline customers and airline agents (Chatbot) was given to them for priming purposes (Appendix 1). The experiment involved four different groups/cells, with two cells using a virtual assistant in text mode and the other two cells using a virtual assistant in voice mode. Participants were randomly assigned to one of four treatment groups. In the text mode cells, participants interacted with a virtual assistant that required them to type their issues. On the other hand, in the voice mode cells, participants interacted with a voice-based chatbot as a virtual assistant. Stimuli included in voice mode eliminated the need for typing, providing a more convenient and natural conversation experience. Further, to manipulate perceived task-solving competency, the virtual agents in both the text mode and voice mode cells were designed to exhibit either high or low competence in solving customer problems. To manifest the chatbot's high competence, stimuli contained affirmative, suggestive, overall quick, and assured helpful tone in conversation. This manipulation allowed researchers to assess how perceived competency influenced participants' responses and experiences with voice vs text-mode chatbots. In the text mode of the chatbot-consumer interaction scenario, participants were presented with stimuli in the form of pre-defined question-answer buttons. For example, the virtual assistant might display a message like "Delayed due to bad weather conditions. Do you wish to cancel or reschedule?" and participants would choose their response by clicking on one of the provided buttons, such as "Reschedule." On the other hand, in the voice mode of the chatbot scenario, participants were given the freedom to speak their responses. The

virtual assistant would provide a spoken response such as "Thank you. Let me check. Your flight has been delayed due to bad weather conditions, and we are currently working on rescheduling it. Can I suggest an alternative flight for you?" Participants in the voice mode cell would then verbally respond, such as saying, "Yes, please. What options do I have?" These scenario descriptions were fine-tuned by pretesting, ensuring that they accurately represented the desired interactions. The first round of pretesting had treatments such as "I am suggesting other alternative options" that were replaced by the more humble yet suggestive toned stimuli later (refer to Appendix 1 for stimuli used in the main study). The demographic descriptives are given in Figure 2.

Manipulations were pretested to assess the effectiveness of the treatments. The responses from the pretest were analyzed using an analysis of variance (ANOVA) test to determine if there were significant differences between the different conditions. The measures of chatbot modes (text and voice) were subjected to ANOVA for manipulation check. ANOVA test revealed that the mean scores for the voice-based chatbot condition (M_{voice} = 3.85) were significantly higher than the mean scores for the text mode of the chatbot condition (M_{text} = 2.71), indicating that the manipulation of communication mode was effective ($P < 0.05$). Similarly, the mean scores for the higher perceived task-solving competency condition (M_{high} = 3.78) were significantly higher than the mean scores for the lower perceived task-solving competency condition (M_{low} = 2.24), indicating that the manipulation of perceived task-solving competency was successful ($P < 0.05$). To have a significant difference in high/low perceived task-solving competency, stimuli such as "Please say your request slowly and clearly" and "5 min hold time" were added in the low competency condition in the second round of pretesting. Finally, the manipulation check was successful, and no other interactions were found to be significant, which indicates higher internal validity.

Figure 2: Sample descriptives



All the scale items were adopted from the existing literature (Table 1) with minor modifications after the results of the pilot study. Further, from the pilot study, Cronbach's alpha for PTSC, PTO, CBT, PCC and Spearman's brown coefficient for scale items of continuance intention came out reliable. For the two-item scale, Cronbach's alpha tends to have larger biases, hence, Spearman's brown coefficient was estimated (Trivedi et al., 2023; Trivedi et al., 2023). Overall, all the scales were found reliable for conducting the main study. Table 2 presents the reliability statistics and Table 1 presents scale items with their sources.

4. RESULTS AND ANALYSES

The data for the study were collected through a survey administered to the participants. The survey also collected demographic information of participants. This included variables such as age group, gender, occupation, and education levels. Furthermore, the frequency of using customer care support was also observed as a control variable.

Table 1: Source of adopted scales

Scale	Items	Source
Perceived task-solving competence	Chatbots are effective Chatbots are helpful Chatbots made my task easy Chatbots provide competent guidance	Jiang et al. (2023)
Perceived technological optimism	The voice mode of chatbot technology contributes to a better quality of life. The voice mode of chatbot technology gives me more freedom of mobility. Voice-mode of chatbot Technology gives people more control over their daily lives. Voice-mode of chatbot technology makes me more productive in my personal life	Silva et al. (2022)
Perceived customer care	The firm by using the voice-mode of chatbot technology would be aware of what consumers want. The firm by using the voice mode of chatbot technology would devote resources to maintain its relationship with its consumers. The firm by using the voice-mode of chatbot technology would genuinely listen to the demands that people put on it.	Rodríguez-Priego et al. (2023)
Cognition based-trust	The virtual advisor is competent and effective in providing airline-related information and recommendations. The virtual advisor performs its role of giving recommendations very well. Overall, the virtual advisor is capable of and proficient in providing airline service information and recommendation.	Wang et al. (2016)
Continuance intention	I intend to continue using this airline's website in the future. I predict I will continue to use this airline's website in the future.	Jiang and Lau (2021)
Chatbot type	Please state whether you talked to an automated voice mode of Chatbot Please state whether you talked to an automated text mode of Chatbot	Zhou et al. (2023)

Figure 3: Means plot presenting ANOVA results (1- text-mode and 2-voice-mode chatbot)

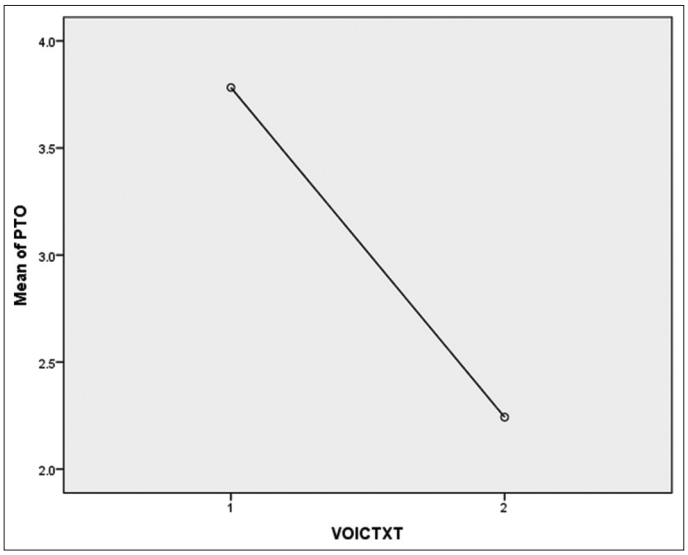


Table 2: Scale items' reliability

Construct	Reliability (Cronbach's alpha/Spearman's brown coefficient)
PTO	0.865
CBT	0.754
PCC	0.784
PTSC	0.920
CI	0.823

H_1, where chatbot mode was a categorical variable (independent variable) and perceived technological optimism (dependent variable) was a scale variable, was tested using a one-way ANOVA. The variance test revealed a significant difference in the means for the voice mode of chatbot condition (M_{voice} = 3.78; F [198] = 355.666, P < 0.05) and text mode of chatbot conditions (M_{text} = 2.24; F [198] = 355.666, P < 0.05) (Figure 3). ANCOVA test (with the frequency of using customer care support as a control variable) also revealed significant differences in the means, even in the presence of confounding variables. The means for the voice mode of the chatbot came out significant even in the presence of age as another confounding variable that was found to have an impact (M_{age} = 2.39; F [193] = 18.50, P = 0.00).

H_2, which tested the moderating role of PTSC on the relationship between chatbot mode and perceived technological optimism (PTO) using the Hayes PROCESS Macro (SPSS version 3.5) for simple moderation (Model 1) (Mitchell and Jolley, 2014), and was found to have a significant impact on the relationship. The bootstrap estimation with 5000 resamples revealed that the sample means were significantly different from zero (P = 0.00, 95% CI [1.0905, 1.5895]), providing statistical support for H_2. Further, H7 posits that Chatbot mode impacts the continuance intention while PTO, CBT and PCC mediate. To test the mediation impacts of PTO, CBT and PCC between the path from chatbot mode and consumer continuance intention, serial mediation by applying Model 6 in PROCESS Macro (SPSS version 3.5) was used. Eventually, H7 also gets statistical support (P ≤ 0.05, 95%, CI [0.0602, 0.0019]). Further, with Model 4 in PROCESS Macro (SPSS version 3.5) a simple mediation path between the PTO and continuance intention through PCC also came out statistically significant (P ≤ 0.05, 95%, CI [0.0222, 0.0683]), providing statistical support to H5. Additionally, the analysis also revealed a significant direct effect of PTO on continuance intention (P = 0.0157, 95%, CI [−0.3139, −0.331]), which means H4 gets statistical support. H_3, which states PTO impacts the PCC through CBT as a mediator, was tested using a simple mediation model (model 4) in PROCESS Macro (SPSS version 3.5). Results revealed that there is a significant indirect effect of PTO on PCC through CBT (P = 0.000, 95%, CI [0.4646, 0.7317]) but a statistically insignificant direct effect (P = 0.2887, 95%, CI [−0.0699, 0.2338]). As posited in H6, the direct effect of the voice mode of the chatbot on continuance intention was found statistically significant (P = 0.000, 95%, CI [−1.7203, −0.9830). Additionally, the R square from SPSS analysis reveals that 83.92% variance in continuance intention (dependent variable) is predicted by the voice mode of the chatbot in the present model (Andy Field, 2009). Overall, all the posited relationships get statistical support.

5. DISCUSSION

5.1. Theoretical Implications

The study offers several theoretical implications. First, the findings align with the concept that more immersive and engaging interactions through the voice mode of chatbots can foster positive attitudes toward technology. This underscores the importance of user experience in shaping perceptions of technology. When a chatbot exhibits human-like qualities, users may develop a sense of trust in its ability to understand and effectively address their problems (Cheng et al., 2022). Second, the findings highlight the importance of users' perceptions of a chatbot's task-solving competence in influencing their technological optimism. The role of PTSC has been instrumental in spelling trust in the chatbot technology, which is vital for future consumer behavioral outcomes in favor of the technology adoption (Im et al., 2023; Jiang et al., 2023) Third, the present study also posited that the voice mode of chatbot impacts the cognition-based trust in it by sounding intelligent and responsive toward the problem through PTO. When a consumer finds a voice mode of chatbot competent in problem-solving, their trust in that mode of chatbot gets better (Jiang et al., 2023). Trust in technologies such as chatbots is cognitive unlike in humans. When chatbots effectively solve problems, they improve chatbot's' perceived task-solving ability, leading to satisfaction and a sense of control in consumers (Nguyen et al., 2022). When chatbots are perceived as intelligent virtual assistants, it influences consumer's reuse intention (Liu et al., 2023). In the e-service context, the way consumer issues are handled by the websites, largely shapes the affective reactions of the users, which stems from their cognitive appraisal of the process (Luo and Chea, 2018). In other words, this is best explained through the lens of Cognitive appraisal theory(Lazarus, 1982). The appropriateness of using cognitive appraisal theory lies in various previous research works that suggested the usage of theory to understand the proper emotional response from the appraisal of the events (Ortony et al., 1990) or studies of antecedents of emotions (Lazarus,

1982; Roseman, 2001). Hence, the results of the present study are in line with the extant theoretical justification of the discussed phenomenon in the e-service context.

The results report that consumers' optimism about the chatbot's technological capabilities is a significant factor in their decision to continue using the firms' websites. Further, the mode of chatbot interaction can influence consumers' continuance intention. The findings also support the idea that the relationship between chatbot mode and user continuance intention is not direct but operates through sequential mediation via technological optimism, trust, and customer care perceptions. Existing studies have already established the relationship between perceived customer care, trust and perceived control (Rodríguez-Priego et al., 2023). But the mediation role of perceived customer care as an underlying psychological mechanism was unexplored. The present study, hence, seems to contribute significantly by investigating the serial mediation that includes the mediating role of PCC on the path between CBT and continuance intention through an experimental investigation. As H7 gets statistical support, it has also established the causal association between CBT and continuance intention through PCC. Overall, the results of the present study are consistent with the extant research findings. With the rapid technological innovations and consumer technological readiness for accepting the same, it becomes imperative to investigate consumer preferences to positively influence their transaction experience (Marketing Science Institute, 2018). Positive transaction experience drawn from a firm's website leads to repurchase intention from the same website (Trivedi et al., 2023). When customers perceive that a firm genuinely cares about their well-being and satisfaction, they develop a sense of trust in the firm. This trust further strengthens the relationship between the customer and the firm, making the customer more inclined to continue using the firm's products or services in the future.

5.2. Managerial Implications

Consumer continuance intention is of paramount significance for a sustainable business. Given the strong competition in the market, service providers must make arrangements that help them have a competitive advantage over others. Today's consumer is much more empowered and informed than in the pre-digital era. Hence, it is imperative for service provider firms to understand the occurrence of certain consumer behavior in the service consumption and issue handling context. The research findings of this study can be used as the yardstick to design the online customer care system of the firm. The present study has four managerial implications for chatbot commercialization. The study demonstrates that the voice mode of chatbot technology is preferred for problem-solving over the text mode of a chatbot for its higher perceived cognitive abilities. The type of communicating agent would save cost by saving consumer energy and time, which would, in turn, save the firm's potential expenditures from customers' switching behavior. An incidence of a failure in the service encounter impacts the customers' tendency to switch (Vakeel et al., 2018) whereas, sense control over consumption-related choice-making facilitates positive emotion toward the service provider (Ryan and Deci, 2000)

Second, unlike text-based interaction, voice-based chatbots do not require consumers to have typing skills or proficiency in reading and writing. This makes voice mode a user-friendly option for individuals. Consumers can use their voice to communicate with the chatbot, just like they would with voice assistants such as *Alexa, SIRI, and Google Assistant*. By leveraging virtual assistants that can respond to voice commands, firms can automate customer support processes and handle a larger volume of customer inquiries simultaneously. To effectively implement voice-mode chatbots, firms need to conduct research to understand the languages and dialects prevalent in their target markets. This knowledge enables them to develop chatbot solutions that can communicate effectively with consumers in both global and local languages.

Third, when consumers feel a sense of control over their interactions with chatbots and perceive themselves as proficient users, it enhances their trust and confidence in the technology. Additionally, consumers also feel an enhanced sense of control over the technology even during a crisis due to Chatbot's task-solving competencies in terms of quick understanding and response. Chatbot developers should design dialogue sequences that empower users and make them feel having control of the interaction. This can involve providing clear and transparent options, allowing users to make choices, and ensuring the process is quick and easy.

Fourth, when a consumer perceives that a firm is making efforts to provide efficient and effective solutions to their problems, it enhances their perception of customer care. This, in turn, can further strengthen consumer continuance intentions, as they develop trust and satisfaction with the firm's customer service efforts. Hence, enterprises should focus on designing user-friendly chatbot interfaces and incorporating features that enable consumers to have a sense of control over the process.

6. CONCLUSION

The present study empirically examined the role of chatbot modes on the consumer's continuance intention through several underlying psychological mechanisms. It reveals a strong consumer preference for voice-based chatbots over text-based chatbots and reports that consumers perceive voice-mode chatbots as offering more control over the interaction process and greater freedom of mobility. This preference is driven by the belief that voice mode enables better control and more efficient problem-solving, leading to positive attitudes towards customer care efforts. The study also extends the literature on AI-based chatbot technologies into the e-commerce domain. It facilitates understanding the application of chatbots in the context of e-commerce by examining the use of voice-based chatbot technology as part of customer care strategies in e-commerce websites. It also innovatively explores the role of voice-based chatbot technology in supporting cognition-based trust.

The study contributes to the literature by exploring the role of voice-based chatbots in e-commerce customer care, highlighting the importance of chatbot competence, consumer sense of control, and perceived customer care in shaping consumer attitudes and

continuance intentions. The findings shed light on the preferences and expectations of consumers regarding chatbot technologies, providing valuable insights for e-commerce firms in designing effective customer care strategies.

Despite the contributions made, the study also has some limitations that can constructively be used as the basis of future research. Conducting the study in a laboratory setting may limit the generalizability of the findings to real-world contexts. Future research could consider conducting field studies to increase the external validity of the results. The study was conducted in India, which may limit the generalizability of the findings to other cultural contexts. Future research should aim to test and compare the perceptions and behaviors towards AI-based chatbots in different countries and cultures. The study did not examine ethical considerations, such as user data privacy and security. Future research could investigate these important aspects to guide chatbot developers in designing systems that address these ethical concerns. Future research could explore the integration of voice and text modes of chatbots and investigate consumer preferences and the potential benefits of using both modes for enhancing consumer retention.

During the preparation of this work, the author(s) used ChatGPT in some places to improve the language of a few parts of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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