

The Impact of Chatbot Communication Style and Service Remedies on Consumer Adoption Intention

-- Based on Service Failure Scenario

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Abstract: The development of chatbots is very rapid, so far, the research on chatbots mainly focuses on the field of service success, ignoring the fact that chatbot service failure (i.e., making mistakes) is a kind of norm, how to better design chatbots so as to minimize the loss brought by service failure has become a problem that needs to be solved urgently by AI producers nowadays. Based on the chatbot service failure scenario, this paper investigates the different impacts of chatbots adopting two communication styles, social and task, on consumers' adoption intention, and finds that consumers' adoption intention of social (vs. task) chatbots is lower after service failure, in which uniqueness neglect plays a mediating role. In addition, different matching effects between three chatbot service remedies (humor vs. apology vs. compensation) and communication style (social vs. oriented) were explored. Social-oriented chatbot service failure, using humor as a service remedy was superior to compensation. Task-oriented chatbot service failure and the use of compensation as a means of service remediation is superior to humor. Apologizing is less effective than humor and compensation in both social and task-oriented chatbot service failure scenarios. The conclusions of this paper enrich the research on chatbots in the area of service failure and provide effective suggestions for merchants to design and apply chatbots.

Keywords: Service Failure, Chatbots, Communication Style, Uniqueness Neglect, Service Failure Remediation.

1. Introduction

More and more companies are trying to use chatbots to reduce labor costs and enhance customer experience (Gelbrich, Hagel, & Orsingher, 2021). Examples include ALIME messaging bots for Taobao in China; telephone chatbots for mobile communication companies and China Merchants Bank ; as well as Apple's SIRI, Xiaomi's Xiaoyi Classmates, and the recently popular ChatGPT, among others (Zhu, Zhang, Wu, & Liu, 2022). However, chatbots also often suffer from service failures due to technical glitches or algorithmic problems, etc. When unable to interpret requests correctly as well as unable to handle complex requests, users may feel frustrated and angry (Crollic, Thomaz, Hadi, & Stephen, 2022), resulting in a reluctance to continue to use the company's chatbot in the future (Sheehan, Jin, & Gottlieb, 2020). How to increase people's willingness to adopt chatbots in service failure scenarios is an important but unaddressed problem.

Past research has shown that the interaction style adopted by chatbots has a significant impact on user adoption intentions and is an important cue that is recognizable by users (Feine, Gnewuch, Morana, & Maedche, 2019). Communication styles are usually categorized into task-oriented and social-oriented, with the former having a simple and dry conversational style, and the latter containing more emotional and intonational word structures. In the past, few studies have focused on the impact of chatbot communication style on consumer adoption intention in service failure scenarios. The purpose of this paper is to investigate how different communication styles (social-oriented vs. task-oriented) of chatbots affect consumer adoption intentions when service failure occurs. Specifically, socially oriented (vs.

task-to-phase) chatbots are more susceptible to the consequences of service failures because they emphasize more on emotional interactions and humanization, resulting in higher customer expectations of their performance. In addition, uniqueness neglect mediates the relationship between socially oriented (vs. task-oriented) chatbots and consumers' willingness to adopt, and social chatbot service failures bring stronger perceptions of uniqueness neglect, which can lead to consumers' reluctance to adopt chatbots. Finally, this paper also finds that different service remediation approaches for chatbots with different communication styles directly affect consumers' adoption intentions. For social chatbots, the use of humor as a service remediation mechanism is more appropriate, whereas for task-based chatbots, an atonement (moral compensation) mechanism is better able to ameliorate the impact caused by errors. It is worth noting that apologizing as a remedial approach does not have a different impact on adoption intention in social and task contexts, not as good as humor and compensation in solving the problem and gaining consumers' understanding, possibly because apologizing appears to be more stereotypical and uninteresting.

This paper bridges an important theoretical gap in the literature on chatbot service failure and recovery by adding to the understanding of service encounters in human-robot interactions (Lariviere et al., 2017). The psychological mechanisms and attributions of consumers when chatbots with different communication styles interact with them in service failure situations revealed in this paper help to advance the integration of artificial intelligence and consumer behavior theories, and provide a more comprehensive and innovative perspective for identifying the factors determining the willingness of chatbots to adopt services. On a practical

level, this study has positive implications and far-reaching impacts on the practice and promotion of chatbot services in the field of chatbot services, helping service providers and chatbot programmers to better understand users' reactions after using chatbot services, and to formulate more effective strategies to improve users' willingness to adopt chatbots, in order to provide specific means of coping with corresponding service failures. These strategies include providing fast and accurate feedback, switching communication styles in a timely manner, and providing different service remediation strategies in different application scenarios, thus further increasing the popularity of chatbot services and improving service accuracy and efficiency.

2. Literature review

2.1. Chatbot Communication Style and Consumer Adoption Intentions

Zumstein and Hundertmark offer a definition of a chatbot as "a program programmed by a computer that mimics human language with the help of a text-based dialogue system that accepts natural language input and outputs natural language"(Zumstein & Hundertmark, 2017). With the continuous advancement of Natural Language Processing (NLP) technologies (e.g., NLTK for Python) and image recognition technologies such as Artificial Intelligence (AI), many types of chatbots such as intelligent search engines, intelligent customer service, and personal intelligent voice companions have emerged (Sheehan et al., 2020). The essence of chatbots is to simulate interaction with humans in a conversation in order to perform tasks(Brandtzaeg & Følstad, 2018).

Social response theory states and demonstrates that humans interact with computers and media just as they interact with others, unconsciously adopting social rules such as politeness, self-representation, and trust in response to social cues such as conversation, interaction, and social role computers(Nass & Moon, 2000). Humans have been socially oriented since the beginning of evolution and this orientation is enhanced when interacting with computers with human-like characteristics(Moon, 2000). Natural dialog protocols in different environments show that users use a combination of social and task-oriented discourse in their conversations with chatbots and conversational agents. Chatbots' socially oriented dialog strategies involve informal relational conversations with social (non-task) interactions such as habitual greetings, small talk, emotional support, and positive expressions to achieve socio-emotional goals(Yoo, Choi, & Park, 2016). Social or non-task environments are typically characterized by informal and casual conversations that promote the exchange of socioemotional and emotional information(Kreijns, Kirschner, & Jochems, 2003). Task-oriented conversations, on the other hand, are more formal and involve purely task-based conversations to achieve functional goals. Chen et al found that an agent's conversational characteristics influence user preferences, conversations, and behaviors(Chen, Naveed, & Porzel, 2010). Since socially oriented chatbots emphasize interaction with users' emotions, they will be more likely to be perceived as more similar to human beings, and thus one would expect socially oriented chatbots to be more intelligent and have a lower probability of service failure(Koehler, Rohm, de Ruyter, & Wetzels, 2011). As a result, if a socially-oriented chatbot fails, users' expectations will be negated, leading to

disappointment and dissatisfaction, and thus lower adoption intentions. In contrast, task-oriented bots are often viewed as less intelligent(Brukenberger et al., 2013). Consumers are more likely to view task-oriented robots as just machines and tools with interactive features(H. Wang, Xie, & Zhan, 2021). Therefore even if service failure behavior occurs, users are more likely to accept it. Based on this, this paper proposes Hypothesis 1:

H1: Social orientation will lead to lower consumer adoption intentions relative to task-oriented communication style chatbots making mistakes.

2.2. Uniqueness Neglect

During interpersonal interactions, especially services, it is crucial for service providers to allow service recipients to perceive that they are being treated in a tailored and unique way, Longoni et al. argued that robotic service providers (as compared to human service providers) allow service recipients to have a stronger sense of uniqueness neglect because human service providers are able to more acutely perceive and satisfy consumers' uniqueness needs, whereas robot attendants are less able to fulfill consumer uniqueness needs(Longoni & Cian, 2022). As the anthropomorphization of robots increases, the expectation that robots will better serve consumers' uniqueness needs will also increase. As Borau et al. found that socially oriented chatbots are more popular than task-oriented chatbots because consumers perceive that socially oriented chatbots are already better able to understand consumer uniqueness needs during chat services(Borau, Otterbring, Laporte, & Fosso Wamba, 2021). However, it was found that confidence in social orientation (vs. task orientation) was lost faster when faced with task-oriented and social-oriented bots making the same mistakes(H. Wang et al., 2021).

Task-oriented chatbots, on the other hand, focus on executing consumers' functional commands, are less anthropomorphic than socially-oriented chatbots, and are less able to perceive consumers' uniqueness needs(Longoni & Cian, 2022). For consumers, there is a lower expectation that task-oriented chatbots (vs. socially-oriented) will fulfill consumers' unique needs. That is, when the social-oriented chatbot service fails, consumers develop a stronger sense of uniqueness neglect compared to the task-oriented chatbot service failure. When a social robot ignores the unique needs of consumers, it can lead to consumer dissatisfaction, which reduces their level of trust and willingness to adopt the service. Based on this hypotheses 2a to 2c are proposed:

H2a: Social orientation leads to higher uniqueness neglect perceptions relative to task-oriented communication style chatbots making mistakes.

H3b : Uniqueness neglect perception reduces consumer adoption intention.

H3c: Perceived uniqueness neglect mediates the relationship between chatbot service failure and consumer adoption intention.

2.3. Service Remediation Strategies

A chatbot's sense of humor is considered a key variable for emotional expression, ensuring that the bot is seen as a genuine social participant(Meany & Clark, 2010). In socially oriented communication styles, unconscious initiation and attribution are made. Many scholars have suggested that visual cues of "humanity" may trigger personal perceptions in users, leading them to perceive chatbots as human and to

perform social actions (Sundar, 2008). Social communication style chatbots aim to establish emotional connection and intimacy, focusing on conversational experience and user engagement. Social communication style chatbots place more emphasis on building emotional connection and intimacy with consumers, and using humor to fix service failures can meet consumers' emotional needs, help them maintain consistency, and enhance their willingness to adopt, thus increasing trust and willingness to adopt the chatbot.

For task-oriented environments, the effectiveness of humor is another story. Alberts and Van Kleef emphasize that anthropomorphic emoticons, language should be used with caution in serious interactions where customers may feel distressed. Task-based chatbots are aimed at accomplishing specific tasks and are primarily concerned with problem solving and task completion, and establishing an emotional connection and intimacy with the user is not their main purpose. When task communication style chatbots use humor to fix service failures, it may make consumers feel that the bot is not serious enough or unprofessional in its approach to the problem. Therefore, using humor to fix service failures may damage the professional and serious image established by task communication style chatbots to some extent, and is not conducive to fixing service failures. In summary, Hypotheses 3a and 3b are proposed:

H3a: The adoption of humor as a service remedy for mistakes made by chatbots with socially oriented communication style is the best means to significantly reduce the negative impact produced by the main effect.

H3b: Chatbots with task-oriented communication style make mistakes using compensation as a service remedy is the best means to significantly reduce the negative impact produced by the main effect.

Compensation is more capable of compensating consumers and increasing their satisfaction and loyalty compared to apologizing. Therefore, the use of some specific compensatory measures (e.g., providing other services for a fee, extending the service period, etc.) may be more appropriate to enhance consumers' willingness to adopt after a failed chatbot service response. This has some fit with the attributes of chatbots themselves as a service-oriented tool. In general, humor is considered beneficial: it can elicit laughter and positive emotions, thus helping to release tension in critical situations (Warren, Barsky, & McGraw, 2018). In scenarios where a chatbot service response fails, humor can improve consumers' moods and attitudes. Apologizing is a common form of social interaction that is effective in repairing mistrust and negative emotions caused by mistakes. In contrast, apologizing is lengthy and unimaginative compared to compensation and humor (Green, Islam, Ali, & Iqbal, 2022). Moreover, in some cases, apologizing is not effective in increasing consumers' willingness to adopt. Especially when consumers are particularly concerned about factors such as the performance and price of a product or service, apologizing may not meet their expectations and needs, leading to a decrease in adoption intentions. Therefore Hypothesis 3c is introduced:

H3c: Apologies are not as effective as compensation and humor as a service remedy for mistakes made by chatbots, whether they are socially oriented or task-oriented.

3. Study 1

Study 1 aimed to test Hypothesis 1: The effect of chatbot service failure on consumer adoption intention. Two pre-

experiments were conducted before the start of the formal experiment. Specifically, Pretest 1 aimed to manipulate the different communication styles of chatbots in order to effectively distinguish between task-oriented and social-oriented. Pre-experiment two aimed to manipulate the degree of service failure of the chatbot in order to control the degree of service response failure of the chatbot. This pretest 2 enables the control of the degree of service response failure and ensures that the chatbots in each group of experimental situations are in the same service failure state, thus reducing the influence of other influencing factors on the experimental results.

3.1. Pretest 1

Pretest 1 is a single factor and two levels (communication style of chat robot: social style vs. task style) inter-group experiment, and 64 valid questionnaires were collected through Credamo channel. A fictional chat robot named Xiaole was assigned to the social chat robot group. Participants read the following words: "There is a chat robot Xiaole in your mobile phone, which can intelligently provide music service according to your emotional needs and accompany you like a friend. Now you have decided to use it to play a song." Then show the participants a screenshot of the conversation with Xiaole, a chat robot, in which Xiaole said, "Good afternoon, my friend, I'm so happy to meet you. Can I help you?" Participants assigned to the task chat robot group read the following words: "There is a chat robot Xiaole in your mobile phone. Xiaole can perform the task of playing music according to your voice instructions and obey you like a soldier. Now you have decided to use it to play a song." In the screenshot of the conversation, Xiaole said, "Hello, what can I do for you?"

Based on the research of Yuan et al. (Yuan, Zhang, & Wang, 2022), this paper measures the social-oriented communication style with four questions: "I can enjoy the service of the chat robot", "The service of the chat robot can make people feel happy/relaxed", and "I am interested in using the chat robot", and with three questions: "The chat robot can complete the task", "The chat robot is very useful" and "The chat robot is very practical" to measure the task-oriented communication style. The items are all Likert's 7-point scale, with 1= none at all and 7= very none. The results show that there are significant differences in the evaluation of social orientation ($\alpha = 0.825$) and task orientation ($\alpha = 0.810$) between the two groups. Participants who watch socially oriented stimulus materials have higher social perception ($M_{\text{Social}} = 5.66$, $M_{\text{Task}} = 3.46$, $t(32) = 9.21$, $p < 0.001$), while participants who watch task-oriented stimulus materials have higher scores on task perception ($M_{\text{Task}} = 5.46$, $M_{\text{Social}} = 3.13$, $t(30) = -7$, $p < 0.001$). It shows that this study successfully manipulated the communication style of social vs. tasks. This paper also measured the "degree of involvement" and "degree of concentration" of the subjects (H. Wang et al., 2021) to check the participants' participation in the situation. The results show that participants have a high degree of participation in situational materials ($M = 5.5$, $SD = 0.95$, $t(63) = 14.103$, $p < 0.001$).

3.2. Pretest 2

According to the theory of benign violations (McGraw & Warren, 2010), if the offending service failure behavior (any stimulus that elicits a threat to one's well-being, identity, or normative belief structure) is too severe, it is possible that any

remedial means will not help. In this paper, we hope to keep the severity of chatbot service failures within reasonable limits by focusing chatbot service failures on the scenario of answering the wrong question in this study (Cuayahuitl et al., 2019). Participants will view task-oriented and social-oriented chatbot service failure scenario stimulus materials, respectively. Following Kobel and Groeppel-Klein (Holbrook & Batra, 1987) and Holbrook and Batra (Kobel & Groeppel-Klein, 2021), this paper utilizes anger to check whether the service failure scenarios are controlled within a reasonable range. The results showed that there was no significant difference in the severity of service failure between the task-oriented and socially-oriented groups ($M_{\text{Social}} = 4.925$, $SD_{\text{Social}} = 1.251$; $M_{\text{Task}} = 5.103$, $SD_{\text{Task}} = 1.165$, $t(63) = -1.807$, $p = 0.29$). This shows that there is no significant difference in service failure severity between task-oriented and socially-oriented chatbot service failure scenario stimulus materials, which avoids the bias that the same error may make a difference in different oriented scenarios and increases the robustness of the experiment.

3.3. Formal experiment

Two hundred and sixty participants were recruited online through the Credamo platform and randomly assigned to the socially oriented and task-oriented groups. Participants were asked to read the stimulus material consistent with the two pre-experiments, which consisted of reading the chatbot's social-oriented communication style stimulus material first, followed by the chatbot's service failure stimulus material, and were asked to read each piece of material for at least 30 seconds. After reading, participants were invited to complete a 7-point consumer adoption intention scale (1 = completely disagree, 7 = completely agree). The consumer adoption intention scale was borrowed from Sheehan's (Sheehan et al., 2020) question items and converted to the Chinese context, with adaptations for words related to chatbot topics. Finally, demographic variables, including age, gender, and education, were recorded in this paper. The results show that consumer adoption willingness is significantly lower for socially oriented chatbot service failures than for task-oriented chatbot service failures ($M_{\text{Social}} = 3.233$, $M_{\text{Task}} = 3.999$, $t(254) = 20.88$, $p < 0.001$), and H1 is validated, i.e., social orientation will lead to lower consumer adoption, relative to task-oriented communication style of chatbot making mistakes willingness.

4. Study 2

Objection. Study 2 aims to validate the mediation mechanism. That is, relative to task-oriented chatbots, service failures of socially-oriented chatbots would be more likely to lead to consumers' perception of uniqueness neglect, and the perception of uniqueness neglect would negatively affect consumers' willingness to adopt chatbots.

Procedures. The manipulation of the independent variables and the measurement of the dependent variables are consistent with Experiment 1. Next, the Perception of Uniqueness Neglect (abbreviated as Un) scale was filled out, which was adapted from Longoni's (Longoni, Bonezzi, & Morewedge, 2019) question items into three items that fit the experimental scenario. Specifically, (1) Un1: The chatbot cannot understand the uniqueness of your stated needs, (2) Un2: The chatbot does not take your unique situation into account, and (3) Un3: The chatbot does not tailor its features to your unique situation. Finally demographic variables such as gender and age are reported.

Results. In this experiment, 250 participants were recruited online through the Credamo platform and randomly assigned to social-oriented and task-oriented groups. The final valid sample of participants was determined to be 204. In this study, the reliability test of each dimension was conducted, and the CITC value was greater than 0.4, and the alpha coefficient value was more than 0.8, which indicated that the internal consistency of the questionnaire measurement items was better. The CR value was higher than 0.8, while the AVE value was higher than 0.5, and the KMO value was greater than 0.7, which indicated that the validity of the factor dimensions was higher, and they were well correlated with each other, and all dimensions could be used for factor analysis. The results show that social-oriented service failure leads to higher uniqueness neglect perception relative to task-oriented chatbots, H2a holds. And uniqueness neglect perception negatively affects consumer adoption intention. Uniqueness neglect has a significant negative effect on adoption intention ($\beta = -0.141$, $p < 0.001$), and H2b holds.

This study uses SPSS27.0 software using the Process plug-in prepared by [4], selecting the model Model4, Bootstrap sampling 5000 times for analysis. The results are shown in Table 5-10. As can be seen from the table, uniqueness neglect perception mediates the relationship between chatbot communication style (0=task oriented, 1=social oriented) and adoption willingness (Boot LLCI=0.068, Boot ULCI=0.100, not including 0), with an effect value of 0.009, and H2c is verified.

5. Study 3

The purpose of this experiment was to further validate the matching relationship between different service remedies and communication styles. The effectiveness of the three service remedial mechanisms of humor, apology and compensation is verified through pretest 1.

5.1. Pretest 1

In Pretest 1, the material of Kobel et al. (Kobel & Groeppel-Klein, 2021) was borrowed to codify the service scenarios of chatbots. The humor defined in this paper is self-deprecating humor. The first step was to check whether the participants understood the joke "artificial retardation" and whether the self-deprecating humor was appropriate (seven semantic differences, no humor, humor). The validity of the measure of apology was defined by "honesty" (seven-point semantic differential, dishonest/honest) to ensure that the apology was perceived as real and not fake (Roschk & Kaiser, 2013). Fifty-eight valid questionnaires were collected through Credamo, where consumers rated each of the three types of redress mechanisms, "apology", "compensation" and "humor". The results showed that apology was considered honest ($M = 4.7368$, $SD = 1.4469$, $t(18) = 2.220$, $p = 0.040$); compensation was also appropriate ($M = 5.0000$, $SD = 1.4951$, $t(17) = 2.838$, $p = 0.011$); and humor was also appropriate ($M = 4.9128$, $SD = 1.3416$, $t(17) = 2.838$, $p = 0.011$). $t(17) = 2.864$, $p = 0.012$, and participants fully understood the joke ($M = 6.3214$, $SD = 1.3592$, $t(17) = 2.912$, $p = 0.009$). Additionally, the humor statement was perceived as funnier than the neutral statement ($M_{\text{humor}} = 3.7907$, $SD_{\text{humor}} = 1.8548$; $M_{\text{neutral}} = 1.9674$, $SD_{\text{neutral}} = 0.8348$, $p < 0.001$). The three service remedies were manipulated successfully.

5.2. Formal experiment

A valid sample of 300 participants was recruited online via

the Credamo platform and randomly assigned to any group of 2 (task-oriented vs. socially-oriented) \times 3 (apology vs. compensation vs. humor). After viewing the screenshots of the conversation between the customer and the chatbot, the subjects filled in the same measurement question items of Experiment 1 and Experiment 2, details of which can be found in the Appendix. In terms of moderating variables, this paper chooses humor as the baseline (0), which is compared with apology (X1) or compensation (X2), and uses multifactorial ANOVA in SPSS27 to conduct the subsequent analysis. In this paper, we draw on the research practice of Zhang (Zhang et al., 2022), for a given scenario, the mean values of different remediation types (e.g., humor vs. apology) on consumer adoption intentions are subtracted to form the mean difference. When the mean difference is significant ($p < 0.001$), it indicates that the remedy is differentiated compared to other types of remedies. Specifically, when a socially oriented chatbot service fails, humor as a service remediation means is better than compensation (mean difference of 0.479 vs. 0.265, $p < 0.001$, respectively), which significantly improves consumers' adoption intention, and the experimental results also found that apologies as a service remediation means do not perform as well as compensation for chatbots with a social communication style (mean difference of 0.214 ($p < 0.001$) and humor (mean difference 0.479, $p < 0.001$). When the task-oriented chatbot service fails, compensation is better than apology and humor (mean difference of 0.458 vs. 0.201, $p < 0.001$, respectively), and apology fails to outperform humor (mean difference of 0.257, $p < 0.001$).

6. Conclusions and general discussion

6.1. General discussion

It was found that chatbots, regardless of their communication style, inevitably reduce customers' willingness to adopt if they make mistakes in their interactions and services. Specifically, socially oriented (vs. task-to-phase) chatbots are more susceptible to the consequences of service failures because of their greater emphasis on emotional interactions and humanization, resulting in customers having higher expectations of their performance. In addition, uniqueness neglect mediates the relationship between socially oriented (vs. task-oriented) chatbots and consumers' willingness to adopt, and social chatbot service failures bring stronger perceptions of uniqueness neglect, which can lead to consumers' reluctance to adopt chatbots. Finally, this paper also finds that different service remediation approaches for different types of chatbots can directly affect consumers' adoption intentions during their interactions with chatbots. For social chatbots, the use of humor as a service remediation mechanism is more appropriate, whereas for task-based bots, the reparation (moral compensation) mechanism is better able to ameliorate the impact caused by errors. It is worth noting that apologies as a remediation method usually come across as stale and uninteresting in both social and task contexts, and are not as good as humor and compensation in solving the problem and winning consumers' understanding.

6.2. Theoretical implications

There are several theoretical innovations in this paper: first, most of the current studies use service success as a context to derive the positive impact of anthropomorphism on customer

attitudes (Holzwarth, Janiszewski, & Neumann, 2006; L. C. Wang, Baker, Wagner, & Wakefield, 2007). However, service failure of chatbots is inevitable. In this paper, we try to explore users' attitudes towards chatbots with different communication styles (social-oriented vs. task-oriented) under service failure scenarios, extending the results of research on chatbot adoption intentions under service failure scenarios. Second, while algorithms can efficiently handle objective and procedural tasks, they are poor at solving subjectivity and uniqueness problems (Castelo, Bos, & Lehmann, 2019; Longoni & Cian, 2022). While past research often emphasizes the benefits of chatbot anthropomorphism, this paper demonstrates that higher levels of chatbot interactivity in service failure scenarios are more likely to lead to the neglect of user uniqueness, resulting in lower adoption intentions, which is a novelty to previous research. Third, a few studies in the service domain deal with humor in regular sales conversations without considering service failure scenarios and the service repair function that humor may have in them, not to mention how the emergence of chatbots may bring about a different scenario after the times have changed. In this paper, humor is included in the consideration of service remediation to provide new ideas for the design of chatbots. In addition, this paper will further explore two other traditional remedies (apology, compensation), proving the optimal matching relationship between different communication types of chatbots and different service remedies, making the conclusions more valuable for social practice.

6.3. Managerial implications

The practical significance of this study is to explore how to better improve service quality and user satisfaction in the case of chatbot service response failure. For merchants, building chatbots with a social style of communication will increase customers' willingness to adopt more, increase their satisfaction and willingness to follow up, and help merchants to reduce costs, improve work efficiency, and realize higher work efficiency and enterprise competitiveness. In addition, this study helps service providers and chatbot programmers to better understand users' attitudes toward the use of humor, compensation, and apology strategies by social vs. task-based chatbots, so that more effective strategies can be developed to further increase the adoption intention of chatbots in service failure scenarios and reduce customer dissatisfaction.

6.4. Future Research Directions

Consumer adoption is a complex phenomenon that is likely to be determined by multiple factors. For example, consumers may show resistance to chatbots because they believe that AI objectively provides inferior or more expensive advice. It may also be due to the perception that chatbots lack human-like enthusiasm and due diligence (Haslam, Bain, Douge, Lee, & Bastian, 2005). In addition, a great deal of previous research addressing mediation has focused on social presence (warmth and competence), (perceived usability, perceived ease of use), and cognitive and trust dimensions. Predictably, uniqueness perception does not cover the full range of explanations from independent to dependent variables. Possible mechanisms of action from independent to dependent variables in the framework of chatbot service failure can be further explored in the future.

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