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# Chatbot or Human? The Impact of Chatbot Service Strategies on Recovery Satisfaction

Short Paper

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## Abstract

*Nowadays, more and more enterprises use chatbots in customer service, but a customer survey shows that most users prefer to choose human service employee rather than chatbots. What scenario can chatbots play a better role than human customer service, bringing better customer service satisfaction has become an issue of concern for enterprises. From the perspective of service recovery, this study explores what circumstances does customer service provide chatbots better service than human service employee? To this end, we proposed a matching effect model between the service recovery entity and customer requirement type, and on this basis, the moderating effect brought by different remedy schemes and communication styles of customer service is discussed. We plan to design mixed design vignette experiments to test our research model. The findings of this study are intended to give new insights for researchers and practitioners.*

**Keywords:** Chatbot, Service Failure, Service Recovery, Recovery Satisfaction

## Introduction

With the rapid development of new technologies, chatbot plays an increasingly important role in enterprise services (Ho et al. 2020;Hu et al. 2021). As chatbot is increasingly used in enterprise services, "human" interaction is transforming into "human and robot" interaction (Ivanov & Webster 2019). Whether chatbot can replace human customer service has been widely discussed. Although with the development of artificial intelligence technology, chatbot, which used to be designed to perform a series of (usually repetitive and monotonous) actions, have become increasingly intelligent and can communicate well and effectively with customers (Wirtz et al., 2018). Compared with human service employee, chatbot has stronger learning ability and will not get tired, and can provide consumers with timely service response 24 hours a day. However, the current chatbot is still considered to be unable to complete emotion-related tasks well, current algorithms support chatbot for emotion recognition and human-like emotional response, consumers still feel that the emotions expressed by robots are unreal (Wirtz & Jerger 2017). In the 2021 China Chatbot Market report, more than 30 percent of users choose to directly pick human services rather than services provided by chatbot when initiating services.

Under what scenario can chatbot play a better role than human service employee, and it has become a concern of enterprises to bring better customer service satisfaction. Some studies have found that in awkward situations, people are more willing to use the services provided by chatbot (Pitardi et al. 2022). According to the study of Longoni and Cian (2022), consumers are more willing to choose utilitarian products recommended by artificial intelligence, while for products recommended by hedonic properties, they are more willing to believe the recommendation results of human beings.

After-sales service is a common scene of customer service. Due to the intangible, heterogeneous, non-storable and simultaneous production and consumption characteristics of services, the occurrence of service failures is inevitable (Hunt et al., 1990). Service failure will lead to negative results such as negative word-of-mouth spread and reduced repurchase intention of customers. Therefore, it is of great significance for enterprises to implement service remedy measures (Liu et al. 2021). More and more enterprises are applying chatbot to service recovery (Choi et al. 2021).

Although many scholars in the field of traditional service recovery have made relevant studies on service recovery strategies to explore the impact of different service recovery strategies on service effects (Kim et al. 2018). Chatbot, a new service recovery entity, is quite different from traditional human service employee. Existing studies have proved that the perception brought by chatbot is different from that of human service employee (Wirtz & Jerger 2016; Pitardial 2021; Mende et al. 2019). Customer service in the service recovery scenario is quite different from services in other scenarios. For example, due to the negative experience of service failure, consumers have negative emotions when initiating service demands. However, few scholars explore the use strategy of chatbot from the service recovery scenario. Therefore, This paper hopes to explore: Under what circumstances does chatbot provide better service than human customer service? What boundary conditions will bring about different service recovery effects?

This study will explore the influence mechanism and effect of different service recovery entities (chatbot vs. human service employee) on service satisfaction, explore the boundary conditions leading to different service recovery effects, expand the research scenario of chatbot, and further enrich the interpretation mechanism of consumers' perception of chatbot effect in the field of service recovery.

## **Literature Review**

### ***Chatbot vs. Human service employee***

Chatbot usually refers to a new customer service system based on artificial intelligence technologies such as human-computer interaction, natural language processing and big data. It can collect data for real-time evaluation of service content and provide personalized suggestions, alternatives and solutions for customers' problems (Xu et al 2020). Sands et al. (2021) define chatbot as an AI-enabled virtual service agent that can use natural language to talk to customers. This ability to understand natural language and engage in conversation enables chatbot not only to provide customer service, but also to improve customer experience by reducing customer effort and allowing those customers to use their time more effectively elsewhere (Mimoun et al. 2017). As chatbot is more and more used in daily life, the comparison between chatbot and human service employee has become a topic of concern for many scholars.

In terms of capabilities, chatbot is considered to have the ability to learn and respond more quickly than human service employee. Human beings are individuals with their own abilities, perceptions and biases, and the services provided by human beings show heterogeneity between time and individuals. Employees need to deeply understand their customer and service processes to deliver results for the customer and the organization, which can cost a significant amount of time. In contrast, robots are likely to be a visible, customer-facing part of large integrated service systems, including knowledge bases and CRM systems. Unlike human learning, robots can acquire knowledge and learn in various forms, almost instantly and system-wide (Wirtz et al. 2018).

In terms of consumer experience. Huang and Rust (2018) believe that chatbot can bring consumers a fair and unbiased experience, because chatbot does not show heterogeneity between different time and different robots. Service robots will have the same behavior throughout the service delivery system, providing highly predictable and homogeneous service interactions and solutions. Service robots are immune to human error and fatigue and respond to the service environment in a highly reliable manner. However, the same highly predictable behavior also means that chatbot cannot bring consumers real emotional experience like human service employee (Picard 2013). Although the imitation of human emotions by chatbot can bring a certain degree of pleasure to customers (Tielman et al. 2014), such emotional interaction is still considered unreal and superficial by consumers (MesmerMagnus et al. 2012; Wirtz & Jerger 2017).

In terms of application scenarios, Mende et al. (2019) found that when consumers interact with humanoid service robots rather than human employees, they will cause greater consumer discomfort (i.e. weirdness and threat to human identity), which in turn will lead to the enhancement of compensatory consumption.

That is, consumers will like to buy status goods, seek social belonging and order and eat more food (Mende et al. 2019). Some scholars also found that in awkward situations (such as buying privacy products), consumers are more willing to use chatbot rather than human service employee (Pitardi et al. 2022). Wirtz et al. (2018) proposed that chatbot is more suitable for performing cognitive analysis tasks, while human service employee is more suitable for performing more complex and emotion-related tasks.

Through the above literature review, we can find that chatbot and human service employee have certain differences in ability, which will bring consumers different service experience. Scholars have found that chatbot can promote compensatory consumption and bring better experience to customers in awkward situations. However, it remains to be explored what scenario is more suitable for chatbot to give full play to its advantages.

### ***Chatbot and Service Recovery***

Service failure refers to those service contents that are not implemented according to customers' expectations, or that do not meet customers' pre-requirements (Michael 2005; Smith et al.1999; Anderson et al.1998). Since zero defect of service is difficult to achieve, service failure is inevitable (Hunt,1983; Clemmer et al.1993; Gronross et al. 1988; Ruth et al.1995). In the face of service failure, consumers generally show a negative attitude and low buyback willingness (Kuang et al. 2022). Therefore, it is important for the enterprise to perform service recovery after a service failure.

Service recovery refers to the action of a service provider in response to a service failure (Gronroos 1988). Spreng et al. (1995) defined service recovery as a series of actions taken by service providers to change the dissatisfied state of consumers. Hart et al. (1990) believed that service recovery was a strategy used by enterprises to solve customer complaints and establish dependence on enterprises through complaint handling. Tax et al. (1998) pointed out that service recovery is a kind of management process, which should first discover service failures, analyze the causes of failures, and then evaluate service failures and take appropriate management measures to solve them on the basis of quantitative analysis. Most studies divide service recovery into material recovery and spiritual recovery (You et al. 2020). Material remedies refer to providing material compensation to consumers through economic expenditures such as compensation or discounts (Smith et al. 1999). A spiritual service remedy (such as an apology, sympathy, or promise) is a verbal admission of wrongdoing and the provision of social and psychological compensation to the consumer (Bagozzi,1975). On this basis, many researchers study consumer responses using a combination of apology and a series of compensations as different recovery strategies (Boshoff,1997; Webster & Sundaram, 1998; Wirtz & Mattila,2004). In addition, some studies classify the types of service recovery according to attribution of responsibility (Lee & Cranage,2014), consumer participation (Bagherzadeh et al. 2020) and remedial service participants (Ho et al. 2020). From the perspective of different service providers, the difference between chatbot and human service employee in service recovery has received relatively little attention.

In the discussion on chatbot and service recovery, some scholars start from the role consistency theory to explore whether customers are more willing to use chatbot or manual customer service in the process of service recovery after different types of chatbot (functional vs. non-functional) service failure. The research finds that for the problem of function failure, Consumers are more likely to involve chatbots in service recovery. For non-functional fault problems, consumers are more inclined to participate in service recovery manually (Xing et al. 2022). Song et al. (2022) explored the remedial effect from the perspectives of perceived value and perceived risk from different service types (chatbot vs. manual customer service), and found that the provision of remedial services by robots would reduce users' concerns about privacy disclosure and positively affect service satisfaction by reducing perceived risks. Some scholars also explored the influencing factors of customers' aggressive behavior towards chatbot after the failure of chatbot (Huang et al. 2022).

In general, there are still few studies on chatbot under the service recovery scenario at present. The influence of different service recovery entities on customer satisfaction and the boundary conditions leading to different effects need to be further explored.

## Research Model and Hypotheses

### ***Matching Effect Between Service Recovery Entity and Customer Demand Type***

After a customer experiences a service failure, they will initiate a service recovery demand to solve their own difficulties or bad experiences. Service recovery needs can be divided into many dimensions. Problem-oriented needs and emotion-oriented needs are common dimensions (Huang et al. 2022). According to the stress and coping theory, we can explain the emergence of these two types of demand orientation. Stress and coping theory (Lazarus & Folkman 1984) explains how people deal with stressful events in the environment. Stressful events can be understood as things that upset and annoy people in daily life (Lazarus & Folkman 1984). It is human nature to be proactive in responding to what happens to them. Coping is when a person in a stressful situation deals with the demands that arise through cognitive and/or behavioral effort. These efforts are called coping strategies and are generally divided into two types: problem-centered coping strategies and emotion-centered coping strategies (Lazarus & Folkman 1984). In the service recovery scenario after a service failure, the problem-centered and emotion-centered coping strategies extend to problem-oriented and emotion-oriented service needs. Although when customers initiate remedial demand, it will not be a single problem demand or emotional demand, but emotional demand and problem demand exist at the same time, but due to different experience of service failure, personal characteristics and other factors, customers will choose problem or emotion as the more important demand. The focus of this study is the service situation at the end of the continuous value, namely emotional demand orientation and problem demand orientation.

With its convenience, accessibility and usability, chatbot provides service recovery to save consumers the time and energy needed to wait for human operators in the service queue, and there will be no similar situations such as the time needed to process information or fatigue of human employees, which may lead to low service efficiency (Babic et al. 2020). Choi et al. (2020) found that the service provided by human service employee has better interaction quality and is considered by consumers to contain more sympathetic and friendly features than the service provided by robots. Longoni (2022) found that people have different perceptions of artificial intelligence and human beings through processing and evaluating different associations of information. Secular beliefs develop either directly through personal experience (Ross & Nisbett 1991) or indirectly from the environment (Morris et al. 2001). Throughout childhood, we learn firsthand that, as human beings, we are able to perceive and relate to the outside world through our emotional experiences. In contrast, artificial intelligence, computers and robots are widely seen as rational and logical, lacking the ability to interact emotionally and empirically with the world. Therefore, people tend to associate artificial intelligence and computers with reason and logic, while human beings are associated with emotions and experiential abilities (Longni & Cian 2020).

Problem-oriented demand-oriented customers focus on the stressor itself and lead efforts to change the stressful situation and reach solutions, such as taking action or seeking assistance (Goussinsky 2012). In contrast, emotionally demand-oriented customers focus on the outcome of stressors, including efforts to reduce emotional distress caused by stressful events. For example, venting negative emotions and seeking self-consolation through emotional support (Carver & Smith 2010). Problem-oriented customers pay more attention to the solution itself and less attention to emotional needs. Based on the above discussion, we believe that chatbot has more rational service ability than human service employee in service recovery processing, because the generation and design of their solutions are relatively more dependent on facts, rationality and logic. When serving customers with problem requirements, chatbot will bring more logical service and be more efficient than human service employee in the process of dealing with problems and giving feedback,.

The ability advantage of chatbot is more matched with the customer focus demand oriented by problem demand (that is, providing solutions), so it can be more competent to meet the customer service demand and bring higher service satisfaction. In contrast, we propose that human service employee is more capable of emotional service than chatbot in service recovery. Having emotion is an innate characteristic of human beings. Human service employee relies more on sensory experience, emotion, intuition and emotional evaluation in the service process, and has more empathic ability when interacting with customers. It can better meet customers' emotional needs and bring higher service satisfaction by matching the focus needs of emotionally demand-oriented customers who want to vent negative emotions, get apologies or spiritual comfort. Therefore, we hypothesized as follows:

**H1:** There is a matching effect between service recovery entity (chatbot vs. human service employee) and customer service demand type (problem-oriented vs. emotion-oriented).

**H1a:** When customer service demand is problem oriented, chatbot (compared to human service employee) brings better recovery satisfaction.

**H1b:** When customer service demand is emotion oriented, human service employee (compared to chatbot) leads to better recovery satisfaction.

### ***The Moderation of Recovery Method***

There are many ways of service recovery, such as apology, explanation, employee authorization, timely response, compensation and so on. According to different enterprise types, customer expectations, cultural background and other influencing factors, the remedial methods are not the same, and the remedial effects are also different. Peng (2006) believe that according to the social exchange theory, the measurement of service recovery should have at least two dimensions: material compensation and spiritual compensation. In fact, most scholars study the effects of service recovery from the aspects of material recovery and spiritual recovery (also known as economic compensation and psychological compensation, or utilitarian relief and symbolic relief) (Fang Shujie et al. 2019). Spiritual remedy belongs to the emotional dimension of social transaction, mainly including communication and apology, while material remedy belongs to the economic dimension of social transaction, mainly in the form of compensation, coupons and discounts (Jung et al. 2017). Accordingly, this study divides the service recovery into material recovery and spiritual recovery.

After experiencing service failure, consumers often expect to receive compensation corresponding to their loss: problem-demand-oriented customers are more likely to receive timely material remedies (Roschk.H & Gelbrickk 2014). Many studies have shown that compared with human beings, artificial intelligence is considered to have a lower ability to make autonomous decisions, and thus lacks the ability to form self-intention to drive follow-up actions (Huang & Chen 2019; Kim & Duhachek 2020). According to the study of Garvey et al. (2023), since people believe that artificial intelligence will not have private and other negative intentions to affect others' interests, trading bids with the same face value provided by artificial intelligence (compared with human beings) agents are more likely to be accepted. Therefore, it can be inferred that, in the case of the same material compensation scheme, chatbot is considered to have no tendency to have a negative impact on customers due to self-subjective intentions. Compared with manual customer service, chatbot provides solutions that enable customers to better perceive the outcome and fairness and bring higher service satisfaction. In addition, it can also be explained based on the expectation gap theory. Expectation has always been a very important concept in the study of customer satisfaction and service quality, and it is considered to be an important factor in determining customer satisfaction together with perception. In previous studies, many scholars adopted the perception-expectation gap model to explore the impact of customer satisfaction (Boulding et al. 1993; Schanke et al. 2021). Humans are generally considered to be flexible with subjective intentions, whereas chatbot is considered to be a programmed response based on the technical interface of computing agents, which is less flexible than human programs (Wirtz et al. 2018). When human service employee provides service recovery, compared with chatbot, customers have higher expectations for the compensation scheme given by human service employee, and expect to obtain a higher amount of compensation scheme through "bargaining" and other ways. Specifically, compared with human service employee, material compensation provided by chatbot brings greater gain between the actual result and the expected result (or less difference between the actual result and the expected income if the customer's expectation is not met) and higher service satisfaction.

Chatbot and human service employee have significant differences in people's cognitive paradigms. Different service recovery entities may bring different customer perceptions. Previous studies on service failure and service recovery show that customers who encounter failed services expect to receive apologies and appropriate compensation from the process of service recovery (Nikbin et al. 2010).

Apology is a representative act of spiritual remedy. To be effective, an apology must be understood as sincere by the customer (Hu et al. 2021). One big difference between robots and humans is that the ability to feel emotions is an innate human trait that robots can only imitate. Wirtz et al. (2018) suggest that robots express emotions that are likely to be perceived as unreal. Thus, one might realize that the emotions expressed by a service robot (e.g, regret over a service failure) cannot be true emotions of the robot, but simply reflect a programmed response. Sincerity is an inherent characteristic of human beings. Compared

with human beings, apology provided by robots is difficult to bring sincere perception to consumers. Based on the above discussion, we believe that it is more effective for human service employee to carry out mental remedies (such as apology and comfort), while mental remedies carried out by chatbot will weaken the remedial effect and may be ineffective or even negative. Therefore, we hypothesized as follows:

**H2a:** When customer service demand is problem oriented, chatbot (compared with human service employee) provides material recovery to bring higher recovery satisfaction.

**H2b:** When customer service demand is emotion oriented, human service employee (compared with chatbot) provides spiritual recovery to bring higher recovery satisfaction.

### ***The Moderation of Communication Style***

Scholars have divided communication styles from different dimensions. Generally speaking, the communication styles of chatbot can be divided into two categories: social-oriented and task-oriented. The socially-oriented communication style aims to establish interpersonal relationship with customers, meet their emotional needs and carry out personalized interaction; While task orientation aims to improve task efficiency, achieve task objectives and minimize communication costs (Verhagen et al. 2014).

Previous studies have shown that the communication style of offline customer service can affect customers' trust and loyalty (Crosby et al. 1990). Li et al. (2018) studied the impact of using emojis on service satisfaction in online customer service communication and found that using emojis would bring customers' doubts on the professionalism of online customer service, which would have a negative impact on service. Compared with social communication style, task-based communication style is more concise and efficient. In the interaction process, users can better grasp the key points of expression, which is in line with the demands of problem-oriented customers for quick solution of problems, and will bring better service satisfaction. Therefore, we hypothesized as follows:

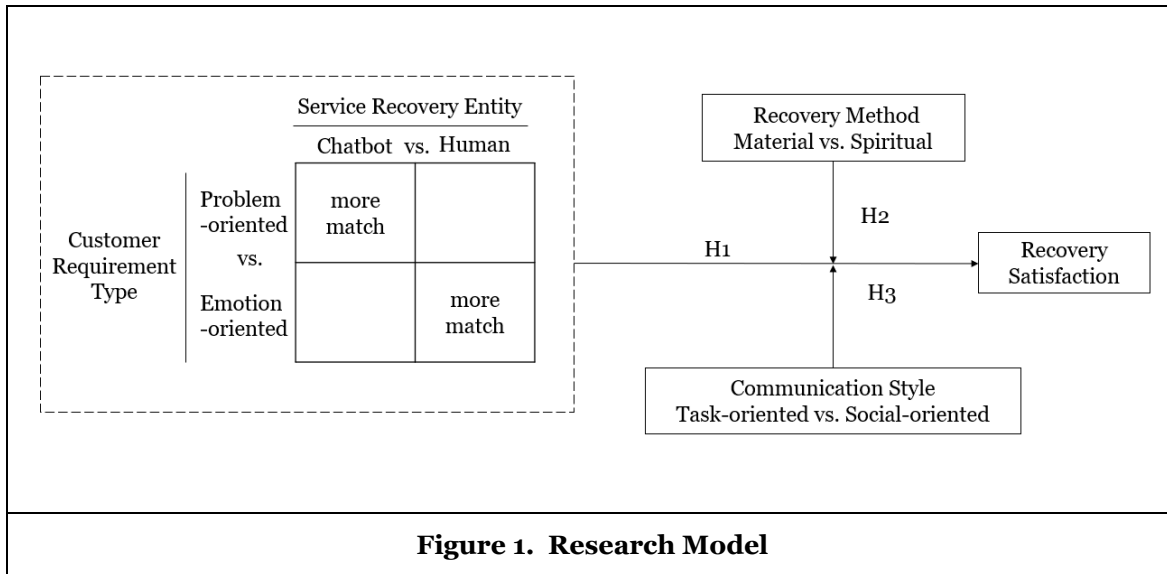
**H3a:** Task-oriented communication style (compared to social-oriented) enhances the matching effect between chatbot and problem-oriented customer requirement, resulting in higher recovery satisfaction.

**H3b:** Task-oriented communication style (compared with social-oriented) weakens the mismatch effect between human service employee and problem-oriented customer requirement, resulting in higher recovery satisfaction.

Some studies also found that the communication style of artificial online customer service also affects the relationship between customers and online customer service. The study found that the use of socially-oriented communication style for online customer service can bring positive effects of service (Verhagen et al. 2014). The socially-oriented communication style will enhance the psychological connection between customer service and customers (Schanke et al. 2021). Therefore, we hypothesized as follows:

**H3c:** Social-oriented communication style (compared to task-oriented) enhances the matching effect between chatbot and emotion-oriented customer requirement, resulting in higher recovery satisfaction.

**H3d:** Social-oriented communication style (compared with social-oriented) weakens the mismatch effect between human service employee and emotion-oriented customer requirement, resulting in higher recovery satisfaction.



## Research Design

This study intends to use the method of field experiment, by designing the actual service recovery scenario, let the subjects feel as if they were in the real life scenario, and explore the influence of different service recovery entity (chatbot vs human service employee) on customer satisfaction, and further explore the influence difference of intelligent customer service on customer satisfaction compared with human customer service under different boundary conditions by manipulating customer demand types, recovery methods and communication styles of service recovery entities, so as to find out the scenario in which intelligent customer service brings better service effect.

Through the scenario experiment of design 2[customer requirement type: problem-oriented vs. emotion-oriented]×2[service recovery entity: chatbot vs. human service employee], the matching effect of service recovery entity and customer requirement type on customer service recovery satisfaction was explored under the service recovery scenario. On this basis, design 2[customer requirement type: problem-oriented vs. emotion-oriented]×2[service recovery entity: chatbot vs. human service employee]×2[recovery method: material vs. spiritual] and 2[customer requirement type: problem-oriented vs. emotion-oriented]×2[service recovery entity: chatbot vs. human service employee]×2[communication style: Task-oriented vs. social-oriented] to explore the moderating effects of compensation and communication style on matching. Participants will be randomly assigned to a scenario. After experiencing a given scenario, they were asked to answer questionnaires. Prior to the formal experiment, a preliminary experiment will be conducted to test and improve the reliability and validity of the questionnaire. We will use analysis of variance and structural equation models to analyze the data collected from formal experiments.

## Intended Contributions and Limitations

From the theoretical perspective, this study will explore the influence mechanism and effect of different service recovery entities on service satisfaction, explore the boundary conditions leading to different service recovery effects, expand the research scenario of chatbot, and further enrich the interpretation mechanism of consumers' perception of chatbot effect in the field of service recovery. In addition, this study will also confirm the advantages and strength of chatbot in logics-based timely execution of problem-oriented service recovery through experimental research.

From the perspective of practice, it is very important to provide good service recovery services after service failure. In this study, chatbot, an emerging service entity, is selected as the research object to explore the influence of different service recovery entities on service satisfaction, and explore the boundary conditions leading to different service recovery effects. This will provide guidance and suggestions for the future man-



machine customer service strategy of the enterprise. According to the different customer demand orientation and the difference of the proposed remedy plan, different service recovery entities are selected to provide services, and the communication style consistent with the needs of the service object is adopted to achieve the best service recovery effect and obtain higher customer satisfaction. Bring better customer relationship and gain for the enterprise. In addition, this study explores the advantageous service scenarios and service strategies suitable for chatbot and human customer service according to their own capabilities, which will promote the better coexistence of chatbot and human customer service in enterprises.

There are also some limitations in this study. This study chooses to discuss the appropriate service scenarios and strategies from different service providers (chatbotvs human beings), but in real scenes, enterprises often choose to use robots to provide services because of their advantages in cost. Therefore, in the future follow-up work, we may further study how robots can provide better services for human beings.

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