Service robot perceived attributes, customer experience and customer acceptance in hospitality industry: Model for customer-robot interaction

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Abstract

The purpose of this paper is to clarify the relationship among service robot perceived attributes, customer experience and customer acceptance by combining the relevant literature and investigating and analyzing the interaction of customer-robot in hospitality industry, and then recommending specific strategies to promote the acceptance of service robots and the effect of human-machine interaction. Through questionnaire survey and SPSS 28.0 statistical analysis software, this paper discusses the relationship among service robot perceived attributes, customer experience and customer acceptance. Based on the results of literature evaluation and the conclusion of investigation and analysis, this paper designs three scales: service robot perceived attributes, customer experience and customer acceptance, and then completes the questionnaire design. The study revealed that attributes of service robot has a positive correlation with customer experience; and at the same time the customer experience has positive correlation with customer acceptance. Further, it formulated a framework for customer-robot interaction in hospitality industry.

Keywords: service robot, perceived attributes, customer experience, customer acceptance, hospitality industry

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1. Introduction

With the rapid development and change of artificial skills and technologies, service robots have been increasingly applied to the reception industry (hotel industry and catering industry). Increasing labor costs, the promotion of contactless services under the influence of the pandemic, and fierce competition in the hospitality industry. Faced with this series of challenges, robotics and artificial intelligence (AI) can provide a solution to these challenges (Bowen & Morosan, 2018). First of all, service robots can replace part of service staff, thus reducing the need for employment. Secondly, under the influence of the epidemic, the use of robots can reduce unnecessary human contact, thus reducing the risk of being infected by the novel coronavirus. Finally, in the face of fierce industry competition pressure, the use of robots can effectively improve the service quality of the reception industry. With the help of the service robot, the work focus of the service personnel is relieved from the standardized and programmed service projects, and they pay more attention to personalized service.

However, today's robot technology is not fully mature; hotel robots check in slowly, are unable to fully understand customer instructions, and other negative events occur. The service robot' failure affects the customer's interactive experience and their willingness to use robot technology. With the continuous development of artificial intelligence technology, if customers resist the adoption of robot technology, hotel companies will face great obstacles and challenges in the implementation of technological innovation decisions (Ivanov, Webster, & Garenko, 2018).

How to create a more effective human-computer interaction experience so as to improve the use of customers is a very concerned industry that still needs to solve the research problem. The research focuses on the attributes and characteristics of service robots and how affects the human-machine interaction experience. The scholars analyzed the customers' warm experience, interesting experience, and so on, based on the technical, social, or pseudo-capriciousness characteristics of service robots.

Most of the existing research focuses on a single attribute of a service robot, and few analyze the attributes of service robot comprehensively. Based on the above analysis, this paper integrates the technology compensation theory and the social interaction theory, integrates the perceived attributes, interactive experience, and usage intention of service robots into an integrated framework, focuses on the reception industry, studies the interaction mechanism between various elements, and has certain reference significance for the reception industry to improve the usage intention of customers.

The author has 10 years of teaching experience in tourism management and has long been concerned about the development of the hotel industry. The author is very interested in the intelligent practices of hotels, especially the application of service robots in hotels. In the process of promoting service robots in hotels, the author pays much attention to how to improve customers' willingness to use service robots. As more and more hotels introduce service robots, consumers have more and more opportunities to contact service robots, which provides the basis for obtaining effective research data in this paper.

Objectives of the Study - This study aims to determine the effect of perceived attributes and interactive experiences on customers' willingness to use service robots in hospitality industry in China. Specifically, the thesis aims to, determine the perceived attributes of service robots in terms of instrument, anthropomorphism, and sociality, assess the customer experience in terms of perceived usefulness, perceived ease of use, perceived pleasure, and trust. Describe the customers' acceptance in terms of usage intention, recommendation intention, and attitude toward using. Test the significant relationship between perceived attributes of service robots and

customer experience. Analyze the significant relationship between customer experience and customer acceptance and to develop a framework for improving customer robot interaction.

2. Methods

Research Design - This paper uses service robots in China's reception industry as research samples. First of all, the research idea of this paper is determined by reading a large number of literatures, and the research makes a preliminary scale based on the review of existing literatures. The scale design of service robot usage intention is mature in foreign academia. The scale design of this study mainly refers to the existing mature scale in foreign studies and combines with the scale in domestic studies to adjust and modify the scale situational. Second, the researcher asked experts to revise and adjust the questionnaire in terms of words, so as to construct the content validity of the scale. Before the formal large-scale questionnaire survey, a preliminary survey was conducted on the scale, and further corrections were made according to the feedback to complete the final draft of the questionnaire. The researchers conducted large-scale surveys online. Finally, the researchers conducted descriptive analysis, correlation analysis on the data.

Participants of the Study - Since the questionnaire was distributed via the Internet, it could cross geographic restrictions. 300 questionnaires were finally sent, and 289 valid questionnaires were recovered. Since the author's area is Anhui Province, China, the reception industry's customers are mainly in Anhui Province, and most of the interviewees are from the Yangtze River Delta region. Since Anhui Province is a developed province in the reception industry in my country, and the service robot is also widely used in the reception industry, the research in this article is typical and representative.

Data Gathering Instrument - This study used established scales from domestic and international scholars to design the questionnaire and collect data through an online questionnaire platform. Participants were first asked to view photos of multiple service robots in service scenarios, and then subjects were asked to fill in the questionnaire. The questionnaire consisted of three parts. The first part of the questionnaire was used to measure the participants' perceived attitudes toward the service robots. The second part of the questionnaire was used to measure the participants' service experience with the service robots, and the third part was used to measure the participants' customer acceptance. The above questions were asked on a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly disagree). Reliability results showed that the Cronbach's alpha for instrument (0.832), anthropomorphism (0.919), sociality (0.801), perceived usefulness (0.848), perceived ease of use (0.896), perceived pleasure (0.868), trust (0.793), usage intention (0.906), recommendation intention (0.859), and service robot attitude (0.887) suggested that the items have high internal consistency.

Data Gathering Procedure - Due to the ease of online transmission and the impact of the COVID-19 pandemic, online data collection has become more prevalent. For this study, a professional questionnaire collection platform, https://www.wjx.cn/, was used to issue the questionnaire. Once the questionnaire was edited, a QR code and link were generated for online distribution. To increase participation, the questionnaire was shared via WeChat and QQ, and participants were encouraged to forward the questionnaire link through the snowball method. Additionally, a reward system was implemented where participants who completed the questionnaire would receive different amounts of red envelopes. Finally, the collected data was exported from the questionnaire platform, and the results of the questionnaire were summarized.

Ethical Considerations - This research adheres to academic ethics, and all theories and data borrowed from other sources are properly cited and credited in the paper. In the design of the questionnaire, the respondents' names were not included to ensure anonymity. The authors provided assurance to the participants that the data provided would be kept confidential and that their privacy would be protected. The collected data is solely used for academic research purposes and will not be shared with any individuals or organizations outside of the research team. This commitment to ethical research practices ensures that the research findings are trustworthy and uphold the integrity of the academic community.

Data Analysis - This paper employs the empirical research method to investigate the research objectives. The researcher used SPSS version 28 software to tally, encode, and analyze the data. The analysis utilized weighted mean, rank, and correlation techniques based on the objectives of the study. Descriptive statistical analysis and correlation analysis of the variables were conducted, and the results were used to form an acceptance model for the service robot. The statistical analysis included a detailed examination of the relationships between the variables and their impact on the research outcomes. Finally, the acceptance model was developed, which serves as a valuable tool for understanding the factors that influence the adoption of service robots.

3. Results and Discussion

Table 1

Perceived Attributes of Service Robot

Indicators	Weighted Mean	Verbal Interpretation	Rank
Instrument	2.91	Agree	2
Anthropomorphism	2.37	Disagree	3
Sociality	3.22	Agree	1
Composite Mean	2.83	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table shows the customer's perceived attributes of service robot in terms of instrument, anthropomorphism, and sociality. The comprehensive average value is 2.83, indicating that the investigators agreed with each item. Among the cited key result areas, the customer's perceived attributes of service robot in terms of sociality got the highest composite mean This indicates that when customers come into contact with the service robot, most of them perceive it not as a tool, but as an assistant, partner, or friend. That is, customers unconsciously view the service robot as a social actor when interacting with it and apply interpersonal norms to the human-robot relationship (Reeves and Nass, 1996). Zehrer (2009) points out that in the experience economy, customers pay more attention to the service or product quality than to the process experience. In other words, customers are more concerned with their personal emotional needs. In the service and hospitality industry, service robots provide services to customers, satisfy their curiosity, and bring pleasure to them (Cha, 2020). There are findings that show that customers' perceptions of the attributes of service robots are more reflected in the emotional value that service robots can bring.

However, such key result area the customer's perceived attributes of service robot in terms of anthropomorphism (2.37) was rated least. The survey results responded that customers perceived a low level of anthropomorphism in service robots. Due to the limitations of the level of science and technology and artificial intelligence, the level of anthropomorphism of robots needs to be further improved. The anthropomorphic features of robots are mainly related to robot appearance, robot touch, robot sound, robot cuteness, robot gender, and robot behavior. People have different expectations for different looking robots (Haring, Silvera, Takahasi, Watanabe & Velonaki, 2016), so academics and industry have been exploring what characteristics of robots are more likely to be preferred by customers. Arbib and Fellous (2004), some robots have been given emotional expressions in an attempt to improve human-computer interaction, such as joy, distress, pity, boredom and fear. However, the service robots in the service hospitality industry have a single type of service robots, with machine and cartoon attributes dominating. Anthropomorphic robots are more likely to gain the identity and love of consumers. Therefore, the hospitality industry needs to pay more attention to the anthropomorphic attributes of service robots in the future.

The customer's perceived attributes of service robot in terms of instrument (2.91). This indicates that customers see service robots as something new and pay more attention to its anthropomorphic features and interesting and fun. With the development of technology, service robots are increasingly being introduced into the service hospitality industry, which improves the service experience of customers (Kabadayi, Choi, Joosten &

Lu, 2019). Service robots and human employees are treated differently as service providers as well as people treat service robots and human employees. There is a difference in the level of customer recognition of service robots as well as human employees in terms of the quality of tasks completed. However, as technology advances, customers will increasingly trust and recognize service robots as employees. There is no doubt that the continuous development of service machines has brought a lot of convenience to the hospitality industry, but given the limited development in the level of artificial intelligence, the instrumentality of the machines needs to be further enhanced. Therefore, how to provide the level of effectiveness of the machines is something that academics as well as machine manufacturers have been eager to address.

Table 2

Customer Experience

Indicators	Weighted Mean	Verbal Interpretation	Rank
Perceived Usefulness	3.12	Agree	2
Perceived Ease of Use	3.11	Agree	3
Perceived Pleasure	3.28	Agree	1
Trust	3.07	Agree	4
Composite Mean 3.15		Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 the customer experience in terms of perceived usefulness, perceived ease of use, perceived pleasure and trust. comprehensive average value is 3.15, indicating that the respondents agreed with each item. Among the cited key result areas, the customer experience in terms of perceived pleasure got the highest composite mean of 3.28. From the survey results it is clear that customers feel the positive emotion of pleasure was better. Perceived pleasure is an important aspect of the customer experience with service robots because it affects the customer's perception of service quality and their willingness to use the robot in the future (Seo, 2022). Positive experiences associated with pleasure can build trust and confidence in the robot, while negative experiences can lead to doubt and mistrust. To enhance the pleasantness of customers' experience with service robots, companies can focus on designing robots that are user-friendly, responsive, and personalized. For example, designing robots to have a friendly and approachable appearance and enhancing the interactive features of service robots findings by Tung and Law (2017) also suggest that users and robots can co-create novel experiences.

Such key result area the customer experience in terms of trust (3.07) was rated least. From the survey results, it was revealed that customers trust the service robots, that is, they believe that the robots are capable, resourceful, and experienced to provide satisfactory services to customers. Trust in robots mainly includes trust in their performance and that they do not pose risks (Tussyadiah, Zach, & Wang, 2020). During human-robot interaction, trust can motivate customers to use the service robot and improve the effectiveness of human-robot interaction. To further improve trust, one can start with the attribute characteristics of the robot and the environmental factors of human-robot interaction (Seo & Lee, 2021). For example, designing more anthropomorphic service robots and increasing the variety of skills of service robots.

The customer experience in terms of perceived usefulness (3.12). The survey results show that service robots provided by the hospitality industry are able to perform tasks quickly, accurately, and with minimal errors, so customers find them useful. Service robots do not only respond to requests, but may initiate communication processes, provide assistance, or look for opportunities to help customers (Rioux & Penner, 2001). Service robots in the hospitality industry can improve the operational efficiency of hotels, reduce labor costs, and increase customer satisfaction (Kim & Lee, 2014). Service robots are able to perform tasks such as greeting customers, checking in, providing information, and delivering food. Similarly, service robots that can remember customer preferences, make personalized recommendations, and provide a seamless service experience can greatly enhance the perceived usefulness of service robots. As technology continues to advance, service robots may become increasingly intelligent, further enhancing their usefulness (Lee, Lin, & Shih, 2018).

The customer experience in terms of perceived ease of use (3.11). From the findings, it can be concluded that customers perceived ease of use of service robots to a better extent. The interface, clarity of instructions, and

functional design of service robots affect the perceived ease of use of customers (Venkatesh, 2000). Song et al. argue that it is crucial to prioritize ease of use in the design and use of service robots. Service robots should be easy to interact with, intuitive to use, and provide clear and concise information. Therefore, on the one hand, the robot's performance is continuously monitored and improved, with ongoing user testing to identify potential problems and improve the robot's interface and instructions, and on the other hand, service robots are assigned instructors to guide and support customers in using the robot effectively.

Table 3

Customer Acceptance

Indicators	Weighted Mean	Verbal Interpretation	Rank
Usage Intention	3.30	Agree	1
Recommendation Intention	3.17	Agree	2
Attitude Toward Using	2.96	Agree	3
Composite Mean	3.14	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

The above table shows of the customer acceptance in terms of usage intention, recommendation intention, service robot attitude. the comprehensive average value is 3.14, indicating that the investigators agreed with each area. value is 3.14, indicating that the investigators agreed with each area. Among the cited key result areas, the customer acceptance in terms of usage intention got the highest composite mean of 3.30. The results from the survey show that the customer's intention to use is high. Among the studies on the factors influencing the intention to use service robots, most of the studies focused on the two areas of usefulness and usability. However, Thüring and Mahlke (2007) argue that emotional experience plays an important role in explaining why people prefer certain systems and point out that the intention to use service robots can be attributed to both emotional and cognitive dimensions, with the cognitive dimension relying on the objective characteristics of the system itself, and the emotional dimension mainly referring to the individual's emotional response to the system, both of which can specifically Both of these factors specifically affect the user's product usage behavior and preferences. Therefore, in order to increase customer willingness to use, it is necessary to improve the instrumental and non-instrumental aspects of the service robot.

Such key result area the customer acceptance in terms of service robot attitude towards using (2.96) was rated least. From the survey results, it was shown that the customer attitude towards using the service robot was positive. Customers' attitude towards using service robots reflects the level of psychological acceptance of customers (Park & Kim, 2013). Only when customers have good attitudinal tendencies towards the use of service robots, it can lead to the emergence of willing behavior of customers to use service robots. Belanche et al. (2021) claim that customers' attitudes towards using service robots increase as the level of humanization of the service robot increases. That is, when the service robot adapts to the customer service characteristics and preferences, the more positive the customer will be in terms of trust and positive emotional response, the more positive the attitude of use. Table 4 presents the association between attributes of service robot and customer experience. As seen in the table, the computed rho-values from 0.300 There was statistically significant relationship between the attributes of service robot and customer experience. This implies that the better the attributes on service robot, the better the customer experience.

The high significant influence of service robot attributes to better customer experience is supported by several research findings. as cited by Qiu et al. 2020, states that service robot attributes affect the customer hospitality experience, specifically noting that the robot's intelligence and humanoid characteristics will positively affect the customer-robot rapport. To the best of our knowledge, a growing number of researchers have attempted to use robot attributes to understand customers' experiences of using robotic services to explore the relationship between service robot attributes and customer experience. Reeves and Nass's (1996) Media Equation Theory proposes that when technology exhibits certain social attributes, users treat computers in the same way they treat humans and respond socially like human socialization processes. This implies that the attributes of service robots affect the effectiveness of human-computer interaction and customer experience.

Studies have shown that, in general, higher levels of human appearance appear to enhance emotional attachment, trigger positive perceptions and attitudes, and increase trust and preference for robots (Tussyadiah & Park, 2018; Van Pinxteren, et al., 2019).

Table 4

Relationship Between Attributes of Service Robot and Customer Experience

Variables	rho-value	p-value	Interpretation
Instrument			
Perceived Usefulness	0.704**	0.000	Highly Significant
Perceived Ease of Use	0.646**	0.000	Highly Significant
Perceived Pleasure	0.491**	0.000	Highly Significant
Trust	0.654**	0.000	Highly Significant
Anthropomorphism			
Perceived Usefulness	0.301**	0.000	Highly Significant
Perceived Ease of Use	0.476**	0.000	Highly Significant
Perceived Pleasure	0.300**	0.000	Highly Significant
Trust	0.347**	0.000	Highly Significant
Sociality			
Perceived Usefulness	0.780**	0.000	Highly Significant
Perceived Ease of Use	0.743**	0.000	Highly Significant
Perceived Pleasure	0.877**	0.000	Highly Significant
Trust	0.646**	0.000	Highly Significant

**. Correlation is significant at the 0.01 level

Several research revealed similarity on the findings of this current study. The study by Huang et al. (2021) classified customer experience in human-robot interaction into sensory experience, cognitive experience, emotional experience, and intentional experience. Among them, cognitive experience mainly includes utility, lovability, autonomy, calmness, interaction, and politeness, and affective experience includes enjoyment, novelty, negative emotions, and satisfaction. Customers are more willing to spend more time with robots that present a higher level of anthropomorphic or perceptual intelligence (Qiu, Li, Shu, and Bai, 2020). More importantly, humans are adept at interpreting robots' gestures and behaviors as emotional cues (Gácsi, Kris, Farago, Janiak, Muszynki & Miklosi, 2016). When a robot adopts a human-like appearance, it can facilitate human-robot interaction and encourage humans to follow social norms when treating it. Previous robot design research suggests that the attributes of service robots also lead to a stronger sense of social presence and social inclusion (Mourey, Olson, & Yoon, 2017). However, the uncanny valley suggests that the degree to which a robot resembles a human is related to how comfortable people are with it (Mori, 1970). Users' responses are not necessarily positive about the degree of similarity of the robot to humans. this was demonstrated in a study by Goudey and Bonnin (2016), where the human appearance of companion robots did not increase consumer acceptance. Therefore, the anthropomorphic design of service robots needs to consider the scenario and user comfort.

With the widespread use of service robots, there is widespread interest in how people will interact with robots and what kind of robots people need. Human-robot interaction (HRI, human-robo tinteraction) research is devoted to understanding, designing, and evaluating robotic systems. It designs service robots that customers expect and are satisfied with from the perspective of customer experience. Table 5 presents the association between customer experience and customer acceptance. As reflected in the table, the computed rho-values from 0.485 to there was statistically significant relationship between customer experience and customer acceptance since all the obtained p-values were less than 0.01. This implies that the better the customer experience. This implies that the better the customer experience, the more possibility is the customer acceptance.

Several research revealed similarity on the findings of this current study. Han, Hsu and Sheu (2010) argue that decision makers evaluate potential outcomes when considering whether to take certain actions. The Technology Acceptance Model (TAM) is a theoretical framework that helps explain and predict users' acceptance and adoption of new technologies. TAM proposes that users' behavioral intention to adopt new technologies is primarily determined by two factors: perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989).

According to TAM, if users perceive a technology to be useful and easy to use, they are more likely to adopt a positive attitude toward the technology, which in turn leads to higher adoption intentions. Perceived usefulness plays a more critical role in the relationship between human-computer interaction and customer intention to use, which may be due to the fact that customers are more concerned with the degree of correctness and completeness of check-in, baggage handling, guided leading, and unmanned shopping through the use of a hotel service robot than with the ease and convenience of specific operational processes (Jennifer, 2019).

Table 5

Relationship Between Customer Experience and Customer Acceptance

Variables	rho-value	p-value	Interpretation
Perceived Usefulness			
Usage Intention	0.799**	0.000	Highly Significant
Recommendation Intention	0.828**	0.000	Highly Significant
Attitude Towards Service Robot	0.589**	0.000	Highly Significant
Perceived Ease of Use			
Usage Intention	0.712**	0.000	Highly Significant
Recommendation Intention	0.792**	0.000	Highly Significant
Attitude Towards Service Robot	0.639**	0.000	Highly Significant
Perceived Pleasure			
Usage Intention	0.797**	0.000	Highly Significant
Recommendation Intention	0.788**	0.000	Highly Significant
Attitude Towards Service Robot	0.595**	0.000	Highly Significant
Trust			
Usage Intention	0.611**	0.000	Highly Significant
Recommendation Intention	0.701**	0.000	Highly Significant
Attitude Towards Service Robot	0.485**	0.000	Highly Significant

**. Correlation is significant at the 0.01 level

The effectiveness of human-robot interaction may generate positive emotions, and this attitude may lead to an increased willingness to adopt autonomous technology. Against the background of the existing level of technology and the fact that robots are not yet widespread, customers have a strong hedonic motivation and curiosity about artificial intelligence devices, and interaction with hotel service robots facilitates fun and pleasure for customers, prompting them to maintain a positive attitude toward the willingness to use service robots (Gursoy, Chi, Lu & Nunkoo, 2019). At the same time, it is particularly important to form customers' perceived trust in the service robot. In this context, the value of creating trust plays a key role in interventions aimed at mitigating social and technological complexity, which ultimately helps to enhance the user experience (Gefen, 2000). what is more, research has shown that trust, as an important antecedent variable for customer acceptance of new technologies, influences customer attitudes and willingness to use. Trust significantly increases PU and PEOU for service robots, and increasing trust in robotic services reduces perceived risk and increases satisfaction. (Seo & Lee, 202). Trust helps to motivate customers to adopt the services provided by robots and reduces uncertainty for both parties (Hoff & Bashir, 2015).

Customer experience refers to the overall impression that customers have of the service robot based on their interactions with it. On the other hand, customer acceptance refers to the willingness of customers to adopt and use service robots. When it comes to service robots, customer experience plays a key role in shaping customer acceptance. If customers have positive experiences with service robots, such as finding them easy to use, reliable and helpful, they are more likely to accept and adopt them. For example, if a hotel's service robot is able to quickly and efficiently handle a guest's request for extra towels or room service, the guest is likely to have a positive experience and feel more comfortable using the robot in the future. Conversely, a negative experience with a service robot can lead to low customer acceptance. For example, if the service robot is difficult to use, unreliable, or does not meet the customer's needs, customers may be hesitant to use it again, which can affect their overall perception of the company or organization providing the service. Therefore, in order to increase customer acceptance of service robots, it is critical to prioritize the customer experience and ensure that the service robot is designed and implemented to meet the needs and expectations of the customer. This can be

achieved through user-centered design, extensive testing, and continuous evaluation and improvement of the service robot's performance based on customer feedback.

Proposed Customer-Robot Interaction Framework
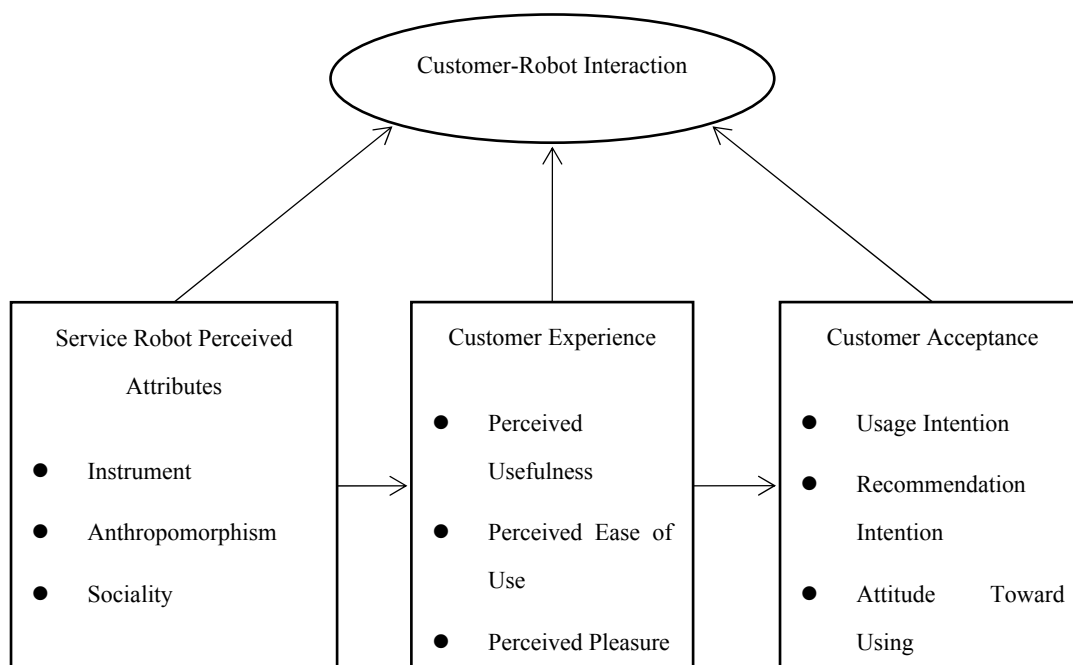

Figure 1. Proposed Framework for Customer-Robot Interaction in Hospitality Industry

From Figure 1, the model for customer-robot interaction consists of three components: service robot perceived attributes, customer experience and customer acceptance. Customer experience also has an impact on customer acceptance. This paper investigates customer perception, evaluation and intention of service robot in hospitality industry. The model for customer-robot interaction helps to explain and predict customer acceptance and adoption of service robots under the conditions of rapid development of artificial intelligence, which is a very important research topic. In addition, it points out the direction of efforts to increase the adoption of service robots and will facilitate the effectiveness of human-robot interaction. Finally, this will ensure that companies consider the perceived attributes of service robots as well as the customer experience, which will benefit the development and design of service robots.

4. Conclusions and Recommendations

Based on the findings of the study, the researcher came up that perceived attributes is found with moderate evidence considering instrument and sociality while anthropomorphism generated little evidence. The degree of "anthropomorphism" in the structure of perceptual attributes of service robots is reduced. The limitations of robot anthropomorphism technology also lead to the fact that service robots cannot imitate human beings to the same extent in dealing with various complex emotional cognitive problems in order to satisfy customers' needs. There is a moderate evidence on the customer experience in terms of perceived usefulness, perceived ease of use, perceived pleasure and trust. 4. The customers manifested moderate evidence to the customer acceptance in terms of usage intention, recommendation intention and attitude toward using. 5. The study revealed that a high significant relationship exists between service robot perceived attributes and customer experience. It was established that there is a highly positive correlation between customer experience and customer acceptance. 7. A proposed framework for customer-robot interaction in hospitality industry has been formulated.

Enhance customer experience by strengthening the perceptual attributes of different dimensions of robots. Research has found that service robots have three important attributes: humanoid, social, and instrumental, and that both social and instrumental attributes have a positive impact on customer experience. When making robot adoption decisions and application designs, companies need to focus on evaluating and strengthening these three attributes in the context of the hospitality industry's service goals and scenarios. Balance the instrumental and social aspects of service robots to give full play to the advantages of AI technology. Managers need to consider a balanced choice between employees and service robots, allowing service robots to cooperate with employees to complete service tasks, with service robots mainly dealing with procedural and standardized tasks and employees mainly responsible for personalized tasks involving complex cognitive and social emotions, so as to improve service quality, achieve service innovation, and enhance corporate performance and core competitiveness.

Leverage customer curiosity. The customer's social perception of the service robot focuses on the perceived pleasantness. Managers should make full use of the customer's curiosity and hedonistic motivation to provide innovative services to meet the customer's personalized needs, create a pleasant and harmonious interactive atmosphere for the customer, and gradually establish a cordial relationship and trust with the customer. Maximize the advantages of hotel service robots and enhance customer-robot interaction. For example, front-line employees in the hospitality industry can participate in the interaction between customers and service robots and assist in completing check-in tasks; the hospitality industry can popularize the knowledge related to service robots to target customers and potential customers as much as possible through publicity and education to help customers eliminate doubts and insecurities brought about by the use of service robots, so as to increase customers' willingness to use service robots; optimize the operation of service robots Optimize the route design of service robots to reduce the interference of external factors to the hotel service robots. The design and development of service robots can use the proposed customer-robot interaction framework to promote the widespread use of service robots in terms of service robot perceived attributes, customer experience and customer acceptance. Future research examines the contextual impact of different service scenarios and may discuss issues such as matching service robot technology to the environment and interaction impact.

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