

Ready for Robot Assistance? Exploring Gender Influences on Service Robot Adoption in Luxury vs. Economy Hotels

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The hospitality and service industries have rapidly integrated advanced robotics and artificial intelligence (AI) to elevate guest service, assist human staff, and provide unique experiences. During the COVID-19 pandemic, this trend accelerated as hotels particularly adopted technology-oriented services to meet stringent health and safety standards. Despite the evolution of consumption behaviors and preferences, a gap remains in understanding guests' service preferences, specifically concerning the acceptance of service robots in the post-pandemic hotel sector. In response, this study examines the role of gender in adopting service robots following the COVID-19 pandemic. The findings indicate that different hotel segments influence guests' attitudes toward service robot adoption. Furthermore, the pandemic has shifted the perceptions of female hotel guests regarding service robots, making them more receptive to such services in luxury hotels, particularly when there are pronounced health and safety concerns.

Keywords: service robots, hotel segments, gender differences, perceived risk

INTRODUCTION

The hospitality and service industries have adopted advanced robots and artificial intelligence (AI) technology to enhance customer service, assisting human staff and augmenting the guest experience by providing unique services (van Doorn et al., 2017; Mende et al., 2019). Various non-humanoid robot services, including non-human service robot agents and chatbots, have been implemented in diverse roles, spanning front desk support, concierge services, and housekeeping (Ivanov et al., 2017; Shin & Jeong, 2020). Additionally, humanoid, or anthropomorphic service robots have established a presence in the industry. The Henn-Na Hotel in Nagasaki, Japan, was introduced as the world's first hotel staffed by robots (Rajesh, 2015), while the Sheraton Los Angeles San Gabriel Hotel has incorporated robot services to carry luggage, deliver room service, and assist in cleaning rooms and hallways, among other tasks (Mills, 2018). Furthermore, interaction with guests has been made possible through robots like Connie, a robot concierge at Hilton, and Robby Pepper, recognized as Italy's first robot concierge (Barry & Pele, 2018; Trejos, 2016).

Moreover, growing concerns about health and safety risks have amplified consumer interest in contactless service, particularly service robots. Service providers including hotels, restaurants, airports, and more other have adopted to attract the customers providing safer environments (Wang et al., 2021). Prior to the COVID-19 pandemic, customers expressed discomfort with technology-related services in luxury hotels (Chan & Tung, 2019). However, the elevated risk associated with COVID-19 influences customer technology acceptance levels.

Increased health and safety risks during COVID-19 have made customers more cautious in purchasing, channeling heightened attention towards contactless services. This behavioral shift has acclimated them to utilizing online and contactless services for added convenience (McKinsey & Company, 2020). Shifts in consumer preferences particularly highlight this change. During COVID-19, consumers have demonstrated a preference for visiting restaurants that utilize service robots (Chuah et al., 2022), and hotel guests have shown a willingness to choose accommodations staffed with service robots over those with human staff during the outbreak (Kim et al., 2021). Therefore, understanding alterations in customer perceptions, attitudes, and behaviors becomes crucial in the post-COVID-19 era to meet evolving needs and ensure customer satisfaction.

While consumption behaviors and preferences have evolved, a significant gap remains in understanding customer service preferences across various sectors and brand images, especially concerning preferences for service robots post-pandemic. Most prior studies focused on customer preferences related to the quality of robotic services and comparisons between humanoid robot services and human services (Choi et al., 2019; Ivanov et al., 2018; Tung & Au, 2018; Tussyadiah & Park, 2018). Furthermore, many studies have not explored robotic service in the context of hotel rankings and diverse service settings, especially considering the shift in hotel guests' attitudes post-COVID-19. With the experience of the pandemic, customers have grown more attentive to health and safety factors in their decision-making. Yet, there remains a limited understanding of hotel guests' altered preferences, attitudes, and behaviors. Thus, examining whether hotel guests are receptive to robotic services following the pandemic is vital. This research investigates the differences in behavioral attitudes towards service robots by gender, considering the perceived hotel segments and associated health and safety risks.

THEORETICAL BACKGROUND

The Rise of Service Robots at Hotels

Contactless technology, originally defined to describe a suite of technologies developed to identify objects (McKinsey, 2021), has seen increasing application across various sectors, including banking (e.g., bank payments and smart cards), healthcare (e.g., tracking equipment and video consultations), manufacturing (e.g., inventory management and data exchange), retailing (e.g., kiosks and point-of-sale payments), and service (e.g., mobile apps and service robots). Particularly, the novel consumption pattern of the COVID-19 era has sparked intact consumption (Bae & Chang, 2021). The emergence of new consumption patterns fosters a heightened interest in contactless services, with a particular focus on robotic service in the hotel industry (Henkel et al., 2020).

Traditionally, the hospitality industry has depended on well-trained personnel to deliver customer services. However, a technological evolution has brought about the broad adoption of robotic service in the daily operations of hotels (Luo et al., 2021). Nowadays, machines and robots alleviate the burdens on human workers by performing dangerous, time-consuming, or repetitive tasks, providing contactless experiences such as check-in and check-out, room services, food delivery, etc. Specifically, service robots have enhanced front desk operations by welcoming guests, serving as communicative concierges, and strengthening the housekeeping department in cleaning and overall service delivery, collectively enriching the hotel guest experience (Ivanov et al., 2017; Shin & Jeong, 2020; Wirtz et al., 2018).

These service robots are categorized as either humanoid (e.g., Pepper) or non-humanoid, with classifications grounded in their physical appearance (Huang & Liu, 2022; Wirtz et al., 2018). Consumers prefer interacting with more socialized robots rather than functional ones (Wirtz et al., 2018). They are more likely to communicate with service robots exhibiting high anthropomorphism, which bear human-like

features and motions and even have human-like names (Qiu et al., 2020; Yoganathan et al., 2021). Therefore, in this research, we focus on the humanoid robot, Pepper, to explore how hotel guests' attitudes toward service robots have changed.

Hotel Guests' Responses to Service Robots by Level of Hotel Service

Hotel attributes significantly impact customer attitudes and behavior (Liu et al., 2017). Guest satisfaction in hotels emerges from experiences interacting with employees (Cetin & Walls, 2016), and guests' behavioral expectations can vary depending on the hotel segment (Chan & Tung, 2019; Sahin et al., 2020), as hotel services differ based on the level of service offered (i.e., economy, mid-scale, or luxury). Within this context, brand awareness is defined by hotel segments. These segments, in turn, shape the service level and significantly influence customers' decision-making processes (Huang & Sarigollu, 2012; Liu et al., 2017).

Embracing modern technology, luxury hotel brands have adopted technology-oriented services to maximize their guest experience (SGEI International, 2020). For example, brands like Marriott International (Schick, 2017), Four Seasons Hotel and Resorts (Four Seasons, 2017), Hilton Worldwide (Hospitality Net, 2020), and Caesars Entertainment (O'Neill, 2019) have implemented chatbot-based voice recognition systems. These systems allow guests to control room temperature, adjust lighting, order meals and drinks, schedule reservations, access various concierge services, and engage in 24/7 chat services via chatbot.

However, hotel guests still express their willingness to receive service from human staff (Cetin & Walls, 2016; Chan & Tung, 2019). Additionally, customers with a strong desire to receive service from human staff are less willing to use technology-oriented services (Kaur & Gupta, 2012). Based on their brand experiences, guests of luxury hotels anticipate receiving sincere care through interactions with human staff, while guests of economy hotels often have lower expectations based on their experiences, understanding they might not receive the highest standard of service from employees (Cetin & Walls, 2016; Chang & Tung, 2019). Specifically, guests at luxury hotels generally prefer to receive personalized service over using self-service options like check-in/out kiosks (Cetin & Walls, 2016). Even though more customized AI services, such as AI customer service chatbots, are being introduced, hotel management may need to carefully approach their guests through the robot service. A pivotal realization is that service satisfaction strongly sways guests' attitudes toward a hotel brand, often determining their revisit intentions (Lee & Oh, 2021). If AI-driven amenities falter in meeting expectations, it could adversely affect overall guest satisfaction.

Changes in Hotel Guests' Perceived Risk

Perceived risk plays a pivotal role in shaping consumer behavior throughout the decision-making process and has been extensively examined in various studies (Han et al., 2019; Seo & Lee, 2021; Quintal et al., 2010). It is characterized as the anticipation of potential loss when acquiring a product or service (Tseng & Wang, 2016). Consequently, the theory of perceived risk has been instrumental in analyzing consumer behavior, especially in light of uncertainties tied to consumption (Quintal et al., 2010). Perceived health risk is often defined as an individual's assessment of the likelihood and vulnerability to illness. This includes their susceptibility to contracting a disease and the potential severity of the ailment once acquired (Brewer et al., 2004; Brewer & Fazekas, 2007). Furthermore, this perception of risk, often linked with uncertainty, typically influences customers' satisfaction and intention to revisit (Seo & Lee, 2021).

Quintal et al. (2010) explored perceived risk, identifying performance, financial, psychological, social, physical, and time risks. Zhang et al. (2012) categorized perceived risk concerning health, quality, time, delivery, and after-sales aspects. In the hospitality context, perceived risk emerged due to uncontrolled circumstances typically related to terrorism, natural disasters, political issues, pandemics, etc. (Adeloye & Brown, 2018; Agarwal et al., 2021; Caber et al., 2020; Floyd et al., 2004; Lepp & Gibson, 2003; Ma et al., 2020; Reisinger & Mavondo, 2005; Wolff & Larsen, 2017). In particular, after the 9/11 terrorist attacks in 2001, more studies focused on perceived health and safety risks in uncertainties such as terrorism and natural disasters (Shin & Kang, 2020; Yang & Nair, 2014). The onset of the COVID-19 pandemic

heightened customers' concerns about potential health risks associated with the virus (Filimonau et al., 2020; Kim et al., 2021; Shin & Kang, 2020).

During the crisis, regulations such as social distancing restricted hotel guests' physical interactions. The perceived risk of contracting COVID-19 might have heightened customers' anxiety, particularly concerning interactions with hotel staff. Using service robots as a risk management strategy can help alleviate customers' anxiety levels (Shin & Kang, 2020; Williams & Balaz, 2015). Therefore, even though the hotel segment wasn't strongly associated with hotel guests' willingness to use service robots before the COVID-19 crisis (Chan & Tung, 2019), guests' acceptance levels of these robots might have shifted depending on the hotel segment post-crisis. This is because trust in established or luxury hotel brands can reduce health and safety concerns. Such trust serves as a buffer, easing guests' anxieties about potential outcomes following the COVID-19 pandemic (Slade et al., 2015).

The Moderating Role of Gender Differences in Attitudes Toward Service Robots

Individual factors, such as gender, age, and education, significantly influence customer behavioral intentions regarding adopting new technology (Ayyildiz et al., 2022). Gender, in particular, is often highlighted as a significant determinant when examining preferences for technology adoption (Gefen & Straub, 1997; Huffman et al., 2013; Meyers-Levy & Maheswaran, 1991; Yu & Ngan, 2019).

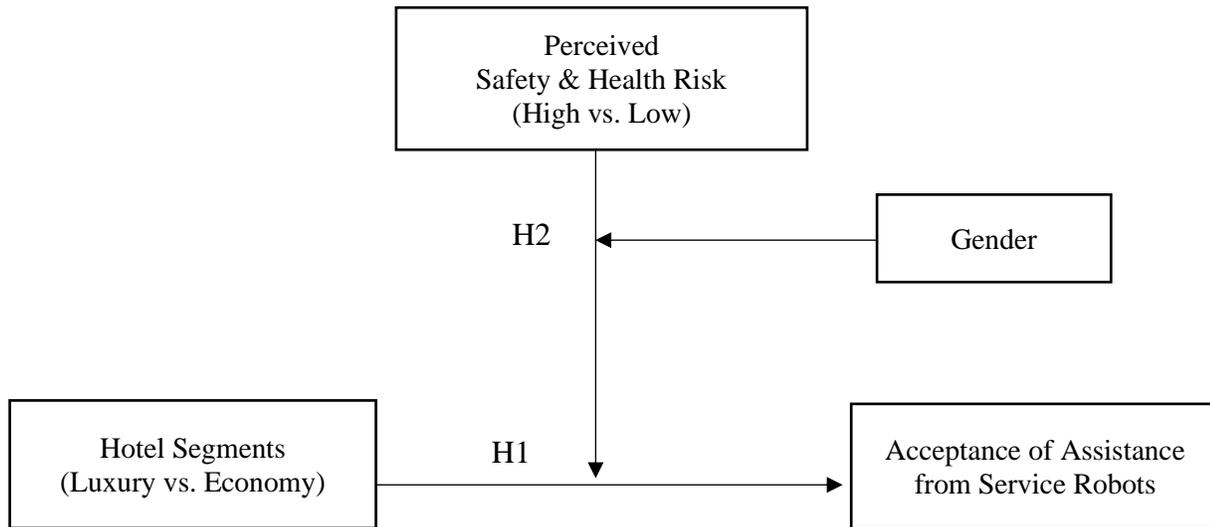
Females often perceive a higher level of perceived risk during online shopping (Garbarino & Strahilevitz, 2004) because of their generally more cautious nature (Mani & Chouk, 2018). Specifically, they express heightened concern about security when using technology-oriented services compared to their male counterparts (Amin et al., 2006; Midha, 2012). Conversely, males frequently show a greater inclination to embrace new technology and typically have a more positive attitude toward adopting mobile services, considering themselves as risk-takers (Mani & Chouk, 2018; Pijpers et al., 2001; Wan et al., 2005). Moreover, females tend to emphasize interdependence and social connectivity, preferring to communicate online with others (Brannon, 1999; Garbarino & Strahilevitz, 2004; Mani & Chouk, 2018). As a result, females are more likely to interact with human staff, whereas males are more interested in technology-oriented services, including service robots (Ayyildiz et al., 2022). Additionally, female guests usually exhibit higher levels of anxiety, worry, and fear in certain situations than males (Mani & Chouk, 2018; Robichaud, 2003). This disparity arises because females frequently perceive their surroundings as more stressful than males (Mani & Chouk, 2018; McLean & Anderson, 2009; Laufer & Gillespie, 2004). These gender-based preferences significantly influence their attitudes toward hospitality service robots (Ivanov et al., 2018; Yu & Ngan, 2019).

The COVID-19 crisis has potentially shifted hotel guests' attitudes towards service robots, with the extent of change possibly tied to the hotel's service tier. Particularly, when females perceive risk, their expectations from a luxury hotel might predispose them to hold more favorable views on service robots during their stay. This is likely because females often exhibit greater concern regarding health and safety and adhere more closely to related regulations at work than men (Galasso et al., 2020). Consequently, hotels should consider guests' perceived risks and how their health and safety concerns influence attitudes toward service robots. The acceptance level of service robots among hotel guests may evolve based on their experiences during the COVID-19 crisis. Therefore, the hypotheses are as follows:

H1: *Hotel segments (Luxury vs. Economy) influence hotel guests' attitudes toward accepting service robots that hotel guests have a more positive attitude toward service robots when they are in an economy hotel than in a luxury hotel.*

H2: *Gender moderates the interaction effect between perceived risk (High vs. Low) and hotel segments (Luxury vs. Economy) on hotel guests' attitude toward accepting service robots.*

FIGURE 1
CONCEPTUAL FRAMEWORK



METHODOLOGY

Two experimental studies were conducted to explore the impact of hotel segments (study 1) and the interacting effect between hotel segments, perceived risk, and gender (study 2) on guests' acceptance of service robots.

Study 1

Participants, Design, and Procedure

A total of 132 MTurk workers (52.4% female; $M_{age} = 43.71$, $SD = 14.38$) completed the study in exchange for a small monetary payment. Participants were randomly assigned to two conditions: the luxury hotel condition and the economy hotel condition. In the luxury hotel condition, participants were asked to imagine a short scenario in which they were traveling alone for a holiday and booked a stay in a luxury hotel, costing them \$200 per night. When they arrived at the hotel, they encountered a robot greeting them at the front desk. The robot looked and behaved like a human and enjoyed conversing with guests. The robot helped guests check in by entering their reservation number and other information. Participants in the economy hotel condition read a similar scenario. Still, they were told they would stay in an economy hotel, which they paid \$70 per night (see Appendix for the experimental stimuli).

After reading the scenario, participants were asked to evaluate their encounter with the service robot during the check-in process (1 = *bad/unfavorable/negative/unsatisfied*; 7 = *good/favorable/positive/satisfied*, $\alpha = .96$). Then, participants were asked to rate their intention to revisit the hotel with two items ("How likely are you going to revisit this hotel next time?", "How likely are you going to recommend this hotel to your family and friends", 1 = *extremely unlikely*; 7 = *extremely likely*).

Results and Discussion

As expected, a one-way ANOVA with hotel condition as the independent variable and guest evaluation as the dependent variable indicates participants in the economy hotel condition had a more positive evaluation toward service robot than those in the luxury hotel condition ($M_{economy} = 5.18$ vs. $M_{luxury} = 4.50$, $F(1, 130) = 5.67$, $p = .02$). A similar result was found in the intention to revisit that participants showed high intention to revisit the hotel in the economy hotel condition than those in the luxury hotel condition ($M_{economy} = 5.13$ vs. $M_{luxury} = 4.46$, $F(1, 130) = 4.53$, $p = .04$). Therefore, our hypothesis is supported.

Using an experimental design, in study 1, we found that participants had a more positive attitude toward service robots in an economy hotel scenario than in a luxury hotel scenario. The purpose of study 2 is threefold. First, we further explored how gender moderates the relationship between hotel segments and perceived risk on guests' acceptance of service robots. Second, we aimed to generalize our findings using a different scenario (i.e., room service). Third, we wanted to control for the guests' past experiences with service robots in our findings.

Study 2

Participants, Design, and Procedure

191 MTurk workers (47.6% female; $M_{age} = 38.84$, $SD = 12.15$) completed the study in exchange for a small monetary payment. The experiment consisted of a 2 (perceived safety & health risk: high vs. low) \times 2 (hotel segments: luxury vs. economy) \times 2 (gender: female vs. male participants) between-subjects design.

Similar to study 1, we randomly assigned participants to luxury hotel and economy hotel conditions. We used a different scenario, i.e., room service delivery, in the study 2. Participants were asked to imagine needing an extra towel for their room in the middle of the night. They called the room service to get the towel delivered and found out a service robot was delivering it. The service robot looked and behaved like a human and could converse with guests (see Appendix for the experimental stimuli).

After reading the scenario, participants were asked how they were satisfied with the room service (1 = *extremely unsatisfied*; 7 = *extremely satisfied*), and how likely they were to order room service next time (1 = *extremely unlikely*; 7 = *extremely likely*). As these two items are highly correlated ($r = .83$, $p < .001$), we averaged these two items to create an overall attitude index toward service robot.

To measure their perceived risk to health and safety after experiencing COVID 19, we asked whether they or their family/friends were diagnosed positively with COVID-19 during the pandemic ($N_{positive} = 103$ vs. $N_{not} = 88$). A separate pretest was conducted to validate that participants had higher concern toward health and safety when they or their close contacts were previously tested positive compared with those who were not. 101 MTurk workers (50.5% female; $M_{age} = 39.05$, $SD = 13.99$) were recruited for the pretest. Fifty participants indicated either themselves or their family or friends were diagnosed with COVID 19 during the pandemic. Participants answered three-item seven-point questions adapted from the COVID 19 anxiety scale (Silva et al. 2020, "I have trouble relaxing when I think about COVID 19", "I feel anxious about COVID 19", "I feel uneasy when reading news about COVID 19", $a = .84$, 1 = *strongly disagree*; 7 = *strongly agree*). An independent t-test revealed that participants who had directly or indirectly experienced COVID-19 symptoms during the pandemic were more concerned about health and safety risk than those who had not ($M_{riskhigh} = 4.93$ vs. $M_{risklow} = 4.23$, $t(99) = 2.61$, $p = .01$).

Previous literature indicates that prior robot experience may influence customers' intention to adopt the robot (Tavitiyaman et al., 2022). Therefore, we asked whether participants had previous experience with service robots and used it as the control variable. At the end of the study, participants answered the questions about their age and gender.

Results and Discussion

A three-way ANCOVA was performed on the attitude toward the service robot, using hotel segments, gender, and health and safety concerns as the independent variables with previous robot experience as the covariate. Consistent with our hypothesis, there was a significant hotel segment \times gender \times perceived health and safety risk three-way interaction ($F(1, 182) = 6.16$, $p = .01$). The main effect of hotel segment ($F(1, 182) = .23$, $p = .63$), gender ($F(1, 182) = .72$, $p = .40$) and perceived health and safety risk ($F(1, 182) = .02$, $p = .88$) were not significant. Moreover, none of the two-way interaction effects were significant (hotel segment \times gender: $F(1, 182) = 1.38$, $p = .24$; hotel segment \times perceived health and safety risk: $F(1, 182) = .24$, $p = .63$; gender \times perceived health and safety risk: $F(1, 182) = .92$, $p = .34$). We also found that robot experience had a positive impact on the attitude toward robot service ($\beta = .58$, $p = .004$).

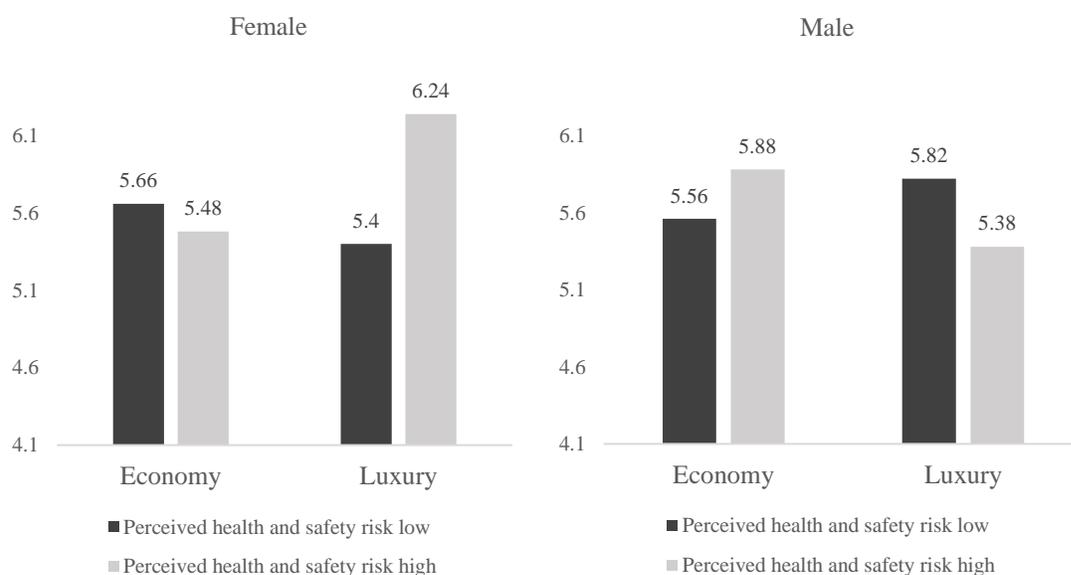
To further show the nature of the three-way interaction, we conducted two separate two-way ANOVA for male and female participants. For female participants, we did not find the significant main effect of hotel segment ($F(1, 87) = 1.13$, $p = .29$) and perceived health and safety risk ($F(1, 87) = 1.91$, $p = .17$).

However, there was a significant two-way interaction between hotel segment and perceived health and safety risk ($F(1, 87) = 4.64, p = .03$). When female participants stayed in the luxury hotels, those who had a higher concern about health and safety risk showed a more positive attitude toward robot service than those who had less concern ($M_{\text{riskhigh}} = 6.24$ vs. $M_{\text{risklow}} = 5.40, F(1, 46) = 11.43, p = .001$). And this difference was attenuated when female participants stayed in the economy hotel ($M_{\text{riskhigh}} = 5.48$ vs. $M_{\text{risklow}} = 5.40, F(1, 41) = .19, p = .66$).

For male participants, we ran a separate ANOVA and found the main effect of hotel segment ($F(1, 96) = .20, p = .66$) and perceived health and safety risk ($F(1, 96) = .06, p = .81$) were not significant. More importantly, the two-way interaction between hotel segment and perceived health and safety risk ($F(1, 96) = 2.09, p = .15$), indicating that perceived health and safety risk and hotel segments did not influence male participants' attitude toward service robot (luxury hotel condition: $M_{\text{riskhigh}} = 5.82$ vs. $M_{\text{risklow}} = 5.38, F(1, 45) = .99, p = .32$; economy hotel condition: $M_{\text{riskhigh}} = 5.88$ vs. $M_{\text{risklow}} = 5.56, F(1, 51) = 1.10, p = .299$). Therefore, our hypothesis is supported.

Study 2 revealed that gender moderated the relationship between hotel segments and perceived health and safety risks on guests' attitudes toward service robot adoption. Specifically, we found that female participants had a more positive attitude toward service robot adoption when they had a high (vs. low) perceived health and safety risk in a luxury hotel. For the economy hotels, the perceived health and safety risk did not influence female participants' attitudes. For male participants, we found no interacting effects between hotel segments and perceived health on guests' attitudes toward service robot adoption. Moreover, we found that participants' experience with robots positively impacted their attitude toward service robot adoption, which is consistent with previous literature (Tavitiyaman et al., 2022).

**FIGURE 2
GENDER DIFFERENCES**



GENERAL DISCUSSION AND CONCLUSION

The COVID-19 pandemic has significantly transformed hotel operations, prompting a surge in the adoption of robotic services in the hotel industry (Kim et al., 2021). This study delves into post-pandemic hotel guests' attitudes toward service robots, offering insights into hotel management for strategic planning.

Research findings suggest that hotels should customize their robotic services, particularly to be human-like, such as Pepper, based on the hotel segment. Research results indicate that guests at economy hotels

express greater satisfaction with robot services than those at luxury hotels. This aligns with prior research indicating a preference among luxury hotel guests for human staff service (Cetin & Walls, 2016; Chang & Tung, 2019). Additionally, when engaging with service robots, guests of economy hotels exhibit a stronger inclination to return compared to their luxury hotel counterparts. These guests are more receptive to robotic services, leading to increased engagement and enhanced satisfaction.

Understanding that guests' acceptance levels regarding hotel services can shift depending on their perceptions of health and safety risks is essential. The research shows that reactions to service robots differ by gender, depending on the hotel's service level. Female guests, especially those with significant concerns about perceived health and safety risks, are more inclined to use service robots when considering a stay at a luxury hotel compared to those with milder concerns. Their willingness to engage with service robots intensifies if their relatives are affected by COVID. However, this trend wasn't observed for economy hotels, where female guests had no specific expectations regarding robotic services.

On the other hand, male guests' attitudes remained largely unchanged throughout the pandemic. Consistent with prior studies, male guests displayed lower anxiety levels (Durndell & Hagg, 2002), which didn't affect their views on robotic services in luxury hotels. As a result, hotel management should consider strategies that incorporate service robots based on gender and in line with brand attributes.

Practical Implications

The findings underscore the importance for hotels to help guests grasp the service robot system rather than compelling them to use it. Guests who have interacted with robotic services generally perceive them positively. As these robots become indispensable for contactless services, they are poised to complement or potentially replace human staff in hotels.

To enhance guest satisfaction, hotel management should consider a strategy that retains human interaction while introducing robotic services, particularly in luxury hotels. Our research indicates luxury hotels can implement tailored robotic services based on their specific segments, addressing guests' health and safety apprehensions through technology-driven services. Ensuring a foundation of trust helps alleviate associated anxieties (Slade et al., 2015).

Although the adoption of robotic services has broadened in the post-COVID era, guests at luxury hotels still predominantly favor personalized services from human staff. Luxury establishments should contemplate strategies for deploying interactive service robots, accompanied by human staff, at the front desk. Instead of allowing guests to interact with robots independently, human personnel can convey information via humanoid robots like Pepper, guiding guests toward more meaningful engagements. Such interactions can nurture a bond with service robots, enhancing guest satisfaction (Tung & Au, 2018). To optimize this service, hotels should train their staff to collaborate effectively with service robots. When human staff work harmoniously with robots, guests will likely feel more comfortable and might be more inclined to use the robotic services.

Also, hotels must acknowledge the shifting acceptance of service robots, especially regarding guests' health experiences during COVID. Our research reveals that guests with relatives impacted by COVID tend to be more circumspect and deliberative in their approach to robotic services. In particular, there are evident gender variations in guest receptiveness to these robots in luxury hotels. Luxury hotels should account for guests' prior experiences and might consider devising social media marketing initiatives that cater to their concerns, illustrating how robots can mitigate these worries. Since females often gravitate towards interpersonal exchanges, tailored social media campaigns can positively influence female guests, enriching their experience with robotic services. Beyond the COVID period, guest perceptions and choices remain shaped by historical experiences (Ayyildiz et al., 2022; Garbarino & Strahilevitz, 2004; Mani & Chouk, 2018). It remains imperative for hotels to persistently highlight their dedication to guests' health and safety through tech-centric approaches.

Conversely, guests at economy hotels have displayed higher satisfaction and a greater likelihood to return than those at luxury hotels, both pre and post-COVID. Economy hotel guests typically spend less time and effort in decision-making, focusing more on cost and showing less interest in robot services (Cetin & Walls, 2016). However, management at these hotels should not misconstrue this as disinterest. While the

primary concern for these guests might be budget, a pleasant surprise in the form of robot services can elevate their satisfaction and increase their likelihood of returning.

Limitations and Future Research

Several limitations in this study should be considered for future research. This research focused on Pepper, a humanoid robot, to study the changed attitude toward robot service. Future research should examine service robots with various operational functions, including cleaning, communicating, and providing information, across different settings. This is essential since guests' perceptions of service robots vary based on their interactions and the attractiveness of these robots (Kim et al., 2021; Murphy et al., 2019; Yoganathan et al., 2021). Furthermore, this study emphasized how the perceived risk of experiencing COVID-19 influences hotel guests' acceptance levels of the service robot. Future research might explore additional personality factors with brand images (Chiang & Jang, 2007; Kucukusta et al., 2014; Yang et al., 2017). As revealed in Study 2, female hotel guests are more accepting of service robots when considering their family's health concerns. Based on these results, further research should examine satisfaction levels with service robots, considering traveler types and brand loyalty. This is crucial as females' travel motives and preferences can shape their decisions, and they are more likely to remain loyal to specific brands.

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APPENDIX

FIGURE 3
a) STUDY 1 EXPERIMENTAL STIMULI



b) STUDY 2 EXPERIMENTAL STIMULI

