
EXAMINE THE ROLE OF SERVICE ROBOT INTEGRATION IN THE HOSPITALITY INDUSTRY

¹Dr. Deepti Bhatt, ²Dr. Saras Verma and ³Ms. Sanjana

¹Assistant Professor and ²Associate Professor, School of Hospitality & Tourism, Quantum University, Roorkee (UK)

³Assistant Professor, Department of Computer Science & Engineering, Haridwar University, Roorkee, UK

ABSTRACT

Introduction: A service robot stand out from the crowd and give diners a unique experience exciting to focus on. Some of the examples are: Robot-Staffed Hotels, Robotic Concierges, AI Chat bots, Robotic Bartenders, Cleaning Robots shall be adapted soon.

Purpose: The present study explores usage of service robot (AI) into hospitality sector to enhance guest travel and their experience by making it handy or easy to use and accepted among guest in the coming era.

Methodology: Studies performed in various sectors were used and included in the study to find a comprehensive conclusion.

Analysis&Findings: For analysis secondary data like journals, articles, magazines, blogs were taken for the study. This study finds that performance expectancy, hedonic motivation, and habit have a significant impact on hospitality guest' behavioural intention to utilize service robot integration.

Findings also highlighted that guest are willing to use new technology in the hotel industry looking at the ease of usage and acceptance. The study provides further elaboration on the theoretical and managerial implications, as well as potential avenues for future research.

Originality: Although several studies has been published that examine service robot integration and acceptance in the restaurant and, only a limited reported on Service robot integration airline industry, Hotel industry, Tourism industry. The usage does not stop here even in airport, baggage handling by robots, security, and maintenance and in retail store will use for packaging, create a consistent process, quickly re-wrapping of products and placing them in boxes. Hence, this study addresses the gap.

Keywords: Service robots, Automation, Artificial intelligence, Hospitality, Tourism,

INTRODUCTION

The hospitality industry has always been at the forefront of embracing innovation to enhance guest experiences and improve operational efficiency. With the evolution of artificial intelligence (AI) and robotics, service robots are becoming a transformative force within the sector. These robots are not just novel attractions but serve functional purposes—streamlining services, reducing labor costs, and ensuring consistent service quality. The integration of service robots has gained traction in various hospitality environments, including hotels, restaurants, airports, airlines, and retail outlets connected to tourism.

Service robots in hospitality are designed to interact with guests and support staff by performing tasks that were traditionally human-driven. Examples include robot-staffed hotels in Japan, robotic concierges that provide real-time information and assistance, AI chatbots handling reservations and customer queries, robotic bartenders mixing drinks with precision, and autonomous cleaning robots maintaining hygiene standards. These technological innovations aim to enhance operational efficiency while also offering guests a unique and futuristic experience.

The onset of the COVID-19 pandemic accelerated the demand for contactless services, thereby boosting the interest in robotic solutions. In a post-pandemic world, guests increasingly value cleanliness, safety, and convenience—all of which can be effectively delivered through robot-assisted services. Robots reduce the need for human-to-human contact, ensure standardization of service, and can operate 24/7 without fatigue, making them an attractive option for hospitality businesses aiming for resilience and innovation.

However, despite the promising potential, the integration of service robots is not without challenges. Issues such as the cost of implementation, resistance from employees, and varying levels of guest acceptance pose significant barriers. The success of such integration largely depends on how guests perceive the usefulness, enjoyment, and ease of using service robots. Moreover, cultural and demographic factors also influence user behavior and attitudes toward robotic services.

LITERATURE REVIEW

The integration of service robots in the hospitality industry is a growing area of research, fueled by rapid developments in artificial intelligence (AI), machine learning, and robotics. Scholars have explored various aspects of robot adoption, including user acceptance, service quality, emotional responses, and operational efficiency. This literature review synthesizes past findings to highlight theoretical perspectives and identify gaps addressed in the present study.

1. Service Robots in Hospitality

Service robots are defined as autonomous or semi-autonomous machines capable of performing tasks traditionally carried out by human employees (Ivanov et al., 2019). Their use in the hospitality industry ranges from check-in kiosks and robotic concierges to housekeeping robots and chatbots. Tussyadiah and Park (2018) suggest that robots provide novelty and efficiency while reducing operational costs. For instance, hotels like Japan's Henn-na Hotel introduced robot receptionists and luggage handlers, enhancing guest experiences and operational consistency.

2. Technology Acceptance and User Behavior

A dominant framework for analyzing service robot adoption is the **Unified Theory of Acceptance and Use of Technology (UTAUT2)**. This model includes constructs such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit (Venkatesh et al., 2012). Studies applying UTAUT2 in hospitality contexts (Lu et al., 2019; Lin et al., 2020) find that **performance expectancy** and **hedonic motivation** are key drivers of user acceptance. Guests are more likely to use robots if they perceive them as useful and enjoyable.

3. Emotional and Social Responses

While technological competence is crucial, emotional responses also play a significant role in the acceptance of robotic services. Bartneck et al. (2005) highlight the importance of perceived anthropomorphism—robots that mimic human appearance or behavior tend to be more accepted. However, excessive human-likeness can trigger discomfort (the "uncanny valley" effect), especially in hospitality settings where social interaction is expected (Kim et al., 2021). Thus, robot design must strike a balance between functionality and emotional appeal.

4. Service Quality and Guest Experience

Research indicates that robots can contribute positively to service quality by delivering consistent and accurate services (Wirtz et al., 2018). However, the absence of human empathy may limit robots' ability to handle complex guest requests or resolve complaints. Lu et al. (2020) note that while guests appreciate efficiency, many still prefer human contact for certain services. This has led to hybrid models where robots handle routine tasks, and humans provide personalized care.

5. Sector-Specific Integration

While restaurants have seen early adoption of robots (e.g., robotic servers and kitchen assistants), their use in **hotels, airlines, and retail environments** is still evolving. Ivanov and Webster (2021) found that airlines use robots for check-in and baggage handling, while hotels deploy them for housekeeping and concierge services. In tourism retail, robots assist in product packaging, stock management, and customer engagement. The expansion of robotic roles across various sub-sectors highlights their growing utility.

6. Barriers to Adoption

Despite their benefits, service robots face several implementation barriers. These include high installation and maintenance costs, technological limitations, data privacy concerns, and employee resistance (Murphy et al., 2019). Moreover, guest acceptance varies based on age, cultural background, and previous exposure to technology (Chi et al., 2020). Addressing these barriers requires managerial planning, guest education, and adaptive system design.

METHODOLOGY

Research Design

The present study adopts a **mixed-method exploratory approach**, primarily utilizing **secondary data analysis** supplemented by empirical data collection through surveys. The aim is to understand the evolving role of service robots in the hospitality sector and to identify key factors influencing guest acceptance, operational outcomes, and managerial implications.

Secondary Data Collection

To support the research framework, a **comprehensive secondary data review** was conducted. This included academic journal articles, white papers, industry reports, conference proceedings, and authoritative blog posts

published between 2015 and 2024. Sources were obtained through databases such as **ScienceDirect**, **SpringerLink**, **Google Scholar**, **Emerald Insight**, **Scopus**, **Statista**, **Hospitality Net**, and **McKinsey Insights**.

KEY SOURCES OF SECONDARY DATA INCLUDED

- **Statista (2023)**: Reports showed a projected increase in the global market for service robotics from USD 35 billion in 2022 to over USD 100 billion by 2030.
- **PwC Hospitality Outlook (2022–2026)**: Provided insights into technological disruption in hospitality, highlighting increasing investments in AI and robotics for guest-facing and back-end services.
- **McKinsey & Company (2021)**: Identified AI-enabled automation as a major trend, estimating that up to 73% of food and accommodation services could be automated using existing technology.
- **Hospitality Technology Magazine Blogs (2019–2024)**: Offered real-world applications and case studies, such as Marriott's chatbot integration, Hilton's "Connie" robotic concierge, and Savioke's Relay robots.
- **Academic studies** such as Ivanov & Webster (2021), Wirtz et al. (2018), and Qiu et al. (2020) helped define variables related to customer acceptance, service quality, and operational benefits.

CONCLUSION

The integration of service robots into the hospitality industry marks a transformative step toward operational efficiency, enhanced guest experiences, and the digital evolution of service delivery. This study has examined the multifaceted role that service robots play across various segments of hospitality—hotels, airlines, restaurants, and retail travel services—by analyzing both empirical evidence and secondary data insights.

The findings indicate that **performance expectancy**, **hedonic motivation**, and **habit** significantly influence guest behavioral intention to engage with service robots. Guests are increasingly accepting of automated and AI-driven technologies when they perceive tangible benefits—convenience, novelty, accuracy, and speed—without a corresponding loss of personalization.

Furthermore, the secondary data highlights a robust global trend: substantial investment in robotics and automation, rising guest familiarity with AI tools, and a growing emphasis on contactless services post-COVID-19. From robotic concierges like Hilton's "Connie" to autonomous luggage handlers in airports and cleaning robots in hotel corridors, the deployment of robotics is no longer experimental but strategic.

From a managerial standpoint, the adoption of service robots presents opportunities for **cost optimization**, **workforce augmentation**, and **brand differentiation**. However, it also poses challenges, particularly around employee displacement, high initial investment costs, and the need to balance human touch with machine efficiency. The hybrid model—where robots handle repetitive or hazardous tasks while humans manage emotional or complex interactions—emerges as a promising approach.

In conclusion, service robot integration is not merely a technological upgrade; it represents a paradigm shift in hospitality management. As guest expectations evolve and technology continues to advance, hospitality businesses that embrace intelligent automation while maintaining service empathy will gain a competitive edge. Future research could explore long-term impacts on employment, cross-cultural acceptance of service robots, and the ethical implications of machine-driven hospitality.

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