

The Rising Influence of Technology and AI on the Hospitality Industry: A Qualitative Review

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Abstract

The development of technology has been increasingly prominent in the customer service industry, as people leverage advanced technologies to facilitate their products and improve customer experience in a competitive market. The hospitality industry, in particular, has seen many major developments such as Artificial Intelligence (AI) chatbots, online check-in, virtual management system, etc. These innovations represent a shift toward data-driven, contactless, and personalized service models that redefine traditional guest experiences. However, it remains a controversial topic whether the extensive application of technology in the hospitality industry brings more benefits than perceived risks. This paper will explore the role of technology and AI in the hospitality industry, examining current innovations and their strengths and risks, professionals' perceptions, and emerging trends shaping their future development. This analysis draws from case studies and qualitative interviews with hotel managers—providing insight into how technological transformation affects both operational efficiency and human-centered service values.

Keywords

Hospitality, Hotel Management, Technology, Artificial Intelligence

1. Introduction

In the hospitality industry, customer experience is a key factor for success. It directly influences brand loyalty and business sustainability. Customers want fast service, a pleasant environment, and personalized attention. They also desire a convenient and streamlined service experience. With the rapid development of technology, many hotels are adopting new tools to provide better service and work more efficiently. For example, some hotels have implemented mobile check-in

systems, allowing guests to bypass the front desk and proceed directly to their rooms. Some hotels have AI chatbots that could answer the customers' concerns 24 hours a day. Many hotels are also equipped with smart room controls, including for lights and temperature, that guests can control via their phones. These advancements reflect a growing emphasis on "smart hospitality"—where automation and personalization work together to create seamless and adaptive service environments. Hotels are using new technologies to make guests feel more welcome and comfortable than ever before. Technology additionally helps hotels save on labor costs, reduce mistakes, and improve operational efficiency. Yet, the hospitality sector continues to face an important question: how to balance technological convenience with the warmth and emotional connection that define hospitality. Technology has therefore become an essential way for hotels to become more competitive. By exploring this balance, the paper situates the current wave of innovation within the broader context of digital transformation and service design in hospitality. This paper will introduce some central technologies used in hotels, explain how they affect customer satisfaction, and discuss the future role of technology in hotel service.

2. Literature Review

Technology has reshaped the hospitality industry. According to [HotelTechReport \(2025\)](#), 81.7% of hoteliers have introduced or plan to introduce at least one technology, especially tools that enable contactless guest experiences. This shift toward digital transformation was accelerated during the COVID-19 pandemic and has since become an integral part of post-pandemic service models—emphasizing health safety, convenience, and operational efficiency. Some common technologies employed by modern hotels are as follows:

1) Mobile check-in

One of the most noteworthy developments is mobile check-in. Guests can use their phone to check in and go straight to their room, which allows guests to bypass the front desk and save time. Cvent ([Campbell, 2023](#)) reports that 71% of consumers are more likely to stay in hotels offering self-service technology such as mobile check-in. A study by HFTP and Oracle ([Hamidane, 2024](#)) found that 73% of travelers prefer hotels with self-service technologies to reduce staff interaction, and 54% of hotel executives plan to make mobile check-in a long-term standard. The growing adoption of mobile check-in systems also highlights a broader industry goal: to reduce physical touchpoints while enhancing guest autonomy, a key driver of customer satisfaction in the digital age.

2) AI-powered chatbots

Another widely used technology is AI-powered chatbots, which are available 24 hours a day to assist guests—answering common questions, making recommendations, and handling everyday needs. These systems operate using natural language processing (NLP) algorithms that allow real-time, human-like interaction, ensuring guests receive consistent and immediate support. Additionally, some ho-

tels are using smart room control systems to allow guests to adjust lighting, temperature, and curtains through their mobile phones or provided in-room tablets, creating a more personalized and comfortable stay environment for guests. Virtual concierge services are also becoming more common. Many guests feel comfortable using a system where they can enjoy individualized services without human interaction, saving time and energy during their trips. Some common virtual concierge services include helping guests book transportation, tours, and other services without needing to speak to hotel staff. These new technologies make the hotel stay more convenient and enjoyable for guests. It also helps hotels work more efficiently and reduce staff costs. According to Oracle (Hamidane, 2024), 76% of hotel executives believe AI is fundamentally changing the industry, and 79% say AI has already had a positive impact on their operations. Furthermore, 55% think AI will completely transform hospitality in the near future. Collectively, these figures show that AI adoption is no longer experimental but rather an established operational standard across mid- and high-tier hotels.

3) Contactless Payment Systems

Contactless payment systems have become more prevalent in many industries, including hotel management—especially since COVID-19. Apple Pay, Google Pay, and various other apps are making paying for hotel services and products more accessible. Wang & Chang (2024) provide a comprehensive overview of payment methods in hospitality and tourism, including mobile payments, digital currencies (cryptocurrencies such as Bitcoin), and biometric methods (including fingerprint, facial recognition, and palm-vein scanning), based on 265 articles spanning from 2013 to 2023.

Another article by Barten (2024) explored further details on the reasons behind the prevalence of contactless payment systems. Specifically, he discussed why contactless payments, such as Apple Pay, Google Pay, and RFID-enabled cards, are gaining traction in hospitality. In this paper, he discussed the hygienic benefits of contactless payment over traditional payment, as well as further opportunities for the development of loyalty programs. Loyalty programs within the hospitality industry can offer guests points whenever they utilize a contactless payment system, which strengthens the connection between customers and hotel brands. Moreover, the integration of contactless payments with loyalty programs enables hotels to collect behavioral data and personalize offers—an emerging strategy in customer retention and brand loyalty. Many hotels leverage that to build bonds with their existing customers by offering them benefits by either providing hotel amenities directly or through their partnership programs, while attracting new customers to join and become lifelong members. Another factor was that customers could enjoy easy payment that saves time during booking and check-in.

4) Social Media, Online Reputation Management, and AI engagement

Social media is also becoming increasingly crucial in hotel management. Various modern hotels leverage social media, such as Instagram, WeChat, and TikTok, to engage with their potential and existing customers, while building strong brand

identity for themselves. The visibility and interactivity of these platforms allow real-time feedback, reputation monitoring, and influencer partnerships that can directly impact booking behavior.

Previous research has highlighted that hospitality and tourism businesses can engage and give a lasting impression to their prospective customers through social media content. Social media plays a massive role in increasing brand awareness, improving customer engagement, managing brand reputation, and increasing the number of customers. Besides the impact of online content, social media can be leveraged to appeal to global audiences. One of the most significant aspects of social media and technology's impact on the hospitality industry is the ability to gain and retain customers on a global scale. Unlike traditional marketing channels, social media allows businesses to connect with potential customers regardless of geographical boundaries (Nguyen, 2024).

Artificial intelligence is transforming hospitality marketing. It enables brands to analyze guest behavior to tailor messages—for instance, AI-powered tools can track engagement patterns on Instagram or booking platforms. Studies show that personalized marketing campaigns can increase revenue by up to 15% (Oyster-Link, 2024). It also allows them to automate follow-up messages and upsell—chatbots on hotel websites or messaging apps can instantly answer FAQs, remind customers about bookings, and suggest upgrades such as spa packages or premium suites. Marriott, for example, uses AI chatbots to handle thousands of customer queries daily, reducing wait time and improving satisfaction (Marriott International, 2017). AI also allows hotels to personalize offers based on past stays or website activity. For example, Hilton and Hyatt both use machine learning models to recommend destinations or packages to loyal customers, creating a sense of exclusivity and personalization. Similarly, hotels are using modern technology to allow real-time data analysis. Hyatt Hotels, for instance, partnered with Amazon Web Services (AWS) to implement machine learning methods that analyze user behavior in real time. This allows them to optimize digital ads and push highly targeted promotions during peak booking periods. By combining social media reach with AI-powered personalization, hotels can both broaden their audience and deepen individual customer relationships, which is essential for long-term loyalty in the competitive hospitality market. These new technologies make the hotel stay more convenient and enjoyable for guests. It also helps hotels work more efficiently and reduce staff costs. However, this also introduces ethical challenges regarding data privacy and algorithmic transparency, which will be further discussed in later sections.

5) Theoretical Framework

To better understand the impact of these technologies, it is helpful to look at established theories in business and service management. Three models are particularly relevant to the changes happening in the hospitality industry: the Technology Acceptance Model (TAM), the SERVQUAL (Service Quality) model, and concepts of Human-Machine Collaboration.

First, TAM helps explain why some guests embrace things like mobile check-in while others resist them. This theory suggests that people will only adopt a new technology if they perceive it as “useful” (it saves them time) and “easy to use” (it is not confusing) (Davis, 1989). For hotels, this means that simply having a mobile application is not enough—it must be user-friendly. If a mobile key is glitchy or hard to find, the guest will likely reject it and go to the front desk instead, regardless of how innovative the hotel claims to be.

Second, the SERVQUAL model is used to measure service quality by looking at five dimensions: reliability, assurance, tangibles, empathy, and responsiveness (Parasuraman et al., 1988). Technology, especially AI, generally excels at “reliability” and “responsiveness”—a chatbot never gets tired and answers instantly. However, the hospitality industry has traditionally relied heavily on “empathy,” which is the ability to provide caring, individual attention. As hotels automate more processes, there is a risk while they improve their speed, they simultaneously lower their empathy scores, potentially hurting the overall guest perception of quality (Huang & Rust, 2018).

Finally, frameworks regarding Human-Machine Collaboration suggest that the goal shouldn’t be to replace humans, but rather to augment them (Huang & Rust, 2018). In this view, technology handles the repetitive, low-value tasks (like processing payments or answering basic questions), while human staff focus on high-value, complex interactions that require emotional intelligence. This theory supports the idea that the most successful hotels will be those that find the right balance—using machines to support staff rather than replace them.

6) Case Study Overview

Technology is shaping the development of the hotel management industry, as well as creating opportunities for customers to enjoy their hotel experiences in multiple new dimensions. This paper will cover three interesting applications of modern technology in some leading hotels in the industry: an AI chatbot, a digital ecosystem, and an AI-powered revenue management platform. These examples were selected because they demonstrate how technology integrates across different operational levels—from customer interaction to internal data analytics—revealing both strategic and experiential benefits.

Case 1: Marriott International—AI Chatbot

Incorporating chatbots into their ecosystem, Marriott International introduced Aloft’s ChatBotlr and Marriott Rewards bots on Messenger and Slack in 2017. ChatBotlr allows guests to request services and information through text, and two-thirds of guests respond to queries via text. Replies are sent in roughly five seconds. With the Rewards bots, members can book over 4700 hotels, manage points, and interact with customer service. 44% of users have utilized the bots for stay-related services while 53% accessed them for rewards. Monthly growth peaked at 85%. The utilization of these bots accelerated the pace of service, reduced the burden on staff, and enabled targeted advertising. This example illustrates how conversational AI not only enhances efficiency but also contributes to data-driven marketing, providing insights into customer preferences and engagement fre-

quency. It reflects the broader shift toward “predictive service,” where customer interactions continuously inform personalization algorithms.

Case Study 2: Hilton—“Connected Room” Digital Ecosystem

Hilton connects its TV, lighting and climate to its app so guests can stream content, manage room temperature, set preferences, and take them when they stay at another hotel. The connected room adaptation has significantly increased people’s satisfaction and convenience levels, as well as achieved an eco-friendly objective. In 3500+ smart rooms, phones are touched about 12 million times per month; in the meantime, properties lower energy use by 25% and raise satisfaction by 8 points. The model accelerates service, reduces the burden on staff and enables the data-led, lower-carbon operation. Hilton also discovered that 2/3 of guests preferred mobile app controls over wall thermostats, and reduced unplanned downtime by 15% through predictive maintenance. Now expanded to over 1000 hotels, it has created a data lake for smarter planning and lifted RevPAR by 4% - 5%. Hilton’s example demonstrates how AI-enabled IoT systems can serve dual purposes: enhancing guest autonomy while supporting corporate sustainability targets. The Connected Room project shows that technological innovation can align environmental responsibility with economic performance.

Case Study 3: Accor—AI-Powered Revenue Management Platform

Accor is one of the largest hotel groups in the world, operating more than 5600 hotels across 110 countries. To address the challenges of fragmented systems and the need for hundreds of daily price adjustments, the group started using the AI-powered IDeaS G3 Revenue Management system. This platform analyzes signals such as market demand, booking pace, competitor rates, and local events, refreshing price recommendations every few minutes while allowing each hotel to set minimum and maximum thresholds to protect brand value. In addition, the system also has a dashboard that shows where the hotel can make more profit and even predicts extra income from dining, events, and package deals. The impact has been significant. Hotels using the system recorded a 5.3% year over year increase in RevPAR and a 92% adoption rate of AI recommendations, while revenue managers saved about four hours each week from manual adjustments. In volatile markets such as Brazil and Southeast Asia, quarterly revenues rose by up to 12% thanks to timely responses to last-minute demand. If this system were used all Accor hotels worldwide, it could generate around €700 million in additional annual revenue while also reducing management fees. This can potentially transform the hotel industry by combining technology with human judgment and revolutionizing the hotel industry. This case underscores the financial dimension of AI adoption, demonstrating how predictive analytics enhance both strategic agility and real-time operational precision. It also exemplifies the growing need for human and AI collaboration in decision-making processes rather than full automation.

3. Method

In this paper, two semi-structured qualitative interviews were conducted to gather

more detailed data on the current technologies employed in a specific hotel and the perceived benefits and challenges, as well as the future trends. Each interview lasted approximately an hour and was conducted online. The interviews were recorded, transcribed, and thematically analyzed to identify key patterns and insights, upon the consent of the participants.

A convenience sampling method was adopted in this study where two participants within closer social network were recruited. The two participants were interviewed for this study, both currently employed as hotel managers in the industry. Candidate 1 was a 48-year-old male hotel manager with several years of experience at the Shangri-La Hotel in Baotou. Candidate 2 was a 37-year-old male hotel manager, also with years of service at the Shangri-La Hotel in Baotou.

Qualitative data were analyzed using thematic analysis, involving systematic coding of text data to identify recurring patterns and themes. Codes were generated inductively from participants' responses and refined into overarching themes that reflected shared meanings across the dataset.

The study followed ethical research standards. Participants provided informed consent after receiving information about the study's aims, confidentiality, and voluntary participation. Data were anonymized to ensure privacy and protection of participants' identities.

4. Result

Topic 1: Technology Used in the Hotel

I asked them about the degree of AI and other forms of automation implemented at their hotel, as well as questioned them on whether they saw any perceived benefits or other changes based on those implementations. They reported that at their hotel, rooms were equipped with intelligent control systems with AI voice assistants that allowed for automated voice control of curtains, lighting, air conditioning, as well as room service. In addition, digital services and robotics, such as a digital front desk, AI interactive robot butlers and intelligent delivery robots, also been implemented. In addition, electric vehicle charging stations had also been installed at the hotel. These findings reflect a trend toward multi-layered digital ecosystems in high-end hotels, where guest convenience, energy efficiency, and technological prestige intersect.

Topic 2: Benefits, Strengths, Challenges, and Weaknesses of the Technologies

In terms of any perceived benefits, changes, and challenges of the existing implementations, it was found that guest experience and satisfaction had significantly improved, and there was the additional benefit of decreased labor costs, as well as service staff burdens. The managers found that the advantages to using these implemented AI-based technologies were long-term cost reduction and efficiency improvement, convenient novel and personalized guest experience, as well as a more standardized management and services. However, they also reported certain disadvantages, such as newly introduced costs due to the need to purchase AI-based equipment as well as maintain them with repairs and other

services. They also mentioned that there was the risk of losing the essence of hospitality of human warmth and personal interaction. This concern directly relates to the empathy dimension of the SERVQUAL model discussed earlier, where efficiency might come at the cost of emotional connection. Overuse of AI-based services may render services cold and overly procedural, which would weaken the emotional connection and human touch that traditional hotels are known for. They were also concerned about the possibility that use of AI-based services would trigger anxiety or resistance among front-line staff who would fear being replaced. In addition, there were data, privacy, and security risks since the use of these AI systems required collecting large amounts of guest data. There was the challenge of figuring out how to safely store the data as well as comply with applicable government laws. Data breaches could cause a devastating blow to the hotel's reputation. These reflections underscore the ethical tension between innovation and authenticity in hospitality: while automation drives efficiency, it must coexist with emotional connection, trust, and human presence.

Topic 3: Perceived Future Trends of AI-based Technologies

When asked about what they saw for the future of hotels and AI-based technologies, the two hotel managers foresaw the use of completely automated front desks that could enable rapid self-check-in, as well as humanoid robots that would assist in luggage handling, room cleaning, and other services. This would allow guests to register and check into rooms with their smartphones which would decrease the cost of the company and the amount of time that guests would need to spend during check-in. It would also allow for personalization of guest rooms with preset conditions such as air conditioning to a preferred temperature or automatically set lighting conditions. They also foresaw robotics becoming key human resources which would operate 24/7 to deliver items to guests, guide guests to the rooms as well as perform cleaning services. They hoped that there would be increased human machine collaboration which would emphasize the synergy between robots and staff where robots serve as a second workforce department alongside the human employees. This vision reflects a shift from replacement to collaboration, emphasizing a hybrid model in which machines handle routine tasks while humans focus on emotional engagement, problem-solving, and high-touch service delivery.

5. Future Trends

Based on the findings from the qualitative report and previous case reviews, various types of technology have been adopted in hospitality, providing a promising outlook for diverse customer experiences, while also presenting risks and concerns.

Looking ahead, several trends are poised to further reshape the hospitality landscape: Smart voice assistants such as Amazon Alexa for hospitality are expanding their role in just services. These devices provide natural, conversational interfaces that allow guests to control room features, order amenities, or request local infor-

mation. Amazon (2024) recently introduced new improvements to Alexa, making interactions even more intuitive and easier to use Amazon + source. this shows that in the future, using voice assistants may become normal and simple part of hotel services

AR and VR are set to change the way guests plan and experience travel. Hotels are beginning to use these tools to allow customers to preview rooms, check out facilities, and even simulate destination activities before booking. This not only builds trust and reduces uncertainty but also opens up new marketing opportunities “ScienceDirect + source”. As these tools become more accessible. AR and VR may become an important factor that sets hotels apart in a competitive market. As these tools become more accessible, AR and VR are expected to play a key role in differentiating brands and providing “pre-experiential” value that enhances the customer journey even before arrival.

The next stage of personalization goes beyond traditional loyalty programs. With the support of AI and detailed guest information, hotels are now able to predict guests needs more accurately. Hyper personalization means adjusting offers, room settings, dining choices, and even wellness services to individual preferences. While this creates unique and memorable experiences, it also raises important concerns about privacy and trust “EHL Hospitality Insights + source”. Therefore, finding a balance between personalization and responsible use of data will be important.

In summary, the hospitality industry’s technological future is likely to emphasize a human-centered digital transformation—where automation enhances rather than replaces human service, immersive experiences extend beyond the physical property, and ethical data management becomes a hallmark of brand integrity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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