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Artificial intelligence in hospitality: a review of contemporary research and development perspectives

Veštačka inteligencija u ugostiteljstvu: pregled savremenih perspektiva istraživanja i razvoja

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Abstract

Artificial intelligence (AI) is transforming the hospitality industry by reshaping traditional service practices and managerial approaches. This literature review provides an overview of recent academic research on the application of AI in hospitality. Relevant studies were collected from major academic databases, including Scopus, Web of Science, and ScienceDirect, covering the period from 2019 to 2025. The review focuses on key areas of AI implementation, including automation, personalized services, and data-driven management. The findings indicate that AI enhances operational efficiency, supports environmentally responsible business practices, and improves guest satisfaction through personalized service delivery. In addition, AI facilitates predictive analytics, dynamic pricing, and decision-making processes, contributing to cost reduction and increased productivity. The review also highlights the importance of guest perceptions of AI and trust in intelligent systems as critical factors influencing technology adoption. The successful integration of AI in hospitality requires balancing technological innovation with human values and ethical considerations to ensure long-term sustainability and competitive advantage.

Keywords**:** *artificial intelligence, hospitality, digital transformation, guest experience, sustainability*

Sažetak

Veštačka inteligencija (VI) transformiše sektor ugostiteljstva menjajući tradicionalne uslužne prakse i menadžerske pristupe. Ovaj pregledni rad pruža pregled savremenih akademskih istraživanja o primeni veštačke inteligencije u ugostiteljstvu. Relevantna literatura prikupljena je iz vodećih naučnih baza podataka, uključujući Scopus, Web of Science i ScienceDirect, za period od 2019. do 2025. godine. Analiza je usmerena na ključne oblasti primene VI, uključujući automatizaciju, personalizovane usluge i upravljanje zasnovano na podacima. Rezultati pokazuju da veštačka inteligencija unapređuje operativnu efikasnost, podržava ekološki odgovorne poslovne prakse i povećava zadovoljstvo gostiju kroz pružanje personalizovanih usluga. Pored toga, VI omogućava primenu prediktivne analitike, dinamičkog određivanja cena i unapređenje procesa donošenja odluka, doprinoseći smanjenju troškova i povećanju produktivnosti. Pregled takođe ukazuje na značaj percepcije gostiju o veštačkoj inteligenciji i poverenja u inteligentne sisteme kao ključnih faktora usvajanja tehnologije. Uspešna integracija VI u ugostiteljstvo zahteva uspostavljanje ravnoteže između tehnoloških inovacija, ljudskih vrednosti i etičkih principa kako bi se obezbedili dugoročna održivost i konkurentska prednost.

Ključne reči: *veštačka inteligencija, ugostiteljstvo, digitalna transformacija, iskustvo gostiju, održivost*

1. Introduction

Technology has emerged as one of the most significant factors influencing how consumers interact with products and services in recent decades. The term artificial intelligence (AI) consists of two words: "artificial," referring to something created through human effort, and "intelligence," representing the capacity for autonomous reasoning. AI can therefore be viewed as a human-created form of cognitive capability. Artificial intelligence is used to describe the intelligence exhibited by computer systems that respond to their environment and customer needs

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through various learning algorithms, providing reliable services that are considered comparable to or even superior to those delivered by human counterparts (Aguiar-Costa et al., 2022).

Additionally, AI is revolutionizing almost every sector of a nation's economy by enabling computers to make informed decisions that contribute to more efficient operations. It also allows people to work more effectively, leading to improved economic outcomes. However, it requires the development of new skills and competencies, including technological expertise, social and emotional intelligence, and creativity. At the same time, AI may replace human labor in certain situations, necessitating the redesign of structures and processes within the hospitality and tourism industries. Furthermore, improved talent recruitment, development, deployment, and productivity in human resource management can be achieved through the use of digital analytics and AI tools to monitor and evaluate employee performance.

Research in the hospitality and tourism industries has shown considerable interest in understanding how AI technologies affect employee engagement, retention, and productivity because of their potential impact on customer satisfaction and service quality. Consequently, AI has become increasingly important in numerous areas of operation. Globally, the hospitality sector is at the forefront of adopting cutting-edge technologies to enhance guest experiences and improve operational efficiency. Among these technologies, artificial intelligence has emerged as a transformative force, reshaping operational strategies and expanding service offerings. Although the application of AI in the hospitality sector has advanced significantly worldwide, limited knowledge exists regarding guests' readiness to accept AI-based services in hotels (Roy et al., 2024).

One of the most significant developments in this technological transformation is the adoption of artificial intelligence devices within the hospitality and tourism industry (Ruel & Njoku, 2021). These technologies offer guests a variety of services and experiences designed to enhance their travel experiences (Alsaad, 2023). The availability of large volumes of data and the potential for cost savings through improved efficiency and effectiveness are among the key factors driving the adoption of AI technologies (Limna, 2023). Despite the evident benefits of AI, hospitality firms remain highly concerned with understanding the factors that influence customer adoption of AI-based services (Gajić et al., 2024; Goel et al., 2022). Recent developments in AI and the rapid pace at which service organizations are integrating these technologies into service delivery processes demonstrate that AI adoption is a growing trend rather than a temporary phenomenon. This is largely due to the numerous advantages AI systems offer compared with human employees (Flavián & Casaló, 2021).

AI technologies can provide higher-quality, more consistent, and more timely services than human employees due to their advanced data-processing capabilities, rapid response times, and ability to deliver highly personalized experiences (Huang et al., 2022; Wang & Uysal, 2024). According to Wu, Sorokina, and Putra (2023), hotels can use AI to increase revenue, improve guest satisfaction, and enhance operational efficiency. Artificial intelligence has proven to be an effective tool for helping luxury hotels achieve their ongoing objectives of improving guest experiences and satisfaction. AI plays an important role throughout the entire guest journey, from booking to check-out.

Hotels can use technology to enhance the overall guest experience, streamline operations, and deliver an exceptional stay (Kim et al., 2024). Consequently, AI has emerged as a crucial factor in improving guest satisfaction in luxury hotels, and its importance is expected to continue growing. AI can be applied in hotels not only to create new experiences for guests but also to improve operational efficiency and service quality (Lv et al., 2022; Sankar & David, 2023). AI technologies have already been adopted across several tourism- and hospitality-related sectors, including hotels and food and beverage operations (Zrnić, Jovanović, & Novaković, 2024). The application of AI represents an important driver of economic development. Furthermore, AI technologies are increasingly evolving into digital assistants that support hospitality businesses in various ways, including reducing costs, increasing operational capacity, and enhancing customer service.

AI developments do, however, present certain risks, including job displacement in low-skilled sectors, reduced human control due to autonomous systems, and concerns related to privacy, security, and safety. Consequently, AI technologies have a significant impact on employment and workforce dynamics within the hospitality industry. To address this gap in the literature, this review paper examines existing studies on AI adoption in the hotel sector. The paper provides valuable insights that may guide future research as the application of AI in the hospitality industry continues to expand globally.

2. Literature review

2.1. AI in kotel operations

AI is reshaping daily hotel operations, from everyday repetitive tasks to increasing productivity and improving guest experiences. Chatbots, self-check-in kiosks, and robotic concierge services help deliver services more efficiently, reducing waiting times and improving operational performance. As more companies incorporate AI into their core service delivery models to provide customers with reliable and seamless service experiences, the adoption of AI-driven technologies is growing rapidly in the global hospitality sector (Ivanov & Webster, 2019). Both academics and industry professionals attribute this increasing trend in the use of AI-related technologies, supported by a wealth of empirical evidence, to the improved information-processing capabilities and enhanced cognitive and task performance exhibited by AI-driven applications compared with traditionally employed mechanisms. The use of AI-driven devices in the hospitality industry enables real-time responses to

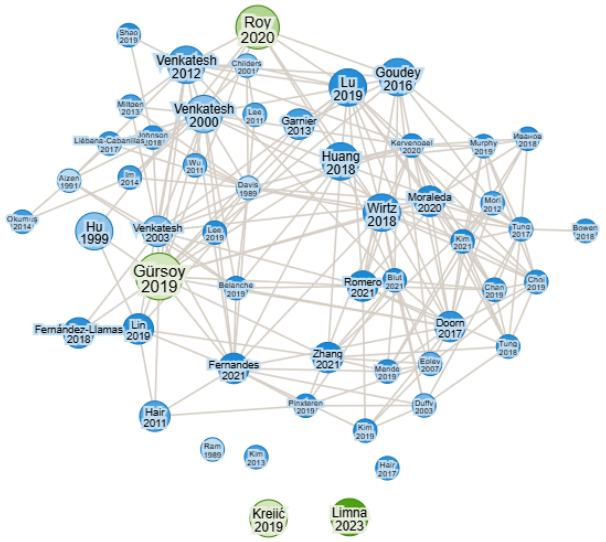
customer inquiries, provides relevant information and recommendations, allows guests to control the physical environment of their rooms (Yang, Henthorne, & George, 2020), and offers comprehensive end-to-end customer services, including virtual check-in and check-out, laundry, housekeeping, travel and tour planning, and food services (Lukanova & Ilieva, 2019).

Paulose and Shakeel (2022) provide valuable insights into how AI and employee service quality affect customer loyalty and satisfaction in the hotel sector. Artificial intelligence in service operations is one example of how technology is driving significant changes in the hospitality industry. This transition has shifted the service delivery paradigm from direct human interaction to digital interaction (Milton, 2024). Virtual assistants provide personalized support and recommendations in real time. In addition, mobile hotel check-in enables guests to benefit from greater convenience, improved data security, and more accurate verification. Dynamic pricing of services and products, workforce management, and inventory control are made possible through analytics and AI algorithms, helping hotels better control costs and improve business efficiency and effectiveness. Moreover, AI-powered sensors can regulate lighting and air-conditioning systems, making operational costs more predictable and sustainable. Today's guests increasingly seek greater control, and smart rooms equipped with virtual assistants help meet these expectations. Facial recognition technology also contributes to enhanced security in hospitality operations. The personalization of products and services through artificial intelligence increases guest satisfaction and improves the overall service experience. Understanding guests' attitudes and perceptions regarding the use of artificial intelligence is therefore important. Despite the significant benefits that AI offers to guests, the acceptance of artificial intelligence is not always guaranteed (Rasheed et al., 2024). However, there is still limited research on the factors influencing guests' decisions to adopt artificial intelligence in the hospitality industry (Sousa, Cardoso, & Dias, 2024; Zahidi, Kaluvilla, & Mulla, 2024). Through AI-assisted service delivery, valuable data can be obtained regarding the experiences, behavior, and preferences of guests staying in hospitality facilities for either short or extended periods (Chi et al., 2023). This information supports the adjustment of prices and services, as well as the use of chatbots that provide personalized services to guests. Although experiences with AI-assisted services are generally positive, some concerns regarding data privacy still remain (Makivić et al., 2024). The automation of hospitality services through artificial intelligence can contribute to higher levels of guest satisfaction (Ivanov & Webster, 2019).

2.2. Acceptance and guest attitudes toward artificial intelligence in hospitality

The importance and role of AI have been widely studied in recent years; however, relatively few studies have examined how artificial intelligence influences guest perceptions in the hotel industry. This section presents studies that investigate three aspects: the implementation of AI in hotel operations, the factors influencing the acceptance of AI, and the role and importance of artificial intelligence in the personalization of guest services.

Figure 1. Research studies on AI in hospitality identified via Research Rabbit



Source: Author's analysis based on Research Rabbit

Morosan and Dursun-Chengizji (2024) investigated the degree of guest acceptance of artificial intelligence by examining several antecedents of technology adoption, including convenience orientation, perceived ethics, rewards, and risks. In another study, Du et al. (2024) analyzed customers' readiness and resistance to the use of AI-powered robotic devices in hospitality services within both full-service and limited-service hotels. Chi et al. (2023) examined how trust influences customers' intentions to use AI robots in hospitality services, as well as the moderating effects of national culture (China and the United States) and individual cultural characteristics. Buhalis and Moldavska (2021) examined the role of voice-enabled devices in mediating relationships between hotels and guests. Research conducted by Han et al. (2025) identified factors and configurations that influence consumers' acceptance of service robots in the contemporary hospitality industry. Their study examined how the use of artificial intelligence in the personalization of hotel services affects travelers' attitudes, behaviors, and satisfaction. Conversely, Makivić et al. (2024) focused on how overall guest satisfaction is influenced by personalized recommendations for food and beverages, activities, and hotel services provided through reliable AI systems, digital experiences, and perceptions of privacy and data security.

Chi et al. (2022) examined travelers' perceptions of using artificial intelligence technologies in both hedonic and more utilitarian tourism services, including airline and hospitality services. A similar study conducted in Serbia by Gajić et al. (2024) focused on hospitality employees' willingness to accept artificial intelligence. In contrast, the present study focuses exclusively on hotel guests and their readiness to embrace AI as an integral part of hotel services (Khatter, 2025).

2.3. Artificial intelligence as a driver of sustainable and efficient hotel practices

The hospitality industry is essential to the economic success of many countries, according to Martínez et al. (2019). The primary focus of hospitality services, which can be provided in both commercial and non-commercial contexts, is the delivery of food, beverages, and accommodation (Abd El Kafy et al., 2022). The hospitality sector is highly dependent on reputation and customer reviews because its foundation lies in the provision of human-centered services (Du et al., 2024). Artificial intelligence (AI) refers to the process by which computer systems simulate human intelligence functions (Li et al., 2021). AI has developed into a powerful force that significantly influences a wide range of business activities across industries, as noted by Russell and Norvig. AI and robotic technologies are widely used in the hospitality sector, including accommodation, travel, food and beverage services, and meetings and events (Li et al., 2024). Artificial intelligence integrated into point-of-sale systems can support sales control functions in the food and beverage sector (Santos & Bacalhau, 2023). In addition to reducing human error, automation and AI-based services can help predict future business performance (Saydam, Arici, & Koseoglu, 2022). Machine learning algorithms drive automation processes and contribute to improved business efficiency in the hotel sector (Alotaibi, 2020; Jayal et al., 2010). According to Selvarajan (2021), artificial intelligence enables valuable data-driven insights that support more effective strategic decision-making in hotel businesses. Olayinka (2019) highlights the importance of predictive analytics in forecasting market trends, optimizing supply chains, and supporting managerial decision-making. Artificial intelligence helps hospitality companies remain competitive, gain advantages in modern tourism markets, and adapt to changing business conditions (Kaul, 2023).

Three primary objectives of AI integration are service personalization, anticipation of guest needs and preferences, and the creation of guest satisfaction through personalized experiences (Challoumis, 2024). At the same time, artificial intelligence can contribute to optimizing operational processes and managing costs and revenues while supporting pricing decisions that reflect market conditions (Wang et al., 2015; Negoiţă & Borangiu, 2023). One of the key reasons for the adoption of artificial intelligence in the hospitality industry is the improvement of the overall guest experience (Avula & Sithole, 2024). The use of artificial intelligence in hospitality is particularly challenging in high-category establishments where guest expectations are especially high (Ferhataj & Memaj, 2024). Another challenge relates to the protection of guest data and compliance with regulations governing privacy and personal data protection (Perkumienė, 2025). Successful integration of artificial intelligence requires alignment with existing technological systems, which demands both technical expertise and organizational readiness.

However, despite the challenges associated with AI adoption in the hospitality industry, its successful implementation largely depends on the attitudes and perceptions of both guests and employees, which directly affects the sustainability of the sector and business operations. The social, economic, and environmental dimensions of sustainability are influenced by employees' attitudes toward the adoption and use of artificial intelligence (Gursoy et al., 2019). The automation of certain jobs and work tasks raises concerns about potential job displacement, despite its ability to improve productivity and stimulate creativity, thereby contributing to the efficiency of available resources and overall sustainability (Bhuiyan, 2024).

Furthermore, artificial intelligence can improve working conditions, create new career opportunities, support workforce development, and enhance social sustainability. It should also be noted that employee attitudes toward AI vary across industries. Employees in the information technology sector, who are more frequently exposed to artificial intelligence, tend to have a more positive attitude toward AI tools (Cheah et al., 2022). Nevertheless, hospitality organizations can influence employee attitudes toward AI and reduce resistance to its adoption through open communication, staff engagement, and organizational policies that promote cooperation and synergy between employees and AI technologies (Rane, Choudhary, & Rane, 2024). This comprehensive approach supports the responsible integration of AI by emphasizing both its workplace benefits and its contribution to sustainability in the hospitality sector.

The operational, technological, and experiential advantages of artificial intelligence in the hospitality industry have been well documented in previous studies; however, much of the existing literature remains fragmented and largely descriptive. Prior research often focuses on specific AI applications, such as chatbots, service robots, or revenue management systems, without sufficiently comparing their outcomes or addressing conflicting findings related to guest acceptance, ethical concerns, and workforce implications.

Furthermore, empirical evidence remains inconclusive regarding whether AI enhances or diminishes the emotional dimension of hospitality services, particularly in high-contact service environments. This inconsistency suggests a lack of integrative frameworks that simultaneously consider sustainability principles, human values, and technological efficiency.

A comprehensive conceptual synthesis linking AI adoption, guest perceptions, organizational readiness, and sustainability outcomes within the hospitality industry is therefore still lacking. By integrating recent research into a unified framework, this study seeks to address this gap and explain how artificial intelligence can support operational excellence while preserving the fundamentally human-centered nature of hospitality services.

3. Materials and methods

3.1. Sources of information and search methods

Reputable academic databases, including Scopus, Web of Science, ScienceDirect, EBSCOhost, and Google Scholar, were used to collect the literature. In August 2025, the search was conducted using the following keyword combinations: "artificial intelligence," "hospitality industry," "hotels," "service robots," "automation," "personalization," "guest experience," "sustainability," and "hotel practices." To ensure that the study focused on recent managerial and technological developments in the field, only studies published between 2019 and 2025 were considered. Publications that primarily focused on AI in tourism marketing or destination management and showed no clear connection to hospitality operations were excluded. The identified studies were grouped into thematic categories reflecting the current applications, challenges, and future opportunities of artificial intelligence in the hospitality industry. Since the aim of the study was conceptual synthesis rather than quantitative comparison, no statistical meta-analysis was conducted.

To ensure transparency, reliability, and reproducibility in the literature selection process, the review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Each source was carefully examined to identify recurring themes and perspectives regarding the current state and future development of AI applications in hospitality. Recent scholarly research has explored various aspects of artificial intelligence adoption in the hospitality sector, ranging from operational efficiency and customer experience to sustainability. Table 1 presents the methodological characteristics of the main studies published between 2019 and 2025. The reviewed studies indicate that artificial intelligence can improve resource management, support personalized services, and enhance hotel business performance. However, recurring challenges related to employees, guests, and ethical concerns surrounding the use of artificial intelligence are also highlighted. Furthermore, Table 1 summarizes the literature in terms of research objectives, methods, key findings, and contributions, providing a useful foundation for future research and practical applications.

Table 1. Literature review on AI hospitality framework

Author(s) (Year)	Purpose of the Study	Methodology	Main Findings	Implications / Limitations
Ivanov & Webster (2019)	To establish a theoretical foundation for the application of AI and robotics in the hospitality industry	Conceptual analysis	Identified the main paradigms of automation and AI-driven guest interaction	Requires empirical validation of the proposed framework
Lukanova & Ilieva (2019)	To examine the impact of AI and robotics on hotel service delivery	Qualitative study	AI reduces costs and increases productivity, but may weaken human interaction	Lack of evidence regarding guest perceptions
Mariani & Borghi (2021)	To analyze online reviews of AI-enabled hotel services	Quantitative review analysis	Guests highly value the accuracy and efficiency of AI services	Emotional connection remains essential to the service experience
Flavián & Casaló (2021)	To identify the benefits and challenges of AI in service industries	Systematic literature review	AI improves operational performance but raises ethical concerns related to trust and privacy	Highlights the need for an ethical implementation framework
Li et al. (2021)	To provide a comprehensive overview of AI-based technologies in hospitality	Literature review	Identified revenue management, personalization, and operations as the three main areas of AI application	Limited empirical evidence on guest attitudes
Goel et al. (2022)	To understand the factors influencing consumer adoption of AI in hospitality	Literature review and synthesis	Trust, enjoyment, and perceived usefulness are key adoption drivers	The geographic scope of the reviewed studies is limited
Chi et al. (2023)	To investigate the influence of trust and culture on AI robot adoption	Quantitative study (China and USA)	Cultural background strongly influences perceived value and trust in AI	Calls for broader cross-cultural research
Alsaad (2023)	To examine the influence of anthropomorphism on consumer decision-making	Experimental study	Human-like robots can increase engagement but may also create discomfort	A balance between human and technological characteristics is required
Gajić et al. (2024)	To examine AI adoption in the Serbian hospitality sector	Empirical study	AI improves efficiency and sustainability, although employee resistance remains present	Limited managerial preparedness and digital literacy
Han et al. (2025)	To identify the main factors influencing the adoption and use of service robots in hospitality	Structural equation modeling	Trust in technology and perceived usefulness directly influence acceptance	Further research on emotional and social dimensions is needed

Source: Author's analysis

Table 1 presents studies with a conceptual framework for the integration of artificial intelligence into everyday business operations and its application based on the findings obtained. The above findings show that the application of AI in the hotel industry requires an approach that combines innovation, guest-focused management practices, and ethical business principles.

Figure 2. Word cloud of the most frequently used terms related to AI in hospitality

Source: Author's analysis

To identify the most commonly used terms, a word cloud was created to highlight key concepts and their role and importance in hospitality and artificial intelligence research. As shown in Figure 1, keywords such as “AI,” “hospitality,” “service,” “hotel,” “intelligence,” and “guest” appear most frequently, reflecting the strong focus of current research on the technological transformation of the hospitality sector. The frequent use of terms such as “automation,” “personalization,” “digital,” “experience,” and “management” indicates a continuing trend toward providing personalized services based on data and intelligent systems that enhance guest experiences.

In addition, the presence of terms such as “sustainability,” “efficiency,” “privacy,” and “trust” suggests that researchers are increasingly paying attention to data security, ethical concerns, and sustainable business practices. At the same time, the appearance of terms such as “human,” “employee,” and “collaboration” indicates that this digital transformation continues to rely heavily on the relationship between human employees and intelligent technologies. The figure illustrates the complexity of AI integration in hospitality research, with a particular emphasis on technological innovation, service design, and operational optimization. Based on the most frequently used terms, current research highlights artificial intelligence as a transformative force that is reshaping workforce dynamics, guest experiences, and strategic management in the hospitality industry.

4. Results

4.1. Conceptual framework for AI adoption and impacts in hospitality

In order to better understand the complex dynamics of artificial intelligence integration in the hospitality business, this review study suggests a conceptual model, the Framework for the Integration and Impact of Artificial Intelligence in Hospitality (AI–HI). The model was developed through a simple synthesis of the available literature, with the main goal of taking into account all the relationships between technological readiness and literacy, the implementation model, and the resulting organizational and experiential outcomes. The input components used to assess the readiness of the organization for the introduction of artificial intelligence represent the starting point for the implementation of AI. They consist of technological infrastructure, employees' technological literacy, leadership capacities for implementation and technological transformation, and the trust and openness of guests toward interaction with artificial intelligence systems. The mentioned components lay the basic foundations for the efficient and effective application of artificial intelligence. The implementation phase represents the operational integration of artificial intelligence technology into complex hotel systems. The automation of daily business tasks such as guest registration, housekeeping, and inventory management, the personalization of services through detailed data analysis, and the improvement of guest interaction

through chatbots and communication with virtual assistants are only part of this phase. Furthermore, monitoring systems using artificial intelligence greatly assist in improving energy efficiency and managing available resources, which enhances the business performance and sustainability of hospitality facilities. Virtual assistants, chatbots, and robots are used daily as tools to improve communication with guests and reduce staff workload. Moreover, forecasting demand for products and services, smart pricing, and the thorough analysis of guest behavior and needs increasingly depend on existing data and predictive models driven by artificial intelligence. These applications show how standard management techniques in the hospitality sector are changing as a result of data-driven decision-making.

5. Discussion

According to the literature review, artificial intelligence enhances the hospitality sector by improving traditional management techniques and restructuring service quality. While recent studies point out that the coexistence of intelligent systems and staff can affect business efficiency without diminishing the emotional component of hospitality, earlier research highlighted concerns that artificial intelligence could reduce or replace human interaction. This supports the theoretical assumption that artificial intelligence should only be used to improve, and not replace, service provision in the hospitality industry. Important questions remain regarding data privacy, employment structures, and the ethical practices and responsibilities associated with the use of artificial intelligence in the hospitality industry. The adoption and application of artificial intelligence in the hospitality industry require thorough organizational acceptance, training, and employee supervision. The adoption of AI in the hospitality industry needs to be viewed as a multi-layered process that includes managerial, socio-cultural, and technological aspects. The ability of the hospitality sector to successfully implement modern technology while preserving human values is imperative for the successful implementation of artificial intelligence, despite the fact that it presents significant opportunities for innovation.

The results of this literature review are consistent with global research indicating that artificial intelligence greatly improves data-driven decision-making, operational efficiency, and personalization in hospitality organizations (Ivanov & Webster, 2019). The adoption of AI is most successful when it is incorporated as a support system rather than as a substitute for human labor, according to similar studies conducted in Western European and Asian markets.

Comparing guest acceptance across various cultural and commercial contexts, however, reveals disparities. Research from developing hospitality destinations highlights enduring concerns about privacy, emotional authenticity, and job displacement, despite studies from technologically advanced markets reporting high levels of trust in AI-enabled services (Gajić et al., 2024; Rasheed et al., 2024). Variations in digital literacy, cultural expectations regarding service interactions, and regulatory environments could all account for these discrepancies.

The discussion also shows that international studies consistently support sustainability-oriented outcomes of AI adoption, such as waste reduction, energy optimization, and predictive resource management. However, little is known about the long-term social sustainability of AI in the hospitality industry, especially with regard to models of human–AI collaboration and employee well-being. These results support the idea that, rather than being a purely efficiency-driven technological solution, artificial intelligence should be strategically positioned as an enabler of sustainable and human-centered hospitality management.

5.1. Theoretical and practical implications

AI-powered chatbots for round-the-clock guest communication, predictive analytics systems for dynamic pricing and demand forecasting, and intelligent energy management systems that lower operating costs and environmental impact are examples of practical applications found in the examined literature. For instance, research shows that hotels using AI-driven revenue management systems improved occupancy optimization and pricing accuracy, while AI-supported inventory and housekeeping systems increased labor efficiency and reduced costs. Furthermore, virtual assistants and service robots have been effectively used in everyday guest interactions, freeing up human staff to concentrate on more intricate and emotionally charged service engagements. These examples show how AI applications convert theoretical developments into practical managerial advantages, improving both operational efficiency and guest satisfaction.

From a theoretical standpoint, this study adds to the hospitality and tourism literature by providing an integrative conceptual framework that connects the adoption of AI with organizational preparedness, guest perceptions, and sustainable outcomes. By adding ethical issues and human–AI cooperation as fundamental aspects of hospitality management, the framework expands upon current technology adoption models.

From a practical standpoint, the results provide hotel managers with guidance on how to strategically apply AI technologies to boost productivity while preserving service authenticity. Managers are encouraged to invest in staff training, maintain open communication with guests regarding data use, and adopt a phased approach to AI implementation that is consistent with organizational culture. These insights may also help policymakers and industry stakeholders develop rules and guidelines that encourage the ethical and long-term use of AI in the hospitality sector.

6. Conclusion

The daily use of artificial intelligence is a significant element of digitalization in the hospitality industry. The

literature review shows that the use of AI applications has changed decision-making processes, guest experiences, and operational procedures. According to this literature review study, which summarizes recent research from 2019 to 2025, AI is increasing employee productivity, reducing human error, and fostering sustainability through data-driven insights and strategic forecasting. However, the literature review also points to some of the main challenges associated with the use of artificial intelligence. One of these challenges is the loss of human authenticity in service provision, concerns regarding personal data privacy and security, and other ethical issues. Hospitality management should prioritize ethical business practices and data security to ensure that AI complements human interaction rather than replaces it. However, the long-term efficiency and effectiveness of artificial intelligence in the hospitality sector significantly depend on finding a balance between innovation and a guest-oriented service philosophy.

5.1. Study limitations

Like any literature review study, this research has certain limitations. There is still a limited number of studies addressing artificial intelligence in the hospitality industry. Some studies focus on the adoption of artificial intelligence in the hospitality sector, while others address issues related to ethics or sustainability. This literature review paper provides a brief overview of studies with different research findings and scientific contributions. Moreover, this paper presents a narrative review rather than a systematic meta-analysis. There is also an absence of quantitative comparison and standardized criteria. Furthermore, the conclusions of the literature review are based solely on previously published studies, as the review did not include primary or secondary empirical data. In this regard, certain conclusions may be influenced by contextual factors specific to each study, such as geographic location, hotel categorization, or the level of technological sophistication. Given the rapid development of artificial intelligence in the hotel sector, new technologies and applications may soon emerge that could affect the relevance of some of the findings discussed here.

5.3. Future research directions

In addition to the limitations mentioned above, there are also opportunities for future research, despite the fact that the available literature provides useful information and statistical data on the application of artificial intelligence in hospitality. Instead of descriptive and conceptual studies, future research could focus more on empirical and longitudinal analyses aimed at assessing the ethical, operational, and social effects of artificial intelligence technologies. Furthermore, the use of mixed methods is recommended in order to gain a better understanding of how artificial intelligence affects guest satisfaction and loyalty, business sustainability, and competitiveness. Another suggestion for future research is the examination of cross-cultural differences in guests' attitudes toward the use of artificial intelligence, since national culture plays an important role in building trust and influencing the acceptance of new technologies. With the continued growth and development of generative artificial intelligence, machine learning, and robotics, there is an increasing need to examine models of collaboration between humans and artificial intelligence. Future studies should focus on the social and environmental dimensions of sustainability in order to gain a better understanding of how artificial intelligence can support more inclusive and ethical hotel management. Despite these limitations, this literature review provides a useful starting point for future theoretical and empirical studies on the transformative potential of AI in the hospitality industry.

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