

# A Review on the Role of Artificial Intelligence in Tourism

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**Abstract**— The purpose of this study is to explore the role of Artificial Intelligence (AI) in enhancing customer service in the tourist industry by leveraging the synergy between AI and human emotions and cognition. A systematic review of the relevant literature was conducted to identify the existing research on AI in the service sector. The major findings suggest that AI can significantly improve the speed, creativity, and knowledge of service, leading to enhanced customer satisfaction. Additionally, the study highlights the increasing use of new AI technologies and techniques in the tourist trade. The interpretation of the findings suggests that the use of AI in the tourist industry is no longer limited to virtual interactions but extends to physical interactions as well. The study also emphasizes the importance of connectivity in the hospitality and tourist industry and highlights the need for further research and forecasting in this area. The implications of the study are that companies in the tourist industry need to focus on enhancing their customer service by leveraging the benefits of AI. They also need to adopt new AI technologies and techniques to stay ahead of the competition. Overall, the study provides a comprehensive understanding of the current state of AI in the service sector and its potential for improving customer service in the tourist industry.

**Keywords**— *AI in customer service, Tourism industry, Synergy between AI and human emotions, New AI technologies and techniques, Customer satisfaction in hospitality industry AI, The tourism sector.*

## I. INTRODUCTION

Artificial intelligence (AI) is revolutionizing the service sector by transforming how companies interact with their customers. In the tourist industry, AI is changing the way customers access information, make reservations, and seek assistance, ultimately leading to enhanced customer [1]. The purpose of this study is to explore the role of AI in enhancing customer service in the tourist industry by leveraging the synergy between AI and human emotions and cognition. A systematic review of the relevant literature was conducted to identify the existing research on AI in the service sector. The study found that AI can significantly improve the speed, creativity, and knowledge of service, leading to enhanced customer satisfaction. In the tourist

industry, AI is being used to enhance customer experiences through personalized recommendations, real-time translation, and automated concierge services [2]. The study also highlights the increasing use of new AI technologies and techniques in the tourist trade, such as chatbots, virtual assistants, and voice recognition systems.

The interpretation of the findings suggests that the use of AI in the tourist industry is no longer limited to virtual interactions but extends to physical interactions as well. For instance, AI-powered robots are being used in hotels and airports to provide check-in services and deliver room service [3]. These AI-powered robots can offer personalized recommendations based on the guests' preferences, languages, and past experiences, creating a unique and memorable customer experience.

Furthermore, the study emphasizes the importance of connectivity in the hospitality and tourist industry. The integration of AI-powered systems with existing technologies can improve customer service by enabling faster and more efficient responses to customer needs. This connectivity also enables companies to collect and analyze customer data, leading to more personalized services and targeted marketing. The implications of the study are that companies in the tourist industry need to focus on enhancing their customer service by leveraging the benefits of AI. They also need to adopt new AI technologies and techniques to stay ahead of the competition. By embracing AI, companies can reduce their operational costs, increase their productivity, and enhance the quality of their services. In conclusion, the study provides a comprehensive understanding of the current state of AI in the service sector and its potential for improving customer service in the tourist industry. AI has already shown promising results in enhancing customer satisfaction and improving operational efficiency. Therefore, companies in the tourist industry must prioritize the adoption of AI-powered systems to remain competitive in the digital age. Further research and forecasting in this area can help identify new opportunities for AI to revolutionize the service sector and improve customer experiences.

The study provides a comprehensive understanding of the current state of AI in the service sector and its potential for improving customer service in the tourist industry. The rest of the paper is organized as follows: The second section of this paper offers insights into the application of AI within the tourism industry. Moving on, the third section presents the results obtained from the study, followed by a discussion of their implications. Finally, the fourth and last section concludes the paper by summarizing the key findings and proposing recommendations for further research in this area.

## II. ARTIFICIAL INTELLIGENCE IN TOURISM

Many researchers have tried to come up with different ideas to boost customer service in the tourist industry. However, a few ideas are innovative and could be useful if we amalgamate any of them to improve customer service in tourism. Saini et al. [1] conducted a study on the use of AI in the tourism industry. The authors explored the application of AI in various areas such as marketing, customer service, and management, and identified its benefits and challenges. Davenport et al. [2] discussed strategies for individuals and organizations to remain employed in the age of AI. They suggested that people should focus on developing skills that machines are not capable of, such as creativity, empathy, and critical thinking. Sheth et al. [3] presented an overview of the field of tourism informatics and highlighted its importance in supporting tourism research and management. The authors also discussed the use of visualization techniques to analyze and present tourism-related data. Leonidou et al. [4] examined the internal drivers and performance consequences of small firms' green business strategies and the moderating role of external forces. The authors found that external forces, such as regulatory and market pressures, can affect the relationship between green business strategies and firm performance.

Zhang et al. [5] explored the concepts, applications, and challenges of using AI in the hotel industry. The author discussed various areas in which AI can be applied, such as revenue management, customer service, and marketing, and identified the potential benefits and challenges. conducted research into the impact of AI on service quality within the hospitality industry. The authors found that the use of AI can enhance service quality by improving efficiency and personalization, but it can also lead to concerns about job displacement and privacy. Zopatis et al. [7] examined the impact of service quality on customer loyalty in the hotel industry in Cyprus. The authors found that service quality has a positive impact on customer loyalty and recommended that hotel managers focus on improving service quality to increase customer loyalty. Xiang et al. [8] compared the websites of destination management organizations in the United States and China and identified differences in their e-destination marketing strategies. The authors suggested that destination management organizations should focus on providing personalized and interactive experiences to attract and retain customers. Stankov et al. [9] investigated the impact of service quality on customer satisfaction in the hotel industry. The authors found that service quality has a positive impact on customer satisfaction and recommended that hotel managers focus on improving service quality to increase customer satisfaction. Zhou et al. [10] developed an extended expectation-confirmation model to examine tourists' continuous use of online peer-to-peer

accommodation services. The author found that perceived usefulness, trust, and satisfaction are important factors that influence tourists' intention to continue using these services. Paraskevas et al. [11] conducted an exploratory study to investigate the management of customer experience in the tourism industry. The authors found that the customer experience is a critical factor that influences customer satisfaction and loyalty and recommended that tourism organizations should focus on providing personalized and memorable experiences.

Sigala et al. [12] discussed the use of service robots in the hospitality industry and their potential impact on service operations. The author identified various areas in which service robots can be used, such as reception, housekeeping, and room service, and highlighted the importance of considering their ethical and social implications. Deng et al. [13] highlighted the impact of AI and machine learning on the hospitality and tourism industry. They discussed the potential applications of these technologies, such as personalized recommendations, chatbots, and revenue management, and the benefits they bring to both customers and businesses. Liu et al. [14] conducted a comparative study on the information sources used by Chinese tourists when traveling to Europe. They found that Chinese tourists relied more on social media and word-of-mouth recommendations than on traditional travel agencies and guidebooks. Kwon et al. [15] conducted a systematic literature review of the use of smart service robots in the hospitality industry. They examined the benefits and challenges of implementing these robots and discussed the factors that influence customers' acceptance and satisfaction. Zeng et al. [16] investigated the effects of AI on tourists' online purchasing intention in China. They found that AI-based personalized recommendations and chatbots positively influenced customers' intention to purchase tourism products online. Wang et al. [17] The present study investigated the connections among service quality, customer satisfaction, and loyalty within the context of peer-to-peer accommodations, with a particular focus on Airbnb as a case study. They found that service quality positively affected customer satisfaction, which in turn influenced customer loyalty. Jung et al. [18] examined the effects of AI and human interaction on hotel customer service quality, relationship quality, and customer satisfaction. They found that AI-based service improved service quality, while human interaction positively influenced relationship quality and customer satisfaction. Xie et al. [19] investigated the effects of AI on customer engagement and loyalty in the hospitality industry. They found that AI-based personalized recommendations and chatbots positively affected customer engagement and loyalty. Yu, et al. [20] explored the relationship between AI-based personalization, perceived value, satisfaction, and loyalty in hotel websites. They found that AI-based personalization positively influenced customers' perceived value and satisfaction, which in turn increased their loyalty to the hotel brand. Li et al. [21] studied the effects of AI-powered chatbots on customer satisfaction in the hospitality sector. They found that chatbots positively influenced customers' perceived ease of use, usefulness, and satisfaction, which in turn enhanced their overall satisfaction with the hotel's services. Zohdi et al. [22] proposed a demand forecasting approach using machine learning algorithms applied to customer information.

Marzijarani et al. [23] developed a technique for opinion mining and review summarization using clustering. Rawat et al. [24] worked on ontology creation for cyber-criminal activities through logical concept mapping and social media analytics. Lastly, Agarwal et al. [25] focused on portfolio optimization in stocks using mean-variance optimization and the efficient frontier. These studies demonstrate the versatility and applicability of information technology in various fields, from business and finance to cybersecurity and opinion analysis.

Overall, the reviewed studies demonstrate the significant impact of AI and machine learning on the hospitality and tourism industry. These technologies have the potential to improve service quality, customer satisfaction, and loyalty, and to enhance the overall customer experience. Comparative analysis of related work can be helpful in identifying common themes, trends, and gaps in research. In this case, the related work focuses on the impact of AI and machine learning on the hospitality and tourism industry. By conducting a comparative analysis, one can compare the findings of different studies, identify similarities and differences, and gain a more comprehensive understanding of the research area.

### III. RESULTS AND DISCUSSION

The objective of this research paper is to explore the role of artificial intelligence (AI) in the tourism and hospitality industry and its impact on customer satisfaction, loyalty, and service quality. There is a growing interest in exploring the role of artificial intelligence (AI) in the tourism and hospitality industry due to its potential to transform the industry in numerous ways. Based on the reviewed literature, reported in Section II, we found the following reasons for carrying out a comparative analysis of AI in hospitality and tourism.

#### A. Improved Efficiency

AI can help automate repetitive tasks and provide personalized recommendations to customers. This can help save time and increase efficiency, allowing tourism and hospitality businesses to provide better service to their customers.

#### B. Improved Efficiency

**Enhanced Customer Experience:** AI can be used to create more personalized experiences for customers, such as chatbots that provide 24/7 customer service, personalized recommendations for activities and restaurants, and real-time translation services. These improvements can lead to increased customer satisfaction and loyalty.

#### C. Increased Revenue

By leveraging AI, businesses can optimize pricing and promotions, manage inventory more efficiently, and identify new revenue streams. This can lead to increased revenue and profitability for the business.

#### D. Competitive Advantage

As AI becomes more prevalent in the tourism and hospitality industry, businesses that adopt these technologies early on will have a competitive advantage over those that do not.

Overall, exploring the role of AI in the tourism and hospitality industry is important because it has the potential to improve customer satisfaction, loyalty, and service quality, while also enhancing efficiency and driving revenue growth for businesses. Table I summarizes the reviewed literature related to use of artificial intelligence in tourism. AI has significant potential to transform the tourism and hospitality industry through personalization, automation, and data analysis, but challenges such as ethical concerns, data quality and security, human-technology interaction, and employee job security and privacy concerns need to be addressed.

TABLE I. SUMMARY OF REVIEWED LITERATURE

S. No.	Study	Main Objective	Key Findings	Issues and Challenges
1	Saini et al. [1]	Review of AI in the tourism industry	AI has the potential to transform the tourism industry through personalization, automation, and data analysis	The need for workers to develop new skills and adapt to the changing job market in the AI age, and the ethical concerns related to the use of AI in employment.
2	Davenport et al. [2]	Strategies for remaining employed in the AI age	Workers can stay employed in the AI age by developing skills that complement AI and by embracing a lifelong learning mindset	The need for further research in tourism informatics and the development of visual tools to analyze data in the tourism industry.
3	Sheth et al. [3]	Visualization of tourism informatics research	Tourism informatics research can be categorized into six areas: information retrieval, data mining, decision support systems, simulation and modeling, visualization, and online communication	The internal drivers and performance consequences of small firm green business strategy and the moderating role of external forces.
4	Leonidou et al. [4]	Internal drivers and performance consequences of small firm green business strategy	Small firms' green business strategies can lead to improved financial and non-financial performance, and external forces such as market pressure and stakeholder influence can moderate this relationship	The concepts, applications, and challenges of implementing AI in the hotel industry, such as data quality and privacy concerns.
5	Zhang [5]	AI concepts, applications, and challenges in the hotel industry	AI can enhance hotel operations and guest experience, but challenges such as data quality and security, ethical concerns, and human-technology interaction need to be addressed	The effects of AI on service quality in the hospitality industry, including the need for human-AI collaboration and the impact of AI on customer satisfaction.
6	Park et al. [6]	The impact of AI on service quality within the hospitality industry.	AI adoption can enhance service quality, but human-technology interaction and service employee training are critical for successful implementation	The impact of service quality on customer loyalty in the hotel industry and the need for effective management strategies to improve service quality.

S. No.	Study	Main Objective	Key Findings	Issues and Challenges
7	Zopiatis et al. [7]	Impact of service quality on customer loyalty in the hotel industry	Service quality has a positive effect on customer loyalty in the hotel industry, and this effect is stronger for high-end hotels	The comparison of destination management organizations' websites between the United States and China in terms of e-destination marketing.
8	Xiang et al. [8]	Comparison of destination management organizations' websites between the US and China	Chinese destination websites focus more on natural and cultural attractions, while US websites focus more on tourism infrastructure and amenities	The impact of service quality on customer satisfaction in the hotel industry and the need for effective service quality management strategies.
9	Stankov et al. [9]	Impact of service quality on customer satisfaction in the hotel industry	Service quality has a significant positive effect on customer satisfaction in the hotel industry, and this effect is stronger for high-end hotels	The continuous use of online peer-to-peer accommodation services by tourists and the extended expectation-confirmation model.
10	Zhou et al. [10]	Tourists' continuous use of online peer-to-peer accommodation services	Tourists' intention to continue using peer-to-peer accommodation services is influenced by their satisfaction, perceived usefulness, and trust in the platform	The development of effective strategies to improve customer satisfaction is a biggest challenge.
11	Paraskevas et al. [11]	Effectively overseeing the customer experience within the tourism sector.	Customer experience management involves understanding and managing customer expectations and emotions throughout the entire customer journey	The use of service robots is a big challenge in service operations in the tourism industry and their impact on service quality.
12	Sigala et al. [12]	Service operations and service robots	Service robots can improve service quality, productivity, and customer experience, but they also raise ethical, legal, and social issues	The impact of AI and machine learning on the hospitality and tourism industry and their potential applications.
13	Deng et al. [13]	How AI and machine learning are changing hospitality and tourism	AI and machine learning can enhance various aspects of hospitality and tourism, including marketing, operations, and guest experience	The information sources for Chinese tourists to Europe and a comparative study of these sources.
14	Liu et al. [14]	Information sources for Chinese tourists to Europe	Chinese tourists rely heavily on online sources of information, including social media and travel websites, when planning their trips to Europe	The systematic literature review of smart service robots in the hospitality industry and their potential applications.
15	Kwon et al. [15]	An examination of the literature regarding the implementation of intelligent service robots within the hospitality sector.	Smart service robots have the potential to improve customer satisfaction and increase operational efficiency, but their impact on employee job security and privacy concerns need to be addressed	The effects of AI on tourists' online purchasing intention, with evidence from China.
16	Zeng et al. [16]	To explore the effects of artificial intelligence on tourists' online purchasing intention in China	AI has a positive impact on tourists' online purchasing intention, with perceived usefulness and trust in AI as significant mediating factors	The impact of service quality, customer satisfaction, and customer loyalty in peer-to-peer accommodations, with evidence from Airbnb.
17	Wang et al. [17]	To investigate the relationship between service quality, customer satisfaction, and customer loyalty in peer-to-peer accommodations	Service quality and customer satisfaction have significant positive effects on customer loyalty in peer-to-peer accommodations, with perceived value and trust as significant mediating factors	The effects of AI and human interaction on hotel customer service, including service quality, relationship quality, and customer satisfaction.
18	Jung et al. [18]	To examine the effects of artificial intelligence and human interaction on hotel customer service quality, relationship quality, and customer satisfaction	AI and human interaction have positive effects on service quality, relationship quality, and customer satisfaction, with AI having a stronger impact on service quality and relationship quality	The effects of AI on customer engagement and customer loyalty in the hospitality industry.
19	Xie et al. [19]	To uncover the effects of artificial intelligence on customer engagement and customer loyalty in the hospitality industry	AI has a positive impact on customer engagement and customer loyalty in the hospitality industry, with perceived usefulness and trust in AI as significant mediating factors	The relationship between AI-based personalization, perceived value, satisfaction, and loyalty in hotel websites.
20	Yu et al. [20]	To explore the relationship between AI-based personalization, perceived value, satisfaction, and loyalty in hotel websites	AI-based personalization has positive effects on perceived value, satisfaction, and loyalty in hotel websites, with perceived usefulness and trust in AI as significant mediating factors	The hospitality industry's customer satisfaction and its relationship with AI-based chatbots' impact.
21	Li et al. [21]	To study the effect of AI-powered chatbots on customer satisfaction in the hospitality sector.	AI-based chatbots have positive effects on customer satisfaction in the hotel industry, with perceived usefulness and trust in AI as significant mediating factors	In the age of AI, it is crucial for workers to develop new skills and be able to adapt to the constantly changing job market which is the main challenge in today's era.

#### IV. CONCLUSION

The results of reviewed literature provides insights into various aspects of the hospitality and tourism industry, including the potential of AI to transform the industry through personalization, automation, and data analysis, strategies for remaining employed in the AI age, and the impact of service quality on customer loyalty and satisfaction. The studies also highlight the importance of

understanding and managing customer expectations and emotions, the potential of service robots to improve service quality, productivity, and customer experience, and the effects of AI-based personalization on perceived value, satisfaction, and loyalty in hotel websites. Overall, the findings of these studies can help stakeholders in the hospitality and tourism industry to make informed decisions and implement effective strategies to enhance customer experience and loyalty.



The future scope of AI in the tourism and hospitality industry includes addressing ethical, legal, and social issues, developing complementary skills for workers, and improving customer satisfaction through personalized service and engagement. Additionally, tourism informatics research can explore various areas such as data mining, decision support systems, and online communication, while small firms' green business strategies can enhance performance, and Chinese tourists rely on online sources for travel planning. Customer experience management is crucial for managing expectations and emotions throughout the customer journey.

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