



Review Paper

Artificial Intelligence (AI) in the Hospitality Industry: A Review Article

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Date received: April 17, 2022

Date received in revised form: May 20, 2022

Date accepted: May 20, 2022

Recommended citation:

Limna, P. (2023). Artificial Intelligence (AI) in the hospitality industry: A review article. *International Journal of Computing Sciences Research*, 7, 1306-1317. <https://doi.org/10.25147/ijcsr.2017.001.1.103>

Abstract

Purpose – Artificial intelligence (AI) adoption is critical in the age of digital technology. This review article aims to evaluate the literature on AI in the hospitality industry.

Method – A narrative synthesis was used in this review article. Moreover, the literature was reviewed systematically to explore AI in the hospitality industry. The literature and information were obtained from various books and research articles on EBSCO, Google Scholar, Scopus, Web of Science, and ScienceDirect. The inclusion criteria were studies that clearly defined AI in all aspects of the hospitality industry, were published and written in English and were peer-reviewed. Content analysis was employed.

Results – The use of AI is a strategic and critical factor in economic development. Furthermore, AI technologies are increasingly being used as digital assistants. They help businesses in the hospitality industry in a variety of ways, including improving customer service, expanding operational capability, and lowering costs. However, there are some risks associated with AI advancements, such as job loss in low-tech sectors, loss of control due to robot autonomy, and safety, security, and privacy concerns.



Conclusion – AI technologies have both positive and negative effects on the workforce and job employment in the hospitality industry.

Recommendations – The recommendation is to consider a quantitative study regarding AI adoption in the hospitality industry or other sectors. Also, a qualitative approach could give a clear view of insight results for further study.

Research Implications – This review article contributed to the existing literature on AI adoption in the hospitality industry. Hence, it could be used to guide future research on AI adoption in the hospitality industry. It may also aid academics in broadening their research by incorporating more potential elements.

Practical Implications – This review article could lead to a better understanding of AI adoption in the hospitality industry. Moreover, it may assist business owners, managers, and marketers in the hospitality industry or any sector to achieve and enhance high business performance by implementing appropriate strategies to meet the needs and expectations of both customers and employees through the use of AI.

Keywords – artificial intelligence (AI), adoption, hospitality industry, review

INTRODUCTION

In the age of digital technology, artificial intelligence (AI) adoption is essential. Since its inception, it has provided numerous opportunities and challenges to various industries, including the hospitality industry. Similarly, AI is necessary to consider when transforming innovation into a global economy. Many AI-powered technologies have been developed with the potential to improve the economy by raising people's living standards (Allam, 2016; Koo et al., 2021; Limna et al., 2021). The hospitality industry these days faces a highly competitive environment, which is saturated with new technologies, customers who expect superior service, serve as a significant source of innovation, and are constantly confronted with the challenges of rising costs.

The survival of these businesses is frequently determined by their overall financial performance, ability to adapt to changing environments, and how they transform and expand their services to meet the needs and expectations of their customers (Van Niekerk, 2016; Wikhamn, 2019). As a result, the hospitality and tourism industry is leveraging cutting-edge technologies, such as artificial intelligence and robotics (AIR), to enhance customer service and experience. These technological advancements have been transformed into smart tools for providing customer service, and they are being used to improve the customer experience (Goel et al., 2022). Furthermore, the recent development and application of advanced technology and communication technologies (ICT) have

transformed and automated every aspect of the tourist experience resulting in tremendous changes in the tourism and hospitality industry (Kumar et al., 2021). Moreover, the rapid advancement of AI in hospitality management also has the potential to increase corporate performance. For instance, the hospitality industry, especially the hotel businesses, is a data-intensive industry that collects massive amounts of data in various forms.

To maintain a competitive advantage and enhance business performance, several organizations implement AI-powered technologies, such as point of sale (POS), Facebook Ads, and LINE Ads (Dash et al., 2019; Limna et al., 2021; Tong-On et al., 2021). Hence, AI and automation science offer numerous opportunities for tourism and hospitality businesses to improve their day-to-day operations and ensure that a high-quality service is delivered to their customers (Drexler & Lapré, 2019; Kumar et al., 2021). Despite the widespread adoption of technology in the service industry in general, and the hospitality industry in particular, striking the right balance between digital and human interactions remains difficult. In terms of service quality, the use of AI, robots, and service automation is becoming increasingly important for gaining a competitive advantage, but providing more personalized guest experiences remains contentious (Naumov, 2019). Therefore, artificial intelligence (AI) adoption in the hospitality industry is critical to discuss.

LITERATURE REVIEW

The Hospitality Industry

In many countries, the hospitality industry is critical to economic success (Martínez-Martínez et al., 2019). Hospitality refers to the practices of welcoming and entertaining customers. Hospitality services are primarily focused on the provision of food, drinks, and lodging and can take place in both commercial and non-commercial establishments (Naumov, 2019). The hospitality industry includes hotel sectors, tourism sectors, food and beverage sectors, and meeting and event sectors (Sisson & Adams, 2013). Because the hospitality industry is based on human services, it is heavily reliant on representation and customer reviews.

Furthermore, innovative technology can put the customer's point of view at the center of operations. Using AI technologies can improve customer experiences while reducing the need for human labor. As a result, many hospitality businesses have been investing more in technology in recent years to increase revenues and growth (Loureiro et al., 2021). The international hospitality and tourism industry is one of the most important, largest, and fastest-growing industries in the world. Globally, it generates \$7.6 trillion in revenue and employs 292 million people, accounting for nearly 10% of global GDP and one out of ten jobs, with more jobs expected to be created in the coming years due to its projected steady growth (Ruel & Njoku, 2021). Therefore, the hospitality industry is critical

as it is one of the most important economic sectors and is currently a highly competitive market.

Artificial Intelligence

Artificial intelligence (AI) is made up of two words: artificial, which refers to something created by humans, and intelligence, which refers to the ability to think for oneself, resulting in AI being defined as a thinking power created by humans (Limna et al., 2021). AI is the simulation of human intelligence operations by computers, particularly computer systems (Wang et al., 2020). AI is extremely effective at performing specific tasks. It also transforms almost every sector of a country's economy by enabling computers to make sound decisions that result in more efficient operations (Holzinger et al., 2021; Kumar et al., 2021). Furthermore, AI enables people to work smarter, resulting in better business outcomes, but it also necessitates the development of new competencies and capabilities, ranging from technological expertise to social and emotional skills, as well as creative abilities (Ivanov & Webster, 2019; Ruel & Njoku, 2021).

Simultaneously, AI may cause human talent to be replaced by technology in some cases, forcing hospitality and tourism businesses to redesign their structures and processes as a result (Saini & Bhalla, 2022). Also, using digital analytics and AI tools to manage and monitor the performance of human talent results in improved talent attraction, development, deployment, and productivity in human resource management (Hecklau et al., 2017; Nocker & Sena, 2019). Because of the potential implications for service quality and customer satisfaction, there is a significant interest in hospitality and tourism research in gaining a better understanding of the impact of AI technologies on employee engagement, retention, and productivity levels (Ruel & Njoku, 2021). Therefore, AI is necessary for several ways.

Artificial Intelligence in the Hospitality Industry

Technological innovations, such as AI-powered technologies, are expected to enable businesses in the digital economy to transition to more digital ways of working, managing, organizing, and facilitating change in various organizational processes (Attaran, 2020; Rosário & Dias, 2022). Furthermore, the hospitality industry is evolving at a rapid pace, aided by technological advances in AI, robotics, and big data (Reis et al., 2020). For instance, AI adds intelligence to the hospitality industry through AI-enhanced hotel and tourism operations and management systems, transforming the hospitality industry into an intelligent hotel and tourism industry (Ruel & Njoku, 2021). Besides, the hospitality industry has implemented computerized processes and AI in the systems, such as property management systems, revenue management systems, and customer relationship management, to synthesize key performance indicators (Mariani et al., 2018).

AI is also used to enable service innovation in the delivery of personalized services in the hospitality industry as AI-powered smart services and robotics, such as AI-based chatbot technologies, are used to support human intelligence and physical capabilities (Chi et al., 2020; Pillai & Sivathanu, 2020). Moreover, the use of AI technologies to deliver services in the hospitality industry has a significant impact on employee productivity. AI service quality significantly contributes to overall service quality in the hospitality industry via employee service quality, necessitating a better understanding of how AI technologies can influence service quality, customer satisfaction, and loyalty via employee-related outcomes, such as employee engagement, productivity, and service quality (Prentice et al., 2020). Therefore, AI is crucial for the hospitality industry in a variety of ways.

The Influence of Artificial Intelligence on the Hospitality Industry

Modern technological applications, such as AI and robotic technologies, are widely used in the hospitality industries, including hotel businesses, tourism businesses, food and beverage businesses, as well as meeting and event businesses (Drexler & Lapré, 2019; Yang et al., 2020). Moreover, the advancement of AI and robotics, combined with increased digital connectivity, has an influence on all business sectors, including hospitality. Companies utilize these advanced and smart technologies to improve operational processes, reduce costs, as well as enhance customer experiences and propose new ones (Mingotto et al., 2021). AI and robotics have a variety of effects on the hospitality industry. For instance, AI in point-of-sale systems can reduce employee theft and steal in food and beverage businesses, such as cafes and restaurants (Berezina et al., 2019).

Furthermore, AI and automation services have the potential to not only reduce human errors and blunders but also to provide predictive insights into the future. Thus, AI and automation services are capable of analyzing massive amounts of data and converting it into useful business information. Moreover, business expertise grows, allowing them to provide better customer experiences to their customers. AI will satisfy business customers by assisting them in identifying and optimizing future sales opportunities (Lu et al., 2020; Kumar et al., 2021; Thong-On et al., 2021). As a result, AI and robotic technologies provide several opportunities for the hospitality industry to enhance their daily operations and their long-term strategies, as well as ensure that their customers receive consistent quality products and services. (Yang et al., 2020). Therefore, AI has an impact on the hospitality industry.

The Risks Posed by Artificial Intelligence Advancements

The implementation of intelligent automation carries risks, such as loss of low-tech jobs, loss of control due to robot autonomy, as well as safety, security, and privacy concerns (Tussyadiah, 2020). Furthermore, some tourism and hospitality businesses are concerned about the risks and security of implementing AI and robotic systems due to their

accessibility and consistency (Kumar et al., 2021). For instance, as AI-assisted robots have a certain level of autonomy, insufficient communication between a robot and a human may result in robot behavior that is not controlled by a human, compromising worker safety. Moreover, the risk of workers' mental health deterioration is a new threat associated with the presence of AI-assisted robots in the workplace.

Workers may become stressed as a result of the possibility of losing their jobs or having the quality of their work monitored by robots, which may result in competition between human workers and robots (Lu et al., 2020; Jarota, 2021; Kumar et al., 2021). Also, an increase in leisure time and convenience as a result of automated travel facilitation has the potential to enhance the demand for travel and tourism even further. This may contribute to issues such as over-tourism and overall stress on destination ecosystems. Finally, AI systems, including the internet of intelligent things, can be vulnerable to security and privacy threats. For example, hackers may easily reverse customer data from machine learning models (Tussyadiah, 2020). Therefore, there are some risks posed by AI advancements.

Previous Research Supporting the Study

Bisoi et al. (2020) highlighted the impact of AI in the hospitality industry. AI approaches have consistently been worth applying in the hospitality industry to benefit customers because they are uncommonly focused on recognizing work signs of progress and increasing organizational effectiveness. AI approaches in the hospitality industry are viewed as modern machines to not only reduce unsatisfactory customers but also to provide incentive services in the age of advancement. To conclude, the hospitality industry is embracing modern technology and a high level of AI-based systems, which provides travel brands with the ideal opportunity to improve marketing, customer service, customer experience, and retention.

Citak et al. (2021) discussed how the hotel industry can be motivated by potential customers to apply selected AI solutions. The most significant deployments are for in-person customer service, chatbots, and messaging tools, machine learning-powered business intelligence tools, and virtual and augmented reality. As a result, hotel businesses in the hospitality industry can leverage their on-site services, and processes, and improve customer experiences with the help of AI. Also, keeping in touch with customers and meeting their needs is essential for maintaining overall quality.

Davenport et al. (2020) recommended that AI is expected to significantly impact marketing strategies in the future, including business models, sales processes, customer service options, and customer behavior. Three broad areas to investigate the full scope of artificial intelligence's impact are (1) how marketing strategies will change, (2) how customers' behaviors will change, and (3) issues related to data privacy, bias, and ethics.

To conclude, AI has already impacted marketing, and it will have a much more significant impact in the future. Also, there is still much to learn.

Jain and Aggarwal (2020) reviewed the whole concept of using AI in marketing. Artificial intelligence marketing (AIM) is a method of maximizing the use of technology to improve the customer experience. It has become increasingly crucial for businesses to recognize and understand their customers' needs and expectations in terms of products and services in recent years. Marketers can use AI to process massive amounts of data, conduct individualized sales, and meet customer expectations. Furthermore, their perception of the customer and their needs in a shorter time frame enables them to improve campaign performance and return on investment.

Khatri (2021) highlighted the role of AI in digital marketing to change consumer behavior. AI is a new technology that can improve the impact of digital marketing on consumer behavior. Although it is a new technology, it does have some drawbacks that can be avoided. India is the third most populous country regarding internet users, allowing businesses to expand their online marketing efforts. They can target specific audiences based on valuable customer insights obtained using AI techniques. They can use AI-based assistance to improve their customer relationships by providing pleasant customer interactions. To conclude, AI in digital marketing can be highly effective.

METHODOLOGY

Narrative synthesis is the process of conducting a systematic review and synthesis of findings from multiple studies that heavily rely on words and text to summarize and explain the synthesis's findings (Popay et al., 2006). In this review article, a narrative synthesis was employed. Moreover, the literature was reviewed systematically to explore AI in the hospitality industry. The literature and information were obtained from various books and research articles on EBSCO, Google Scholar, Scopus, Web of Science, and ScienceDirect. The inclusion criteria were studies that clearly defined AI in all aspects of the hospitality industry, were published and written in English and were peer-reviewed. The data were reviewed between January 15th, 2022, and April 10th, 2022. To search the database, the researcher identified a set of keywords related to AI in the hospitality industry. The keywords identified were "artificial intelligence," "AI," "AI adoption," "AI technology," "smart technologies," "AI service robots," and "hospitality industry."

The qualitative approach includes four primary research steps: research design, data collection, data analysis, and report writing (Erickson, 2012). Content analysis is a versatile data analysis technique that can be applied to qualitative systematic reviews. Additionally, qualitative systematic reviewers seeking to generate knowledge and theory are encouraged to adapt or modify content analysis methods to accommodate data that

is, by definition, highly organized and contextualized (Finfgeld-Connett, 2014). Thus, a qualitative – content analysis was employed in this review article.

RESULTS

AI technologies have already infiltrated various sectors of the tourism and hospitality industries, such as hotel sectors and food and beverage sectors. The use of AI is a strategic and critical factor in economic development. Moreover, AI technologies increasingly become digital assistants. They aid businesses in the hospitality industry in several ways, such as improving customer service, expanding operational capability, and reducing costs. However, there are some risks posed by AI advancements, such as job loss in the low-tech sectors, loss of control due to robot autonomy, and safety, security, and privacy concerns. Therefore, AI technologies have both positive and negative effects on the workforce and job employment in the hospitality industry.

DISCUSSION AND CONCLUSIONS

AI is not a novel idea. AI technologies have an impact on the workforce and job opportunities in the hospitality industry, both positively and negatively. Bisoi et al. (2020) indicated that the hospitality industry is adopting advanced technology and a high level of AI-based systems, providing travel brands with an excellent opportunity to improve marketing, customer service, customer experience, and retention. According to Jain and Aggarwal (2020), AI is advantageous because marketers can use it to process massive amounts of data, conduct customized sales, and meet customer expectations. Moreover, Khatri (2021) concluded that AI-based assistance can be used to improve customer relationships by providing pleasant customer interactions. Tussyadiah (2020) indicated that AI systems, such as the internet of intelligent things, are vulnerable to security and privacy threats. Finally, Davenport et al. (2020) stated that AI has already had an impact on marketing. It will have a much greater impact in the future, and there is still a lot to learn. Hence, business owners, managers, employees, and marketers in the hospitality industry should pay attention to AI technologies so that organizations can better assess their ability to successfully implement AI and determine which changes to make. Furthermore, by understanding how AI can be used, organizations can make better decisions about where to implement AI solutions in their value chain. Moreover, understanding the potential consequences of AI adoption can help organizations better prepare to integrate AI into their operations. To conclude, it is important to focus on these technologies and implement appropriate strategies to meet the needs and expectations of both customers and employees through the use of AI technologies. As a result, high business performance will incur.

RECOMMENDATIONS

The recommendation is to consider empirical research, particularly on the long-term effects of AI and robotic technologies on actual behaviors, potential downsides, as well as ethical risks for customers and service employees (Lu et al., 2020). Moreover, it is recommended to consider a quantitative study, such as online surveys, regarding AI adoption in the hospitality industry or other sectors. A qualitative approach, such as interviews and focus groups, could also give a clear view of insight results.

IMPLICATIONS

This review article could lead to a better understanding of AI adoption in the hospitality industry. Therefore, the implication could be applied to business owners, managers, and marketers in the hospitality industry or any sector to better understand and implement appropriate strategies to meet the needs and expectations of not only the customers but also the employees through the use of AI. As a result, high business performance will occur. Furthermore, this review article contributed to the existing literature on AI adoption in the hospitality industry. Hence, it could be used to guide future research on AI adoption in the hospitality industry. It may also aid academics in broadening their research by incorporating more potential elements.

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