

# THE IMPACT OF ARTIFICIAL INTELLIGENCE ON ENHANCING THE TRAVEL EXPERIENCE FOR TOURISTS: AN ANALYSIS OF SUCCESSFUL MODELS

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## Abstract

The pace of adopting artificial intelligence (AI) is accelerating across various fields, and the travel and tourism sector is one of the most benefited from this technology. This article reviews the impacts of AI on the development of travel and tourism experiences, focusing on four model countries: Switzerland, Egypt, Saudi Arabia, and the smart city of Helsinki, Finland. The article highlights the challenges faced by the tourism sector in improving service quality and meeting travelers' expectations in the modern technological era. The significance of this research is highlighted by its emphasis on how AI can be used as an innovative tool to enhance travel experiences and increase the efficiency of tourism operations. The article aims to explore practical applications of AI in these countries and provide insights into best practices that can be adopted in the sector. Through the analysis of successful models, the article arrives at several key findings: First, AI technologies contribute to the personalization of services according to travelers' needs, thereby increasing their satisfaction. Second, big data enables the analysis of customer behavior and the improvement of marketing strategies. Third, technological innovations enhance operational efficiency and reduce costs. The article concludes by offering future insights on how to leverage AI to achieve further innovation and growth in the travel and tourism industry, emphasizing the importance of international collaboration in knowledge and experience exchange to develop the tourism sector for optimal results.

**Keywords:** Artificial intelligence, Tourism industry, Modern technology.

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## 1. INTRODUCTION

The travel and tourism industry is evolving at an astonishing pace, influenced by modern technologies that are fundamentally reshaping the tourist experience. At the heart of this technological revolution, artificial intelligence (AI) emerges as a driving force that enhances services and provides personalized experiences tailored to individual needs. By integrating AI, tourism organizations can analyze customer behavior,

anticipate their demands, and offer well-informed recommendations that ensure a unique and enjoyable experience.

The applications of AI in this sector are diverse, ranging from smart booking systems that facilitate trip planning to virtual assistants that provide round-the-clock support. As competition in the tourism market intensifies, the use of these technologies becomes essential for increasing efficiency and improving the quality of tourism services.

Based on the above, we can formulate the problem statement of this research paper in the following main question: How can the travel and tourism industry effectively leverage AI applications to enhance its efficiency and improve the experience of tourists?

According to the main problem posed, a fundamental hypothesis for this research can be stated as follows: "AI applications in the field of travel and tourism can contribute to enhancing its efficiency and improving the experience of tourists."

This research aims to explore the role of AI in enhancing the travel and tourism industry and to understand how it can contribute to improving tourists' experiences and increasing their satisfaction with their tourism experiences. By studying the diverse applications and opportunities that this technology offers, researchers and practitioners in the field will be able to make informed decisions that strengthen their future strategies. The significance of this research arises from the urgent need to understand the impact of AI on the travel and tourism industry, which helps tourism organizations make evidence-based strategic decisions. The research also highlights successful AI applications, enabling other organizations to benefit from past experiences. Furthermore, it contributes to exploring how to achieve a balance between technology and human interaction in tourism, which may affect tourists' satisfaction and loyalty.

## 2. CONCEPT OF ARTIFICIAL INTELLIGENCE

The term "artificial intelligence" was coined by John McCarthy in 1956, who defined it as "the science and engineering of making intelligent machines, especially smart computer programs," or as a branch of computer science aimed at creating intelligent machines (Collins et al., 2021). Elaine Rich also defined it as "the study of how to make computers do things at the right time better than humans" (Rich, 1985).

Bulchand-Gidumal et al. (2023) defined artificial intelligence as a set of technologies that can mimic human intelligence to solve problems similarly to humans. AI can apply rules, improve over time, learn, and adapt to changes in the environment (Ertel, 2017).

Artificial intelligence is also referred to as machine intelligence demonstrated by human-like or non-human robots that act like humans, and it can be applied in organizations to improve and enhance operational efficiency (Bulchand-Gidumal et al., 2023).

Notably, the penetration of artificial intelligence across various industries is observed, along with its ability to achieve significant financial profitability for organizations, particularly in the service sector, such as banking, human resource management, healthcare, and the tourism and hospitality industry (Prentice et al., 2020).

It is noticeable that artificial intelligence has penetrated various industries and its ability to generate significant financial profitability for organizations, particularly in the service sector such as banking, human resources, healthcare, and the tourism and hospitality industry (Prentice et al., 2020).

### 3. ARTIFICIAL INTELLIGENCE IN THE TOURISM AND TRAVEL INDUSTRY

Artificial intelligence and automation sciences provide numerous opportunities for tourism organizations to enhance their daily operations and ensure the delivery of high-quality service to their customers.

#### 3.1 Applications of artificial intelligence in the tourism and travel industry

Among the most important applications of artificial intelligence used in the tourism and travel industry are:

**Virtual Reality:** Virtual reality applications are widely used in the tourism and travel industry. Virtual hotel tours and virtual booking interfaces are some examples. Some hotels offer 3D video presentations of the hotel surroundings and facilities (Farahat et al., 2022). Virtual reality technology is ideal for pre-travel and exploring sites that were previously unseen. By providing virtual tours to tourists of tourist destinations through collaboration with hotel owners and tourism institutions (Samala et al., 2020).

**Facial Recognition:** This is another method of applying artificial intelligence in the tourism sector. This technology helps tourists navigate through airports and airplanes without travel documents. Visitors can easily access duty-free shops, restaurants, or entertainment facilities through facial scanning, as blockchain technology ensures that tourists' data and information are reliable. It also assists in automatically recognizing and verifying tourist arrivals at airports. Self-check-in machines and automated passport verification via facial recognition facilitate the flow of travelers (Gaafar, 2020).

**Chatbots:** These robots operate 24/7 by responding to common tourist inquiries, providing recommendations and offers, and even handling simple booking requests. This can improve customer service and reduce response times, thereby enhancing tourist engagement, loyalty, and satisfaction (Bulchand-Gidumal et al., 2023). Chatbots are also used in airports to inform travelers about gate changes, departure information, and the cheapest and shortest destinations and flights (Abd El Kafy et al., 2022).

**Robots:** Robots are another type of artificial intelligence technology that is increasing its presence in the tourism industry. They are used to perform simple tasks such as turning on bedroom lights, turning off the television, and handling systems to ensure automatic luggage check-in, among others, which will change the tourist experience (Farahat et al., 2022). Recently, many restaurants have started using robots to perform various tasks, such as cooking, packing and serving food, collecting dishes from tables, cleaning floors and tables, taking tourist orders, and even washing dishes and serving meals. Robots can also be utilized in airports to perform a variety of tasks, such as guiding passengers for check-in, directing them to gates within the airport, handling and checking bags, verifying passenger boarding passes, and printing baggage tags. In addition, robots can respond to travelers' inquiries and interact with them. Munich Airport is the first airport in Germany to use a robot called "Josie Pepper" to welcome passengers and answer their questions about shops, restaurants, and gates (Abd El Kafy et al., 2022).

**Google Maps:** Google Maps, which uses GPS (Global Positioning System) technology, has helped travelers by providing them with directions. Travelers can also use the Google Maps app to know their exact location and experience the live view of Google Maps. This technology offers details about shops, institutions, hotels, shopping centers, cinemas, restaurants, recreational areas, and more (Samala et al., 2020).

#### **4. SHOWCASING INTERNATIONAL MODELS SUCCESSFUL IN INTEGRATING ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE TOURISM AND TRAVEL INDUSTRY**

##### **4.1 Model of artificial intelligence and its applications in Swiss hotels**

Switzerland is preparing for a significant influx of tourists as travel rebounds strongly. However, hotel and restaurant owners are concerned about the challenge posed by a decline in the number of workers, such as chefs, cleaning staff, and guest service assistants. To address these challenges, the company Robotin introduced two humanoid robots designed to serve dishes, each standing 120 centimeters tall, with one of them utilizing artificial intelligence. Jan Christophe Goustanian, the founder of Avatarion, explains that reaching these two robots required going through machine learning, which involves teaching the robot the various questions and responses it might encounter. The artificial intelligence provides the robot with a form of intelligence that allows it to understand what an aloe vera massage offered by the hotel is, as well as a better understanding of language, enabling it to communicate in French, English, German, and Chinese. This way, the robot can assist guest service staff in communicating with tourists from different nationalities.

This company offers other technological solutions for hotels, including an app that allows communication with an avatar from a smartphone or tablet, aimed at navigating the various services provided by the hotel, whether it's ordering a dish from the kitchen or booking a massage session at the spa.

Over time, the data accumulated by this app is expected to enable better predictions of customer expectations and behaviors, such as when a room will be available, organizing the cleaning process more efficiently, and automatically lowering the temperature once a tourist leaves to reduce the energy bill, as explained by Goustanian. Meanwhile, the owner of a hotel in Yverdon-les-Bains notes that a receptionist in Switzerland earns three times the salary paid in France or Germany. However, "my prices cannot be three times higher," he remarks, referring to the low returns in the tourism sector.

Switzerland beautifully embodies this revolutionary transformation in the tourism and travel industry, as its hotels have become an unforgettable experience thanks to the adoption of smart technology (Khalifa Sahl & Sanousi, 2024).

#### **4.2 Models of artificial intelligence and its applications in religious tourism (Hajj and Umrah) in Saudi Arabia**

**Virtual Reality:** The virtual reality application provides an Islamic tourism experience for Hajj and Umrah by serving as an educational resource through 3D media simulations of Hajj, interactive Hajj learning, and virtual tours of Hajj and Umrah.

**Automated Robots:** Robots are used diversely in the travel, tourism, and hospitality sectors. During the COVID-19 pandemic, robots were employed during Hajj to ensure social distancing and provide a safe environment. These robots assist with cleaning, disinfecting buildings, offering room service to hotel guests by carrying their luggage, guiding them to their rooms, and delivering food. Saudi Arabia introduced two types of robots during the pandemic: the first type is a robot equipped with a screen, camera, and microphone that answers inquiries and provides guidance to pilgrims. The second type is a security robot that helps enforce preventive measures against COVID-19 by measuring body temperature, monitoring compliance with mask-wearing, and providing sanitization. Additionally, robots are used in tourist guidance, as they can recognize multiple languages and are employed in tourist areas to enhance safety; in case of an incident, the AI can request assistance by sending an alert.

**Smart Hajj Bracelet:** Saudi Arabia introduced the smart Hajj bracelet for the first time in 2021, which stores and transmits data as part of the Internet of Things. The bracelet offers numerous services, including collecting pilgrims' information and health status, monitoring health data such as blood oxygen levels and pulse. The bracelet also provides emergency medical or security assistance requests and sends

awareness messages. The smart Hajj bracelet functions similarly to smartwatches and wristbands that monitor heart rate and overall health, as well as mood (Althaqfi & Al Rashdi, 2024).

#### 4.3 A model of artificial intelligence and its applications for promoting Egyptian tourism

This applied model aims to utilize artificial intelligence in promoting Egyptian tourism by highlighting the South Sinai Governorate as an example. The study is summarized in the following steps:

First: Preparation Stage: The study relied on designing a video created using artificial intelligence, which is showcased on the electronic portal of South Sinai as part of tourism promotion activities. The design aimed to create a character inspired by the land of Sinai that embodies local characteristics for specific goals, including:

- Raising awareness about Egyptian culture, which is characterized by diversity according to tourist regions, and presenting it through a character inspired by the land of Sinai using modern artificial intelligence techniques and the character "Sinaawi."
- Presenting a character from the heart of the Egyptian Bedouins that reflects the nature of the area to be promoted in a new and different way that is appealing to foreign tourists.

Second: Design Stage: The main character (Sinaawi) was developed on one of the artificial intelligence platforms, based on a character inspired by the land of Sinai, depicted as a beautiful Sinai child with features reflecting the Egyptian Bedouin face and expressive eyes that convey confidence and strength. The platform used to create images through artificial intelligence is Leonardo.

Third: Implementation Stage: The video featured a voice recording of a script where the Sinaawi child talks about the tourist attractions and characteristics of South Sinai, accompanied by video clips of locations including Sharm El-Sheikh, Ras Sidr, and Pharaoh's Bay, among other areas of the governorate that have a unique tourism character. The AI platform was fed with the produced audio and the image of the Sinaawi child obtained from artificial intelligence experiments, which generated an animated video using the D-ID studio platform.

The use of artificial intelligence in Egyptian tourism has helped provide tourists with information about famous tourist spots in Egypt, identify the best hotels and resorts suitable for accommodation, assist tourists in planning and tracking their travel bookings, and supply information about cultural and historical heritage, museums, and archaeological exhibitions in Egypt (Ghandoor& Atef, 2024).

#### **4.4 Model of artificial intelligence and its applications in the Finnish context (virtual Helsinki)**

Helsinki maximizes the benefits of its title as the European Capital of Smart Tourism, which it was awarded in 2019 alongside Lyon for its innovative approach to tourism. Virtual Helsinki is a digital experience that allows users to visit the city's high-quality 3D digital twin. They will be able to explore and discover the main tourist attractions in the area, enjoy nature on the small Luna Island, which is very close to the capital and part of an archipelago that includes over 40,000 islands in Helsinki. All of this can be done at any time of the year, simply by using virtual reality glasses and the application (Liceras, 2021).

#### **5. CONCLUSIONS**

This study highlights the various impacts of artificial intelligence on enhancing the travel experience for tourists by examining inspiring models from different contexts. It demonstrates that applications of artificial intelligence, such as robots in Swiss hotels, provide a distinctive hospitality experience by enhancing service efficiency and facilitating seamless interaction between guests and staff.

Moreover, the AI model used in promoting Egyptian tourism emerges as an effective tool for raising awareness of Egyptian culture and enriching visitor experiences through customized tourism offerings. In the religious context, smart applications like the electronic Hajj bracelet contribute to facilitating procedures for pilgrims and providing vital information, ensuring a smoother and safer experience.

The smart city of Helsinki illustrates how artificial intelligence can redefine the concept of urban tourism by providing innovative solutions that enhance visitor experiences and support sustainability. Additionally, the integration of virtual reality in tourism presents new opportunities for exploring destinations in an interactive and engaging manner.

In this way, we have reached an answer to the problem of our study and verified the validity of the proposed hypothesis, which states that 'applications of artificial intelligence in the field of tourism and travel can contribute to enhancing its efficiency and improving the experience of tourists.

In conclusion, it is evident that artificial intelligence represents a revolutionary tool that can enhance travel experiences and improve tourist satisfaction levels. It is essential for stakeholders in the tourism sector to embrace these modern technologies while addressing ethical and technical challenges to build a more inclusive and sustainable tourism future. Investing in artificial intelligence is not just an option but a strategic necessity to ensure success in a rapidly changing world with increasing demands from tourists.



## 6. RECOMMENDATIONS

Based on all of the above, we can offer some suggestions and recommendations for applying artificial intelligence in the tourism and travel industry to improve tourists' travel experiences:

- Stimulate sustainable innovation. Tourism institutions should invest in modern artificial intelligence solutions to offer exceptional services that meet the growing expectations of travellers.
- Invest in training and development. It is essential to provide training programs for employees to enhance their skills in using AI technologies and improve customer interactions.
- Enhance data protection. Companies should implement effective strategies to safeguard customer privacy and ensure transparency in data usage.
- Facilitate access to technology. Efforts should be made to promote the use of artificial intelligence in lesser-known destinations, enhancing comprehensive travel experiences.
- Leverage data analytics. Encourage companies to use data analytics tools to understand customer behavior and anticipate future needs.
- Strengthen public-private collaboration. It is important to establish partnerships between technology companies and tourist destinations to foster innovation and improve travel experiences.
- Support ongoing research and development. Continued support for studies and research exploring the impact of AI on travel experiences is essential for adapting to changing trends.
- Learn from global experiences and embrace international best practices. It is essential for countries to learn from the successful experiences of others in implementing AI technologies to enhance travel experiences. For instance, Egypt's innovative approaches to promoting its tourism sector can serve as a model. Additionally, the use of hotel robots in Switzerland demonstrates how automation can improve guest services. Helsinki, Finland, as a smart city, showcases the potential of virtual reality in providing immersive travel experiences. Furthermore, Saudi Arabia's implementation of smart Hajj bracelets illustrates the benefits of technology in ensuring safety and enhancing the pilgrimage experience. By adopting and adapting these practices, countries can significantly elevate their tourism offerings.



## REFERENCES

- Abd El Kafy, J. H., Eissawy, T. M. & Hasanein, A. M. (2022). Tourists' perceptions toward using artificial intelligence services in tourism and hospitality. *Journal of Tourism, Hotels and Heritage*, 5(1), 1-20.
- Althaqfi, S. A. & Al Rashdi, M. R. (2024). Applications and challenges of artificial intelligence in religious tourism and hospitality: A systematic review. *Journal of Information Studies & Technology*, 2024(1), 4. <https://doi.org/10.5339/jist.2024.4>.
- Bulchand-Gidumal, J., Secin, E. W., O'Connor, P. & Buhalis, D. (2023). Artificial intelligence's impact on hospitality and tourism marketing: Exploring key themes and addressing challenges. *Current Issues in Tourism*, 26(1), 1-18. <https://doi.org/10.1080/13683500.2023.2229480>.
- Collins, C., Dennehy, D., Conboy, K. & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management*, 58, 102383. <https://doi.org/10.1016/j.ijinfomgt.2021.102383>.
- Ertel, W. (2017). *Introduction to artificial intelligence*. Germany: Springer International Publishing.
- Farahat, M. S. M., Ezzat Mohamed, E. M. & Samir, B. (2022). Artificial intelligence applications and its impact on the competitiveness of the Egyptian tourist destination. *Journal of Tourism and Hotels Faculty, Mansoura University*, 11(2), 57-93. <https://doi.org/10.21608/mkaf.2022.254031>.
- Gaafar, A. H. (2020). Artificial intelligence in Egyptian tourism companies: Implementation and perception. *Journal of Association of Arab Universities for Tourism and Hospitality*, 18(1), 66-78.
- Ghandoor, M. H. & Atef, H. (2024). Utilizing artificial intelligence applications in promoting foreign tourism in Egypt: An applied study. *The Arab Journal of Communication and Digital Media Research*, (5), 368-369.
- Khalfa Sahl, A. & Sanousi, O. (2024). Applications of artificial intelligence in the tourism and travel industry: A new shift in trips and accommodation – A case study of Swiss hotels. *Journal of Law and Environmental Sciences*, 3(1).
- Liceras, P. (2021, December 2). Helsinki: Opening new frontiers in digital tourism. Retrieved September 22, 2024, from <https://tomorrow.city/a/helsinki-opening-new-frontiers-in-digital-tourism>.
- Prentice, C., Lopes, S. D. & Wang, X. (2020). Emotional intelligence or artificial intelligence—An employee perspective. *Journal of Hospitality Marketing & Management*, 29(4), 377-403. <https://doi.org/10.1080/19368623.2020.1717790>.
- Rich, E. (1985). Artificial intelligence and the humanities. *Computers and the Humanities*, 19(2), 117–122. <http://www.jstor.org/stable/30204398>.
- Samala, N., Katkam, B. S., Bellamkonda, R. S. & Rodriguez, R. V. (2020). Impact of AI and robotics in the tourism sector: A critical insight. *Journal of Tourism Futures*, 8(1), 73-87. <https://doi.org/10.1108/JTF-02-2020-0023>.