Smart Tourism in the Era of Artificial Intelligence: Applications and Lessons Learned From the Experiences of Leading Countries

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Abstract: *This research paper aimed to highlight the role of artificial intelligence in the development of smart tourism, as one of the most important technologies produced by the digital revolution, which contributed to a qualitative transformation in the tourism sector. In this context, the concept of smart tourism has emerged as a modern model based on the use of technologies and data in the development of services and Destination Management. In order to achieve the objectives of the study, the analytical descriptive method was adopted based on the theoretical literature and applied practices, in addition to reviewing and analyzing some of the leading international experiences in this field, represented by the experience of Spain and China. The study concluded that artificial intelligence is one of the most important drivers of the development of smart tourism, and that its success is not only related to the adoption of modern technologies, but also requires building an integrated system that combines digital transformation, data management, governance and sustainability while adapting international experiences according to the specifics of each tourist destination.*

Keywords: Smart Tourism, Artificial Intelligence, Tourist Destinations, International Experiences

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Introduction

In recent years, the world has witnessed an accelerated development in the field of digital technologies, especially artificial intelligence technologies, which have become playing an increasing and effective role in various economic sectors, especially services. The tourism sector is among the sectors that have benefited from these transformations, as the use of artificial intelligence has contributed to the development of tourism services, improving the tourist experience and enhancing the efficiency of Destination Management. In this context, the concept of smart tourism has emerged as a modern trend based on the use of digital technologies, data and artificial intelligence, to build a more efficient, interactive and sustainable tourism system.

Highlighting the role of artificial intelligence in the development of smart tourism, identifying its most prominent applications and benefiting from leading international experiences has become an imperative necessity.

From this point of view, the problem of the study is centered on the following main question:

How have AI applications contributed to the development of smart tourism in leading countries, and what lessons have been learned to develop the tourism sector?

To answer this problem, the following sub-questions can be formulated:

- What is meant by artificial intelligence ,and what is the concept of smart tourism?
- What are the most important applications of artificial intelligence in smart tourism?
- What are the most important leading international experiences in the field of smart tourism?

The Importance of Research

The importance of this study stems from the increasing role played by artificial intelligence in the development of the tourism sector, improving the quality and customization of services provided, as well as enhancing destination management and achieving sustainability. In addition, this study provides some of the leading international experiences, allowing lessons to be drawn and used to provide insights and supportive directions for smart tourism. Its importance from a scientific point of view is also manifested in providing a theoretical framework that will guide researchers in future studies.

Research Objectives

Through this research paper, we seek to achieve a number of goals:

- Identify the conceptual framework of smart tourism by reviewing its characteristics, components and tools,

- Identify artificial intelligence technologies in the field of smart tourism and their role in improving the experience of tourists,
- Analyzing the experiences of some leading countries in Smart Tourism and drawing lessons learned from them to develop them.

Curriculum Followed

In this study, we relied on the descriptive analytical approach to clarify various theoretical concepts related to artificial intelligence and smart tourism. we also reviewed and analyzed some of the leading international experiences in smart tourism represented by the experience of Spain with reference to the Barcelona model and the experience of China, based on the theoretical literature and some recent applied studies to draw a set of results to be used as lessons for the development of Tourism.

Structuring the Research

The study was divided into the following axes:
The first axis: the conceptual framework of artificial intelligence and smart tourism;
The second axis: artificial intelligence applications in smart tourism;
The third axis: the experiences of leading countries in the application of smart tourism and the lessons learned.

The First Axis: the Conceptual Framework of Artificial Intelligence and Smart Tourism

Artificial intelligence and smart tourism are among the most prominent concepts associated with digital transformation in the modern era, as many sectors have witnessed important transformations and changes in light of the use of technological technologies, including the tourism sector.

1. Artificial Intelligence

Despite the importance of the human element in the performance of tasks, the process of taking advantage of technology has become a must, especially in light of the dependence of many fields on the applications of modern technology in their work, and artificial intelligence is considered one of the most important modern forms of technology, and below we will get acquainted with its concept, characteristics and techniques.

1.1.the Concept of Artificial Intelligence:

Artificial intelligence (AI) was first proposed by John Mc Culloch in 1955, and is one of the most prominent outputs of the Fourth Industrial Revolution, as artificial intelligence and robotics technologies are being used a lot in our daily lives and in most fields (Vaje & Dif, 2025, p.28).

Artificial intelligence is defined as a kind of branch of computer science that is concerned with the study and formation of computer systems that show some formulas of intelligence, and these systems have the ability to draw very useful conclusions about the problem, as these systems can understand natural languages or understand living perception and other possibilities that need intelligence once implemented (Ben Daoud, 2024, P.47). and in the British encyclopedia it is defined as the ability of digital computers or robots controlled by a computer to solve problems that are usually associated with the intellectual abilities of humans (Chaki and Boukhari, 2021, p.216).

In general, it is possible to adopt a comprehensive definition of artificial intelligence as a relatively modern science of computer science aimed at creating and designing automated systems that resemble and simulate human intelligence, where those systems perform tasks instead of humans and simulate their functions and capabilities using their qualitative properties and computational and logical relationships (Ben Zian and Falah, 2026, p.107).

1.2. characteristics of artificial intelligence:

Artificial intelligence is characterized by a number of characteristics, which we mention as follows: (Marzouki, 2021, page 26)

-The ability to plan and analyze problems using logic;

-The ability to recognize sounds, understand speech and the ability to move objects through technologies such as robots to perform certain tasks;

-To understand the inputs and analyze them well and provide outputs that meet the user's need with high efficiency;

- A continuous learning mode where the learning process is automated and self-directed without undergoing monitoring and supervision;

-The ability to process a huge amount of data at the same time and quickly;

-The task is to notice similar patterns of data and process them more quickly and more accurately than human brains;

-Users find solutions to unfamiliar problems using their cognitive abilities.

1.3. the importance of artificial intelligence:

Artificial intelligence is of great importance, especially in light of globalization and the transformations that the world is experiencing today, and this importance is manifested in the following: (Khalfa Sahel and Senossi, 2024, pp. 607-608)

-AI applications and systems include all areas and aspects of life, where humans can employ and benefit from them in the medical, security, political, economic field, as well as in the field of Tourism and the hotel industry, where artificial intelligence applications and systems facilitate the search for individuals, solve problems, deal with complex situations and facilitate the services provided;

-Artificial intelligence systems have independence and objectivity, which makes their decisions far from error and bias to any side, issuing prejudices or allowing

external and personal interventions. It also contributes to the performance of tasks with high efficiency, improves productivity and reduces costs;

- Artificial intelligence technologies help to reduce risks and relieve stress to which humans are exposed and make them focus on important things, by employing machines to do dangerous and hard work and participating in rescue operations during natural disasters;

- Artificial intelligence with its various systems and applications contributes to building an intelligent society, cities and homelands, where man cooperates with the machine for the welfare of citizens in homelands that exploit their resources efficiently and effectively and increase the productivity of human resources in order to qualify, train and develop them in order to achieve sustainable development;
-It contributes to the promotion of innovation in all sectors and spheres of life (Ben Zian and Falah, 2026, P.108).

1.4. artificial intelligence technologies:
Artificial intelligence is used in many applications, including: (Vaje and Dif, 2025, p.p.28-29)
- **Machine learning**: or machine learning is an artificial intelligence application where machines are not explicitly programmed to perform specific tasks, instead they learn and improve from experience automatically i.e. focuses on teaching computers to learn from data and improve with experience instead of programming them and when training a machine algorithms are trained to find patterns in large data sets and to make the best decisions and predictions based on that analysis, machine training applications improve their use and become more accurate the more data they have access to.
- **The field of Neuro-Linguistic Programming (natural language processing)**: Its applications include IVR systems in Call Centers, language translation such as Google Translate and word processors such as Microsoft Word to verify the accuracy of grammar and improve content such as paraphrasing applications to improve the readability of complex text, although natural language processing is difficult due to the nature of human languages and complex rules that are difficult for a computer to understand, neuro-linguistic programming makes use of algorithms to recognize and abstract natural language rules and convert unstructured human language data To a format that the computer can understand.
-**Automation and robotics:** are two interrelated areas that involve the use of technology to perform tasks that could have been performed by humans. automation is the use of technology such as software or machines to perform tasks with minimal human intervention. this can include tasks such as data entry or chat bots for customer service. by automating these tasks, companies can increase efficiency, reduce errors and free human workers to focus on more complex tasks. robotics, on the other hand, involves the design, construction and operation of robots that can be programmed to perform tasks independently. it includes a wide range of disciplines.

-**Machine vision function**: machines can capture visual information and then analyze it, this process involves using cameras to capture visual information, convert the analog image into digital data, process the data through digital signal processing and then the resulting data is fed to a computer in the machine vision.

2. Smart Tourism

The tourism sector has witnessed a transformation in the methods of providing services and managing tourist destinations, which led to the emergence of the concept of smart tourism as a modern direction for the development of this sector. Below we will discuss the concept of smart tourism, its characteristics, components, tools and the difference between traditional tourism and smart tourism.

2.1. The Concept of Smart Tourism:

There are several definitions of smart tourism, some of which are discussed below with reference to some related terms.

- Smart tourism is the use of modern technology, artificial intelligence and big data for the purpose of improving and enhancing the tourist experience and using a set of applications that facilitate booking, navigation and communication (Khazali and Al-Dalimi, 2024, p.2393).
- In another definition, they are defined as intelligent services aimed at meeting the needs of tourists by helping them to make the most of their visits to unknown destinations with the rapid increase in domestic and international tourism (Baharat and Other, 2024, p.40).
- It is also defined as an integrated tourism model that combines smart infrastructure, social interaction, and sustainable innovation in Destination Management (Kharkhach, and Other, 2025, P.6).
- In the context of referring to the relationship between Smart Tourism and e-tourism, smart tourism is considered the advanced stage of e-tourism, where it moves from simply providing information and providing tourist offers via the internet (search, booking, electronic payment) to building interactive digital systems capable of predicting the behavior of tourists and customizing services in accordance with their expectations (Kharkhach, and Other, 2025, P.6).

Here we find that e-tourism uses e-business in the field of travel and tourism, where offers of tourist services converge through the internet between various dealers, to develop later with the emergence of smart cities and the integration of information and communication technologies with physical infrastructure to extend the concept of e-tourism to smart tourism, as the latter is an extension of e-tourism and more comprehensive and consists in connecting the physical world with the digital world through the use of social media, cloud computing and the Internet of things (Vaje and Dif, 2025, p. 25).

From the above, the most important differences between Smart Tourism and e-tourism can be deduced:

Table No. 01: the difference between Smart Tourism and e-tourism

Smart Tourism	Electronic Tourism
A comprehensive and integrated system based on artificial intelligence, big data, the Internet of Things, cloud computing and others.	It relies on websites and platforms in the field of Tourism and the provision of tourist services and offers.
Enables customization of services in accordance with the expectations and preferences of the tourist (customization of the tourist experience).	It enables to make tourist Offers, Book and organize trips via the internet and electronic payment.
It aims to improve and enhance the tourist experience, efficiency of Destination Management, Sustainability and competitiveness.	It aims to facilitate the provision of tourism services and access to them electronically.

Source: prepared by the researchers based on previous studies.

It should also be noted that the term smart tourism is related to some other concepts, which we address with some brevity:

-**Smart Cities**: it is an innovative city that uses information and communication technologies to improve the quality of life, operational efficiency and competitiveness while ensuring the rights of future generations and taking into account economic, social, environmental and cultural aspects (El-Sherbini and Bassiouni, 2023, p.278).

Smart cities are also defined as a gathering or civilized environment in which innovative, advanced and smart services are available to citizens, improving their quality of life in various fields and achieving their well-being by connecting their facilities with equipped, interconnected and smart systems, in addition to smart applications that have the ability to respond intelligently to their various daily needs, and this is based on the ubiquitous information and communications technology (karbouch and Meskin, 2024, p.193).

It should be noted that the concept of smart city and smart tourism are closely related, due to the fact that they share many basic elements, however, the main difference between them lies in the fact that smart cities serve their residents, i.e. citizens or residents, while Smart Tourism focuses mainly on visitors and tourists. The common elements between them are infrastructure and equipment, while providing solutions that meet the needs of both residents and tourists (Khan, and Other, 2017, p. 05).

- **Smart Destinations**: (Lopez de Avila, 2015) defines a smart tourist destination as an innovative tourist destination, based on an infrastructure based on the latest technologies, that ensures the sustainable development of tourist areas and is

accessible to everyone, facilitates the interaction of the visitor with his surroundings and integration into it, raises the quality of his experience in the destination, and improves the quality of life of the population. A key aspect of smart destinations is the integration of information and communication technologies (ICTs) into physical infrastructure (Gretzel, and Other., 2015, p. 180).

- **Smart Experience**: it means designing an individual tourist experience supported by digital technologies such as augmented reality or digital guides (Kharkhach and other, 2025, P.07).

- **Digital Sustainability**: means how societies use digital technology for the benefit of sustainable development, that is, how technology can be used to support environmental, economic and Social Development Goals (al-Junaidi, 2024, p.320).

Based on the above, it can be said that smart tourism represents a new model in the tourism industry, based on new and smart sources and technologies for interaction and communication, in which technology is integrated with the components of tourism in order to improve and enhance the tourist experience of the tourist and achieve a sustainable and competitive tourist destination.

2.2.Characteristics of Smart Tourism:

Smart tourism has several characteristics, including: (Kharkhachand Other ,2025, p. 09)

- **Personalization**: providing services tailored to the preferences, interests and needs of each tourist;

-**Interaction mode:** adoption of smart applications and platforms that allow instant and continuous communication and interaction between the tourist, destination and service providers;

- **Sustainability:** optimal and rational use of resources while preserving the environment and heritage;

-**Innovation:** integrating new technologies such as virtual reality and artificial intelligence to provide tourism services and experiences;

- **Big Data management:** leveraging tourism data to improve policies and services.

2.3. Components of Smart Tourism

Smart tourism is based on several elements that are integrated among themselves to form a comprehensive and integrated tourism system, we mention its main components as follows: (Kharkhach. and Other, 2025, pp. 07-08)

-Digital Infrastructure: digital infrastructure is the cornerstone of smart tourism, and includes fast and reliable communication networks such as (4G/5G) to ensure that tourists have easy access to information and services. It also includes secure data centers to protect tourist information and facilitate data management, as well as reliable electronic payment systems to facilitate payment and purchase operations.

- **Digital Services and applications:** digital services and applications play a vital role in improving the experience of tourists, including booking applications that

facilitate the process of booking hotels, excursions and tourist activities. It also includes guidance applications and interactive maps that help tourists explore tourist sites easily and conveniently, in addition, augmented/virtual reality content can be used to enhance the experience of tourist sites and make it interactive and fun.

- **Data management and Analytics:** smart tourism relies on data management and analytics to understand the behavior of tourists and anticipate their needs, this is done through the use of Big Data (Big Data) to analyze travel patterns, spending and interests. Such analyzes also help to predict the demand for tourism services and efficiently manage tourist flows, which contributes to better planning and tourism marketing.

-**Government, institutions and data protection laws:** the success of smart tourism requires the existence of clear legislative and regulatory frameworks that regulate data handling and protect the privacy of tourists. These frameworks should also stimulate public-private partnership to promote innovation and investment in smart tourism.

- **Community Engagement and Local Economy**: Smart Tourism aims to enhance community engagement and the local economy by creating platforms that connect local producers and residents with tourists directly, as these platforms contribute to creating local value directly by supporting handicrafts, local products and services provided by local residents, which promotes sustainable development and improves the standard of living of local communities.

2.4. Smart Tourism Requirements:

The implementation of the smart tourism model requires the availability of some conditions, which we mention as follows: (Belaid and Karkar, 2021, p.p. 168-169)

- The task of digitizing the infrastructure of the tourism sector by building comprehensive tourist information databases ;

-The role of governance and its role in guidance and regulation to control the performance and quality of the digital service provided;

-Availability of digital urban planning strategies for infrastructure including roads, communications, networks and services in general;

- Provide legislation and funding to support smart policies and Smart City transition programs, which achieve sustainable development;

-The availability of technical personnel responsible for the digital system and its monitoring;

-To enhance community awareness of the importance of smart tourism in supporting the economy.

2.5.Smart Tourism Tools:

Smart tourism tools are represented by all technological technologies that contribute to improving the experience of tourists and increasing the effectiveness of smart tourism, we address them as follows: (Trif and Farhi, 2026, p.p. 56-57)

- **Artificial intelligence (AI):**these are technologies aimed at innovating and designing automated calculation systems that mimic the human intelligence method so that those systems can perform tasks instead of humans and simulate their

functions and capabilities. artificial intelligence applications in the field of Tourism and its industry are represented in many areas, including: hotel design, management of heritage and cultural sites, improving airport and airline services, increasing security and safety, chat portals and inquiries (using robots and automated chat to answer tourists ' queries at any time), improving tourist guidance.

- **Internet of Things:** It is a large company of various systems such as computers, mobile phones, car systems and other various systems that exist in our daily lives, where these systems are easily and smoothly integrated with each other through the internet to be able to exchange information between them, where machines connected to the internet become the source of data instead of humans doing this task, and in the field of tourism, the Internet of things facilitates the task of reaching the target tourists with maximum speed or less efforts and provides golden opportunities for marketing and promoting products and various tourist destinations, in addition to increasing the percentage of satisfaction among tourists and contributing to the ability of the tourist destination to compete with others And raising the level of subjectivity in obtaining tourist services.

-**Cloud computing:** is a technology that enables tourism companies to store and process data online and Exchange it with active partners in the tourism sector, where these technologies are tracked to access tourist destination information in real time, booking and payment via the internet, and this technology also enables tourism companies to manage their own business from anywhere in the world through internet connectivity.

-Electronic applications: these are programs that work on smart devices such as phones and digital tablets based on the advantages provided by these devices and their connection to the internet, they allow users to interact with each other remotely, as they have become an effective role in the tourism industry.

-**Blockchain - BCT:** it is a tool to improve the efficiency and sustainability of the tourism supply chain, especially in areas such as marketing, logistics and smart business models, as it relies on a complex digital algorithm that collects data and organizes it into blocks and then combines these blocks together using encryption, and these blocks are linked to each other. These technologies can provide tourism enterprises with the possibility of managing sales, management and financing transactions, with the ability to communicate with external stakeholders and the ability to promote sustainable tourism (Sakak and kattas, 2024, p.466).

-Augmented reality/ virtual reality-AR/VR: this technology provides many advantages, especially because it is associated with viewing a virtual real world or creating interactive virtual tours. there is also another technology that significantly improves the navigation experience and provides conscious guidance to the tourist about the site using augmented reality technology.

The use of this technology made it possible to depict tourist destinations in a unique way, allowing the user to experience the feeling of being there and thus creating unforgettable tourist experiences for the user. In addition to the hologram technology, which makes it possible to see an image of a hologram from all directions in the smallest details to look like real, and this image is formed in the void in a three-dimensional form in addition to the possibility of containing the

element of movement and sound effects. this technology is used in the field of tourism in displaying ancient archaeological artifacts in museums, as well as embodying archaeological sites in their original form before they were damaged and displaying figures of kings and figures of antiquity, and this technology is also used in promoting tourism at international exhibitions (Trif and Farhi, 2026, p. 57).

2.6.The Difference Between Traditional Tourism and Smart Tourism:

From the above, the difference between Smart Tourism and traditional tourism can be deduced in the following table:

Table No. 02: the difference between Smart Tourism and traditional tourism

Face the difference	Electronic Tourism	Smart Tourism
Technology	Limited use of technology such as using a computer, phone to communicate, e-mail, booking through websites.	Extensive use of digital technologies, artificial intelligence, the Internet of things and the use of augmented reality.
Interaction	It is carried out between the tourist and service providers	It is carried out between the tourist, the tourist destination and the service providers.
The tourist experience	Services and experiences of a general and often unified nature, where the same services are provided to a group of tourists.	Customized experience according to the preferences, wishes and interests of the tourist.
Information	General information obtained by the tourist from tourist offices, publications, tour guide and websites.	Instant and continuous digital customized information via smart apps and platforms.
Innovation	Based on the gradual development of tourism products and services.	Based on the use of advanced and intelligent technologies and data to develop more personalized and efficient services and experiences.
Sustainability	Achieving sustainability through traditional policies to protect resources and rationalize their use.	Employing technology and data to manage resources efficiently, reduce environmental impacts and achieve the sustainability of tourist destinations.

Source: prepared by the researchers based on previous studies.

The Second Axis: Artificial Intelligence Applications in Smart Tourism

Artificial intelligence applications provide new possibilities for improving tourist services and developing methods of interaction with tourists, contributing to more

efficient and personalized service delivery and supporting destination management. Below we will get acquainted with the most prominent of these applications.

1. the Importance of using Artificial Intelligence Technologies in the field of Tourism

With the beginning of the 21 century, the tourism industry has witnessed many technological developments that have radically transformed the dynamics of work in the field of tourism, as tourist and hotel facilities have become more interactive with customers or tourists, and modern technological means have facilitated the provision of a lot of new innovative tourist services and created unique experiences for tourists, which was reflected in the revenues of suppliers of tourist services and increased satisfaction and loyalty of tourists.

Due to the importance of digital transformation and the adoption of modern technology in various fields of tourism business, the World Tourism Organization celebrated World Tourism Day 2018 with the whole world under the slogan "tourism and digital transformation", where the importance of technological developments and innovations in the continued growth of the tourism sector was highlighted, as well as the need to invest in digital technologies to create a suitable environment for creativity and leadership in the field of Tourism.

Artificial intelligence is one of the forms of modern technology that the tourism field can rely on, where we find that services in their entirety and tourism services in particular depend heavily on the human element, and those services may be provided in different parts of the world, so that we find that the way of providing the service may differ from person to person, or may differ for the same person from time to time, and therefore the services face a big problem, which is the inability to maintain a consistent form of the service provided. The ability to change the provision of service may cause some problems, as it is difficult to conduct follow-up and control to ensure the constancy of service delivery standards, especially that the production and consumption process occurs at the same time, therefore there is a tendency to consider services based on equipment and devices less changeable, and therefore most service organizations have sought to reduce changeability by relying on automated services such as replacing the human telephone operator with computer-based voice systems, as well as the mechanization of many banking services and the use of smart services at refueling stations, etc.

That is why service organizations, including tourism organizations, seek to reduce the changeability by selecting, training, motivating and controlling employees, and replacing employees with machines and machines in order to reduce human changeability (Marzouki, 2021, p.29).

2.Artificial Intelligence Technologies Used in Smart Tourism

Among the most important applications used in smart tourism we find: (Vaje and Dif, 2025, p.p. 29-39)

- **Features of facial recognition technology**: This technology has gained great importance, as it has been used in various industries for various purposes, including the travel and tourism industry, for example, travelers at the airport must undergo a

set of complex operations in the form of checking travel documents by various authorities such as Customs and airport workers, this complexity in the process consumes a lot of precious time, which leads to a kind of frustration among tourists, and to alleviate these complexities, facial recognition technologies have come into force, as this technology recognizes the face of tourists and verifies documents through the face and provides hassle-free registrations, using this technology tourists can comfortably pass through the check-in processes at the airport don Verification of documents by various authorities.

-**The case of virtual reality**: There is a big gap between customers ' expectations of Service and the actual service provided by service providers, customers at a distance are usually unaware of tourist sites and experience tourism in that destination, as customers want to experience travel and explore tourist sites before moving to tourist sites, this is done by searching for relevant information on the internet, customers think about many factors about travel and tourism before choosing a destination place, these factors are represented by natural resources such as picturesque places, lakes, mountains deserts, diversity and uniqueness of flora and fauna, weather conditions, public infrastructure facilities such as roads and transportation, hotels And accommodation, restaurants, clubs and amusement parks, sports activities, water parks, zoos, adventure activities, shopping centers and others, allowing them to determine the choice of tourist destination faster, as many companies have begun to use virtual reality technology in promoting destinations and hotel experiences, and these technologies not only provide information about all these factors, but also provide a direct experience for customers that gives them the feeling of being there, motivating them to travel and experience the service.

- **Chat bots**: it is a program that conducts a conversation via audio or text methods, and there are two main types of it are text chat bots based on messages and voice chat programs. Chat bots are usually computer software devices pre-programmed to answer simple questions asked by customers. in addition, chat bots can be accessed around the clock, all days of the week and during the year. These key features have made chat bots replace employees, some companies offer a unique experience using travel robots, where travelers can ride the car alone without any guide and the in-car chat program continues to describe every place and for a wonderful intelligent tourist experience chat bots aim to provide high-level services to their customers through a wide range of services such as facilities at the hotel, ordering food services, taxi services, reading messages, scheduling tasks and appointments, room services, gym facilities, safety measures and other services.

-Robots: it is another type of artificial intelligence technology that enhances its presence in the tourism industry, where robots provide unexpected services that surprise tourists and keep them constantly engaged, thus creating a new and enjoyable experience in their minds.
Robots provide assistance at the hotel to tourists or customers through handling systems to ensure automatic baggage check-in and reception of guests at the hotel,

direct them to their hotel rooms, carry luggage to their rooms, they also take care of the aspects of room service so that guests do not face any kind of problems during check-in to the new hotel room and maintain housekeeping services, serving food and snacks, as well as doing simple activities such as turning on the bedroom lights, similarly at airports where robots have begun to be present, and are used as guides and assistants.

- About Google Maps: the artificial intelligence technology found in Google Maps uses the Global Positioning System (GPS) to provide information about public infrastructure facilities such as roads, public and private transport. we find that vehicles are currently using this technology to provide information about road accidents and traffic jams. Google Maps has come up with a new solution to integrate visual positioning system (VPS) to facilitate the travel journey. this latest version uses Visual Positioning System artificial intelligence technology that provides a live view of the real world and visible landmarks in front of travelers. Google Maps with the help of artificial intelligence has now become able to provide a live view of the real world, the new feature in Google Maps starts with the camera immediately, and starts scanning to find visual landmarks such as buildings, storefronts, etc., thus travelers can launch the Google Maps application to find out their exact location and experience the live view of Google Maps to provide details about stores, companies, hotels, shopping malls, cinemas, restaurants, entertainment areas, etc., thus providing location-based experiences.

-Language translation applications: due to the fact that traveling to a foreign country may pose several difficulties, especially with regard to language barriers, this problem can only be overcome if travelers use a local guide to speak the local language, but software applications can replace the local guide by translating the unfamiliar language into familiar languages, as these applications allow travelers or tourists to talk with local residents and are voice speech translation services, this option enables them to speak their language and capture their voice message and translate it into the target language, thus travelers convey a message to the local population.

There is also another useful feature is the "camera integration" option used to translate signs and menus in foreign locations of hotels, this application scans the signs and menus by the phone's camera and translates the information on the signs and menus into the preferred language where it helps travelers who want to read the menus in hotels and understand the signs, translate the words or messages in the pictures taken by the camera.

The Third Axis: Experiences of Leading Countries in the Application of Smart Tourism and Lessons Learned

After discussing the conceptual framework of smart tourism and the role of artificial intelligence technologies in improving and developing the tourism sector, we highlight the importance of presenting some of the pioneering experiences that

embodied these technologies on the ground. To achieve this, the experience of Spain and China was chosen, with the most important lessons that can be learned in the development of smart tourism.

1.the Spanish Experience Spain

is among the top tourist countries internationally, and it is one of the first countries to adopt the smart tourist destinations model. It has focused on managing big data to improve the distribution of tourists and relieve pressure on some destinations, and has also worked to involve local communities in the tourism process through digital platforms that allow citizens to contribute their ideas to improve services. Spain has also successfully used open data to make tourism information available to developers and innovators, which has contributed to the emergence of various local applications that have helped improve the tourist experience and increase the added economic value.

In this context, Spain has launched the Smart Destination Spain project, which covers more than 70 cities, and aims to connect smart infrastructure with environmental and climate data to improve tourism planning. This project has contributed to anticipating the influx of visitors and reducing congestion by 15% at historical sites.

Madrid has also established a National Tourism Innovation Center that brings together researchers, developers and decision makers, with the aim of piloting new solutions based on artificial intelligence and blockchain in hotel and transportation management. This cooperation between the public and private sectors is an important model for building a sustainable innovation environment. On the social side, the Spanish experience has attached importance to the involvement of the local community in digitization through training programs for citizens and tourism professionals on the use of digital platforms. This has contributed to raising the level of trust between the population and the authorities, strengthening the digital cultural identity (Kharkhach, and Other, 2025, pp. 11-12).

1.1. the most prominent digital practices and applications in the Spanish tourism sector:

Among the digital practices that are being applied in the tourism sector in Spain we find: (Bougachal and Abd el Razak, 2025, p. 10)

- **RFID (Radio Frequency Identification) technology**: it is called radio frequency identification technology and is used to analyze the behavior of crowds in certain places, for example, to determine the most visited places and the duration of visits or rest periods (i.e., to understand the movement and behavior of tourists, which helps to organize the flow of visitors and improve their experience).
- **From the digitization of traditional tourist offices to virtual offices:** through the Open Web 24 platform providing a series of tools for managing destination information, from the use of a web portal, interactive shop windows, digital signage or wall to information through QR codes.

-**Action or initiative Gipuzkoa (a province in northern Spain):** through which data can be obtained by measuring and monitoring the behavior of visitors in order to build a tourist intelligence system, among other variables information is collected on the origin and volume of tourist spending, analysis of visitor flows, routes and the number of tourists at different strategic points in the city (a region that applies a digital practice based on big data).

- **Application Taro**: this application aims to enrich communication and interaction with tourists, through a series of conversations, where the application is able to work as a virtual assistant, answer questions and provide suggestions and recommendations tailored to the interests of the traveler.

- **The task of building a monument with three-dimensional technology:** the monument simulates the historical landmark Alcázar of Seville to enable a virtual visit to the past of this place thanks to augmented reality and virtual reality.

1.2. Barcelona's Model of Smart Tourism:

Barcelona is one of the leading global models in the development of smart tourism destinations, as its success is largely due to the integration of digital technologies into a comprehensive urban strategy that combines innovation, sustainability and participatory governance. The city has developed an integrated digital system that contributes to improving the management of tourism activity and improving the tourist experience, taking into account the well-being of the population and reducing the negative effects of tourism activity. Its governance model also relies on collaboration between public institutions, private stakeholders and citizens, fostering innovation and resilience (Ben Haddou, 2026, p. 912).

In light of this, the components of the success of the Barcelona model in building an intelligent and integrated tourism system can be highlighted as follows: (Ben Haddou, 2026, pp. 915-916)

-**Governance and strategy**: the Barcelona smart city strategy integrates urban innovation with tourism policy through coordinated governance between municipal bodies, academic institutions and private stakeholders. The Smart Tourism Office also monitors tourism sustainability indicators and ensures coordination between various sectors and departments.

-**Digital infrastructure and data management:** the city operates an open data portal that gives the public access to more than 400 data sets. Researchers and start-ups use this data to develop tourism-related services, fostering innovation and transparency.

-**Sustainability and mobility:** Barcelona promotes sustainable mobility through electric buses, smart parking and extensive cycling infrastructure. These initiatives are in line with the tourism for all strategy, which aims to reduce environmental impacts and improve access to services and facilities.

- **Tailor the tourist experience**: the digital platform (Tourisme de Barcelona) uses artificial intelligence to customize tourist recommendations, manage booking systems and provide instant information through mobile applications, virtual reality experiences and digital narrative tools enhance visitors ' interaction with heritage sites.

- **Citizen participation**: public participation is a key element of the Barcelona model, involving residents in decision-making processes through participatory platforms such as Decidim Barcelona, which helps to alleviate the problem of excessive tourism and balance the needs of residents and visitors.

From the above, it becomes clear to us that the success of the Barcelona model is not due to the individual adoption of advanced digital technologies, but to its ability to integrate technology into an integrated system that combines governance, data management, sustainability, improving the tourist experience and citizen participation.

Barcelona can be considered a reference model that highlights that the transition to smart tourism is a comprehensive process that goes beyond technical digitization to reorganize the relationship between various actors, resources and services within the tourist destination.

The Chinese Experience

China is one of the leading countries in the use of digital technologies and artificial intelligence in the field of smart tourism, and the highlights of the Chinese experience in this field can be identified through the following table:

Table No. 03: features of the Chinese experience

Technique used	field of use
Facial recognition technology	Facial recognition technology is widely used at airports, where it is about 86 %, which is high, it is also used at all stages of travel, as for its use in hotels, it is average due to privacy concerns.
Virtual reality	China is investing heavily in virtual reality, and its market is expected to witness a significant expansion, supported by digital infrastructure projects and tourism innovation policies.
Chat bot	One of the most countries that rely on chat bot in tourism, where it scores high percentages in all fields from 72% to 80%, this superiority is due to a clear national strategy in supporting artificial intelligence, and these policies have encouraged major companies to integrate artificial intelligence tools within their tourism services. Reports indicate that the Asia-Pacific region in general is leading the adoption of digital tourism, which reinforces China's strong performance compared to some other countries.

Robotics	In recent years, there has been an increase in the density of robots, according to the International Federation of robotics I.F.R in 2023, there was a significant acceleration in the use of industrial robots, as 553,000 new robots were installed in 2022, bringing the global total to 3.9 million robots. Asia is the main engine of this growth, accounting for 73% of new installations, and China came with 290 thousand industrial robots in the lead, reflecting a significant development in its dependence on industrial automation. Some of the tasks of robots in China can be explained as follows: reception/ login by 65% due to the adoption of smart hotels such as FlyZoo Hotel on automated login systems supported by robots and artificial intelligence, room service and delivery by 72% wide use of delivery robots such as (PuduBot) in hotels, cleaning and sterilization by 75% wide use especially after the covid-19 pandemic, guidance and guidance by 68%, waiter service in restaurants by 70 %.

Source: prepared by the researchers based on: (Vaje and Dif, 2025, pp. 30-36)

Lessons Learned from The Experiences of Spain and China

By reviewing the experience of Spain and the experience of China in the field of smart tourism, we can draw some lessons learned, especially for countries that have tourism capabilities that qualify them to be leading destinations competing with developed world countries in smart tourism. One of the most prominent of these lessons is that the transformation towards smart tourism is not limited only to the use of modern technologies, but also requires the construction of an integrated system that combines digital infrastructure, data management and innovation in the provision of tourism services, and this is embodied in the Spanish experience. The same experience also highlights the importance of strategic planning, participatory governance and the involvement of various actors, as well as achieving a balance between improving the tourist experience and ensuring the well-being of the population and sustainability.

On the other hand, the Chinese experience emphasizes the importance of expanding the use of advanced technologies such as artificial intelligence, robotics, facial recognition technologies and virtual reality, which contributes to improving the efficiency of services and providing a more accessible and interactive tourism experience. Therefore, the success of the transformation towards smart tourism requires a combination of technological development, integrated planning, investment in the digital environment and human resources, taking into account the specificity of each tourist destination and its needs.

Conclusion

Through the presented research paper, we have reached a number of results, which we list as follows:

- Artificial intelligence is an essential tool in developing the tourism sector and building unique tourist experiences;
- Smart tourism is a strategic necessity to keep abreast of global developments and changes in the field of Tourism;
-The Spanish experience has shown that the success of smart tourism is linked to the adoption of an integrated strategic vision that combines digital transformation, data management, participatory governance and sustainability while ensuring a balance between improving the tourist experience and the well-being of local residents;
- The Chinese experience has shown the importance of expanding the use of artificial intelligence technologies in the tourism sector such as robots, virtual reality, chat bots, which enhances the efficiency of the services provided and contributes to providing a more rapid and interactive tourist experience.

Based on the findings, we make the following suggestions:

- To promote investment in artificial intelligence applications, especially in the fields of data analysis, providing smart services and customizing tourism offers according to the needs of the tourist;
- To work on building an integrated smart tourism system that combines the use of digital technologies, infrastructure development, data management and enhancing coordination between various actors in the tourism sector;
- The aim is to benefit from the experiences of leading countries in the field of smart tourism by adopting an integrated strategic vision based on coordination between various actors and expanding the use of artificial intelligence technologies in line with the specifics and capabilities of tourist destinations for each country.

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