JOURNAL OF THE FACULTY OF TOURISM AND HOTELS
UNIVERSITY OF SADAT CITY
Journal homepage:
https://mfth.journals.ekb.eg/

Transforming Travel: The Impact of Smart Tourism Systems on Destination Management

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Printed ISSN: 2537-0952
Online ISSN: 3062-5262
DOI: 10.21608/MFTH.2025.447168

ABSTRACT

In an era of rapid advances in technology, smart tourism systems have emerged as an essential tool to strengthen destination management. The objective of the research is to determine the impact of smart tourism systems on destination management by investigating how integrating smart technology affects visitor experience and personalized tour plans. It also investigates the impact of smart tourism on improving communication and providing tourists with real-time information, as well as determining the significance of smart technology in enhancing operational effectiveness and visitor distribution within a destination. Furthermore, it investigates the impact of smart systems on environmental sustainability and the promotion of eco-friendly tourism. This study adopts a descriptive-analytical approach to analyze the impact of smart tourism systems on destination management. Data were collected through a questionnaire administered to experts and analyzed using appropriate statistical methods. The research sample consisted of 440 participants, with 415 questionnaires collected, and 405 deemed valid for analysis. This methodology provides accurate insights into the effect of smart technology on various aspects of destination management, supporting strategic decision-making to promote smart tourism. Statistical analysis was used to reveal the relationships between the different dimensions of smart tourism systems and destination management. The results showed a significant positive impact of smart tourism systems on destination management and a statistically significant effect of technological integration on enhancing the tourist experience and sustainability. The findings also indicated a positive impact of smart tourism systems on environmental and operational efficiency. The research provides recommendations for enhancing destination management strategies using smart tourism systems, thereby contributing to sustainable tourism development. The results confirm that integrating smart tourism systems significantly enhances destination management by optimizing resource allocation, improving safety and security, and fostering sustainable tourism development. The study recommends strategic investments in digital infrastructure, personalized visitor experiences, and enhanced digital communication to maximize the benefits of smart tourism systems. Additionally, fostering public-private partnerships and supporting small and medium-sized enterprises (SMEs) are considered crucial for sustainable tourism growth.

KEYWORDS

Smart, Tourism, Systems, Destination, Management, and Travel.

تحول قطاع السفر: أثر نظم السياحة الذكية على إدارة الوجهات السياحية

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الترقيم الدولى الموحد للطباعة:
2537–0952
الترقيم الدولى الموحد الإلكترونى:
3062–2562
DOI:
10.21608/MFTH.2025.447168

الملخص

في سياق التطور التكنولوجي المتسارع، أصبحت أنظمة السياحة الذكية أداة حيوية لتعزيز إدارة الوجهات السياحية. يهدف هذا البحث إلى قياس أثر نظم السياحة الذكية على إدارة الوجهات السياحية من خلال تحديد أثر دمج التكنولوجيا الذكية على تجربة الزوار وتخصيص البرامج السياحية، و دراسة تأثير السياحة الذكية في تحسين التواصل وتوفير المعلومات الفورية للسياح، اضافة الي التعرف علي دور النظم الذكية في تحسين الكفاءة التشغيلية وتوزيع الزوار داخل الوجهة السياحية، واستكشاف تأثير استخدام النظم الذكية على الاستدامة البيئية ودعم خيارات السياحة الصديقة للبيئة، ومن ثم تتبنى هذه الدراسة منهجية وصفية-تحليلية لفهم تأثير أنظمة السياحة الذكية على إدارة الوجهات. تم جمع البيانات عبر استبيان موجه للخبراء وتحليلها باستخدام الأساليب الإحصائية المناسبة. تكونت عينة البحث من 440 مشاركاً، وتم جمع 415 استبياناً، منها 405 استبيانات صالحة للتحليل. تساعد هذه المنهجية على تقديم رؤى دقيقة حول تأثير التكنولوجيا الذكية على مختلف جوانب إدارة الوجهات، مما يدعم اتخاذ القرارات الاستراتيجية لتعزيز السياحة الذكية، وتم تحليل البيانات باستخدام الأساليب الإحصائية للكشف عن العلاقات بين الأبعاد المختلفة لأنظمة السياحة الذكية وإدارة الوجهات. أظهرت النتائج وجود تأثير إيجابي كبير لأنظمة السياحة الذكية على إدارة الوجهة السياحية، اضافة الي وجود تأثير ذي دلالة إحصائية للتكامل التكنولوجي على تعزيز تجربة السائح وتعزيز الاستدامة، كذلك تأثير ايجابي لأنظمة السياحة الذكية على الكفاءة البيئية والتشغيلية يقدم البحث توصيات لتعزيز استراتيجيات إدارة الوجهات باستخدام أنظمة السياحة الذكية، مما يساهم في التنمية السياحية المستدامة.، كما تؤكد النتائج أن دمج أنظمة السياحة الذكية يعزز بشكل كبير إدارة الوجهات من خلال تحسين تخصيص الموارد، ورفع مستوى السلامة والأمان، وتعزيز التنمية السياحية المستدامة. توصي الدراسة بالاستثمارات الاستراتيجية في البنية التحتية الرقمية، وتخصيص تجارب الزوار، وتعزيز التواصل الرقمي لتعظيم فوائد أنظمة السياحة الذكية. إضافة إلى ذلك، يُعدّ تعزيز الشراكات بين القطاعين العام والخاص ودعم المؤسسات الصغيرة والمتوسطة أمراً حاسماً للنمو السياحي المستدام.

الكلمات الدالة

السياحة الذكية، الوجهات السياحية، ادارة المقصد السياحي، السفر

Introduction

The advancement of information and communication technologies (ICTs) in general, and cloud computing technologies in particular, has motivated tourism destination governments and practitioners to leverage smart technologies to optimize their business planning decisions and enhance the tourist experience (Ye, et al, 2020; Huang et al., 2017). In recent decades, smart tourism has been attracting attention from practitioners and scholars, and The integration of smart technology has become a key element in the development of the tourism industry globally (Lee, et al, 2020). Smart tourism systems enhance operational efficiency, contribute to improving visitors' experience, and support sustainability by reducing environmental impacts (Jeong & Shin, 2020).

The main research gap is that empirical studies exploring the strategic impact of smart tourism systems on destination management remain limited, particularly in the Egyptian context. Despite the growing global recognition of smart technology's importance in enhancing tourist experiences and operational efficiency, current academic literature lacks a deep and documented understanding of how these systems can be effectively applied in a unique tourism market like Egypt, which is characterized by distinctive cultural, economic, and environmental features. This research deficit creates an urgent need to study how smart technology can be strategically utilized to address local challenges related to visitor flow management, achieving sustainability, and offering personalized experiences, thereby providing a knowledge base to support decision-makers in the Egyptian tourism sector.

In Egypt, tourism is a major source of national income, and as global competition grows, there is an urgent need to adopt smart systems to improve destination management and enhance competitiveness. The problem with the study is that as tourists increase in number and diversity of needs, destinations face challenges in managing the flow of visitors, ensuring sustainability, and offering personalized experiences that meet visitors' expectations. The role of smart tourism systems is shown here as innovative solutions that can help improve operational efficiency and enhance visitor satisfaction. Smart tourism systems play a crucial role in enhancing operational efficiency, improving visitor experiences, and promoting sustainability by minimizing environmental impacts. However, empirical studies exploring the strategic impact of these systems on destination management, particularly in Egypt, remain limited and require further research.

This study aims to measure the impact of Smart Tourism Systems on Destination Management by determining the effect of integrating smart technology on enhancing the visitor experience and personalizing tourism programs, Investigating the influence of smart tourism on improving communication and providing instant information to tourists, Identifying the role of smart systems in improving operational efficiency and managing visitor distribution within the tourism destination, and exploring the impact of using smart systems on environmental sustainability and supporting eco-friendly tourism options.

Research's hypotheses

- **H1**: There is a relationship between Smart Tourism Systems and Destination Management.

- **H2**: There is an effect of Smart Tourism Systems on Destination Management
- **H3:** There is an effect of Technology Integration on Enhancing Tourist.
- **H4:** There is an effect of Smart Tourism Systems on Digital Communication and Engagement
- **H5:** There is an effect of Smart Tourism Systems on Environmental and Operational Efficiency

The significance of this research lies in its contribution to enriching knowledge about the role of smart tourism systems in improving destination management, thereby helping decision-makers adopt effective strategies to promote sustainable development. The study focuses on Egyptian tourist destinations as a case study.

Literature Review

The rapid development of ICT has led to the emergence of the concept of "smart tourism" (Leung, 2022), which reflects the integration of modern technology and destination management. This review aims to analyze previous studies on smart tourism systems and their impact on destination management, focusing on key dimensions such as; technology integration, sustainability, intelligent mobility, improved visitor experience, and preservation of cultural heritage.

Nowadays, the term “smart” has become popular in reflecting technological progress in social and economic improvement, as well as the exchange of knowledge and information. The emergence of smart gadgets is very useful because it connects infrastructures with accessible networks, smart technology has led and connected everything, including activities and services, to be more connected, more informed and shared with customers conveniently, especially in the tourism industry, and as a result smart tourism has been developed, making tourism easier and more enjoyable for everyone (Noraini, Khoo, Fasihah, Abdul, Abdul, & Anes, 2022, p. 42) The concept of “smart” is described as the application of information technology that relies on sensors, big data, open data, and new ways of sharing information (Dhiani, Arif, & Tony, 2023, p. 135).

Smart tourism is a manifestation of the impact of information technology on the tourism sector (Dhiani, Arif, & Tony, 2023, p. 143). It is a term related to a tourism offer based on cloud computing, which is the management, storage and access to data over the Internet by connecting a group of devices via a virtual network, and open data using smartphone applications, to create a smart tourist destination at the level of a city or region, that is, providing personalized information to a customized visitor in real time, as well as the ability to measure the impact of tourist sites and know the various paths of tourists and their experiences to satisfy them (Botghrin & Ayashi, 2020). Smart tourism is also defined as Tourism supported by integrated efforts in a destination to collect, aggregate, and utilize data gathered from physical infrastructure, interpersonal relationships, government/organizational reports, and humans bodies/minds while using modern technology to convert this data into actual visitor experiences and commercial operations value propositions with a clear focus on sustainability, effectiveness, and experience enhancement (Vargas-Sánchez, 2016, p. 180).

On the other hand, some believe that smart tourism is a new way to manage tourism flows and provide better tourism services, new advertising models and tourism projects that rely on cloud services and open data to innovate beyond the boundaries

of traditional tourism, and smart tourism is a platform that implements information and communication technology to provide tourists with information, collect and integrate data about tourist destinations, offer rich experiences to beneficiaries, and integrate tourists into the tourism experience, which is circulated by them through technology and documented through what they publish through their personal accounts and display the value of their experiences using smart devices (Seffari Google Maps, Google Trips, City Mapper (Seffari & Mekarssi, 2020)

There are several definitions by foreign researchers regarding the term smart tourism, but there is no comprehensive definition that touches the various aspects of smart tourism, perhaps due to the novelty and complexity of the idea, and it can be said that smart tourism is a new development of tourism as a result of the impact of information technology on the tourism sector as a whole, as it is a new way of tourism transactions that provides better and faster services associated with smart systems, programs and devices based on information and communication technology, and offers tourism offers based on cloud computing and data accessed through virtual networks that can provide fast and accurate information about the destination

Current applications of Smart Tourism

I: Smartphone applications and their importance in the tourism sector :

The rapid growth in the travel industry always requires advanced technologies and information to manage the increasing volume and quality of tourism, as many previous studies have indicated that travelers nowadays demand more high-quality value for their money (Barnett, 2016), so smartphone technology has become an inevitable necessity for travel (Wang & Law, 2018) as tourists are assisted by many smart devices that enable them to travel more freely and comfortably than ever before through smartphone technology (Shi et al., 2014). While traveling, maps or navigation apps are the most popular among tourists, and tourists also check the weather, find restaurants, engage in social media, search for hotel services, and make reservations, which are the basic activities typical of traveling (Linton et al., 2019). In addition, Zsarnoczky (2018) believes that travel-related smartphone applications generate added value through the synergy and mutual influence of a healthy lifestyle and a passion for travel due to the use of modern technology, this added value is one of the factors that increase the attractiveness of tourism and facilitate its use, for example (GPS) available on smart devices. Related applications can provide tourists with personalized services that meet their needs based on their current location (Meehan et al., 2016). As a result, tourists can have a richer, more informative, and more immersive experience than before. (Maged et al., 2018) summarizes the importance of smartphone applications in tourism and hospitality as follows:

1. Access to general information: It means those information related to various tourist events, accommodation, tourist attractions, shopping centers, various tourist attractions, interpretation services and other services needed by tourists
2. Obtaining tourism services: Such as booking tours, booking tickets, and searching for flight schedules available on various airlines. As well as hotel reservations, emergency services, and various geographical services, such as locating geographical locations and locations of services provided, knowing the

geographical directions, obtaining various maps of tourist destinations and roads, as well as obtaining weather reports.

3. Electronic payment services: This is the payment of money in exchange for obtaining tourist, hotel, and entertainment services and reservations through these applications.

II: Digitizing Egypt's archaeological sites:

As part of the efforts of the Egyptian Ministry of Tourism and Antiquities to make some archaeological sites and museums available to the people of the world, to enjoy viewing the ancient Egyptian civilization digitally, the ministry, in cooperation with its partners from scientific and archaeological institutes and institutions, launched a service of visits to some of these sites through the ministry's official pages on the Internet and social networking sites by publishing a number of virtual visits to them or explaining some museums through Egyptian tourist guides, the theme of these visits Experience Egypt from Home (SIS, 2024):

The Ministry of Tourism and Antiquities, in collaboration with numerous international and local institutions, has offered a wide range of virtual tours of historical and archaeological sites in Egypt. These tours included visits to the tomb of "Menna" in Luxor, in cooperation with the American Research Center in Cairo, and the tomb of Queen "Meresankh III," in collaboration with the Harvard University Museum. Virtual tours were also launched for Islamic and Coptic archaeological sites, such as the mosque, school, and Khanqah of Sultan "Al-Zahir Barquq," and the "Ben Ezra" Temple, in collaboration with the Ministry of Communications and Information Technology (SIS, 2024).

The Ministry also organized virtual tours of other archaeological sites with local and international partners, such as the "Beni Hassan" area, the "Kom al-Shughafa" tombs in Alexandria, and the tomb of King "Ramesses VI." Additionally, the Ministry launched guided tours of Egyptian museums, showcasing and explaining twenty unique artifacts inside the Egyptian Museum in Tahrir. These tours also encompassed the Grand Egyptian Museum and the Museum of Islamic Art in Bab Al-Khalq, providing the public with a unique opportunity to explore Egypt's ancient and Islamic treasures from anywhere in the world (SIS, 2024).

III: E-ticketing system and digital gates

Digital transformation is one of the key factors in the development of tourism services, as modern technologies contribute to facilitating the tourist experience and enhancing the efficiency of operations within archaeological sites and museums. In this context, a project is being implemented to digitize e-ticketing systems and digital gates, to improve the services provided within the various tourist destinations.

This system contributes to reducing waiting times at entry gates and providing a more organized mechanism for the movement of visitors, which contributes to improving the tourist experience. The use of e-tickets also enhances the efficiency of controlling access to archaeological sites and museums, contributing to better revenue management and transparency of operations.

As of the date of this study, the total number of Egyptian archaeological sites and museums that have implemented the e-ticketing system and digital gates has reached 35 archaeological sites and museums across Egypt. This approach is part of a broader strategy aimed at developing the digital infrastructure of the tourism sector, which

enhances operational efficiency and keeps pace with global trends in improving tourism services using modern technology (Ministry of Tourism and Antiquities, no date)

Dimensions of Smart Tourism Systems in Tourist Destinations

Smart Tourism Systems can be classified into various key aspects that emphasize the integration of technology, sustainability, and improving user experience. These are the main dimensions to take into account such as:

A. Technology Integration:

Tiwari, Rosak-Szyrocka, and Żywiołek, (2022), as well as Novera, Ahmed, Kushol, Wanke, and Azad. (2022) mentioned connected devices that are utilized to enhance visitor experiences, including smart signage, crowd management sensors, smart lighting, and air quality monitoring. Ivars-Baidal, Celdrán-Bernabeu, Femenia-Serra, Perles-Ribes, and Giner-Sánchez (2021) referred to the importance of Centralized Mobile Applications for offering travelers booking services, real-time information, navigation, and tailored suggestions (Gajdošík, 2019).

Augmented Reality (AR) and Virtual Reality (VR) provide immersive experiences, such as virtual museum tours or augmented reality historical sites, that let visitors interact with the location in novel ways (Rane, Choudhary, & Rane, 2023 & Wei, 2019) as well as Gajdošík (2019) clarified that data collection and analysis to create personalized experiences, maximize services, and comprehend visitor behavior (e.g., predictive analytics for crowd control).

B. Sustainability and Environmental Impact:

Murat Koçoğlu, Pinaroğlu, and Yaşarsoy (2023) assured Integrating eco-friendly technologies like energy-efficient systems, solar power, and water recycling into the destination's infrastructure and supporting Eco-friendly infrastructure. Baumber, Merson and Lockhart Smith (2021) referred to some Sustainable tourism practices including encouraging responsible travel, lowering waste, and promoting low-carbon transportation options through digital tools like eco-tourism apps and smart trash cans. Implementing Green Certifications and Monitoring can provide mechanisms to monitor the environmental impact of tourism-related activities, like real-time emissions monitoring and sustainable practice certification (Asrifan, Murni, Hermansyah, and Dewi, 2024).

C. Smart Mobility and Accessibility:

Amendola, La Bella, Joime, Mascioli, and Vito (2022) clarified that it can utilize intelligent transportation options such as self-driving cars, electric buses, and bike-sharing programs that are accessible through digital platforms. Using Mobility as a Service (MaaS), tourists can seamlessly move around the destination with unified ticketing and payment systems across different modes of transportation (Signorile, Larosa, & Spiru, 2018). Jeong and Shin (2020) ensure that digital and physical resources such as accessible websites, apps, and modes of transportation are designed to be accessible to individuals with disabilities.

D. Visitor Experience and Personalization:

Cepeda-Pacheco and Domingo (2022) referred to make use of data to offer suggestions and itineraries that are tailored to each person's interests, past actions, or current circumstances (temperature, time of day, crowd density).To achieve seamless

connectivity, it is possible to provide high-speed Wi-Fi, charging stations, and digital kiosks throughout the destination for visitors to stay connected (Srivastava & Shandilya, 2024). Finally, multilingual support provides information and services in a variety of languages that accommodates foreign guests (Ionescu & Sârbu,2024).

E. Cultural and Heritage Preservation:

Cultural heritage sites and artifacts can be digitally preserved for future generations by leveraging technologies such as 3D scanning and augmented reality (Sonuç & Süer, 2023). Furthermore, Smart Interpretation Systems teach visitors about a site's cultural significance and history through interactive media-based guides and immersive narratives (Gelter, Lexhagen, & Fuchs, 2021).

F. Safety and Security

Intelligent Surveillance Solutions such as AI-powered surveillance systems, can be used for crowd management, security, and emergency response (Huang, Huang, & Wang, 2020). Bulchand-Gidumal (2022) clarified that utilizing digital technologies is important to monitor health and safety factors, including air quality sensors, real-time hazard notifications, and health tracking for large-scale events. It can apply smart technologies to detect and address emergencies, such as natural disasters or accidents, and effectively communicate with visitors (Gretzel, & Scarpino-Johns, 2018).

G. Collaboration and Governance

Collaboration among Public-Private Partnerships (PPP) is absolutely necessary to establish a smooth smart tourist environment (Errichiello, & Marasco, 2017). Smart Regulations can be provided through the creation of guidelines that control technology use in tourism while guaranteeing the safety of data, privacy, and the local community (Shafiee, Ghatari, Hasanzadeh, & Jahanyan, 2022). Using feedback systems and engagement platforms can make sure locals and visitors are involved in the creation of smart tourism projects (Pan, Lin, Liang, Akyildiz, & Park, 2021).

Impact of Smart Tourism Systems on Destination Management

Smart Tourism Systems can enhance tourist experience by providing personalized recommendations and itineraries for visitors that are tailored to their preferences, past behavior, or real-time data (Jeong, & Shin, 2020). Buhalis and Amaranggana (2015) stated that it helps tourists by giving immediate updates on services, attractions, and any possible delays (such as the availability of restaurants and transportation) that lessen annoyance and boost their interest in the tourism destination by enabling them to make well-informed judgments. Furthermore, it facilitates smoother transitions between various services (transport, accommodations, attractions) inside the destination (Alami, & Tahmasebi Aria, 2016).

Smart tourism systems give destination managers important information by gathering data on tourist movements, preferences, and behavior. Demand forecasting, visitor flow management, and resource allocation can all be improved based on data (Lee, Hunter, & Chung, 2020).

Zubiaga, Izkara, Gandini, Alonso, & Saralegui (2019) mentioned that destinations can utilize smart systems to redirect tourists away from overcrowded areas and distribute visitation more evenly across the destination. Finally,

it can help mitigate the environmental consequences of tourism by encouraging sustainable behaviors by using public transportation, tracking energy usage at tourist

destinations, or providing eco-friendly tour options (Shafiee, Ghatari, Hasanzadeh, & Jahanyan, 2019).

Advanced technological systems allow destinations to communicate directly with visitors through mobile applications, push notifications, and social media integration (Buhalis, & Amaranggana, 2013).

Azis, Amin, Chan, & Aprilia, (2020) mentioned that it provides destination managers with insights into visitor perceptions and enables prompt resolution of complaints, which can enhance a destination's reputation.

Through the implementation of intelligent technologies, processes like booking, ticketing, and check-ins are automated, minimizing the requirement for manual involvement and enhancing operational efficiency (Leung, 2022) as well as it helps for resource optimization by collecting data from visitors allows for better management of resources like staffing, accommodation, transportation, and utilities (Qiang, Lan, & Nan, 2024).

In times of pandemics such as COVID-19, intelligent systems enable the monitoring and regulation of visitor volumes, the provision of up-to-date health guidelines, and the management of social distancing protocols, all with the aim of safeguarding the wellbeing of both residents and travelers (Buhalis, & Amaranggana, 2013).

Jovicic (2019) clarified that it enables cooperation among various stakeholders, including local businesses, governments, tourism boards, and visitors. Shared data and systems can result in more integrated approaches to the development of tourist destinations. Buonincontri and Micera (2016) assured that travel destinations may offer virtual tours, interactive experiences, or gamified activities as innovative ways to engage and attract visitors.

Digital technologies can be leveraged to assist in the safeguarding and dissemination of cultural heritage. This can be achieved through the creation of virtual museums, digital exhibitions, and augmented reality (AR) experiences (Georgescu Paquin, & Carballido Risco, 2021).

Local communities can gain advantages from smart tourism by having improved access to tourists and chances for small enterprises to expand through digital platforms and focused marketing strategies (O'Connor, 2023).

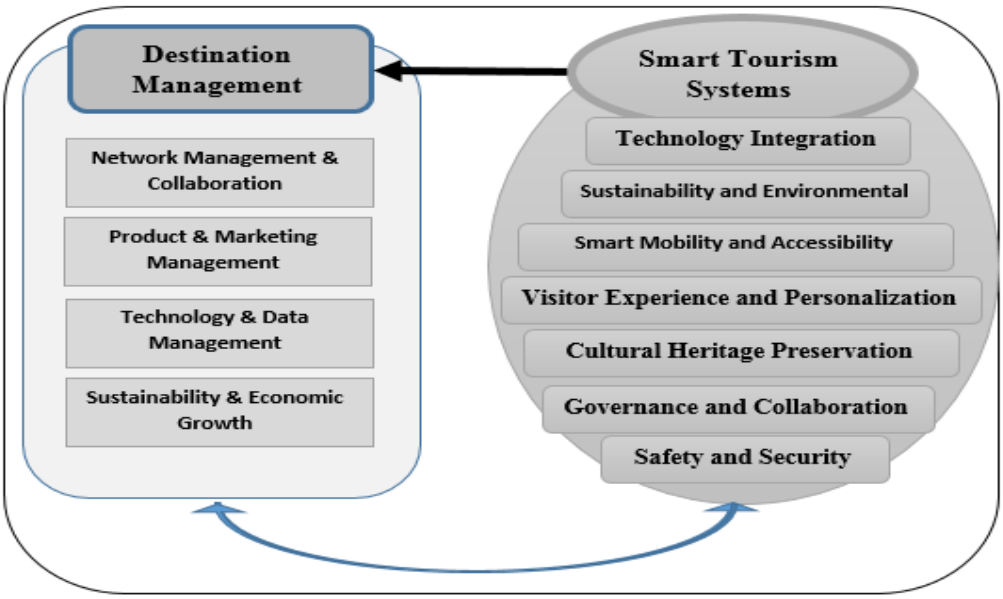

Figure (1) Research Model
Prepared by Researchers depend on (Ivars-Baidal, et al., 2019; Bingöl, & Yang, 2025; Any., & Tariazela, 2024; Srinivasan, et al., 2024; Ruiz-Sancho, et al., 2021).

Methodology and data analysis

A descriptive-analytical approach was adopted to describe and analyze the impact of smart tourism systems on destination management.

The study's population included experts and managers specializing in destination management, particularly those with experience in applying smart technology in the field. A random sample of 440 participants was selected to ensure comprehensive representation of the study population. The sample selection criteria required participants to have at least 5 years of experience in destination management or working with smart tourism systems to ensure their expertise and suitability for the research. The sample was chosen based on specific criteria to ensure the validity of the findings. Experts were selected due to their direct involvement in destination management and their experience in implementing smart tourism solutions. This criterion guaranteed that the responses would be insightful and grounded in real-world applications.

Questionnaire Design: The questionnaire was designed to cover the main research axes based on previous studies (Ivars-Baidal et al, 2019; Bingöl, & Yang, 2025; Any., & Tariazela, 2024; Srinivasan et al, 2024; Ruiz-Sancho et al, 2021). The questionnaire was structured into three sections:

Section One: Includes 3 items aimed at collecting demographic information.

Section Two: Consists of seven dimensions representing the independent variable, each with 5 statements:

- **Dimension 1:** Technology Integration (5 statements).
- **Dimension 2:** Sustainability and Environmental Impact (5 items).
- **Dimension 3:** Smart Mobility and Accessibility (5 items).
- **Dimension 4:** Visitor Experience and Personalization (5 statements).
- **Dimension 5:** Cultural Heritage Preservation (5 statements).

- **Dimension 6:** Safety and Security (5 statements).
- **Dimension 7:** Governance and Collaboration (5 statements).

Informed consent was obtained from the respondents. Participants were informed of the study's objectives and their consent was secured prior to their participation. The confidentiality of participants' personal information and its use for research purposes only was emphasized. The research objectives were clarified to the participants, and they were given the freedom to withdraw at any time without any consequences, in line with the principle of transparency.

A **pilot study** was conducted prior to distributing the main questionnaire to refine the instrument and verify the clarity of the questions. This preliminary step ensured the reliability of the data collection tool. A total of 440 questionnaires were distributed online via emails, LinkedIn, and social media platforms to ensure access to a diverse sample of experts.

Data collection took place over three months, from November 2024 to January 2025. Of the distributed questionnaires, 415 were received, with 405 deemed valid for statistical analysis, yielding a **response rate of 94%**.

Result and Discussion

Validity and Reliability of the Study Instruments

The Cronbach's Alpha reliability was computed and the tests showed that the reliability coefficients for all the items were above 0.60 which indicates that the instrument is reliable. For this study, Cronbach's alpha for all survey questions is presented in Table (1)

Table (1) Cronbach alpha for research instruments

No	Items	Cronbach's Alpha
V.1	**Smart Tourism Systems**	0.781
1.1	Technology Integration	0.742
1.2	Sustainability and Environmental Impact	0.770
1.3	Smart Mobility and Accessibility	0.725
1.4	Visitor Experience and Personalization	0.779
1.5	Cultural Heritage Preservation	0.755
1.6	Safety and Security	0.728
1.7	Governance and Collaboration	0.736
V.2	**Destination Management**	0.792
2.1	Enhancing Tourist Experience	0.792
2.2	Data-Driven Decision Making	0.801
2.3	Environmental and Operational Efficiency	0.755
2.4	Digital Communication and Engagement	0.791
2.5	Supporting SMEs and Local Economy	0.781

Demographic characteristics of respondents

The questionnaire used for this study included many sections concerning the respondents' demographic characteristics and other relevant information. This information was useful in understanding the background of the respondents. Results of respondents' demographics and profile are presented in Table (2)

Table (2) Respondent Characteristics

Respondent Characteristics	Total	Percentage (%)
Gender		
Male	255	63%
Female	150	37%
Age		
30-40 years	160	39.5%
41-50 years	140	34.6%
Above 50 years	105	25.9%
Years of Experience		
5-10 years	180	44.4%
11-15 years	135	33.3%
More than 15 years	90	22.2%

Data in table (2) indicated that, out of the 405 respondents, 255 of them (which represented
63% of the sample) were male and 150 of them (which represented 37% of the sample) were female. The data indicated that respondents who are less than 40 years were 160 (39.5%), 140 (34.6%) belong to the 41-50 years old category, 105 (25.9%) of the respondents were Above 50 years old category. This result might reflect that the most age segment was the 30 – 40 years segment. Regarding the Years of Experience, 180 (44.4%) of respondents belonged to the 5-10 years of Experience, 135 (33.3%) of respondents belonged to the 11-15 years of Experience, and 90 (22.2%) of respondents were more than 15 years.

Respondents' attitudes towards the smart tourism systems

Thirty-five statements were used to measure respondents' attitudes towards the smart tourism systems in the Egyptian destination.

Table (3) Smart Tourism Systems

Indicator	Mean	St. Deviation
A. Technology Integration	**4.13**	**0.839**
Advanced technological infrastructure (e.g., IoT, smart signage) is sufficiently available at key Egyptian tourist destinations.	3.96	1.125
Centralized smartphone applications are effectively utilized to provide comprehensive information and services for tourists in Egypt.	4.11	0.931
Augmented Reality and Virtual Reality technologies are innovatively employed to enrich tourist experiences at Egyptian archaeological and cultural sites.	4.49	0.793
Big data analytics are efficiently used in the Egyptian tourism sector to understand visitor behavior and personalize services.	3.58	1.132
Sufficient support and encouragement are provided by relevant authorities for adopting the latest technological solutions in the management and operation of Egyptian tourism facilities.	4.53	0.771
B. Sustainability and Environmental Impact	**4.02**	**0.873**
Smart tourism systems implemented in Egypt effectively contribute to enhancing environmentally sustainable tourism practices.	4.13	0.893
Eco-friendly technologies (e.g., energy efficiency and water recycling) are significantly integrated into the infrastructure of Egyptian tourism	4.01	1.091

establishments.		
Digital tools available in Egypt encourage tourists to adopt environmentally responsible behaviors (e.g., using low-carbon transportation).	3.97	1.241
Effective monitoring and evaluation mechanisms for the environmental impact of tourism activities exist in Egypt, supported by smart technology.	3.93	1.171
Egyptian tourism policies adequately support the application of environmental certifications and green initiatives in the tourism sector.	4.03	0.982
C. Smart Mobility and Accessibility	**4.06**	**0.892**
Smart transportation solutions are effectively used to facilitate tourist mobility within Egyptian destinations.	3.71	1.326
Diverse and sustainable transportation options supported by user-friendly digital platforms are available for tourists in Egypt.	3.94	1.107
Smart tourism systems in Egypt ensure easy and accessible information and tourism services for people with disabilities.	4.42	0.994
"Mobility as a Service" (MaaS) applications provide integrated solutions encompassing various modes of transport with unified payment systems in major Egyptian tourist cities.	4.03	1.075
The digital infrastructure in Egyptian tourist destinations contributes to providing accurate and immediate information regarding available transportation schedules and means.	4.22	0.993
D. Visitor Experience and Personalization	**4.23**	**0.816**
Data and its analytics are effectively utilized to provide personalized tourism recommendations and offers tailored to each tourist's interests and preferences in Egypt.	3.97	1.153
High-quality wireless internet coverage and electronic device charging stations are sufficiently available in major tourist areas in Egypt.	4.48	0.792
Tourism information and services are provided in multiple languages through digital platforms to meet the needs of international tourists in Egypt.	4.64	0.738
Smart systems contribute to providing tourists with immediate and accurate updates regarding events, weather conditions, and any changes in tourism services in Egypt.	3.97	1.227
Smart systems encourage direct interaction between tourism service providers and visitors to offer a more responsive experience to their needs in Egypt.	3.99	1.081
E. Cultural Heritage Preservation	**3.85**	**0.878**
Digital technologies are effectively utilized to preserve Egyptian archaeological sites and heritage artifacts for future generations.	3.92	1.042
Smart interpretation systems and interactive guides provide rich and innovative explanations about the cultural and historical significance of Egyptian heritage.	3.81	1.121
Digital platforms contribute to providing virtual access to Egyptian heritage sites for a wider global audience.	3.57	1.352
Smart technology is used to monitor and protect Egyptian archaeological sites from damage or illicit activities.	3.77	1.278
Governmental and private initiatives in Egypt adequately support the use of smart technology in documenting and disseminating intangible cultural heritage.	4.12	0.926
F. Safety and Security	**4.18**	**0.898**

Smart monitoring systems (e.g., AI-powered cameras) are effectively utilized to enhance tourist security and safety in Egyptian destinations.	3.97	1.107
Digital technologies contribute to providing immediate notifications and warnings to tourists regarding any potential risks (health, security, natural) in Egypt.	3.98	1.215
Effective smart systems are implemented for crowd management and ensuring safety during major events and busy tourist seasons in Egypt.	4.19	0.993
Fast and reliable digital communication channels are available for tourists to report emergencies and request assistance in Egypt.	4.36	0.917
Smart technology is used to track and implement health and precautionary measures in Egyptian tourism facilities when needed.	4.29	0.908
G. Governance and Collaboration	**4.05**	**0.903**
Strong and effective partnerships exist between the public and private sectors in Egypt for developing and implementing smart tourism solutions.	3.82	1.302
Clear and supportive policies and regulations for innovation in smart tourism are implemented in Egypt, with due regard for data protection and privacy.	4.11	1.011
Local communities and stakeholders are effectively involved in the planning and implementation process of smart tourism projects in Egypt.	4.06	1.162
Digital platforms are available to facilitate information exchange and coordination among various actors in the Egyptian tourism sector.	4.38	1.183
There is a clear commitment from leaders and decision-makers in Egypt to adopt a comprehensive national smart tourism strategy.	3.91	1.175
General Mean " Smart Tourism Systems "	**4.075**	**1.352**

As shown in Table (3), respondents expressed a positive sentiment towards the Smart Tourism Systems variable, with a mean of (4.075) and a standard deviation of (1.352). This indicates a high degree of consensus among the sample respondents regarding the variable's dimensions.

The dimension "Visitor Experience and Personalization" ranked first in terms of acceptance, with a mean of (4.25) and a standard deviation of (0.816). "Safety and Security" ranked second, with a mean of (4.18) and a standard deviation of (0.898). Finally, the "Cultural Heritage Preservation" dimension ranked last in terms of approval, with a mean of (3.85) and a standard deviation of (0.878).

The statement "Tourism information and services are provided in multiple languages through digital platforms to meet the needs of international tourists in Egypt" ranked first among 35 statements in terms of respondent agreement, with a mean of (4.64) and a standard deviation of (0.738). This indicates complete consensus among the respondents regarding this statement.

The statement "Augmented Reality and Virtual Reality technologies are innovatively employed to enrich tourist experiences at Egyptian archaeological and cultural sites" ranked second in terms of agreement and acceptance, with a mean of (4.49) and a standard deviation of (0.793).

The statement "High-quality wireless internet coverage and electronic device charging stations are sufficiently available in major tourist areas in Egypt" ranked third in terms of agreement and acceptance among the variable's statements, with a mean of (4.48) and a standard deviation of (0.792).

Finally, the statement "Digital platforms contribute to providing virtual access to Egyptian heritage sites for a wider global audience" ranked last among the variable's statements in terms of acceptance, with a mean of (3.57) and a standard deviation of (1.352). This indicates that respondents expressed varying degrees of acceptance for all the variable's statements.

Respondents' attitudes towards the destination management

Sixteen statements were used to measure respondents' attitude towards the Egyptian destination management.

Table (4) Destination Management

Indicator	Mean	St. Deviation
A. Network Management & Collaboration	**4.11**	**0.762**
The Destination Management Organization effectively contributes to building strong relationships and fruitful partnerships among various tourism stakeholders in the destination (e.g., hotels, restaurants, transportation companies, and others).	4.21	0.642
I perceive that the DMO skillfully coordinates stakeholder efforts to ensure the delivery of an integrated and harmonious tourism experience for visitors.	3.98	0.931
The DMO enjoys sufficient respect and acceptance from local partners, enabling it to effectively lead and guide tourism initiatives.	4.11	0.787
The DMO provides effective platforms or channels for information and opinion exchange among stakeholders in the tourism sector.	4.14	0.693
B. Product & Marketing Management	**4.02**	**0.897**
The DMO develops innovative and attractive tourism products and services that meet visitors' needs and aspirations.	4.12	0.791
I believe that the marketing campaigns launched by the DMO are effective in highlighting the distinctive image and unique character of our tourist destination.	4.11	0.832
The DMO successfully reaches diverse tourism markets and increases awareness of our destination at both local and international levels.	3.91	0.914
The DMO focuses its marketing efforts on the characteristics and features that differentiate our tourist destination from others.	3.92	0.924
C. Technology & Data Management	**4.23**	**0.82**
Digital platforms managed by the DMO (e.g., destination management systems) contribute to facilitating the booking and trip planning process for tourists.	4.42	0.661
The DMO shows significant interest in updating and maintaining the destination's digital content to ensure its accuracy and attractiveness.	4.24	0.792
The DMO effectively utilizes available data and information to improve tourism services and products within the destination.	4.02	0.891
I believe that the technology used by the DMO (e.g., websites, applications) is user-friendly and provides a seamless experience for users.	4.23	0772
D. Sustainability & Economic Growth	**4.26**	**0.891**
The DMO works diligently to ensure that tourism development contributes positively to the local economy and provides sustainable employment opportunities.	4.32	0.721
The DMO considers environmental, social, and cultural aspects when formulating its tourism plans, to ensure the destination's sustainability.	4.41	0.731

I believe that the DMO strategies effectively balance the interests of visitors, tourism businesses, and the local community.	4.13	0.723
The DMO demonstrates a commitment to protecting the destination's natural resources and cultural heritage for future generations.	4.19	0.729
General Mean " Destination Management **"**	**4.092**	**1.128**

As shown in Table (4), respondents expressed a positive sentiment towards the "Destination Management" variable, with a mean of (4.092) and a standard deviation of (1.128). This indicates a high degree of consensus among the sample members regarding the variable's dimensions.

The dimension "Technology & Data Management" ranked first in terms of acceptance, with a mean of (4.23) and a standard deviation of (0.82). The "Network Management & Collaboration" dimension ranked second in terms of acceptance, with a mean of (4.11) and a standard deviation of (0.762). Finally, the "Sustainability & Economic Growth" dimension ranked last in terms of agreement, with a mean of (4.01) and a standard deviation of (0.891).

The statement "Digital platforms managed by the DMO (e.g., destination management systems) contribute to facilitating the booking and trip planning process for tourists" ranked first among 16 statements in terms of respondent agreement, with a mean of (4.42) and a standard deviation of (0.661). This indicates complete consensus among the respondents regarding this statement.

The statement "The DMO considers environmental, social, and cultural aspects when formulating its tourism plans, to ensure the destination's sustainability" ranked second in terms of agreement and acceptance, with a mean of (4.41) and a standard deviation of (0.731).

The statement "The DMO shows significant interest in updating and maintaining the destination's digital content to ensure its accuracy and attractiveness" ranked third in terms of agreement and acceptance among the variable's statements, with a mean of (4.24) and a standard deviation of (0.792).

Finally, the statement " The DMO successfully reaches diverse tourism markets and increases awareness of our destination at both local and international levels" ranked last among the variable's statements in terms of acceptance, with a mean of (3.91) and a standard deviation of (0.914). This indicates that respondents expressed varying degrees of acceptance for all the variable's statements.

Testing the research's hypotheses

To test the research's hypotheses, Pearson's correlation coefficient was used to determine the strength and direction of the relationship between the dimensions of the independent variable, "Smart Tourism Systems," and the dimensions of the dependent variable, "Destination Management."

H1: There is a **statistically significant relationship** between Smart Tourism Systems and Destination Management.

Table (5): Correlations between Smart Tourism Systems and Destination Management.

		Destination Management	Smart Tourism Systems
Smart Tourism Systems	Correlation Coefficient	.718**	1.000

	Sig. (2-tailed)	.000	.
Destination Management	Correlation Coefficient	1.000	.718**
	Sig. (2-tailed)		.000

** Correlation is significant at the 0.01 level (2-tailed).

The results in Table (5) indicated that the significant value is less than 0.05 which means that there is statistically significant correlation between smart tourism systems and destination management. Furthermore, the correlation coefficient value is (+0.778), which confirms the validity of the hypothesis and indicates a strong positive correlation between smart tourism systems and destination management.

Table (6) Correlation Matrix

Variable Dimensions	Enhancing Tourist Experience	Data-Driven Decision Making	Environmental and Operational Efficiency	Digital Communication and Engagement	Supporting SMEs and Local Economy
Technology Integration	0.74**	0.68**	0.61**	0.73**	0.66**
Sustainability and Environmental Impact	0.67 **	0.73 **	0.79**	0.61**	0.62**
Smart Mobility and Accessibility	0.74**	0.78**	0.72**	0.80**	8.59**
Visitor Experience and Personalization	0.80**	0.61**	0.57**	0.59**	0.53**
Cultural Heritage Preservation	0.63**	0.59**	0.61**	0.60**	0.58**
Safety and Security	0.58**	0.63**	0.59**	0.71**	0.58**
Governance and Collaboration	0.68**	0.70**	0.63**	0.72**	0.63**

** Correlation is significant at the 0.01 level (2-tailed).

As shown in Table (6), the results of the Spearman's test indicated that the significance value for all correlation coefficients was less than (0.01), i.e., ($p<0.01$). This means that the correlation coefficient values are statistically significant. Furthermore, the table reveals that the correlation coefficients between the dimensions of the independent variable and the dimensions of the dependent variable are positive, which signifies a direct relationship between them. The correlation coefficients ranged from (0.53) to (0.80), which suggests that the strength of the relationships between the variable dimensions is moderate to strong.

Hypothesis 2

H2: There is a statistically significant effect of Smart Tourism Systems on Destination Management at a significance level of ($\alpha \leq 0.05$).

Simple linear regression was used to test the hypothesis and determine the presence of a statistically significant effect.

Table (7) Effect of Smart Tourism Systems on Destination Management

Hypothesis	**E**ffect Direction			**R**	**t**	**Sig.**	**Adjusted R^2**
H.2	Smart Tourism Systems	→	Destination Management	**0.554**	**8.652**	**0.00**	**0.649**

As shown in Table (7), the hypothesis test findings reveal that there is a statistically significant influence of smart tourism systems on destination management, with a regression coefficient of (0.554) with a significance level of (0.00), which is less than (0.05). Thus, the regression coefficient is statistically significant. As a result, the null hypothesis, stating that smart tourism technologies have no statistically significant effect on destination management, is rejected. The alternative hypothesis, stating that smart tourism systems have a statistically significant effect on destination management, has been accepted.

As stated in the table, the Adjusted R-squared was (0.649). This indicates that the independent variable "Smart Tourism Systems" explains 64.9% of the variance in the dependent variable "Destination Management".

Hypothesis 3

H3: There is a statistically significant effect of Technology Integration on Enhancing Tourist Experience at a significance level of ($\alpha \leq 0.05$).

Table (8) Effect of technology integration on destination management

Hypothesis	**E**ffect Direction			**R**	**Sig.**	**R^2**	**Adjusted R^2**
H.3	**T**echnology **i**ntegration	→	Destination Management	**0.643**	**0.00**	**0.413**	**0.406**

As shown in Table (8), the results of the hypothesis test for the research hypothesis that there is a statistically significant effect of Technology Integration on Enhancing Tourist Experience show that the regression coefficient was (0.643) with a significance level of (0.00), which is less than (0.05). Thus, the regression coefficient is statistically significant. As a consequence, the null hypothesis, stating that technology integration has no statistically significant impact on improving tourist experience, is rejected. The alternative hypothesis, stating that technology integration has a statistically significant influence on improving the tourist experience, is accepted.

As shown in the table, the value of the Adjusted R-squared was (0.406). This means that the independent variable "Technology Integration" accounts for 40.6% of the variance in the dependent variable "Enhancing Tourist Experience".

Hypothesis 4

H4: There is a statistically significant effect of Smart Tourism Systems on Digital Communication and Engagement at a significance level of ($\alpha \leq 0.05$).

Table (9) Effect of smart tourism systems on digital communication and engagement

Hypothesis	**E**ffect Direction			**R**	**Sig.**	**R^2**	**Adjusted R^2**
H.4	**s**mart **t**ourism **s**ystems	→	**d**igital **c**ommunication and **e**ngagement	**0.885**	**0.00**	**0.783**	**0.621**

As shown in Table (9), the results of the hypothesis test for the research hypothesis that there is a statistically significant effect of Smart Tourism Systems on Digital Communication and Engagement indicate that the regression coefficient was (0.885) with a significance level of (0.00), which is less than (0.05).Therefore, the regression coefficient is statistically significant. Consequently, the null hypothesis, which states that there is no statistically significant effect of Smart Tourism Systems on Digital Communication and Engagement, is rejected. The alternative hypothesis, which states that there is a statistically significant effect of Smart Tourism Systems on Digital Communication and Engagement, is accepted.

As shown in the table, the value of the Adjusted R-squared was (0.621). This means that the independent variable "Smart Tourism Systems" accounts for 62% of the variance in the dependent variable "Digital Communication and Engagement".

Hypothesis 5

H5: There is a statistically significant effect of Smart Tourism Systems on Environmental and Operational Efficiency at a significance level of ($\alpha \leq 0.05$).

Table (10) Effect of smart tourism systems on environmental and operational efficiency

Hypothesis	**E**ffect Direction			**R**	**Sig.**	**R^2**	**Adjusted R^2**
H.5	Smart **t**ourism **s**ystems	→	Environmental and operational efficiency	**0.785**	**0.00**	**0.616**	**0.563**

As shown in Table (10), the results of the hypothesis test for the research hypothesis—that there is a statistically significant effect of Smart Tourism Systems on Environmental and Operational Efficiency indicate that the regression coefficient was (0.785) with a significance level of (0.00), which is less than (0.05). Therefore, the regression coefficient is statistically significant. Consequently, the null hypothesis, which states that there is no statistically significant effect of Smart Tourism Systems on Environmental and Operational Efficiency, is rejected. The alternative hypothesis, which states that there is a statistically significant effect, is accepted.

As shown in the table (10), the value of the Adjusted R-squared was (0.563). This means that the independent variable "Smart Tourism Systems" accounts for 56% of the variance in the dependent variable "Environmental and Operational Efficiency".

Results and Discussion

The research findings showed that experts agreed on the importance of smart tourism systems in the Egyptian tourist destination. This aligns with the study by Magdy et al. (2022) and Khadr (2025). The experts also confirmed the importance of smart tourism systems in enhancing the tourist experience, which is consistent with the findings of Buhalis and Amaranggana (2014) regarding how smart tourism destinations are capable of enhancing the tourist experience by offering more personalized products and services to meet each visitor's unique needs and preferences.

The research also highlighted the role of smart tourism systems in promoting safety and security and contributing to the preservation of the cultural heritage of the Egyptian tourist destination. The findings confirmed that smart tourism systems in Egypt provide tourism information and services in multiple languages through digital

platforms to meet the needs of tourists. In addition, these systems employ augmented reality and virtual reality technologies innovatively to enrich the experiences of tourists at some Egyptian archaeological and cultural sites. Furthermore, digital platforms contribute to providing virtual access to Egyptian heritage sites for a wider global audience. In this context, Wang et al. (2016) argue that the smart information system, intelligent tourism management, smart sightseeing, e-commerce system, smart safety, intelligent traffic, smart forecasting, and virtual tourist attractions are the key evaluation factors for smart tourism components from the perspective of tourists.

The study's findings confirmed that Egyptian Destination Management Organizations (DMOs) primarily rely on technology and data management systems, in addition to establishing principles of network and collaboration management. This is done to achieve sustainability and economic growth goals. This was confirmed by the study of Micera et al. (2013), which indicated that smart applications enable various stakeholders in tourism destinations to exchange knowledge and form partnerships. Consequently, the experts in the research sample affirmed the role of digital platforms managed by the DMO in facilitating the booking and trip planning process for tourists. These platforms also consider environmental, social, and cultural aspects when formulating their tourism plans to ensure the destination's sustainability. The research findings also stressed the importance of updating and maintaining the destination's digital content to ensure its accuracy and attractiveness. This, however, contrasts with the study by Gajdošík (2019), which asserted that Destination Management Organizations (DMOs) face numerous challenges and find it difficult to adapt to continuous technological developments.

The study's findings also revealed a positive relationship between Technology Integration and Enhancing Tourist Experience in the Egyptian tourist destination, which is consistent with the findings of the study by Buhalis and Amaranggana (2014). Furthermore, the study concluded that there is a positive relationship between Technology Integration and Data-Driven Decision Making in the Egyptian tourist destination.

The study's findings also revealed a positive relationship between Technology Integration and Supporting SMEs and Local Economy in the Egyptian tourist destination. This contrasts with the study by Gajdošík (2019), which argued that despite the tourism industry's move toward becoming smarter, it still lags behind other industries due to its fragmented nature and the small size of its businesses .Furthermore, the study concluded that there is a positive relationship between Sustainability and Environmental Impact and Enhancing Tourist Experience in the Egyptian tourist destination.

The study also found a statistically significant effect of Smart Tourism Systems on Destination Management. The Adjusted R-squared value was (0.649), which indicates that the independent variable "Smart Tourism Systems" explains 64.9% of the variance in the dependent variable "Destination Management". This finding is consistent with the study by Ivars-Baidal et al. (2019), which noted the emergence of a need for new management models. One of these models is the emerging smart tourism destination, although it requires greater conceptual precision to become a new paradigm for destination management.

The study also found a statistically significant effect of technology integration on enhancing tourist experience. The regression coefficient was (0.643), and the Adjusted R-squared value was (0.406). This means that the independent variable "Technology Integration" explains 40.6% of the variance in the dependent variable "Enhancing Tourist Experience." This is consistent with Buhalis (2020), who expressed that technology-enabled tourism experiences increasingly support travelers to co-create value throughout all stages of their journey.

The study also found a statistically significant effect of Smart Tourism Systems on Digital Communication and Engagement, with a regression coefficient of (0.885). The Adjusted R-squared value was (0.621), which means that the independent variable "Smart Tourism Systems" explains 62% of the variance in the dependent variable "Digital Communication and Engagement." This, however, differs from the findings of Adamış and Pınarbaşı (2022). Their study concluded that communication about smart elements conveys far fewer textual and visual signals than expected from Destination Management Organizations (DMOs). While DMOs tend to showcase their standard metropolitan areas and neighborhoods, user-generated content (UGC) focuses on food-related and emotional elements.

The study also found a statistically significant effect of Smart Tourism Systems on Environmental and Operational Efficiency. The regression coefficient was (0.785), and the aadjusted R-squared value was (0.563). This indicates that the independent variable "Smart Tourism Systems" explains 56% of the variance in the dependent variable "Environmental and Operational Efficiency." This finding is consistent with the study by Baggio et al. (2020), which noted that if information and knowledge flows are efficient and well-organized in the physical world, the integration of digital components further enhances these processes. Conversely, inefficiencies can hinder the flow of information and reduce its effectiveness.

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