

THE IMPORTANCE OF SUSTAINABLE SMART TOURISM IN PROMOTING TOURISM DEVELOPMENT: AN EXPLORATORY STUDY OF OPINIONS OF A SAMPLE OF TRAVEL AND TOURISM COMPANIES IN BAGHDAD

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Abstract

Against backdrop of rapid digital transformation, global trends towards sustainability, sustainable smart tourism (SUSTAINABLE SMART TOURISM) has become one of the key pillars for revitalizing tourism development & enhancing the competitiveness of tourist destinations. Despite growing interest in the adoption of smart technologies within travel tourism companies, there remains a clear gap in service quality, tourist satisfaction. SO, It research aims to analyses the importance of sustainable smart tourism in revitalizing tourism development. The research was based on a descriptive-analytical approach, Data was collected via an online questionnaire distributed to 200 employees of travel and tourism companies in the Baghdad Governorate/ Iraq, analyzed using a range of descriptive and inferential statistical methods, including weighted arithmetic means, relative importance, standard deviations, and coefficients of variation, as well as Pearson's correlation coefficient, simple linear regression to test the relationships and influences between the research variables. The results revealed a statistically significant positive correlation and influence between smart tourism and sustainable tourism development.

Introduction

Amid rapid advancements in information communication technologies, the development of the tourism sector is no longer confined to expanding infrastructure or enhancing traditional tourist services. Rather, transition toward smart, (SUSTAINABLE SMART TOURISM) has become an imperative for keeping pace with global transformations and ensuring the long-term viability of tourism as a key driver of comprehensive development. Sustainable smart tourism represents an integrated approach that combines the principles of environmental, social, and economic sustainability with the latest technologies of the Fourth Industrial Revolution, including cloud computing, Internet of Things (IoT), artificial intelligence (AI), and mobile applications. approach aims to promote tourism destinations, ensure environmental sustainability, strengthen economic competitiveness, enhance tourists' experiences, improve the efficiency of tourism resource management, preserve cultural and natural heritage for future generations in line with Sustainable Development Goals (SDGs). Travel and tourism companies are among the sectors most significantly affected by this transformation due to their growing reliance on digital applications and technology-driven services. The importance of sustainable smart tourism becomes particularly evident in

destinations that experience a continuous influx of tourists, visitors throughout year, creating environmental and service-related challenges that require innovative and sustainable technological solutions.

Materials and Methods

Research Problem

The research problem stems from fact that many travel and tourism companies continue to rely on conventional methods of service delivery, while adoption of sustainable smart technologies remains limited. This situation negatively affects both tourist satisfaction and the quality of services provided. Accordingly, study seeks to address the following main research question:

To what extent do sustainable smart tourism applications contribute to improving the performance of travel and tourism companies?

Significance of the Research

The significance of this research lies in the following:

- Highlighting concept of smart tourism , applications within the tourism sector.
- Emphasizing the importance of sustainability in tourism, particularly within travel and tourism companies.
- Examining role of sustainable smart tourism in enhancing tourist satisfaction and improving the quality of services provided by travel and tourism companies.
- Providing insights that assist travel and tourism companies in adapting to digital transformation.
- Supporting policymakers, decision-makers in the tourism sector in adopting smart and sustainable strategies.

Research Objectives

This study achieves the following objectives:

- To clarify the concept of sustainable smart tourism and its key characteristics.
- To examine the current state of travel and tourism companies in terms of adopting modern technologies.
- To analyze the role of sustainable smart tourism applications in improving the quality of tourism services.
- To provide practical recommendations for development of the travel and tourism sector.

Research Methodology

The study adopted the descriptive–analytical approach through an extensive review of the relevant literature and previous studies related to smart tourism and sustainability within the tourism sector.

Research Hypothesis

The study is based on the following main hypothesis:

H1: There is a statistically significant correlation between sustainable smart tourism and tourism development.

From main hypothesis, four sub-hypotheses were derived as follows:

H1a: There is a statistically significant correlation between sustainability and tourism development and its dimensions

H1b: There is a statistically significant correlation between accessibility and tourism development and its dimensions.

H1c: There is a statistically significant correlation between technology and tourism development and its dimensions.

H1d: There is a statistically significant correlation between innovation and tourism development and its dimensions.

Structure of the Research

The study is organized into three main sections as follows:

- Section One: Introduction and Research Methodology.
- Section Two: Theoretical Framework.
- Section Three: Empirical Framework.

Theoretical Framework

Sustainable Smart Tourism, Tourism Development, and Travel and Tourism Companies

Sustainable Smart Tourism (SUSTAINABLE SMART TOURISM)

It refers to use of advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT), smart building management systems, and renewable energy to improve the management of tourism facilities and deliver high-quality services to tourists. Smart tourism has emerged as a concept that employs mobile digital connectivity to establish more intelligent, meaningful, and sustainable interactions between tourists and destinations. According to the European Commission, smart tourism is closely associated with the concept of smart tourism destinations, as it promotes sustainable development, cultural enhancement through the use of innovative information communication technologies (ICTs) to facilitate tourism services, including accommodation, dining, travel ticket booking, public transportation, and museum access. Sustainable smart tourism has also been defined as a platform that integrates tourism resources with information and communication technologies throughout all stages of the tourist journey (1). Moreover, it has been described as an advanced stage of digital, smart, and virtual tourism, in which information related to tourism activities, product consumption, and tourism and social resources is instantly integrated through ICT, thereby providing tourists, businesses, and tourism organizations with a wide range of digital services and end-user applications. Furthermore, sustainable smart tourism is viewed as an adaptation of the smart city concept to tourism destinations. In this context, smart tourism represents a form of social innovation because it reshapes the way potential tourists plan their trips, interact with destinations, and communicate with other tourists through digital platforms such as online reviews, blogs, and social media. And another sees (2) smart tourism consists of intelligent services designed to satisfy tourists' needs by helping them maximize the value of their visits, particularly to unfamiliar destinations. This approach has become increasingly important with the rapid growth of domestic and international tourism, especially among independent travelers. Likewise, Lilia and Ahmed (3) defined sustainable smart tourism as the adoption of a comprehensive, long-term, sustainable approach to the planning, development, operation, marketing of tourism products. More broadly, sustainable smart tourism can be defined as tourism that relies on cloud computing, open data, and smartphone applications to create smart tourism destinations at the city or regional level while ensuring that the economic, social, and environmental needs of both present and future generations are met through the efficient and sustainable use of digital technologies. From a strategic perspective, sustainable smart tourism adopts a comprehensive, long-term approach to the planning, development, operation, marketing of tourism products and services. It relies on cloud computing, open data, and mobile applications to establish smart tourism destinations at the city or regional level while ensuring that economic, social, environmental needs of both present and future generations are met.

This can be achieved through several smart tourism services, including:

▪ Smart Transportation Services

Smart transportation services provide tourists with real-time, location-based information, high-quality public transportation options, navigation assistance, and intelligent parking solutions through the integration of advanced technologies with transportation systems. These services contribute to

improving mobility, enhancing visitor experiences, increasing the efficiency and sustainability of tourism destinations.

▪ **Smart Accommodation Services**

Smart accommodation services provide tourists with seamless access to integrated accommodation information through information and communication technologies (ICTs). These services facilitate electronic booking processes enable tourists to customize their accommodation arrangements according to their individual preferences ,requirements, thereby enhancing convenience, flexibility, and overall travel experiences.

▪ **Smart Purchasing Services**

Smart purchasing services integrate information and communication technologies with modern purchasing systems, reflecting the rapid expansion of e-commerce into mobile commerce platforms. Through these technologies, tourists can access product and service information and complete purchasing transactions anytime and anywhere, thereby improving accessibility, convenience, and efficiency throughout the tourism experience (4).

Importance of Sustainable Smart Tourism

Sustainable smart tourism represents a new paradigm in the tourism industry, driven by rapid evolution of information and communication technologies. This transformation has been enabled by tourism organizations and destinations functioning as components of an integrated ecosystem, where a variety of advanced technologies including smartphones, sensors, software applications, virtual reality (VR), augmented reality (AR), artificial intelligence (AI), big data, the Internet of Things (IoT), and cloud computing are employed to enhance environmental performance and promote digital integration across the tourism sector. Smart tourism relies on networked ICT infrastructure, creating advanced opportunities for both tourists and tourism organizations. It enables the efficient exchange of information, supports innovative service delivery, and enhances the competitiveness of tourism destinations (5).

The growing importance of smart tourism is reflected in increasing efforts of governments and businesses develop smart devices, intelligent services, technologically advanced tourism destinations. In recent years, cities around the world have increasingly adopted smart city initiatives aimed at improving citizens' quality of life while ensuring the sustainability of urban and tourism environments. Consequently, smart tourism has emerged as a significant area of academic inquiry and practical application. Over the past six decades, travel and tourism have become one of the world's largest and fastest-growing economic sectors. According World Travel and Tourism Council (WTTC), sector currently contributes approximately 10.4% of global GDP and 6.5% of global exports. Furthermore, the United Nations World Tourism Organization emphasizes that every tourist generates additional employment and business opportunities not only within tourism but also across related economic sectors. As competition among tourism destinations intensifies, the economic significance of tourism has become increasingly linked to destination competitiveness, sustainability performance, and positioning within international tourism rankings. In this context, sustainable smart tourism enhances tourist experience through innovative and technology-driven services while simultaneously addressing environmental and socio-cultural challenges. The importance of sustainable smart tourism also stems from its capacity to mitigate negative environmental impacts, reduce the deterioration of cultural and heritage sites, and maintain positive relationships with local communities that regard these destinations as places of significant historical, cultural, and spiritual value (6).

Dimensions of Sustainable Smart Tourism

Sustainable smart tourism represents a contemporary approach to tourism development that integrates smart technologies with the principles of sustainable development. This approach contributes to enhancing tourists' experiences, improving the efficiency of tourism destination management, and preserving natural and cultural resources for future generations. By leveraging digital innovation and sustainable practices, sustainable smart tourism seeks to create value for tourists, tourism organizations, local communities, and

the environment alike. Sustainable smart tourism is built upon four key dimensions: sustainability, accessibility, technology, and innovation. Together, these dimensions form an integrated framework that supports the development of competitive, resilient, and sustainable tourism destinations, as illustrated in (Fig.1).

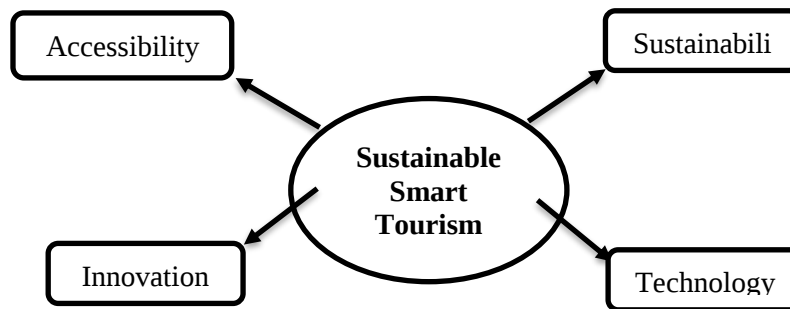


Figure 1. presents key dimensions of sustainable smart tourism.

A. Sustainability

Sustainability refers to the integration of tourism-related economic activities with environmental protection in both the present and the future. It emphasizes balancing short-, medium-, and long-term development objectives while preserving the social and cultural values of the destination and ensuring a high quality of life for current and future generations.

B. Accessibility

Accessibility refers to the development of tourism systems that enable all tourists, without exception, to access, use, and enjoy tourism environments, services, products, technologies, and facilities. It promotes equal opportunities and seeks to provide safe, comfortable, and independent tourism experiences for all users to the greatest extent possible.

C. Technology

Technology reflects the extent to which tourists utilize and benefit from technological tools and digital solutions to satisfy their needs and preferences throughout the tourism experience, from travel planning and information search to on-site activities and post-visit engagement.

D. Innovation

Innovation refers to the introduction or improvement of services, processes, and organizational practices within destination management. It encompasses new approaches to interacting with residents and tourists, enhancing service quality, and strengthening the competitiveness and attractiveness of tourism destinations (5).

Requirements of a Sustainable Smart Tourism System

A sustainable smart tourism system requires a combination of technological, managerial, environmental, institutional capabilities that facilitate the effective use of modern technologies to achieve sustainable tourism development. These requirements contribute enhancing tourists' experiences, improving destination management efficiency, strengthening competitiveness, ensuring the long-term sustainability of tourism resources. The most important requirements include the following:

1. **Smart Digital Infrastructure:** Smart digital infrastructure constitutes the technological foundation of sustainable smart tourism. It involves the provision of high-speed internet networks, advanced communication technologies, cloud computing services, and Internet of Things (IoT) applications, ensuring the real-time and efficient exchange of tourism-related data and information (7).
2. **Big Data and Data Analytics:** The effective implementation of sustainable smart tourism requires the development of integrated tourism databases and the utilization of big data analytics and artificial intelligence technologies to analyze tourist behavior, forecast tourism demand, and support evidence-based decision-making processes (8).

3. **Smart Tourism Applications and Platforms:** Smart tourism destinations rely on digital platforms and mobile applications that provide online booking and payment services, tourism information, digital guidance, and interactive maps, thereby enhancing accessibility and improving tourists' overall experiences (10).
4. **Artificial Intelligence and Emerging Technologies:** The adoption of artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and tourism robots contributes to delivering innovative tourism services, enriching visitor experiences, and increasing the efficiency and personalization of tourism offerings (11).
5. **Sustainable Tourism Infrastructure:** Sustainable smart tourism requires the development of tourism facilities and infrastructure that comply with environmental sustainability standards through energy and water conservation, effective waste management, and the utilization of renewable energy sources (12).
6. **Qualified Human Resources:** The successful implementation of smart tourism systems depends on the availability of skilled human resources possessing digital and technological competencies that enable them to manage smart systems, adapt to emerging technologies, and continuously improve tourism services (11).
7. **Governance and Supportive Regulations:** An effective regulatory framework is essential for guiding digital transformation within the tourism sector. This includes the formulation of policies and regulations that govern digital tourism activities, protect personal data, and encourage investment in sustainable smart tourism initiatives (13).
8. **Public-Private Partnerships:** Collaboration among government institutions, tourism enterprises, and technology providers plays a vital role in developing smart tourism solutions, mobilizing financial resources, and supporting sustainable tourism projects (14).
9. **Environmental and Social Sustainability:** Environmental and social sustainability focuses on achieving a balance between tourism growth and the preservation of natural resources and cultural heritage while enhancing the quality of life of local communities and ensuring long-term tourism sustainability (15).
10. **Cybersecurity and Data Protection:** As tourism services become increasingly digitalized, advanced cybersecurity systems are required to ensure the security of information, electronic transactions, and the protection of tourists' and tourism organizations' data from potential cyber threats (16).

Factors Supporting the Transition toward Sustainable Smart Tourism

Several factors contribute to accelerating the transition toward sustainable smart tourism and enhancing its effectiveness in tourism destinations. The most important of these factors include:

A. Development of Smart Cities

The development of smart cities contributes significantly to tourism growth by attracting tourism investments, improving operational efficiency, and enhancing competitiveness within the tourism industry. This is achieved through the deployment of information and communication technologies (ICTs) that enable the efficient management of resources, including human and social capital, transportation systems, and communication infrastructure. Furthermore, the designation of cities as "smart" destinations can increase urban tourism revenues and generate substantial economic and tourism-related benefits.

B. Availability of Digital Technologies: The availability of advanced digital technologies, particularly big data governance systems, provides sophisticated forecasting and analytical capabilities that support sustainable smart tourism initiatives. These technologies facilitate regulatory compliance and strengthen communication and collaboration among tourism stakeholders.

C. Adoption of Cloud-Based Tourism Management Systems: Cloud-based tourism management systems support tourists while traveling abroad by enhancing and enriching their tourism experiences. The technologies incorporated within these systems enable tourists to identify routes, access tourism circuits, and locate major attractions and points of interest, thereby improving travel convenience and destination accessibility.

- D. Support for Smart Destination Tourism: Smart destinations represent an innovative approach to tourism planning and destination management. They utilize sustainability indicators to assess tourists' attitudes, behaviors, and levels of commitment to sustainable practices, thereby promoting responsible tourism development and effective destination governance. (17)
- E. Integration of Cultural Heritage with Smart Tourism Platforms
The integration of cultural heritage resources with three-dimensional modeling technologies and artificial intelligence applications enhances tourists' engagement with cultural attractions. Previous studies have classified tourists into three categories laggards, enthusiasts, and pragmatists indicating that pragmatists are particularly likely to respond positively to AI-enabled tourism systems and services.
- F. Tourist Engagement in Sustainable Destination Development
The successful implementation of sustainable smart tourism depends on involving tourists in the development and evaluation of sustainability indicators. Assessing tourists' knowledge, experiences, values, attitudes, and behaviors contributes to fostering proactive engagement in sustainable tourism practices and supports the long-term sustainability of smart destinations.
- G. Promotion of Digital Transformation in the Tourism Sector
Digital transformation is strengthened through the adoption of advanced ICT innovations, including artificial intelligence, the Internet of Things (IoT), blockchain technology, cloud computing, and big data analytics. Together, these technologies create intelligent value chains for data processing and exchange, becoming essential components of tourism operations and enhancing sustainable competitive advantage.
- H. Integration of the Internet of Things and Machine Learning Technologies
The integration of IoT and machine learning technologies contributes to the design of advanced smart tourism service systems and tourism platforms. These technologies enable the monitoring and management of tourism activities, such as identifying congestion points in popular attractions and scenic destinations, thereby improving operational efficiency and visitor experiences. (18)

Tourism Development

Tourism is considered one of the most important economic activities and among the fastest-growing modern industries. When effectively developed and managed, it can serve as a fundamental pillar of economic growth and a key contributor to achieving sustainable development objectives.

1- Dimensions of Tourism Development: Contemporary tourism development is based on the Triple Bottom Line (TBL) model, which seeks to achieve a balance between economic growth, environmental protection, and social well-being.

A. Economic Dimension

The economic dimension extends beyond increasing the number of tourists and focuses instead on the quality of tourism expenditure and the long-term financial sustainability of host communities. Researchers argue that successful tourism development enhances innovation, creates decent employment opportunities, and reduces dependence on external investments that may result in economic leakage. The primary objective is to achieve economic resilience, enabling destinations to withstand global crises and maintain sustainable growth (19).

B. Environmental Dimension

The environmental dimension constitutes a cornerstone of contemporary tourism development due to the growing pressures associated with climate change and environmental degradation. Recent studies emphasize the importance of adopting a circular tourism model that minimizes waste generation and promotes the use of renewable energy sources. Sound management of natural resources is not only an ethical responsibility but also a prerequisite for the long-term viability of tourism destinations whose attractiveness depends largely on environmental quality.

C. Social and Cultural Dimension

This dimension focuses on the social carrying capacity of destinations. Tourism development should not undermine the cultural identity of local communities or lead to their displacement from traditional areas. Academic research highlights the importance of involving local communities in tourism decision-making processes to ensure that tourism serves as a tool for community empowerment and equitable cultural exchange rather than the commodification of local cultures. (20)

Travel and Tourism Companies

Various definitions have been proposed for travel & tourism companies. They are generally described as organizations that provide travel-related services, technical assistance, and consultancy to facilitate travel arrangements by land, sea, or air to destinations around the world. Such services are often provided free of charge or for minimal fees. Travel agencies are typically small organizations employing between two and twelve staff members. Travel and tourism companies are also defined as tourism enterprises whose primary activities involve selling tourism products and services on a commission basis. Their operations are largely centered on ticket sales, tourism package marketing, and travel arrangements. Ticketing remains a core activity for most companies and includes booking transportation through airlines, ships, trains, and buses. In addition, these companies may provide complementary services such as hotel reservations, car rentals, and other tourism-related services (21).

1- Functions and Activities of Travel and Tourism Companies

A. Travel Ticketing and Transportation Services: Travel ticketing is one of the primary functions of travel and tourism companies. These companies organize travel reservations through various modes of transportation, including airlines, trains, buses, and ships. They also assist customers in selecting suitable schedules, issuing electronic tickets, and confirming reservations. Modern Global Distribution Systems (GDSs) are widely used to compare prices and efficiently organize travel arrangements, thereby facilitating travel processes and improving service quality (22).

B. Organizing Tours and Tourism Programs: Travel and tourism companies play a significant role in designing tourism programs and organizing both individual and group tours. These services include itinerary planning, destination selection, accommodation arrangements, transportation coordination, and the overall management of tourism experiences (10).

C. Inbound Tourism Services: Inbound tourism services constitute a major area of activity for travel and tourism companies. These services involve receiving international visitors and organizing their accommodation, transportation, guided tours, and recreational activities. By providing integrated tourism experiences, these services contribute significantly to tourism revenues and destination competitiveness (23).

D. Hotel Reservation and Accommodation Services: Travel and tourism companies arrange reservations for hotels, resorts, and serviced apartments according to tourists' preferences and budgets (24). These services are offered to both inbound and outbound tourists, whether traveling individually or in groups. Owing to their relationships with international suppliers and hospitality providers, travel companies are often able to secure competitive rates. In many cases, hotel booking services are provided as complementary services to ticketing activities.

E. Visa Processing and Travel Insurance Services: Travel and tourism companies assist travelers in obtaining visas and arranging travel and health insurance coverage. These services facilitate international mobility and reduce administrative burdens for travelers by managing documentation and application procedures on their behalf (25).

F. Tourism Marketing and Promotion: Travel and tourism companies undertake marketing and promotional activities through both traditional and digital channels to attract tourists, stimulate tourism demand, and enhance the competitiveness of destinations and tourism products. Effective tourism marketing contributes to increasing destination visibility and strengthening customer engagement (26).

G. Sale of Tickets for Events, Activities, and Festivals: Travel and tourism companies also provide ticketing services for tourism events, cultural activities, exhibitions, and festivals. These services facilitate tourists' participation in destination-based experiences and contribute to the diversification of tourism products and services (27).

Empirical Framework

Assessment of the Measurement Instrument

1. Reliability and Validity of the Research Instrument

Reliability refers to the stability and consistency of a measurement instrument and its ability to produce consistent results when applied repeatedly under similar conditions. In other words, a reliable instrument yields stable and consistent outcomes when administered to the same sample over time (28). One of the most widely used measures for assessing the reliability of questionnaire items is Cronbach's Alpha. According to Sekaran, a Cronbach's Alpha value below 0.60 indicates weak reliability, whereas a value exceeding 0.70 is considered acceptable. Values of 0.80 or higher indicate a high level of reliability and internal consistency.

Validity, on the other hand, refers to the extent to which a measurement instrument accurately measures the concept it is intended to measure. In other words, validity assesses whether the instrument captures the phenomenon under investigation rather than measuring unrelated constructs (28).

Among the various forms of validity, this study adopted Content Validity, which is a judgment-based approach that relies on the researcher's accurate specification and representation of the study variables. The effectiveness of this type of validity depends largely on the breadth and depth of the literature reviewed and the researcher's understanding of the research topic (29).

Reliability Coefficients of Sustainable Smart Tourism

Table (1) presents the reliability coefficients (Cronbach's Alpha) for the dimensions of the Sustainable Smart Tourism variable.

NO.	Dimension	Dimension
1	Sustainability	0.811
2	Accessibility	0.770
3	Technology	0.891
4	Innovation	0.823
	Sustainable Smart Tourism	0.834

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (1) indicate that all reliability and validity coefficients for the dimensions of Sustainable Smart Tourism fall within statistically acceptable ranges. This demonstrates that the measurement instrument used in the study possesses a high level of reliability and internal consistency. Consequently, the instrument is considered suitable for measuring the study variables, and the findings derived from it can be relied upon with confidence for subsequent statistical analysis, hypothesis testing, and drawing valid research conclusions.

1- Reliability Coefficients of the Tourism Development Variable

Table (2) presents the reliability coefficients (Cronbach's Alpha) for the dimensions of the Tourism Development variable.

NO.	Dimension	Dimension
1	Economic Dimension	0.81
2	Environmental Dimension	0.76
3	Social and Cultural Dimension	0.87
	Tourism Development	0.86

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (2) indicate that all validity and reliability coefficients for the dimensions of the Tourism Development variable fall within statistically acceptable ranges. This confirms that the measurement instrument used in the study possesses a high level of reliability and internal consistency. Accordingly, the instrument can be considered dependable for measuring the study variables, allowing the researchers to rely confidently on the findings generated for subsequent analysis and informed decision-making.

Second: Testing the Normality of Data Distribution

Data normality constitutes a fundamental assumption underlying parametric statistical analyses, as it reflects the extent to which observations are symmetrically distributed around the mean. To assess the degree of conformity with a normal distribution, researchers commonly examine two statistical indicators: skewness and kurtosis.

Skewness measures the symmetry of a data distribution. A skewness value of zero indicates perfect symmetry, whereas positive values indicate a distribution skewed toward lower values with a longer right tail, and negative values indicate a distribution skewed toward higher values with a longer left tail (30). In contrast, kurtosis reflects the concentration of observations around the mean and the degree to which the distribution is peaked or flattened. Positive kurtosis values indicate a more peaked distribution, whereas negative values indicate a flatter distribution relative to the normal distribution (31).

To objectively assess data normality, researchers do not rely solely on the absolute values of skewness and kurtosis. Instead, these statistics are compared with their respective standard errors. According to Tabachnick and Fidell (32), the ratio obtained by dividing the statistic by its standard error (Z-score) provides an appropriate criterion for evaluating normality. A distribution is considered approximately normal when the resulting Z-score falls within the range of -1.96 to $+1.96$ at the 0.05 significance level.

This approach serves as an important statistical procedure for ensuring the validity of subsequent parametric analyses. Values falling outside this range indicate substantial skewness or kurtosis that may require corrective measures before conducting further statistical tests.

The Z-score is calculated using the following equation:

$$Z = \text{Statistic} \div \text{Standard Error}$$

Based on this criterion, data are considered normally distributed when the calculated Z-scores for both skewness and kurtosis lie within the interval of -1.96 to $+1.96$ at the 0.05 significance level. This method is widely accepted in social and administrative sciences because deviations beyond this threshold may indicate non-normality that could affect the accuracy and robustness of parametric statistical procedures.

Table (3): Normality Indicators for the Research Variables and Their Dimensions

Variable	Skewness	Std. Error of Skewness	Z-Score	Kurtosis	Std. Error of Kurtosis	Z-Score
Sustainable Smart Tourism	0.150	0.173	0.87	-0.200	0.346	-0.58
Sustainability	-0.120	0.173	-0.69	0.150	0.346	0.43
Accessibility	0.220	0.173	1.27	-0.400	0.346	-1.16
Technology	-0.180	0.173	-1.04	0.250	0.346	0.72
Innovation	0.080	0.173	0.46	-0.100	0.346	-0.29
Tourism Development	-0.300	0.173	-1.73	0.600	0.346	1.73
Economic Dimension	0.110	0.173	0.64	-0.150	0.346	-0.43
Environmental Dimension	-0.250	0.173	-1.45	0.350	0.346	1.01
Socio-Cultural Dimension	0.050	0.173	0.29	-0.250	0.346	-0.72

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

To verify the suitability of the data for parametric statistical analyses, a normality test was conducted for the nine study variables using the skewness and kurtosis indicators. According to the statistical criterion proposed by Tabachnick and Fidell (32), a distribution is considered normal when the standardized values (Z-scores) of skewness and kurtosis fall within the acceptable range of ± 1.96 at a significance level of 0.05. The results obtained from the study sample of 200 respondents were consistent with this criterion.

Table (3) presents the statistical results of the normality assessment. The skewness values ranged from -0.300 to 0.220, while the kurtosis values ranged from -0.400 to 0.600. The standard errors were 0.173 for skewness and 0.346 for kurtosis. By dividing the skewness and kurtosis values by their respective standard errors, all calculated Z-scores were found to lie within the acceptable range of ± 1.96 . These findings indicate the absence of substantial deviations from normality, confirming the sound distribution of the data and supporting the application of parametric statistical techniques to examine the relationships and effects among the study variables.

Second Section: Description and Diagnosis of the Research Variables

This section aims to present, analyze, and interpret the responses provided by the study participants regarding the items included in the questionnaire. The analysis is based on the weighted arithmetic means, relative importance percentages, standard deviations, and coefficients of variation calculated for each item of the research variables.

The level of responses was determined according to the arithmetic mean scores and their corresponding categories. Since the questionnaire was designed using a five-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree,” the mean scores were classified into five categories. The class interval was calculated by subtracting the lowest scale value from the highest value ($5 - 1 = 4$) and dividing the result by the number of categories ($4 \div 5 = 0.80$). Subsequently, the interval value (0.80) was added successively to the lower limit of the scale or subtracted from the upper limit to determine the response categories (33), as follows:

1.00 – 1.80: Very Low

3.41 – 4.20: High

1.81 – 2.60: Low

4.21 – 5.00: Very High

2.61 – 3.40: Moderate

The discussion of this section is organized according to the following subsections:

First: Analysis and Interpretation of Respondents' Perceptions of Sustainable Smart Tourism

The dimensions of Sustainable Smart Tourism are examined through an analysis of the weighted arithmetic means, relative importance percentages, standard deviations, and coefficients of variation calculated at both the individual-dimension level and the overall-variable level, as presented below.

Table (4): Descriptive Statistics of the Sustainable Smart Tourism Dimensions

Dimensions	Weighted Mean	Standard Deviation	CV (%)	Relative Importance (%)	Dimensions Ranking
Sustainability	4.01	0.72	17.95	80	2
Accessibility	3.88	0.83	21.39	77	3
Technology	4.06	0.71	17.48	81	1
Innovation	3.65	0.77	21.09	73	4
Sustainable Smart Tourism	3.83	0.80	20.88	76	

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

It is evident from Table (4) that the Sustainable Smart Tourism variable achieved a weighted arithmetic mean of (3.83), which falls within the “High” category. The standard deviation recorded was (0.80), while the coefficient of variation reached (20.88%), indicating a relatively strong level of agreement among respondents regarding this variable within the studied organization. This is further supported by the relative importance value of (76%), which reflects the substantial presence of this variable in the research context.

The data presented in Table (4) reveal the following:

Sustainability:

The sustainability dimension achieved a weighted mean score of 4.01, indicating a high level. Its relative importance reached 80%, while the standard deviation was 0.72 and the coefficient of variation amounted to 17.95%. These results indicate that the sustainability dimension is well established within the organization under study.

Accessibility:

The accessibility dimension recorded a weighted mean score of 3.88, placing it within the high category. The relative importance reached 77%, with a standard deviation of 0.83 and a coefficient of variation of 21.39%. These findings clearly demonstrate that accessibility is adequately available within the sampled organization.

Technology:

The technology dimension achieved a weighted mean score of 4.06, reflecting a high level of availability. The relative importance reached 81%, while the standard deviation was 0.71 and the coefficient of variation was 17.48%. These results suggest that the organization actively pursues its strategic objectives by embracing technological advancement and innovation.

Innovation:

The innovation dimension attained a weighted mean score of 3.65, which falls within the high category. The relative importance reached 73%, while the standard deviation and coefficient of variation were 0.77 and 21.09%, respectively. These findings indicate that innovation constitutes an important and available dimension within the organization under investigation.

Second: Presentation, Analysis, and Interpretation of the Responses of the Research Sample Regarding Tourism Development

The dimensions of this variable are examined through an analysis of the calculated weighted mean scores, relative importance percentages, standard deviations, and coefficients of variation at both the individual and overall levels, as presented below:

Table (5): Descriptive Statistics of the Dimensions of Tourism Development

Dimensions	Weighted Mean	Standard Deviation	CV (%)	Relative Importance (%)	Dimensions Ranking
Economic Dimension	3.18	1.04	33.09	64	3
Environmental Dimension	3.41	1.03	30.11	68	1
Social and Cultural Dimension	3.44	0.99	28.81	69	2
Tourism Development	3.33	1.09	30.80	67	

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

Table (5) shows that the Tourism Development variable achieved a weighted mean score of 3.33, placing it within the high category. The standard deviation reached 1.09, while the coefficient of variation was 30.80%, indicating a satisfactory level of availability of this variable within the organization under study. This finding is further supported by its relative importance of 67%, reflecting its significant role in enhancing tourism development efforts.

The data presented in Table (5) the following:

1-Economic Dimension:

The economic dimension achieved a weighted mean score of 3.18, placing it within the high category. Its relative importance reached 64%, while the standard deviation was 1.04 and the coefficient of variation amounted to 33.09%. These results indicate that the economic dimension is adequately present within the organization under study.

2-Environmental Dimension:

The environmental dimension recorded a weighted mean score of 3.41, which falls within the high category. The relative importance was 68%, with a standard deviation of 1.03 and a coefficient of variation of 30.11%. These findings clearly demonstrate that the environmental dimension is well represented within the organization selected for the study.

3-Social and Cultural Dimension:

The social and cultural dimension achieved a weighted mean score of 3.44, indicating a high level. Its relative importance reached 69%, while the standard deviation was 0.99 and the coefficient of variation was 28.81%. Based on these results, it can be concluded that this dimension is sufficiently available within the organization under investigation.

Third Axis: Testing the Correlation and Impact Hypotheses between the Research Variables

This section aims to examine the correlation and causal relationships among the research variables. The analysis involves testing the correlation and impact relationships at the level of the sub-hypotheses derived from the main hypotheses, as well as at the overall level. To achieve this objective, the Pearson Simple Correlation Coefficient and the Simple Linear Regression Coefficient are employed to assess the strength and direction of the relationships between the study variables.

First: Testing the First Main Hypothesis Concerning the Correlation Between Sustainable Smart Tourism and Tourism Development

Main Hypothesis:

There is a statistically significant correlation between Sustainable Smart Tourism and Tourism Development.

Four sub-hypotheses were derived from this main hypothesis, as follows:

1. There is a statistically significant correlation between Sustainability and Tourism Development and its dimensions.
2. There is a statistically significant correlation between Accessibility and Tourism Development and its dimensions.
3. There is a statistically significant correlation between Technology and Tourism Development and its dimensions.
4. There is a statistically significant correlation between Innovation and Tourism Development and its dimensions.

Table (5) presents the matrix of Pearson's Simple Correlation Coefficients among these variables and their dimensions. Before discussing the results of this hypothesis, it should be noted that the table also reports the t-test values used to determine the significance of the correlation coefficients, as well as the corresponding tabulated t-values. A single asterisk (*) indicates that the correlation is statistically significant at the 5% significance level, whereas a double asterisk (**) indicates significance at the 1% significance level.

The strength of the correlation coefficients is interpreted according to the classification proposed by Cohen (34), as follows:

Weak correlation: correlation coefficient ranges from 0.10 to 0.29.

Moderate correlation: correlation coefficient ranges from 0.30 to 0.49.

Strong correlation: correlation coefficient ranges from 0.50 to 1.00.

Table (6): Testing the First Main Hypothesis (Correlation Hypothesis).

Sustainable Smart Tourism	Innovation	Technology	Accessibility	Sustainability		
0.563**	0.342**	0.436**	0.497**	0.441**	Pearson Correlation	Tourism Development
9.586	5.121	6.817	8.059	6.914	T-Test	
1.972					T-Table	

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

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

First Main Hypothesis Testing Results (Correlation Hypothesis)

Table (6) presents the correlation matrix used to test the first main hypothesis and its associated sub-hypotheses. The results reveal the existence of positive, strong, and statistically significant correlations at the 1% significance level between Sustainable Smart Tourism and Tourism Development, as the calculated Pearson correlation coefficient between the two variables reached 0.563. Furthermore, the calculated t-value of 9.586 exceeded the tabulated value of 1.972, indicating a statistically significant relationship. According to Cohen's criterion, this represents a strong correlation.

At the dimensional level, the strongest correlation was observed between the Accessibility dimension and Tourism Development, with a correlation coefficient of 0.497. The calculated t-value reached 8.059, which is greater than the tabulated value of 1.972, confirming the statistical significance of the relationship. Based on Cohen's classification, this relationship can be regarded as relatively strong. In contrast, the weakest correlation was found between the Innovation dimension and Tourism Development, where the correlation coefficient reached 0.342. The calculated t-value amounted to 5.121, exceeding the tabulated value of 1.972, which confirms the significance of the relationship. Despite being the weakest among the dimensions, the relationship remains positive and statistically significant.

The findings presented in Table (6) support the acceptance of the first main hypothesis and all its sub-hypotheses, which state that:

"There is a statistically significant correlation between Sustainable Smart Tourism and Tourism Development."

Second: Testing the Second Main Hypothesis Concerning the Impact Relationship Between Sustainable Smart Tourism and Tourism Development

Main Hypothesis:

There is a statistically significant effect of Sustainable Smart Tourism on Tourism Development.

Four sub-hypotheses were derived from this main hypothesis, as follows:

1. There is a statistically significant effect of Sustainability on Tourism Development and its dimensions.
2. There is a statistically significant effect of Accessibility on Tourism Development and its dimensions.
3. There is a statistically significant effect of Technology on Tourism Development and its dimensions.
4. There is a statistically significant effect of Innovation on Tourism Development and its dimensions.

Table (7): presents the estimation results of the Simple Linear Regression Model examining the impact of Sustainable Smart Tourism on Tourism Development.

Dependent Variable Independent Variable	Tourism Development			
	(β)	(R ²)	(T-Test)	(F-Test)
Sustainable Smart Tourism	0.56	0.31	9.55	20.21
(F-Test) Table	3.89	(T-Test) Table		

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (7) indicate that the regression coefficient of Sustainable Smart Tourism on Tourism Development reached 0.56. This suggests that a one-unit increase in Sustainable Smart Tourism is associated with a 56% increase in Tourism Development. Moreover, this effect is statistically significant, as the calculated t-value of 9.55 exceeds the tabulated value of 1.97 at the 1% significance level.

The findings further reveal that Sustainable Smart Tourism explains approximately 31% of the variance in Tourism Development, as reflected by the coefficient of determination (R^2). The remaining 69% of the variation can be attributed to other factors not included in the current research model.

In addition, the estimated regression model is statistically significant overall, as the calculated F-value of 20.21 is substantially higher than the tabulated value of 3.89 at the 1% significance level. This confirms the adequacy of the model in explaining the relationship between the study variables.

Accordingly, based on the above results, the second main hypothesis is accepted, which states that:

“There is a statistically significant effect of Sustainable Smart Tourism on Tourism Development.”

Upon further examination of Table (7), the following result becomes evident:

First Sub-Hypothesis

There is a statistically significant effect of the Sustainability dimension on Tourism Development.

Table (8): Estimation of the Simple Linear Regression Relationship between Sustainability and Tourism Development

Dependent Variable Sub-Independent Variable	Tourism Development			
	(β)	(R^2)	(T-Test)	(F-Test)
Sustainability	0.44	0.19	5.26	2.821
(F-Test) Table	3.89	(T-Test) Table		1.97

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (8) indicate the following:

- The regression coefficient reached 0.44, indicating that a one-unit increase in the Sustainability dimension leads to a 44% increase in Tourism Development. Furthermore, this effect is statistically significant, as the calculated t-value of 5.26 exceeds the corresponding tabulated value of 1.97 at the 1% significance level.
- The coefficient of determination (R^2) was approximately 0.19, indicating that the Sustainability dimension explains 19% of the variance in Tourism Development. The remaining 81% of the variation is attributable to other factors not included in the current model.
- The calculated F-value of 12.82 is greater than the tabulated value of 3.89 at the 1% significance level, demonstrating that the estimated model is statistically significant overall.

Based on the foregoing results, the first sub-hypothesis derived from the second main hypothesis is accepted.

Second Sub-Hypothesis

There is a statistically significant effect of the Accessibility dimension on Tourism Development.

Table (9): Estimation of the Simple Linear Regression Relationship between Accessibility and Tourism Development.

Dependent Variable Sub-Independent Variable	Tourism Development			
	(β)	(R ²)	(T-Test)	(F-Test)
Accessibility	0.49	0.24	6.32	13.19
(F-Test) Table	3.89	(T-Test) Table		1.97

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (9) indicate the following:

- The regression coefficient reached 0.49, indicating that a one-unit increase in the Accessibility dimension leads to a 49% increase in Tourism Development. This effect is statistically significant, as the calculated t-value of 6.32 exceeds the corresponding tabulated value of 1.97 at the 1% significance level.
- The coefficient of determination (R²) was approximately 0.24, indicating that the Accessibility dimension explains 24% of the variance in Tourism Development. The remaining 76% of the variation can be attributed to other factors that are not included in the current research model.
- The calculated F-value of 13.19 is higher than the tabulated value of 3.89 at the 1% significance level, indicating that the estimated model is statistically significant as a whole.

Based on the above findings, the second sub-hypothesis derived from the second main hypothesis is accepted.

Third Sub-Hypothesis

There is a statistically significant effect of the Technology dimension on Tourism Development.

Table (10): Estimation of the Simple Linear Regression Relationship between Technology and Tourism Development.

Dependent Variable Sub-Independent Variable	Tourism Development			
	(β)	(R ²)	(T-Test)	(F-Test)
Technology	0.43	0.19	8.70	14.73
(F-Test) Table	3.89	(T-Test) Table		1.97

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

The results presented in Table (10) indicate the following:

- The regression coefficient reached 0.43, indicating that a one-unit increase in the Technology dimension leads to a 43% increase in Tourism Development. This effect is statistically significant, as the calculated t-value of 8.70 exceeds the corresponding tabulated value of 1.97 at the 1% significance level.
- The coefficient of determination (R²) was approximately 0.36, indicating that the Technology dimension explains 36% of the variance in Tourism Development. The remaining 64% of the variation can be attributed to other factors that are not included in the current research model.
- The calculated F-value of 14.73 is higher than the tabulated value of 3.89 at the 1% significance level, indicating that the estimated model is statistically significant as a whole.

Based on the above findings, the third sub-hypothesis derived from the second main hypothesis is accepted.

Fourth Sub-Hypothesis

There is a statistically significant effect of the Innovation dimension on Tourism Development.

Table (11): Estimation of the Simple Linear Regression Relationship between Innovation and Tourism Development.

Dependent Variable Sub-Independent Variable	Tourism Development			
	(β)	(R ²)	(T-Test)	(F-Test)
Innovation	0.34	0.12	4.52	7.61
(F-Test) Table	3.89		(T-Test) Table	1.97

Source: Researchers' calculations based on data analysis using IBM SPSS Statistics Version 27.

value of 1.97 at the 1% significance level.

b. The coefficient of determination (R The results presented in Table (11) indicate the following:

a. The regression coefficient reached 0.34, indicating that a one-unit increase in the Innovation dimension leads to a 34% increase in Tourism Development. This effect is statistically significant, as the calculated t-value of 4.52 exceeds the corresponding tabulated ²⁾ was approximately 0.12, indicating that the Innovation dimension explains 12% of the variance in Tourism Development. The remaining 88% of the variation can be attributed to other factors that are not included in the current research model.

c. The calculated F-value of 7.61 is higher than the tabulated value of 3.89 at the 1% significance level, indicating that the estimated model is statistically significant as a whole.

Based on the foregoing results, the fourth sub-hypothesis derived from the second main hypothesis is accepted.

Conclusions & Recommendations

Conclusions

- The research measurement instrument demonstrated a high level of reliability and internal consistency, providing a solid foundation for confidence in the findings and their use in administrative decision-making.
- A strong and positive correlation was identified between the implementation of Sustainable Smart Tourism practices and the achievement of Tourism Development objectives within the organization under study.
- The orientation toward technology and innovation in tourism constitutes a fundamental driver of tourism development, reflecting the organization's awareness of the importance of digital transformation.
- The findings revealed that the Accessibility dimension represents a vital and influential factor in promoting tourism development, enabling broader segments of society to benefit from tourism services.
- The study area has achieved advanced levels across the dimensions of Sustainable Smart Tourism, particularly in sustainability and technology, which enhances its competitive position within the tourism sector.
- The adoption of smart tourism practices has a direct positive impact on the environmental dimension of the organization, contributing to the reduction of the adverse effects associated with tourism activities.

- Sustainability, in its comprehensive sense, contributes significantly to strengthening the social and cultural dimension of tourism development, thereby fostering stronger connections between the organization and the local community.
- Although all dimensions of (SUSTAINABLE SMART TOURISM) exert a positive influence on tourism development, other external factors not incorporated into current model continue affect tourism development, creating opportunities for future research.
- The results confirmed that innovation in tourism services contributes substantially to enhancement of the economic dimension of tourism development.
- The statistical model adopted in study demonstrated a high level of significance, indicating that (SUSTAINABLE SMART TOURISM) serves as a genuine and effective driver of tourism development within the organization under investigation.

Recommendations

- The organization should strengthen its technological infrastructure to facilitate tourism innovation and support the sustainable management of tourism resources.
- Efforts should be directed toward expanding the scope of accessibility by incorporating advanced technologies that serve individuals with special needs and improve tourists' travel experiences in general.
- Greater investment should be allocated to tourism projects emphasizing the environmental dimension due to their significant contribution to sustainable tourism development.
- Specialized training programs should be developed for tourism-sector employees to enhance their ability to utilize smart technologies in improving tourist experiences and supporting local community development.
- The organization is encouraged to adopt smart tourism-based marketing strategies to highlight its achievements in innovation and sustainability to stakeholders and beneficiaries.
- Future studies should incorporate additional variables to explain the remaining proportion of variation in tourism development that was not accounted for by the current research model.
- Senior management should formulate policies that ensure an appropriate balance between technological advancement and the preservation of the social and cultural identity of tourism destinations.
- The achievements attained in the Innovation dimension should be leveraged to develop new tourism products capable of meeting tourists' evolving expectations and adapting to rapid global changes.
- Strategic partnerships should be strengthened between the organization and innovative technology providers to ensure continuous access to the latest digital solutions in the field of smart tourism.
- Sustainability performance indicators should be monitored on a regular basis to ensure the continuity of the positive impact of Sustainable Smart Tourism on Tourism Development over the long term.

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