Sanaz Shafiee / Ali Rajabzadeh Ghatari / Alireza Hasanzadeh / Saeed Jahanyan

A Study of Online Tourism Services in Iran: The Viewpoint of Tourists

Abstract

Given the fact that tourism is an important sector of many national economies, it is very essential to examine the factors which can help develop successful and smart tourism experiences. The importance of developing tourism destinations through smart technologies as a strategic tool to develop tourism has persuaded many countries to explore the implementation of these destinations, their models, components, and policies. The present study proposed a model for developing online tourism services in smart tourism destinations. The model was analyzed via structural equation modeling using SPSS (version 20) and Lisrel (version 8.8). The data analysis identified 21 components in six major dimensions which can affect smart tourism development: online content quality, access to interactive online services, end-user internet service, demand for online services, the utilization rate of location-based services, and level of online services. The identified factors can help researchers gain a better understanding of the factors affecting the development of smart destinations and recognize their importance and their degree of influence and power. It is recommended that more attention be paid to improving the quality of services provided to tourists for developing smart destinations.

Keywords: online tourism services, smart tourism, smart tourism destinations, structural equation modeling, Iran

1. Introduction

Over the past few decades, tourism has increasingly become one of the most important economic sectors Over the past few decades, tourism has increasingly become one of the most important economic sectors worldwide. In 2018, tourism, directly and indirectly, accounted for 10.4% of the global Gross Domestic Product (GDP) (World Travel & Tourism Council [WTTC], 2019). This industry has helped create employment opportunities, generate income in target communities, and improve related industries' growth and development. Tourism growth has caught the attention of political leaders, which has helped them to promote their countries as important tourist destinations. The potential of tourism to serve as an economic driver of sorts has drawn the attention of policymakers in some respects to the extent that some countries have started to look for international relations strategies that could build and improve a positive perception of the country to capture a share of the global tourism revenue (Shafiee et al., 2019).

This rise of the tourism industry has coincided with the development of Information and Communication Technologies (ICTs). ICTs have transformed the tourism experience (Xiang & Fesenmaier, 2017) by allowing tourists to become more informed consumers and providing them with better data (Gretzel et al., 2015).

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Governments around the world invest in smart city projects and smart tourism destinations (Gretzel et al., 2016). The concept of 'smart tourism' has recently become particularly important as a strategic tool for developing tourism in some countries. For example, there have recently been coordinated efforts to advance a smart tourism agenda in Asia. Governments in Taiwan, China (Zhang et al., 2012; Zhu et al., 2014), and South Korea are investing in projects related to smart tourism (Hwang et al., 2015). In Europe, many smart tourism programs come from smart city projects (Caragliu et al., 2011). Political leaders around the world have recognized the transformational power of smart technologies in terms of economic potential and their social and experimental potential (Gretzel et al., 2015). The harnessing of such technologies in the tourism industry is a driving force for innovation, creativity, and competition in tourism destinations (Gretzel et al., 2016). Smart technologies make tourism destinations focus on providing better and more satisfying services to tourists and attracting them through developing tourism-based information technologies (Minghetti & Buhalis, 2010).

Smart tourism technologies have not received considerable attention from researchers (Gretzel et al., 2015), though many suggest that smart tourism has led to considerable innovation in the industry (Tu & Liu, 2014). Smart tourism can be a useful tool for developing countries that strive to develop their tourism industry. However, most previous studies in this field have been conducted in developed countries, which has created a digital gap in knowledge related to how smart infrastructures and smart technologies work in some places. According to the World Tourism Organization, Iran is one of the top 10 countries in the Middle East in terms of the number of people traveling to the country as tourists. At the same time, the share of Iran from the world tourism revenue in 2015 was only $4-5 billion, which is a small share in comparison to countries such as Turkey and Saudi Arabia with higher income potentials (United Nations World Tourism Organization [UNWTO], 2019). Iran has used technology in various fields, and more than 70% of Iranian people have personal mobile phones with significant online activity. The penetration rate of smartphones is increasing in Iran. There were 58.42 million Internet users in Iran in January 2020. Nowadays, the broadband Internet penetration rate has reached 94% in Iran, and 81% of Iranians use the Internet at least once a week. The figures indicate outstanding progress related to ICT growth in Iran since 2013 (Iran Internet Stats and Telecommunications Reports, 2021).

Given the considerable growth of the Internet, many online websites allow Iranians to shop online. The tourism industry has also been associated with the growth of online websites. For example, people use online booking websites to reserve hotels and tours. With the growth of online businesses, smart tourism has become an emerging field of development in Iran. Iran performs well in Internet and smartphone usage based on statistical evidence, which suggests that Iranians have adopted the culture of online reservations, and new users are added to the market size of this industry every year. The digitalization of tourism in Iran is expanding rapidly, which can promise a future full of golden opportunities for those involved in the tourism industry (Nematpour & Faraji, 2019; Vazin et al., 2019). However, the use of smart tourism is still in its early stages of development in Iran. This study aims to shed light on the components of smart tourism and its development in Iran.

The present study contributes to the literature on smart tourism destinations by presenting a suitable model for developing online services in Iran. Thus, a suitable model is proposed to identify and develop online services for smart tourism destinations in Iran. The following research question was explored in this study:

What are the effective factors for developing online services in smart tourism destinations from tourists' viewpoints?

Before explaining the model developed in this study, the literature related to technology, tourism, and smart tourism is examined. Then, the research methodology is explained, and the process for structural equation modeling is described. Finally, the discussion of the findings as well as their possible applications is presented.

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2. Research literature

2.1. Tourism as a path toward economic development

The tourism industry has become one of the most dominant sectors in the modern era, although technology continues to develop (Kontogianni & Alepis, 2020). Increasing demands for tourism in developed and developing countries means that these countries should change their strategies to adapt to this global competition and changing market to benefit from competitive advantages. In this regard, tourism destinations are faced with a variety of challenges and need to deal with the rapid technological changes (Iunius et al., 2015). Technology is revolutionizing the tourism industry and decisions about strategies of tourism organizations and destinations as well as their competitiveness (Buhalis, 2020). Nowadays, the tourism economy is driven by information technology (Januszewska et al., 2015). The evolving impact of ICT on the tourism industry has been observed over the past two decades. The integration of ICT in tourism has facilitated and led to significant changes in the tourism experience (Xiang & Fesenmaier, 2017). ICT can change the way tourists get access to and use tourism products and trigger creating new opportunities for gaining access to better data and understanding travel behaviors (Gretzel et al., 2015).

2.2. Information technology and tourism

E-tourism has been defined as a new form of distribution of travel products in which service/product providers offer services to a group of customers via the Internet, irrespective of their physical location. E-tourism provides faster services for customers, increases profits, decreases costs, and allows tourists to look for information about tourist products and destinations, which can lead to sharing information among tourists (Buhalis & Deimezi, 2004). In addition, it helps tourists share their views about destinations and experiences through social media.

On the tourist side, new communication technologies allow individuals to become more informed travelers. Potential tourists can search for primary information about a destination, as well as comparison shops, and learn about other tourists' travel and decision-making experiences (Wang et al., 2016; Snellen & de Hollander, 2017). Tourists can do this through the use of various tools such as websites, tourism blogs, counseling systems, virtual communities, or mobile phone technologies. ICTs inform the experiences of tourists before, during, and after traveling (Wang et al., 2016).

Since 2010 with advances in fields such as search engines, social media, Internet of Things (IoT), and mobile phone technologies, the introduction of Web 2.0 and its interactivity expectations required a new and even more transformed framework for tourism management. The combination of ICT infrastructure and interrelated systems allows destinations to collect and analyze information and support optimized decisions based on collective knowledge, which can improve operating efficiency and quality of life. The IoT is vital for creating a comprehensive and smart technological environment with physical and digital infrastructures (Atzori et al., 2010). It includes technologies such as radio frequency identification (RFID), sensors, and mobile devices, allowing individuals to interact around a common cause and cooperate to achieve a common goal. These are connected to the Internet and help fill the gap between real and digital worlds (Miorandi et al., 2012). The development of big data analysis has allowed companies, cities, and many organizations to meet the needs of their constituents and communities more efficiently (Xiang & Fesenmaier, 2017). The new technological infrastructures have led to establishing new connections and communicative methods for internal and external travel, which can help better understand the traveling process (Xiang et al., 2015). Advances in location-based technologies improve mobile communications and influence tourists' experiences, making tourists more creative and self-motivated (Wang et al., 2012). Some scholars suggest that these developments lead to an era of 'smart tourism' (Gretzel et al., 2015).

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2.3. Smart tourism destinations

The rapid development of ICT technologies has changed the common framework for tourism development (Jovicic, 2017) and brought smartness into destinations (Buhalis & Amaranggana, 2013). Smart destinations serve as a type of digital environment in which new levels of intelligence are achieved in tourism systems (Tu & Liu, 2014). Smart tourism destinations can be considered a specific case of smart cities that use smart city components and fulfill the needs of residents and tourists (Shafiee et al., 2021). An innovative tourism destination built based on very advanced technology and ensuring sustainable development of the tourist areas accessible to everyone, can facilitate visitor engagement and integration with the environment, enhance the quality of tourists' experiences at the destination, and improve the inhabitants' quality of life (Gretzel et al., 2015; Gretzel et al., 2016).

Smart tourism destinations rely on the participation of citizens and social activists in the network, which requires the assistance and support of government entities. A smart tourism platform can facilitate contact points with tourists via relationships through an extensive range of end-user devices which support tourism experiences (Buonincontri & Micera, 2016). Smart systems can be employed to (1) predict users' needs based on a group of factors and offer suggestions by considering a selection of activities such as tours, dining, and recreation, (2) enhance travelers' experiences by offering rich information based on a travelers' particular situations and providing customized and interactive services, and (3) empower tourists to share their experiences to help their decision-making while renewing and reinforcing experiences in their social network (Gretzel et al., 2015). The literature review indicates that smart tourism destinations include three main components, namely, cloud services, IoT, and end-user Internet service systems (Zhang et al., 2012; Buhalis & Amaranggana, 2013; Wang et al., 2013; Zhu et al., 2014; Gretzel et al., 2015; Buonincontri & Micera, 2016).

Employing cloud computing in the tourism industry helps tourism companies have uninterrupted communication with their customers to improve their relative customer service and develop their business practices. IoT supports smart destinations in terms of information, analysis, automation, and control. IoT aims to generate real-time automatic interactions among real-world objects connected to the Internet and reduce the gap between real and digital realms (Buhalis & Amaranggana, 2013). IoT allows quick access to and interaction with a wide range of details for situations such as transportation, attractions, tours, shopping, and hotels (Wise & Heidari, 2019). The end-user internet service refers to applications and hardware supporting end-user cloud services and IoT at various levels. For instance, designing private payment systems is based on personal telecommunication devices such as smartphones and tablets. Wireless connections and touch screens are installed at specific locations to provide services to tourists (Buhalis & Amaranggana, 2013).

2.4. Development of hypotheses

The smart tourism destination provides a smarter platform to enhance the experience of tourists by collecting and distributing information in destinations, facilitating efficient allocation of tourism resources, and integrating tourism providers at micro and macro levels to ensure that the advantages of the approach are distributed throughout the local community, which can offer valuable services to customers (Boes et al., 2016). Integrating key concepts from tourism, ICT, smart city development, and the IoTs provides a framework for understanding how to develop and grow smart tourism destinations. Even so, it remains somewhat unclear how a smart destination is achieved. The present study aims to shed light on this process and propose a development model for smart destinations. More specifically, it examines the development of online services to support smart tourism in Iran. The hypotheses guiding this study seek to fill in the gaps related to this issue.

2.4.1. Quality of online content

Given the growing access to the Internet, people increasingly share information and knowledge through online communities. Nowadays, most people use search engines to get the answers they need, which has made online

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content integral to digital marketing. Online content is now a primary source of travel information, which exceeds all other forms of traditional media and marketing in Europe (Tourism Economics, 2013). While online content can remarkably increase with the active participation of users, its quality and reliability have become a major concern (Ala-Mutka et al., 2009). The massive amounts of information and the dependence of searchers on the Internet have increased the importance of issues related to the credibility or quality of the information which is searched (Metzger, 2007). Credibility in this context refers to the believability of information and/or its source(s). Determining the quality of online content helps customers evaluate the products and services they use, enhance their satisfaction, and make better choices in using online services (Kim & Lennon, 2008).

Level of online services

Tourism is known as an information-based context in which online information plays a vital role in the whole cycle of travel, before, during, and after it (Wang et al., 2016). Smart tourism has created innovations in providing tourism services to cause changes in the way services are used (Xiang & Fesenmaier, 2017). Generally, it is believed that the process of travel is related to its stages, before they travel, in the way and places during the travel and after it (wherever a traveler involves in various activities related to using information and interacting with the environment) (Wang et al., 2016). Personalized online tourism services play an important role by helping tourists to search and investigate information in this cycle. Tourism destinations should have functionality and performance to increase satisfaction with the tourism experience. The existence of personalized online services is one of these key features (Barta et al., 2009).

Since there is no general standard for sharing online content, several researchers have argued that the number of issues related to the quality of online content is increasing (Ghasemaghaei & Hassanein, 2015). It is necessary to determine the quality of online content to evaluate the approaches which increase information accessibility, the usefulness of contents, and user satisfaction. Based on the literature review and experts' opinions, the quality of online services is assessed in terms of the content indexes of the websites in the most common international languages, the volume of data and information available on websites, and the validity and accuracy of the information and up-to-date information (Lee & Lin, 2005; Economist Intelligence Unit, 2018). Improving the quality of online content can enhance the level of online services for smart destinations. The level of access to online services, the level of the quality of the provided online services, and the affordability of the services are factors that can influence the level of online services (Economist Intelligence Unit, 2018). Additionally, the quality of online content provided to tourists increases the level of end users' Internet service. The quality of the contents provided by the end-user Internet service system, which is associated with applications and devices supported by cloud services and IoT at different levels of end-users, is very important. Indicators considered to measure the end-user Internet service include the quality level of services provided in web sites related to tourism (Ku & Chen, 2015; Ukpabi & Karjaluoto, 2018), the interoperability level of web sites (Herrero & San Martín, 2012; Ku & Chen, 2015; Ukpabi & Karjaluoto, 2018), and the security level of online services in web sites (Escobar-Rodríguez & Carvajal-Trujillo, 2013; Amaro & Duarte, 2015; Ukpabi & Karjaluoto, 2018).

Location-based services

Smart application of technologies (e.g., cloud computing, location-based services, virtual reality, and augmented reality) enhances tourism experiences and services and creates business models for creative tourism (Gretzel et al., 2016). Social and mobile communications have increased due to the growth of tourism and advances in location-based technologies (Wang et al., 2012). Location-based services are a new challenge for tourism destinations. They are defined as services required by consumers and designed according to their location (Pedrana, 2014). Location-based information is useful for people who visit or live in a place (Chang et al., 2006). This service provides customers with information or services fitted to that location. Each tourism destination

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can use new mobile technologies and location-based services to complement others. In the tourism industry, location-based services are necessary for decision-making and high-quality travel experience, especially in destinations (Pedrana, 2014). These services are defined as services that incorporate the location or position of mobile devices into other information to provide value-added to users (Schiller & Voisard, 2004). In this study, the extent of use of personalized mobile information services and smart services was considered as indicator of location-based services. For example, the design of personal payment systems is based on personal telecommunication devices such as smartphones and tablets. Wireless connections and contact points are placed at specific points to provide tourists with services. Tourism service providers and government agencies are equipped with portals and connections for cloud services (Wang et al., 2013). Upgrading location-based services improves the provision of end user Internet services and upgrades the applications for various levels of end users and the provided online services.

End-user Internet service

The end-user Internet service refers to applications and hardware supporting end-user cloud services and IoT at various levels. Updating and upgrading applications and supporting the devices from cloud services and the Internet of Things at various levels can facilitate tourists' access to online sharing services.

Interactive online services

Using mobile devices and the IoT to share information and resources (Wang et al., 2013; Dickinson et al., 2014), using smartphones and online media for sharing information (Wang et al., 2012; Dickinson et al., 2014;) and the usefulness of using channels contents and social networks (Xiang & Gretzel, 2010; Leung et al., 2013; Zeng & Gerritsen, 2014) are some of the factors which can affect access to online sharing and interactive services. Promoting the availability of online sharing and interactive services increases the demand for online services in tourism destinations.

Demand for online services

The increasing demand for online services and the desire for planning and receiving services and information related to tourism destinations necessitate using the Internet before and during the travel as well as using networks, social media, and mobile devices for gaining access to the information about the destination or sharing experiences with others after the trip.

Consequently, the following hypotheses are proposed:

Hypothesis 1: The quality of online content has a direct and positive influence on the level of online services in smart tourism destinations.

Hypothesis 2: The quality of online content has a direct and positive influence on the level of end-user internet service in smart tourist destinations.

Hypothesis 3: The rate of utilization of location-based services has a direct and positive influence on the level of end-user internet service in smart tourist destinations.

Hypothesis 4: The level of end-user internet service has a direct and positive influence on the level of online services in smart tourism destinations.

Hypothesis 5: The level of end-user internet service has a direct and positive influence on the access to collaborative and interactive online services in smart tourism destinations.

Hypothesis 6: The level of online services has a direct and positive influence on the access to collaborative and interactive online services in smart tourism destinations.

Hypothesis 7: Access to collaborative and interactive online services has a direct and positive influence on the demand for online services in smart tourism destinations.

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Based on the review of existing literature, this study developed a theoretical model to better explain the study, as shown in Figure 1.

Figure 1
Proposed study model
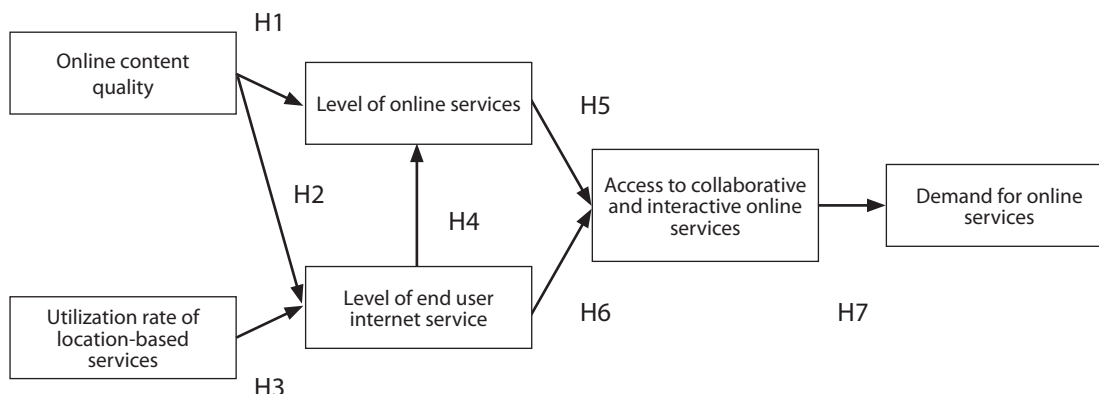
3. Methodology

The most important dimensions and components of smart destinations were first identified based on the literature review. Then, using a survey from 5 academic experts and professionals of the tourism industry, indicators identified were verified, and questions were designed. A researcher-made questionnaire was used to identify the components of smart destinations. Next, a Likert scale questionnaire with two sections was prepared. The first section contained demographic questions, and the second one had 23 main questions.

This study was based on a survey of Iranian tourists. Given the fact that the present study aimed to identify the effective dimensions and components for developing online tourism services in smart tourism destinations, it is applicable from an objective perspective and descriptive-correlational from a methodological perspective. The statistical population included Iranian tourists who had used smart tourism services at least once. The sample size was estimated as 385 through Cochran's C test formula which is used for unlimited populations. The questionnaires were randomly distributed among tourists. A total of 420 questionnaires were collected, out of which 408 were analyzed.

To gain access to a large number of respondents, the questionnaires were distributed through website managers and online tourism channels (e.g., Telegram and Instagram) among the respondents.

The convenience sampling technique was used to select the desired samples of users who had experienced the use of smart tourism. The survey was made accessible to respondents via the Google Forms service. The content validity of the questionnaire was confirmed based on theoretical principles of the research and the ideas of experts and some university professors.

Two approaches were used to determine the validity of the questionnaire, i.e., content validity and construct validity. On the one hand, the qualitative content validity of the questionnaire was examined by a panel of experts. The panel included five academic and university professors with a Ph.D. degree in tourism. The experts were asked to identify vague statements. The experts' opinions were used to make some necessary changes to the questionnaire. On the other hand, Confirmatory Factor Analysis (CFA) was used to determine the construct validity of the latent variables (Table 3). The results of the measurement models indicated that the model was appropriate for measuring the variables since all the values and parameters were significant.

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4. Data analysis method

4.1. Exploring the demographic data

The demographic characteristics of the participants are shown in Table 1. Most respondents were men (58.3%). In addition, most participants had a bachelor's degree and were in the 15-25 age group.

Table 1
Respondent characteristics

Descriptive characteristics	Level	Distribution percentage	Frequency
Gender	Female	170	41.7%
	Male	238	58.3%
Level of education	PhD	59	14.5%
	MSc	140	34.4%
	Bachelor	163	40%
	High school degree or less	46	
	11.3%		
Age	15-25	168	41.2%
	25-35	110	27%
	36-45	67	16.4%
	Above 45	63	15.4%

Experience in using online and smart tourism services	Less than years	43.1%
	1 to 5 years	42.4%
	Over 5 years	15%
Purpose of using smart tourism services	Buy and book online tickets	68.1%
	Hotel reservation / online accommodation	42.4%
	Using location based service	66.7%
	Access to Information / services of smart destinations	61%
	Using smart tourism services (smart devices / smart phones, smart apps, …)	33.8%
	Others	17.2%

4.2. Structural equation modeling (SEM)

To test the research model, structural equation modeling (SEM) with LISREL 8.8 and SPSS 20 was used. SEM consists of two parts, i.e., assessments of the measurement model and the structural model. In this study, a two-stage approach has been used. In the first step, i.e., the measurement model assessment, the latent variables' validity and reliability are investigated using CFA. In this stage, the structural validity (average variance extracted) (AVE) is used to test the validity. Also, the composite reliability (CR) and the Cronbach's alpha coefficient (α) are used to test the reliability of the measurement model (Fornell & Larcker, 1981; Raykov, 1998). In the second stage, the causal relationships between latent variables (structures) are examined in assessments of the structural model. The indicators given in Table 4 are used to evaluate the fitness of the final model.

Figure 2 represents the measurement model of the latent variables, including the standardized factor loadings, significant loadings, and fitness indicators. Table 3 further shows the validity and reliability of the latent variables.

It is seen from the reported values of the fitness indicators in Figure 2 that the data are statistically consistent with the factor structure and theoretical basis of the latent variables, which implies that the indicators are in line with the theoretical constructs of the research. According to the results presented in Table 3, the CR, α, and AVE indices are appropriate for all of these variables. Therefore, it can be declared that all selected indicators

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for measuring the latent variables are correctly selected, and their validity and reliability are confirmed. After verifying the validity and reliability of the model and fitting the measurement model of the latent variables using confirmatory factor analysis, the structural equation modeling in the form of path analysis was used to test the hypotheses. Figure 2 shows the structural model of the relationships between the latent variables, including the standardized factor loadings and fitness indicators. As it is seen, the values of NFI, IFI, GFI, RMSEA, NFI, CFI, and RMR are appropriate.

4.3. Evaluation of the measurement model

The measurement model was first assessed by confirmatory factor analysis. The confirmatory factor analysis was used to evaluate the overall quality of the measurement (Gerbing & Anderson, 1988). The measurement model specified six factors—i.e., online content quality, access to collaborative and interactive online services, end-user internet service, demand for online services, the utilization rate of location-based services, and level of online services.

To examine the construct validity of the questionnaire and extract primary components, factor analysis was conducted using SPSS software. The minimum suitable factor loading for each item was estimated equal to 0.5. According to this estimation, two questions were omitted, and twenty-one were categorized into six dimensions (the confirmatory factor analysis results are shown in Table 3). To assess construct validity, factor analysis through varimax circulation was conducted using Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) as well as Bartlett's Test of Sphericity Sig. Factor analysis was carried out for all questionnaire items. KMO values between 0.8 and 1 indicate the sampling is adequate. The KMO Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in variables that might be caused by underlying factors. The value of the KMO test was calculated at 0.924, which indicates this technique's suitability for data analysis. Six obtained factors explain about 0.64 percent of the variance of scores, and it can be concluded that the data is appropriate for factor analysis. The obtained results show the appropriate correlation of questions to perform factor analysis. The results of confirmatory factor analysis for each variable are displayed in the table below. Factor loading of each index and the related dimension are shown in Table 2.

Table 2
Confirmatory factor analysis

Dimensions	Cronbach's alpha	Variables	Code	Factor load
Online content quality (OCQ)	0.806	Accuracy of the information	q22	.785
		The volume of the existing data and information on websites	q21	.776
		Up-to-date information	q23	.768
		Presenting the content of websites in most International common languages in the world	q9	.5
Access to collaborative and interactive online services (IOS)	0.769	Degree of using smartphones and online media	q11	.764
		Degree of using the media for information sharing	q12	.763
		Degree of usefulness of using the content of channels and social networks to gain information	q13	.626
		Degree of using mobile equipment for information sharing	q5	.5
End-user internet service (EIS)	0.789	Degree of security of online services in websites	q17	.684
		Level of interoperability of websites	q15	.615
		Qualitative level of presented services in tourism websites	q14	.536

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Table 2 *(continued)*

Demand for online services (DOS)	0.724	Degree of use of mobile equipment for planning and having access to travel information	q4	.788
		Using the internet before travel and during it for planning and having access to the information	q2	.782
		Use of the networks and social media for having access to information of destination or sharing one's experiences with others after travel	q3	.577
		Tendency toward planning and receiving services and information related to tourism destinations through the internet	q1	.563
Utilization rate of location-based services (LBS)	0.740	Degree of use of personalized mobile information services	q19	.599
		Qualitative level of location-based services	q18	.553
		Degree of use of smart services	q20	.520
Level of online services (LOS)	0.719	Cost-effectiveness of the use of services	q8	.737
		The quality level of the presented online services	q7	.553
		Level of access to online services	q6	.5

4.4. Evaluation of the structural model

The proposed model produced by this study is based on a kind of structural equation modeling that included a group of causal relations among its variables. Structural equation modeling and Lisrel software were used to examine and test the proposed conceptual model. The model below shows online service development in smart tourism destinations via standard estimation mode. The results of calculations reveal that all indexes are appropriate. Considering the estimated output in Lisrel software, the calculated χ^2 value is 316.25, which is divided by the degree of freedom 162, equal to 1.96. RMSEA is equal to 0.048 and in a suitable range (lower than 0.05). GFI, AGFI, and NFI indexes are equal to 0.93, 0.9, and 0.97, respectively, showing high goodness of fit.

According to the significance test, all obtained coefficients in the model show that the relationships are significant (greater than 1.96 or less than -1.96).

Table 3
The goodness of fit indexes of the measurement model

Indexes	Allowed amount	Numbers obtained	Result
χ^2/df	<3	1.95	Goodness of fit
RMSEA	<0.05	0.048	Goodness of fit
GFI	Above 0.9	0.93	Goodness of fit
AGFI	Above 0.9	0.90	Goodness of fit
CFI	Above 0.9	0.98	Goodness of fit
NFI	Above 0.9	0.97	Goodness of fit
NNFI	Above 0.9	0.98	Goodness of fit
IFI	Above 0.9	0.98	Goodness of fit
PNFI	Above 0.9	0.75	Goodness of fit

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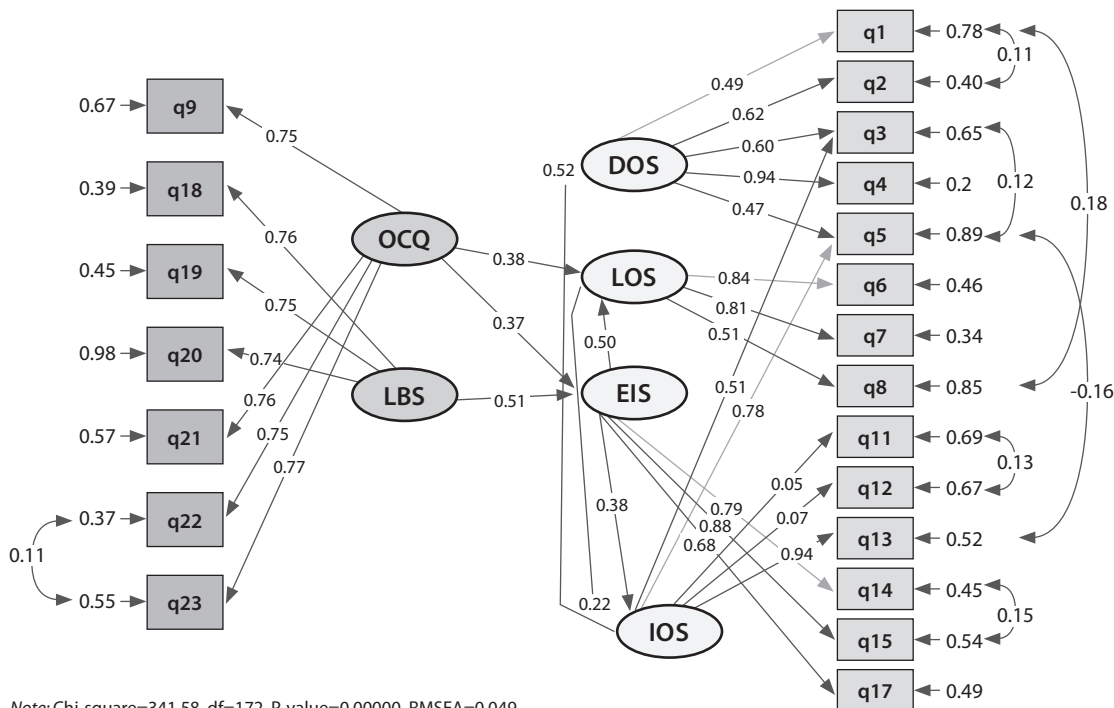Vol. 70/ No. 1/ 2022/ 67 - 86

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5. Analysis of research findings

The statistical significance of all the structural parameter estimates was examined to determine the validity of the hypothesized paths. Table 6 shows the standardized path coefficients and their significance coefficients in the structural model, the coefficient of determination (R2) for independent variables, and the hypothesis test results. The standardized path coefficients represent the strength of relationships between independent and dependent variables in the model. The results of the paths of the final model are displayed below.

Table 4
Summary of structural model estimation results

	Path		Estimate	T-VALUE	Result
Online content quality	→	Level of online services	0.38	2.81	Confirmation
Online content quality	→	Level of end user internet service	0.40	3.97	Confirmation
Utilization rate of location-besed services	→	Level of end user internet service	0.55	5.32	Confirmation
Level of end user internet service	→	Level of online services	0.46	3.27	Confirmation
Level of end user internet service	→	Access to collaborative and interactive online services	0.45	3.73	Confirmation
Level of online services	→	Access to collaborative and interactive online services	0.29	2.60	Confirmation
Access to collaborative and interactive online services	→	Demand for online services	0.50	4.57	Confirmation

Figure 2
Summary of structural model estimation results

Note: Chi-square=341.58, df=172, P-value=0.00000, RMSEA=0.049.

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5.1. Results of testing the structural model

As shown in Figure 2, the fit indices for the structural model include $\chi 2/$ df = 1.98 ($\chi 2$ = 341.58, df = 172), CFI = 0.98, and RMSEA = 0.049. These indices are within acceptable thresholds, indicating that the displayed fit the data well.

A comparison of all fit indices, with their corresponding recommended values (Bagozzi & Yi, 1988), indicated a good model fit (GFI = 0.93, AGFI = 0.9, NFI = 0.97, CFI=98, RFI=0.96, IFI=0.98, PNFI=0.97, RMSEA = 0.049), although the GFI value of 0.98 was at a marginal acceptance level (Etezadi-Amoli & Farhoomand, 1996).

6. Discussion

Technology is evolving at an unprecedented rate and has made fundamental changes in people's lives. Smart tourism is an exciting application of technology that can shape the future. Over the past few years, there has been a dramatic growth in smart tourism, which has attracted considerable research attention (Ye et al., 2020). Information technology continuously progresses by introducing new ways for improving the tourism industry. Global tourism development is inextricably linked to the development of ICT. Therefore, countries that do not have proper access to this technology would soon be excluded from the field of competition in the tourism industry. ICT, along with its various facilities, has provided many facilities to meet the diverse demands of tourists for developing smart tourism. The key issue is investing and utilizing the enormous possibilities of ICT by Iranian policymakers to improve the tourism industry and turn it into a productive sector. Tourism can play an important role in the economy of Iran. If policymakers properly plan tourism, it can become a sustainable competitive advantage for the country. Tourism is one of the few industries which will not disappear in the future and can flourish considerably. Tourism will experience very rapid growth in Iran if the smart tourism infrastructure is improved.

Using ICTs as a tool in tourism development relies on components such as hardware development, access to online content quality, the level of online services, location-based services, and accessibility of sharing services. In Iran, the use of this technology is not in its proper place, and among the components of ICT, more development has been done. Using ICT, tourist policymakers can interact with tourists and provide data, special offers, and online payment. Tourist facilities help tourists better plan their travel through the Internet. The future of smart tourism will be concentrated on ICT, which can enable organizations to focus on their profitability through a network of partnerships.

This study examined the factors affecting the development of online services for smart tourism destinations using the structural equations modeling. More specifically, it was aimed to investigate the relationships among the quality of online content, the level of online services for smart tourism destinations, the level of Internet services for the end-user, the ratio of using location-based services, the accessibility of online interactive and sharing services, and the demand for online services. The conceptual correlation among the aforementioned components was tested and verified. It is suggested that future studies enhance the model by considering more related constructs of interest, which may help further investigate effective factors for developing online services in smart tourism destinations.

In practical terms, the results obtained in this study are beneficial to understand the magnitude of the impact of each factor on others. Based on the results and examining the hypotheses, increasing the quality of online content can improve the level of Internet services for end-users in smart destinations, which is partly similar to the Economist Intelligence Unit (2018) study, in which the quality of online content was considered as an influential component of the level of online services. Improving the quality of online content, as proposed by Kim and Lennon (2008), can lead to a better assessment of the quality of products and services

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and increase user satisfaction, which could enable users to make better decisions while using online services and increase the quality of online services as well as growth in the level of Internet services for the end-user. In addition, improving and upgrading the level of Internet service for end users can significantly affect the level of online services for smart destinations. Additionally, as discussed by Buhalis and Amaranggana (2013) and Wang et al. (2013), employing the internet services system for the end-user enables the hardware to support cloud services and the IoT at various stages of end-users while improving the level of online services. A smart destination connects the technology in various platforms through end-user components at different contact points to provide numerous online services for tourists. Such integrated platforms have multiple contact points which can exploit a wide range of end-user devices to support creating and facilitating real-time tourism experiences and improve the efficiency of tourism management organizations for all destinations at all levels (Buhalis & Amaranggana, 2013; Ronay & Egger, 2013). Therefore, it is suggested that future research focus on improving the quality of services provided to tourists for smart destinations. It is vital to determine the quality of online content to evaluate the methods that can increase the efficiency of the content and users' satisfaction.

The results showed that using location-based services has a positive and meaningful effect on the level of Internet services for the end-user. The significance of the quality of location-based services has been emphasized by Pedrana (2014). Location-based services, as a novel communication medium, are effective and can provide added value to tourism. Given the necessity of considering location-based services (e.g., personalized portable information services and smart services in tourism) as decision making means and their impact on Internet services for the end-user, to improve both the services offered to tourists in touristic destinations as well as their residents' quality of life, we propose proper implementation and development of this technology to offer services at the right time and place and improve the travel experiences of the tourists.

The level of internet services for the end-user and the level of online services have positive and meaningful effects on the accessibility of online interactive and sharing services. Due to improvements in the services offered and employing various devices (such as designing individual payment systems, employing smartphones and tablets, wireless connectivity and touch screens, IoT, and cloud services) to provide smart services in smart destinations, a large amount of data is produced, which can be accessed and shared via online and social media networks (Yalçınkaya et al., 2018). Furthermore, the proposed model demonstrates a positive and meaningful effect on the demand for online services due to the accessibility of online sharing services, which is consistent with the results of previous studies. Past research has shown that the demand for online services increases in tourist destinations by increasing the accessibility of online interactive and sharing services.

This study has a significant theoretical contribution. The contribution of this study was to illustrate the structural model of developing online services in smart tourism destinations. The present study's findings can help provide a better understanding of the components of smart tourism and shed light on its utilization and development in Iran. The identified effective factors can help researchers better understand the factors affecting the development of smart destinations and recognize the importance of each factor and their degree of influence and power. We position this as a key contribution to the body of knowledge in the field of smart tourism.

This study has some practical contributions. The results could be valuable for stakeholders, including tourism managers, scholars, researchers, and policymakers, by offering insights into the factors that can influence smart destinations' development and successful design. Smart tourism requires a holistic view that can meet all the needs of tourists. A holistic and comprehensive approach to smartness and tourism services can be a good solution to find the best way to make smart destinations. This paper reviewed the literature in various fields of smart tourism and identified important research trends, topics, and components.

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This study has several important implications for future research. In particular, the impact of smart services and the quality of online services, and the impact of other components of smart tourism on the development of smartness in destinations and the development of a theory of important areas progress awaiting breakthroughs.

In addition, the study has some implications for smart tourism management. It provides an understanding of the importance of the issue, which can serve as a good basis for creating smart tourism services in the future. Additionally, it justifies investment in information technology as an added value for tourism businesses and a factor of competitive advantage. Further, this study provides a tool for governments to examine the necessity of online services to develop smart tourism.

7. Conclusion

Offering smart services to tourists is becoming increasingly important for businesses and attractions, requiring political leaders in tourist destinations to invest in smart technologies. For both economic and environmental reasons, more attention should be paid to the role of information technology in facilitating and managing tourism. Undoubtedly, smart tourism is a new step in developing information and communication technology to be used in tourism and can bring various stakeholders, including businesses, tourists, and political leaders, together. It is suggested that scholars and individuals in this industry explore the factors that can affect the development of smart tourism to improve tourism experiences and help facilitate sustainable development, economic growth, social progress, and efficiency improvement. In Iran, policymakers who become familiar with practical methods and strategies for developing and implementing smart tourism can better help Iranian cities and destinations attract tourism dollars.

This study investigated the development of online services in tourism destinations. It aimed to propose a model of smart tourism development by examining various factors and their relationships. To this end, the research variables were explored in six dimensions. The research model was examined through structural equation modeling using SPSS and Lisrel software. The fit of the model was confirmed based on the analyses, and the hypotheses were supported. The obtained findings confirmed the effect of all six dimensions on developing smart tourism. The results revealed that six dimensions could affect developing smart tourism: content quality, access to online collaborative and interactive services, level of end-use Internet services, demand for online services, the utilization rate of location-based services, and level of online services.

The results of ranking the identified factors showed that tourists make the highest use of tourism e-services before travel and during to plan their trip and to become better informed about their chosen destination. They use mobile devices for this purpose. In addition, tourists use smart services to receive services and information and share their experiences with other tourists. They use smart services mostly to purchase tickets online and gather information about places and locations. Other important factors include content quality and the level of online services provided, as was the importance of collaborative and interactive experiences with those services. The implication is that tourists' satisfaction with and use of services can be increased by improving the quality of online content as well as the level of services available to users. Future research should explore other variables which were not considered in this study. Managers in the field of tourism policy can evaluate different components to make more satisfactory decisions.

It is recommended that governments formulate policies and regulations and coordinate stakeholders in the tourism industry. In addition, it is essential to increase the benefits of smart tourism and sharing information or big data among governments. Additionally, cooperation between tourism industry employees and other smart technology companies should be promoted. Furthermore, it is necessary to study the demand for smart tourism. The success of smart tourism mainly depends on the satisfaction of its end users, which is determined by meeting their expectations. Further, governments and stakeholders should work together to understand tourists' needs better to create shared tourism experiences. To achieve long-term competitiveness,

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governments must pay special attention to financial support and facilitate innovations and applications of smart technology (Ye et al., 2020).

The present study had some limitations. It was focused on only the Iranian context; therefore, future studies should apply this model to other contexts to examine its generalizability. However, to develop a smart destination, it is essential to explore more countries and all dimensions for developing smart destination services. Iran is still in the early stages of adopting smart technology strategies for aligning them with the requirements of the smart tourism model. Future research should explore the perceptions of tourists and residents in different destinations about the 'smart' destination. Iran is currently in the early stages of transitioning to a smart tourism destination. It is recommended that this model be further developed in the near future and considered for other destinations. The development of smart tourism can be a guarantee for the future of tourism development in Iran.

Given the increasing use of smart tourism services, the development of social media, and tourists' growing comfort with these technologies, this study should be replicated over a longer period to shed light on how smart technologies can affect tourism experiences and tourism destinations.

The findings of this study indicated that developing online services in tourism destinations can play an important role in creating and supporting smart tourism experiences. However, future studies should deeply examine other facts which might help create smart tourism. The importance of tourism for the economy of communities and countries is growing. Understanding how smart technologies can be used to attract travelers to a destination will allow businesses and attractions to fulfill tourists' needs better and provide policymakers with insights into the types of technological investments which should be made in their communities to harness the economic potential of tourism.

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Appendix

Questionnaire of online tourism services in Iran

We would be grateful if you could answer a few simple questions that are related to the online services for tourism destinations and smart destinations services. We are asking lots of people to take part and we will never find out who has said what. Please do not write your name on the questionnaire. There are no right or wrong answers so you should feel free to be totally honest. All of your responses are anonymous and will be treated confidentially. This survey should take no longer than 5 minutes to complete.

Sex ☐ male ☐ female

Age ☐ under 25 ☐ 26-35
☐ 36-45 ☐ above 45

Education
☐ High school degree or less
☐ Bachelor's degree
☐ Master's degree
☐ Doctorate degree

Experience in using online and smart tourism services
☐ Less than years ☐ 1 to 5 years ☐ Over 5 years

Which of the following online services do you use?
☐ Buy / book tickets online
☐ Hotel reservation / online accommodation
☐ Using location-based service
☐ Access to Information / services of smart destinations
☐ Using smart tourism services (smart devices/smart phones, smart apps, …)
☐ others

Please answer the following questions carefully

Descriptions	Very high	High	Moderate	Low	Very low
Your desire to plan a trip, receive services, and information about tourist destinations via online channels /platforms					
Use the Internet before and during the trip to plan and access destination information					
Use online sites / social media to access destination information or share your experiences with others before/ during and after the trip					
The use of mobile devices (such as smartphones, tablets, etc.) to plan and access travel information					
How much you use mobile devices to share information					
Level of access to online services in Iran's tourism destinations					
The level of quality of online services provided in Iran's tourism destinations					
Cost-effectiveness of using online tourism services in terms of cost					
Provide appropriate content for tourism sites in common international languages					
Level of readiness of Iran's tourist destinations to provide online services to tourists					
Use of smartphones and online media to share your tourism experiences with others or be aware of other users' tourism experiences					
The use of tourism websites / social networks to share information					
The usefulness of using the content of sites/ social networks to obtain tourism-related information or share information with other tourists					
The quality level of services provided in Iranian tourism websites (such as site appearance, site design and ease of use of the website)					
Level of the interaction of websites (such as communication between site users and communication between users and webmasters)					
The level of complexity of online services offered on websites / social networks					
The level of security of online sites services					
The quality level of location-based services					
The use of personalized mobile services in Iran's tourism destinations					
The use of smart services such as online taxi, smart energy management services, … in hotels, restaurants and public places, etc. in Iran's tourist destinations					
The amount of data and information available on sites and social networks to obtain information about Iran's tourism destinations					
The validity and accuracy of tourism-related information on social networking channels and websites					
Access up-to-date information related to travel and tourism on social network and websites					

Will you likely use online/smart services again?
☐ Yes ☐ No ☐ Not sure
If not, why not? _____

Would you recommend these services to others?
☐ Yes ☐ No ☐ Not sure

Do you have any additional feedback or any other suggestions for improving online/smart services?
_____
_____
_____

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