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The Challenges Facing Urban Smart Tourism Development in a Developing Tourism Destination: The Case Study of Tabriz

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ABSTRACT

Urban smart tourism (UST) development and its associated strategies are being progressively acknowledged as tools for more competitiveness, accelerated growth, and optimized environmental sustainability in numerous cities around the globe. Previous surveys have been typically confined to the developed regions or the main factors influencing tourism development and its benefits, but the barriers to UST development in the developing cities and countries have been to date overlooked, to the best of the authors' knowledge. To fill the gaps in the existing literature, the present study reflected on the major challenges facing UST development in Tabriz, Iran, and delineated the barriers in this respect. For this purpose, a qualitative interview, constructed on Grounded Theory (GT), with a semi-structured questionnaire containing open-ended items, was performed upon recruiting 16 key informants, and then the data were analyzed via MAXQDA 2018. The study results demonstrated that the barriers to UST development in Tabriz, Iran, could be examined from infrastructure-related, governmental/ institutional, political, economic, sociocultural, environmental, and marketing-related perspectives. The main challenges at the macro and micro levels were then explored to provide the policymakers and governors of tourist destinations with a comprehensive insight to improve UST development plans.

Keywords: Barriers to Development, Destination Management, Smart City, Tabriz, Urban Smart Tourism.
JEL: M10, M19, M16, O20

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چالش‌های توسعه گردشگری هوشمند شهری در یک مقصد گردشگری درحال توسعه: مطالعه موردی شهر تبریز

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چکیده

شهرهای سراسر جهان به‌طور فزاینده‌ای مفهوم گردشگری شهری هوشمند و استراتژی‌های مرتبط را به‌عنوان ابزاری برای رقابت‌پذیری بالاتر، رشد بیشتر و بهینه‌سازی محیط‌های پایدار می‌شناسند. بااین‌حال، اکثر مطالعات انجام‌شده، محدود به شهرها و کشورهای توسعه یا عوامل مؤثر بر توسعه گردشگری و مزایای آن بوده است. به‌طوری‌که موانع توسعه گردشگری هوشمند در شهرهای درحال‌توسعه در مطالعات قبلی نادیده گرفته‌شده است. ازاین‌رو، برای پر کردن شکاف تحقیقاتی ذکرشده، مطالعه حاضر موانع توسعه گردشگری هوشمند در شهر تبریز را موردبررسی قرارداد. هدف این مطالعه بررسی موانع توسعه گردشگری هوشمند شهری است. روش مصاحبه کیفی (روش داده بنیاد) با استفاده از پرسشنامه نیمه ساختاریافته با سؤالات باز در پژوهش حاضر اتخاذ شد. داده‌ها از مصاحبه با ۱۶ مطلع کلیدی به دست آمد. تجزیه‌وتحلیل داده‌های پژوهش با استفاده از نرم‌افزار MAXQDA-2018 انجام شد. یافته‌های پژوهش حاضر نشان داد که موانع توسعه گردشگری هوشمند در شهر تبریز از هفت منظر کلان زیرساخت‌ها، دولتی–نهادی، سیاسی، اقتصادی، اجتماعی فرهنگی، زیست‌محیطی و بازاریابی قابل‌بحث است. مطالعه حاضر مباحثی کلیدی را در سطوح مختلف کلان و خرد مورد کنکاش قرارداد که می‌تواند بینشی جامع به سیاست‌گذاران و حاکمان مقاصد گردشگری برای اصلاح و بهبود طرح‌های توسعه گردشگری هوشمند شهری ارائه نماید.

واژه‌های کلیدی: تبریز، شهر هوشمند، گردشگری هوشمند شهری، مدیریت مقصد، موانع توسعه
طبقه‌بندی JEL: M10، M19، M16، O20.

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Introduction

The universal dissemination and advancement of digital technologies have significantly revolutionized the key aspects of human life (Oakes, 2024; Abbie-Gayle, 2023). In addition, the big steps forward in Information and Communications Technology (ICT) have extensively influenced many economic sectors, including the tourism industry (Zhang, Sotiriadis, & Shen, 2022; Sun, Law, & Hsu, 2022), as much as technology has been introduced as a driver for the growth and management of tourist destinations (Ionescu & Sârbu, 2024; Buhalis et al., 2023). At present, tourism is assumed as one of the dominant sectors, extending fast-paced electronic (e)-tourism and smart tourism as the functions of novel technologies (Rosário & Dias, 2024). Smart tourist destination is thus considered as a new but constantly evolving concept that calls for much more attention. In view of that, the leading organizations, including the World Tourism Organization (WTO) and the World Economic Forum (WEF), have promised to support smart tourism in regard to the rising influence of smart technologies on the tourism industry (Ma, 2024). Even though many academic disciplines have proposed numerous definitions for the term *smart*, smart environments in practice have been illustrated as those wherein the broad application of ICT allows all interested parties to have access to knowledge and information, facilitates innovations in their activities, and creates value for users or customers (Gretzel & Chulmo, 2021). Notably, e-tourism and smart tourism have been so far differentiated, namely, the former has been associated with launching a digital link between businesses and customers, and the latter has involved connecting the digital and physical worlds through the existing technologies, such as the internet of things (IoT), cloud computing (CC), and social media (Abbie-Gayle, 2023; Hamid et al., 2021). Furthermore, Buhalis and Amaranggana (2015) have labeled smart tourism as an approach to deliver real data, raise context awareness, afford personalization, promote the quality of tourism life, and prepare practical and interactive environments for users (Hamid et al., 2021).

Smart tourism has recently infused into governments and businesses, accompanied by much effort to develop smart devices, increase revenues, boost services, and consequently improve tourist destinations (Ivars-Baidal et al., 2024; Buhalis et al., 2023). Even with the negative effects of the Coronavirus Disease 2019 (COVID-19) pandemic, the predictions indicate the long-term progression of the tourism industry in future and the upturn in the associated jobs and business opportunities (Zhang et al., 2022; Bulchand-Gidumal, 2022). Considering the benefits of the tourism industry for cities and countries (Gelter, Fuchs, & Lexhagen, 2022) along with the tourist destination managers' attitudes toward the ICT use in smart tourism as the driver of more competitiveness, it is absolutely essential to make tourist destinations as attractive as possible and raise loads of competitions between them (Gelter, Lexhagen, & Fuchs, 2020). In this regard, many countries, such as China, South Korea, Italy, and the United Kingdom, commenced

smart tourism plans ahead of the COVID-19 pandemic (Wang et al., 2021). From the perspective of policymakers, smart tourism also means fueling competitiveness between tourist destinations, stimulating new distribution channels, and creating novel business environments (Femenia-Serra & Neuhofer, 2018; Sun et al., 2022). Therefore, much attempt has been devoted to achieving sustainable competitive advantages by developing and implementing various plans in the field of smart tourism, thereby guaranteeing tourism development for the coming years (Gretzel, 2018; Buhalis et al., 2023).

Given the reflections on UST development in the theoretical and applied literature, researchers believe that the concept of smart tourist destinations has not yet become exactly clear in practice or as a scientific model (Ionescu & Sârbu, 2024; Sun et al., 2022; Gretzel & de Mendonça, 2019; Gelter et al., 2020). Some key aspects in the definitions of smart tourism can be thus exploited to add new perspectives to the understanding and management of tourist destinations (Ivars-Baidal et al., 2019; Gelter et al., 2020). Addressing the smart approach in destination management and marketing correspondingly brings many challenges even with pre-planning, such as the in-depth revision of structures, processes, and practices, change in culture, etc. (Baggio et al., 2020). Researchers further maintain that the utilization of smart concepts in tourist destinations entails some structural and organizational changes due to the growing integration of tourist destinations into the global digital ecosystems (Ivars-Baidal et al., 2019), which is making the management of tourist destinations much more complicated (Gelter et al., 2020). Thus, management has turned into a new challenge though it was expected to be answered with the ICT use (Gelter et al., 2022; Bulchand-Gidumal, 2022). In view of the global income of the tourism industry, Iran has taken positive measures to compound its share in this market. Nevertheless, there are multiple barriers, including international and infrastructure-related prerequisites for its global market presence (Momeni et al., 2018). Owing to the more competitiveness of the tourism industry and much technological advancement in this field, it seems that the traditional structure of tourist destination management in Tabriz is facing enormous challenges to move toward smart tourism and meet the needs of tourists, managers, and stakeholders (Ghorbani et al., 2019). Against this background, the present study was to explain the factors influencing the UST development in Tabriz, in line with the perspectives of the key informants of this industry. To this end, the concept of smart tourism and its development were initially described, and then smart tourism in Tabriz was elucidated. Afterward, the research method and the barriers to UST development were listed.

Theoretical Background

The concept of smart tourism was originally defined by Gordon Phillips in 2000 (Li, Clark, Huang, & Duan, 2017, p 294; Akdu, 2020). To be more precise, smart tourism emerged following the introduction of the Smarter

Planet initiative (https://www.ibm.com/smarterplanet/us/en/) by the International Business Machines (IBM) Corporation, with much focus on some components, such as CC, sensors, mobile technology, as well as big data analytics (Gretzel, 2018). According to Akdu (2020), smart tourism means accepting an integrated, long-term, and sustainable approach to plan, develop, implement, and market tourism-related products and services. Even though smart tourism has drawn much attention among researchers, presenting a comprehensive definition for this concept is still among the most reviewed topics (Wang et al., 2021). Gertzel et al. (p.181, 2015) have described smart tourism as follows:

'Tourism supported by integrated efforts at a destination to collect and aggregate/harness data derived from physical infrastructure, social connections, government/organizational sources and human bodies/minds in combination with the use of advanced technologies to transform that data into on-site experiences and business value propositions with a clear focus on efficiency, sustainability and experience enrichment.' (p.181)

The main objectives of smart tourism have been either directly obtained from smart city literature and plans, or have remained generally undefined (Ivars-Baidal et al., 2024; Gretzel, 2018). UST development mainly aims to promote competitiveness and sustainability (Buhalis & Amaranggana, 2015), learning and knowledge management (Del Chiappa & Baggio, 2015), leadership, innovation, entrepreneurship, along with development of human and social capital (Boes, Buhalis & Inversini, 2015), deep understanding of human mobility and tourism experience (Gretzel et al., 2015, 2018).

Smart cities are urban environments that exploit ICT and the related technological infrastructure to progress regular urban operations and promote the quality of services provided to citizens (Gretzel & Chulmo, 2021). A smart tourist destination accordingly meets the requirements of a smart city, such as being endowed with advanced technologies to generate personalized tourist experiences and then provide opportunities to establish connected tourism experiences (Johnson & Samakovlis, 2019). It further embraces interdependent actors, including the government, locals, infrastructure, businesses, and tourists (Gretzel et al., 2015). As a result, smart tourism is the supply of advanced technologies for tourists and the interdependence of various actors (Johnson & Samakovlis, 2019). On account of integrating smart city and smart destination, UST consists of smart technologies powered by sensors and infrastructure, big data and data management, together with networks and applications that react to security and privacy as well as governance issues (Cohen, 2012; Gretzel & Chulmo, 2021).

From the perspective of the markets and economies, namely, smart economy, smartness refers to the technologies that provide support for new forms of collaboration and value creation in order to achieve innovation, entrepreneurship, and competitive advantages. In this regard, smart tourism is assumed as a component with much institutional support and even

pressure in some cases to operationalize it (Bashirkhodaparasti & Bagheri Garbollagh, 2023; Lee et al., 2020; Gretzel et al., 2015). For governments, the expansion of smart tourism means a growth in the employment rates and tax revenues, a good source of foreign exchange earnings, more investments in infrastructure, higher technologies, and improved human capital, effectiveness of local companies, and higher economic balance (Cavalheiro, Joia, & Cavalheiro, 2019). Hence, smart tourism development has come to be one of the hot topics in tourism policymaking with regard to the recognition of tourism and its impact on regional and national economies to gain sustainable competitive advantages (Cavalheiro et al., 2019; Manyara & Ndivo, 2016). As many regions are planning to attract more tourists and investors, competition between destinations is also mounting simultaneously (Ma, 2024; Cavalheiro et al., 2019). The main efforts in Asia have been thus dedicated to providing guidelines to promote smart tourism. The related policies of the governments in China and South Korea have strongly moved toward smart development and financial support for such projects based on the creation of technological infrastructure for the marketing and management of destinations and resources (Baggio et al., 2020). In New York, the United States, the LinkNYC project has been a large wireless network designed to provide internet access to all citizens within 50 meters of some kiosks and search for information or directions, make phone calls, and even charge devices. These urban services are also doing well to tourists (Gretzel & Chulmo, 2021). Many smart tourism plans have further emerged from smart city projects in Europe, so smart tourist destinations are progressively incorporating into the European tourism landscape (Gretzel et al., 2015). There is more concentration on innovation and competitiveness along with the development of end-user apps based on tourism experiences enriched with the existing data and processing them in novel modes (Gretzel et al., 2015). Australian tourism policies have similarly shed light on smart governance and open data (Baggio et al., 2020).

In view of that, smart cities are now developing some plans in their various activities to meet the common needs among tourists and citizens. As well, government support at the global level indicates the recognition of the transformative power of smart technologies within their economic potentials as well as experiential and cultural dimensions (Gretzel et al., 2015; Lee, Hunter, & Chung, 2020). In spite of this, not all destinations have equally gained such a perception in practice, so the traditional management of destinations is facing many challenges to realize smart tourism despite its potential for attracting many tourists. Thus, simultaneous development and management is essential to fulfill smart development goals (Gretzel & Chulmo, 2021). In this line, the present study aimed to investigate the UST development in Tabriz, and identify the existing barriers.

Previous Studies

The recent theoretical literature on smart tourism has been on 10 main themes, including data analysis, smart destinations, smart hospitality, technological adaptation, technology and marketing, technology and tourism development, technology and tourist perceptions, technology and tourist experience, and some other conceptual investigation of smart tourism (Ye & Law, 2020). The effects of technology on tourists' perceptions, behaviors, and experiences have been frequently surveyed, but the barriers to UST development in tourist destinations have not been under scrutiny (Ye et al., 2020; Sun et al., 2022). As a pioneer in smart tourism planning, China has thus far provided insights for other nations in terms of developing smart tourism systems. However, this country has been grappling with numerous challenges in this line. Wang et al. (2021) depicted such barriers as ignoring tourists' needs during hardware infrastructure development, low utilization of smart facilities, inefficient exploitation of data resources, no creativity in smartness, and the privacy and security issues (Tussyadiah et al., 2019; Wang et al., 2021). A model indicating the strategic path of tourist destinations to become smart ones had been further presented by Cavalheiro et al. (2019). Considering the challenges of UST development, the given model comprised of three layers, i.e., smart ICT infrastructure, tourism apps and smart tourist destinations. In one other study, Gertzel and Cholmo (2021) investigated the challenges of the perceived spatial difference between the residential and tourist areas with UST and argued that it was not logical to make a distinction between them in an era with overlapping smart technologies and no borderlines. As well, Kontogianni and Alepis (2020) in their theoretical literature review of smart tourism drew much attention to some challenges faced by tourists, researchers, and destination communities, such as growing data and the necessity of their screening and personalization, user privacy protection, strict security mechanisms of social networks and finally the need for programs and services associated with smart tourism to synchronize with various devices in order to measure and exchange data, and then connect to social networks and the internet.

Tourism in Iran

Geographically located in Southwest Asia, Iran is bordering with Turkey, the United Arab Emirates, Qatar, Bahrain, Saudi Arabia, Kuwait, Azerbaijan, and Armenia. This country consists of 31 provinces with the population of about 85 million people. Even though Iran ranks 10th in terms of tourist attractions in the world, it is in the 52nd place with regard to attracting tourists (Momeni et al., 2018). Even with the thriving domestic tourism market, inbound tourism has been politically disturbed by loads of domestic and international conditions since the Iranian Revolution.in 1979. Over the past years, foreign tourists were 4-5 million people (Khodadadi, 2016), but this has dwindled due to some reasons, including the COVID-19 pandemic. The development goal of 20 million tourists by 2025 proposed by

Iran's government accordingly seems to be out of reach (Ghaderi, Hatamifar, & Henderson, 2018). Although Iran's foreign exchange reserves are dependent on crude oil exports, this country is seeking to invest in tourism as a source of income to reduce it (Jabbari et al., 2013; Momeni et al., 2018). Iran has thus far welcomed technology, with more than 70% of citizens owning smartphones and doing online activities (Baldino & Goold, 2014; Shirazi, 2012), experiencing growing smartphone penetration (Ghaderi et al., 2018). In the past years, some projects have been further planned and implemented by the government in different sectors (Ghorbani, Danaei, Zargar, & Hematian, 2019), such as the escalating use of smart technologies in urban management, the introduction of Iranian smart city, the completion of numerous ICT-based projects, the support for tourism startups and smart technologies, and the cooperation with China to build a smart city in southern parts**.**

Study Setting

The megacity of Tabriz, as the capital of East Azerbaijan Province and one of the largest cities of Iran, was selected for the study setting. The city of Tabriz, in northwestern Iran, serves as the administrative, communicative, commercial, political, industrial, cultural, and military hub in this region (Rasoolimanesh et al., 2022). The geopolitical situation of this city has thus made it a bridge between Iran and Europe during its thousand years of history (Momeni et al., 2018). This city is endowed with a collection of tangible and intangible heritage tourism. For example, the Tabriz Historic Bazaar Complex, entered into the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List in 2010 (UNESCO, 2019) as the main pillar of the Silk Road, has been the commercial center in this province since the 13th century and has been preserved as one of the largest and best examples of traditional markets across the world (Curran et al., 2018). Additionally, the traditional rugs and the beautiful handicrafts have exhibited Tabriz as the global city of handwoven rugs (Rasoolimanesh et al., 2022). The moderate climate, abundant water resources, fertile soil, as well as springs and rich minerals have led to growth and development in the residential, manufacturing, industrial, service, and agricultural areas. Tabriz is typically dry and hot in summer under the influence of the region's altitude, while it is cold in winter due to its mountainous topography. Considering these benefits, this city has to date attracted many domestic and foreign tourists (Moghaddam, Ahmadzadeh, & Valizadeh, 2022).

For years, many projects, such as digital citizens, have been implemented to move toward a smart city in Tabriz, wherein the municipality has distributed e-course training packages among citizens. In the following, the given projects have been realized as the provision of facilities for the development of the tourism industry, mobile apps to introduce the main attractions, guide apps for finding street parking space, and online taxis, together with the utilization of modern technologies as tools for communicating with tourists,

and free Wi-Fi connection in selected tourist hotspots and e-guides in tourist attractions, which made Tabriz a good study setting for further analysis (Moghaddam et al., 2022; Rasoolimanesh et al., 2022). However, the measures taken in this city are not effective from the perspective of stakeholders, and Tabriz is currently facing major challenges in its development as a smart tourist destination, acknowledged by many tourism activists (Momeni et al., 2018). Against this background, the present study was an attempt to initially examine the challenges of UST in Tabriz, and secondly explain the main barriers to its development.

Methods

A qualitative approach was adopted in this study, because it was not possible to obtain the findings through quantification, and even the quantitative criteria could not adequately describe or interpret this situation since there was a need to identify some variables, which could be later quantitatively checked (McDermott, 2023). Given the different types of qualitative data collection methods, varying from unstructured to semi-structured techniques (Miyaoka et al., 2023), Grounded Theory (GT) was applied according to the exploratory nature of this study.

According to Corbin and Strauss (1990), GT was to provide a theoretical explanation by specifying the components in terms of the conditions creating them, how these components had been expressed through action and interaction, their consequences, and the changes in this respect. GT accordingly afforded a methodology on how to identify some themes, create links between them, and establish their interrelationships. In addition, it could create an explanatory framework through which a phenomenon could be appreciated. To identify, refine, and integrate the themes, and ultimately develop a theory, some key strategies, including constant comparative analysis, theoretical sampling, and theoretical coding were typically utilized (Momeni et al., 2018). Accordingly, the same procedure was completed to meet the research objectives here.

Data Collection

To collect the data, in-depth face-to-face and online interviews (via phone calls, video calls, and voice messages through the WhatsApp Messenger) were conducted with 16 key informants of the smart tourism industry in Tabriz. The experts were accordingly selected using purposeful sampling of the snowball type. During the interviews, there was much attempt to talk about the generalities of smart tourism before raising the main questions. Accordingly, it was ensured that the interviewees had enough competence for further discussion and preparation for the interviews, so the data could be collected with more accuracy. Coordination was thus made by sending text messages via the WhatsApp Messenger and emails or making phone calls. Despite this, one of the interviewees changed the interview time due to busy work and two others declined to attend the interviews. Given the voluntary

participation in the interviews, verbal consent was further obtained. The scheduling and coordination processes for the interviews lasted 5-70 days. The main objectives of the interview were also fully explained to each interviewee in advance. Notably, the interviews were conducted in November, December, and January 2022-2023. In the course of the interviews, access to foreign tourists was limited owing to some internal security challenges and protests in Tabriz that had led to the suspension of inbound tours. For this purpose, the interviews were conducted with two foreign tourists in one of the five-star hotels in the city of Tabriz after coordination. The selection criterion was their experience of travels to different smart cities in the world and more than three-day stay in Tabriz. The interviews were conducted with the help of translators. Other interviewees whose first language was Azeri were also given the opportunity to choose between Farsi and Azeri as the language of the interviews, in order to keep the atmosphere calm and intimate so that the interviewees could share real data with no stress. The interviews conducted in Azeri were further translated into Farsi to integrate the text and content during transcriptions. At the onset of all interviews, the interviewees were asked about recording the conversations and there was much effort to prepare them for the main discussions by raising some opening questions. Four interviewees preferred not to be recorded, so the concepts considered by the interviewees were collected by taking notes and writing down the key points. One of the interviewees selected to receive the questions via WhatsApp Messenger, and send the answers subsequently through voice messages. Each in-depth interview lasted about 20-65 minutes in total. A semi-structured questionnaire was also prepared to guide the interviews. The interview questions were first developed based on the related literature, but later more questions were developed and finalized. Using three pilot interviews, some questions were revised. The interview questions were to find the barriers to the UST development in Tabriz. The interview questions were open-ended, and mainly focused on the weaknesses and threats of the smart tourism industry in this city. The interview questions are detailed in Table 1.

Table 1. Interview questions.

1. How do you evaluate the current situation of smart tourism in Tabriz? Good or bad? Why?
2. What are the weaknesses of the urban smart tourism in Tabriz?
3. What are the threats to the urban smart tourism in Tabriz?
4. What infrastructure is required for the urban smart tourism development in Tabriz? How is the current situation? Is it ideal?
5. What are the management and governance challenges of the urban smart tourism in Tabriz?
6. How the economic situation and issues governing Tabriz have affected the

urban smart tourism development in Tabriz?
7. What is the sociocultural situation of the hosts regarding the acceptance of innovations and smartization of this city and its tourist attractions?
8. What are the problems faced by the private sector and tourism-related service providers?
9. What other problems are there as the barriers to urban smart tourism development in Tabriz?

Data Analysis

First, the recorded interviews were transcribed verbatim to achieve the initial content analysis by examining the transcripts and notes. Following multiple reviews, seven main themes were identified and imported into MAXQDA 2018. Afterward, two researchers highlighted the sub-themes through consensus and included them under the main themes. In case of disagreement regarding some sub-themes, they were given to a third person for further analysis. To ensure the identification of all sub-themes that failed to be listed in the previous step, the researchers reviewed the transcripts once again. Axial coding accordingly allowed grouping the sub-themes to reach the main themes and establish their interrelationships. During this process, the main themes and sub-themes were confirmed by comparing the information provided by the participants, and then further comparisons with the information from the interviews and the data collected through observations and secondary document analysis (Bahadori et al., 2022; Momeni et al., 2018). Upon examining the main themes and sub-themes along with interpretations from the interviews, the framework for the barriers to the UST development in Tabriz was created.

Any preconceptions about the study subject were also discarded during the interviews and data analysis in order to increase the consistency of the data and avoid biases (Fischer, 2009). According to Mabuza, Govender, Ogunbanjo, and Mash (2014), each interview was immediately transcribed verbatim after its completion to ensure their content accuracy and clarity. Afterward, the transcribed interviews along with the main themes and sub-themes were sent to the interviewees to confirm the accuracy of the data and express their opinions if corrections were needed. Except for two foreign tourists interviewed in the hotel and one of the tour guides who was not available, others confirmed the accuracy of the content.

Results and Discussion

Characteristics of Participants

The data were collected through interviews with the managers and representatives of governmental organizations in charge of tourism in Tabriz, scientific centers, offices and departments working on the tourism industry, including inbound travel agencies and international guides, two smart tourism experts and researchers, and two foreign tourists. The interviews were conducted until theoretical saturation was reached. In total, 16 key informants participated, of whom nine individuals were from the

public sector, three cases were from the private sector, and the rest included two tourists and two researchers. Table 2 illustrates the characteristics of the participants.

Table 2. Characteristics of study participants.

Sector	Organization	Gender	Interview type	Freq
Public sector	Public Relations Director in the Cultural Heritage, Handicrafts, and Tourism Organization	Male	Face-to-face	1
	Tourism Development Office, Tabriz Municipality	Male	Online	1
	Former tourism development deputy, Tabriz Municipality	Male	Face-to-face	1
University	Department of Geography and Urban Planning, University of Tabriz	Male	Face-to-face	1
	Department of Health Tourism, Ilam University of Medical Sciences	Male	Online	1
	Department of Tourism Marketing, Isfahan Art University	Male	Online	1
	Department of Tourism, University of Mohaghegh Ardabili	Male	Online	1
	Department of Social and Environmental Studies, Mazandaran University	Male	Online	1
	Department of Political Geography, University of Isfahan	Male	Online	1
Tourism	Director of inbound travel	Female	Online	1
	Chairman of the International Tourist Guide Association of the province	Male	Face-to-face	1
	International tour guide	Female	Online	1
Other	Tourist	Male/Female	Face-to-face	2
	Smart tourism researcher and expert	Male/Female	Online/Face-to-face	2
Total				16

Themes Extracted and Study Framework

The main themes (n=7) and sub-themes (n=23) together with their frequency by the participants are given in Table 3. The main category raised by the interviewees was infrastructure followed by governmental-institutional barriers. Among the sub-themes, the challenges related to ICT infrastructure were in bold. According to the study participants, wrong policymaking and no strategic plan, and then the ideology of government, smart accommodation infrastructure, and smart transportation were the next barriers to UST development in Tabriz.

The study framework was thus the outcome of the main themes and sub-themes arising out of the research findings, which could provide an outline of their interrelationships. Figure 1 depicts the barriers to the UST development in.

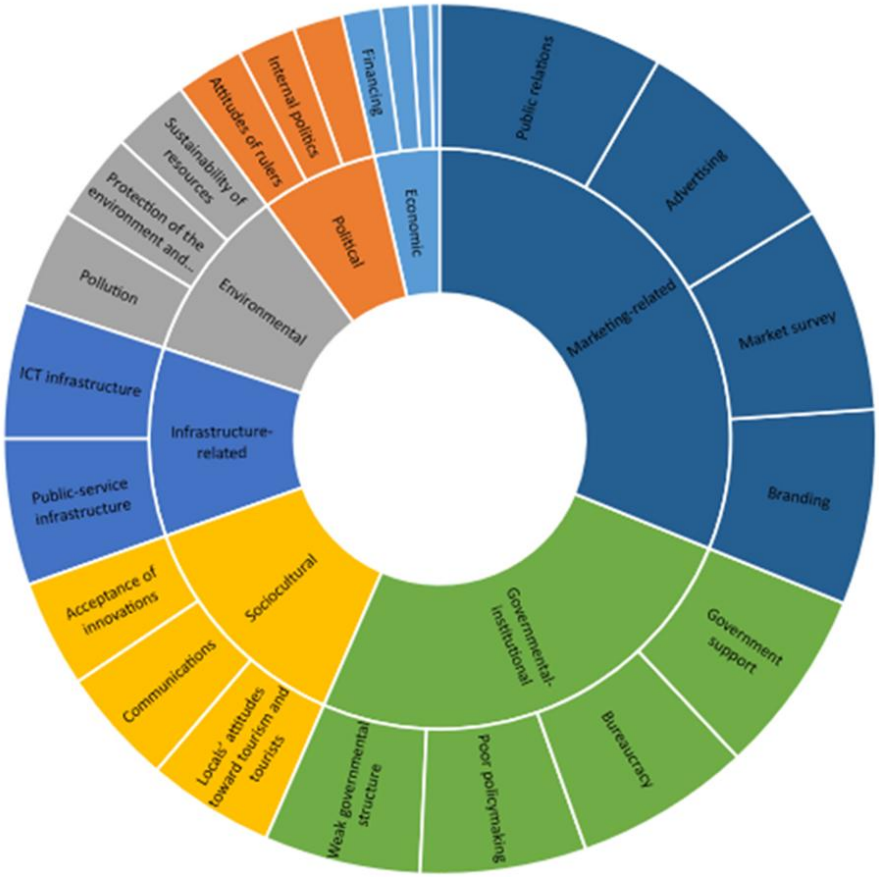

Fig. 1. The Challenges of Urban Smart Tourism Development in Tabriz

In this line, Sun, Lau, and Hsu (2022) in their study of the barriers to smart tourism development in Hong Kong, reduced them to four general themes, namely, economic issues, sociocultural issues, planning and management, and technology. Some challenges identified in the given survey, such as no planning for development, poor promotion, inadequate infrastructure, technology problems, and conservatism were thus consistent with the findings in the present study, while other barriers such as internal and external political issues, rulers' attitudes, weak governmental structure, no fiscal transparency, economic shocks, and government deficit had been scrutinized for the first time.

Table 3. Challenges facing UST development.

Main category	Sub-themes	Indicators	Freq
Economic	Money transfer by tourists	No chance to pay and receive in a smart manner by foreign tourists	4
		High costs as a burden on tourists for currency conversion and transportation	6
	Fiscal transparency	Lack of fiscal transparency	1
		Being included among the Financial Action Task Force (FATF) blacklist countries	1
	Macroeconomic variables	Inflation and recessions	3
		Economic shocks	1
		Currency management problems	1
		Reliance on oil exports and revenues	4
	Financing	Budget deficit and inadequate financial resources for the development and implementation of tourism plans	2
		High-risk investment in Iran	2
Political	Foreign policy issues	Sanctions	1
		Negatively growing global consensus against Iran	2
		Failure to use tourism diplomacy in establishing relations with target countries	2
		Negative news dissemination and fear of foreign tourists about security issues in Iran	2
	Internal politics	Recent protests in Iran	2
		Negative political events fueled by the government	2
	Attitudes of rulers	Viewing tourists through security glasses	2
		Rulers' concerns about the cultural influence of tourists on hosts	4
		Ideology of the government	8
Environmental	Sustainability of resources	No smartization of energy and water extraction, distribution, use, and management	8
	Protection of the environment and human health	Failure to comply with international laws and protocols regarding the environment, such as the International Organization for Standardization (ISO)	3
		Failure to comply with health issues in food and healthcare sectors	3
	Pollution	Pollution	3
		No value for green components	5
Sociocultural	Acceptance of innovations	No acceptance of smart plans due to their perceived complexity	5
		Differences in the personality of tourists in terms of accepting smart tools	3
	Communications	Communication challenges and a common language	3

		Failure to support tourists' languages on websites	2
	Locals' attitudes toward tourism and tourists	Awareness and the culture of smartness and tourism among people	2
		Locals' attitudes toward foreigners	3
		No benefit to society from tourism	4
		Resentment among locals due to pollution caused by tourists	5
Infrastructure-related	ICT infrastructure	Poor ICT infrastructure, such as the internet, online booking of services, fiber optics, the metaverse, AI, etc.	15
		Internet restrictions, censorship, and challenges to access social networks, platforms, and use of Virtual Private Network (VPN)	6
		Slow smartization in Iran due to the transfer of technology from other countries	2
		No use of the internet provided by international internet service providers	1
		Inadequacy of e-government development	3
	Public-service infrastructure	Smart transportation	8
		Smart accommodation services	8
		No access to public offline and smart city facilities	1
Governmental-institutional	Weak governmental structure	Traditional management and selective approach in smartization	6
		No transparency in governmental activities	3
		Desire for ownership instead of supervision in the tourism industry	2
		Absence of a central processing system for destination management	5
		Failure to recruit managers with expertise and practical experience in tourism	4
		Inaccurate and unreliable statistics	3
		Restrictions imposed by the government on citizens traveling abroad	2
		Problems of granting visas to foreign tourists	1
	Poor policymaking	Wrong policymaking and no strategic plans	9
		Unreality of existing plans	2
	Bureaucracy	Parallel work and no coordination between organizations in charge of tourism	3
		Bureaucracy	1
	Government support	Lack of government support	4
Marketing-related	Branding	Undeveloped urban personality, branding, and image for a destination	7
		Undeveloped urban tourism	6

	Market survey	Marketing and appropriate target market	2
	Advertising	Inadequate content production in e-commerce	4
		Ignorance of effective advertising in target countries	4
	Public relations	Organizing no festivals, conferences, and world summits of international tourism	3
		Disregard of notification of travel restrictions and rules in Iran in a global dimension	5
		Poor communication with domestic and foreign media, including not using social networks and interactive websites, such as TripAdvisor, to promote and broadcast tourism events	4

In this respect, Lee et al. (2020) analyzed the challenges of smart tourism development in tourist attractions in different countries from the perspective of smart governance, locals, and tourists. The given barriers including those associated with sustainable development and overtourism, were poles apart as compared with the ones facing Iran, in this study, namely, the governmental-institutional, economic, and marketing-related challenges.

Wang et al. (2021), reflecting on the applications, experiences, and challenges of smart tourism development in China, further addressed the main barriers to the low use of smart facilities, imbalance in smart tourism between the eastern, central, and western regions and the urban and rural ones, inefficient utilization of data resources, no creativity in smartness, and the privacy and security issues, which were consistent with the findings in the present study. However, some other challenges, such as wrong policymaking, economic problems, rulers' attitudes, weak governmental structure, and lack of government support were among the distinguishing features of both studies.

Similarly, Khan et al. (2017) investigated the challenges of developing and implementing the concept of UST in Dubai, which included the main elements of a smart city, viz., smart economy, smart governance, smart environment, smart life and people, and smart mobility. In line with progress in this comprehensive plan, Dubai was dealing with some challenges, such as managing the current smart plans, handling horizontal and vertical connections with other projects, directing future projects under the current smart Dubai concept, linking the tourism subsystem with the overall smart city system, and managing the adaptation criteria arising in a dynamic system. These barriers were not the same as many of those faced by Iran. The challenges related to no public tourism development, budget deficit, branding and advertising, bureaucracy, lack of government support, and

sociocultural issues were thus the main challenges investigated for the first time in this study.

However, the findings reported in Cavalheiro et al. (2019) regarding the challenges of smart tourism development overlapped with those in this study. ICT infrastructure, the promotion of economic, sociocultural, political, and environmental values, investment and its risks, provision of smart services, and destination management problems were accordingly underlined in both studies.

Barriers to UST Development in Tabriz

The factors shown in Table 3 are the main barriers to UST development in Tabriz, including smart infrastructure, governmental-institutional challenges, and the political, economic, marketing-related, sociocultural, and environmental issues.

Smart Infrastructure

As an ICT-based tourism development path, smart tourism raises high demands for network-related infrastructure and technologies (Sun et al., 2022). On the word of most participants, there were weaknesses in smart infrastructure, placed into eight components under two sub-themes of ICT infrastructure and public-service infrastructure, which were considered as the barriers to the development of smart tourism in Tabriz in this study.

Barriers to ICT Infrastructure. As delineated by one of the interviewees:

'Not a lot has been prepared on the subject of tourism infrastructure, linking all tourist accommodations, as well as transportation, urban traffic, and weather check systems through smart systems.' (P 11) 'You are required to access the internet, many websites, and social networks via a VPN, which is always without a solution.' (P 1)

Barriers to Public-Service Infrastructure. According to the interviewees, there were some challenges in terms of the public-service infrastructure:

'To accomplish smart tourism and its benefits, a smart city must be first established. Let me give you an example about buying an online ticket. Is it now possible? Why not! But, Is the city itself connected to provide such facilities? The answer might be no. This means that the transportation system is not yet smart here. A tourist traveling abroad can easily find when the bus is coming in seconds, but anything like that is unfeasible here.' (P 14)

Governmental-Institutional Barriers

Smart governance has been associated with government-based transparency through the modernization of urban management by supporting open data and public participation (Gretzel, 2018), which needs to be expanded at all levels to ensure investments, facilitate coordination, and achieve goals (Cohen, 2012). However, the interviewees in this study believed that the government and the governance in Iran were facing many

serious challenges, manifesting weaknesses in the governance in the whole country. The participants thus explained weak governmental structure along with traditional management and selective approach in smartization as follows:

'We just complete smartization in the sectors that benefit the government. For example, if you do not pay the bills on time, your subscription will be expired without delay. The camera fines are also applied in a smart manner.' (P 3)

'In the case of domestic tourists traveling abroad, the government has raised the exchange rate, imposed taxes, and elevated the costs.' (P 4)

Political Barriers

The progress of a country unquestionably insists on constructive and global interactions in all domains within it and with other nations, so the UST is no exception. Even though it was expected that the sanctions against Iran would be lifted after the Agreement on the Joint Comprehensive Plan of Action (JCPOA, namely, the E3/EU+3 negotiations with Iran), and the global interactions would resume, this has not yet occurred (Momeni et al., 2018). The interviewees accordingly mentioned three sub-themes under the political barriers, but the rulers' attitudes seemed to be the uppermost one that could broadly affect others as well. For example, the study participants stated that:

'The government views tourism negatively with security glasses. From their perspective, foreign tourists create an environment endangering the cultural security in the society, so cultural exchange may lead to cultural change, which will make it much more difficult to control the society as assumed by the governance. Accordingly, tourists are not allowed to come.' (P 4)

Economic Barriers

Smart urban tourism has been recognized as a high-impact economic sector, a major job generator, and a priority area for an increasing number of national and regional economies (Cavalheiro et al., 2020). However, the challenges facing Iran from an economic perspective do not let it exploit its economic benefits.

'The non-availability of money transfer facilities for tourists due to not being connected to the global banking system and SWIFT in Iran has led to the impossibility of smart payments and receipts for foreign tourists, including their failure to use international bank cards, Visa credit cards, cryptocurrencies, and other e-payment methods, which impose higher costs on tourists to convert and carry currency.' (P 5)

'Considering that the implementation of smart projects necessitates significant financial resources, budget deficit does not allow the advancement of such innovative projects.' (P 9)

Environmental Barriers

Given that many resources of tourist destinations depend on the attractiveness of their natural and environmental conditions, tourism often rationalizes environmental protection through some actions, such as the designation of national parks. Besides, the ICT use in order to enhance sustainability and natural resource management seems to be a common element in smart tourist destinations (Cavalheiro et al., 2020). The interviewees here mentioned three sub-themes as the main challenges facing Tabriz in terms of the environmental issues, including those related to the sustainability of resources and lack of smartness in the energy and water extraction, distribution, use, and management. In this line, some stated that:

'From an environmental perspective, tourism should be viewed as sustainable development.' (P 15)

'Energy and environment smartization should be of importance. For example, how to smartly manage water consumption per capita and how to use it seem to be essential. How much do I have access to resources and how should I manage the issue of water and energy while developing tourism? There is also the issue of distribution of power and so on.' (P 14)

Sociocultural Barriers

Given the possibility of cultural exchange in the tourism industry, any tourism development plan is likely to fail if this issue is not taken into account. As alleged, the most valuable souvenirs for tourists are the morals and social culture in the host country (Momeni et al., 2018). Creating a smart tourist destination is thus fulfilled by investing in human capital to strengthen its capacity for learning and innovation. As soon as tourism is developed in a sustainable manner, it brings cultural pride, boosts a sense of ownership and control, reduces vulnerability through diversification, and develops entrepreneurial skills and capacities (UNWTO, 2002). Three cultural challenges were accordingly addressed by the interviewees, including the acceptance of innovations among people with regard to their personality and age differences. One participant said that:

'Younger people are generally benefiting smart devices to a great extent, but older adults, in particular those at the age of 50-65, give no value to this issue.' (P 4)

'Establishing communication in the destination community still remains as a challenge despite the improvements in the general culture compared with that in the past. Communication and language problems are not still settled.' (P 16)

Marketing-Related Barriers

Four sub-themes were identified as the major marketing-related challenges. The leading one was associated with city branding in Tabriz. In addition to the other problems mentioned above, marketing was a barrier because there was no brand through which smart tourism could be promoted. As explained by one of the interviewees:

‘It is true that there are a cycle of problems facing smart tourism development and its infrastructure, but there is a need to talk about tourism itself at first. There is still a long row to hoe. I think this city has not yet been recognized as a tourist destination.’ (P 4)

‘We have not done real marketing in many target countries, how active are the media in the tourism issues in foreign countries? Is there a two-way interactive relationship?’ (P 2)

Implications, Suggestions, and Conclusion

This study had significant implications for the main stakeholders of smart tourism in Tabriz and other regions in Iran as well as similar tourist destinations around the globe. The research findings accordingly grouped the main barriers to the UST in Tabriz into seven themes. General concepts were further suggested to improve them. The following suggestions were thus offered for the development of the UST industry in Tabriz.

Infrastructure

Providing fast-paced and unrestricted access to international internet service providers and the required infrastructure, including the development of novel technologies in the field of AI, IOT, mobile platforms, booking systems, the metaverse, fiber optics and the related equipment, and the next-generation internet, is not a choice, but an obligation for the development of tourism in Tabriz. The removal of internet restrictions on social networks should be thus on the agenda to facilitate free access to information. Moreover, cooperation between domestic mobile phone service providers and the international ones or granting them licenses to provide tourists with free access to the internet and international calls can thus have positive effects in the short term. On the subject of the inner-city transportation system in Tabriz, there is a dire need to design and implement smart projects associated with the urban transportation fleet, through which locals and tourists can rapidly monitor the time of the public transportation services and the volume of urban traffic. Such systems are also desirable to manage the tourist attractions in this region.

Governmental-Institutional Infrastructure

Taking some measures in the field of smart tourism remains ineffective without setting the right objectives. It is thus possible to formulate a roadmap for the UST in Tabriz with the cooperation of the interested organizations, and then encourage the main trustees and other organizations to play a part in line with the relevant policies and guidelines. Without doubt, the implementation of such strategic plans demands the recruitment of professional managers with tourism expertise in their proper positions. The current situation of tourism in Tabriz and Iran accordingly calls for a gradual change in the role of the government as a tourism services provider to a policymaker and a supervisor. The government should accordingly determine new policies in keeping with long-term development documents.

For example, the Article 44 of the Constitution of Iran, entitled as the delegation of activities to the private sector or privatization, can be a good example, in which policymakers and managers must create and facilitate the conditions for the involvement of the private sector in smart tourism (Momeni et al., 2018). Supporting the private sector in terms of financing and legislation as well as granting free and grace-period loans, and providing the possibility of operating with tax exemption or intervals to promote the UST in Iran can be accordingly among the useful suggestions for this purpose.

Political Infrastructure

Developing the UST in Tabriz necessitates mindset shifts, and then physical development. This must occur among rulers and people. As mentioned earlier, the rulers' negative attitudes toward tourists do not allow any constructive discussion in this regard. Therefore, there is a need to change their views by explaining the peaceful nature of tourism, highlighting the respect paid by foreign tourists to the culture of the people, and improving the cultural level in the society through correct cultural exchanges in addition to economic benefits. Besides, success in recent efforts to expand friendly relations with Iran's neighboring countries and reviving the Agreement on the JCPOA can help lift the sanctions and attune global consensus against Iran.

Economic Infrastructure

Countless economic problems faced by foreign tourists during their visits to Iran trace back to its financial disconnection with the world due to no fiscal transparency. Therefore, it is necessary to take some positive measures regarding increasing fiscal transparency and joining the FATF and subsequently the SWIFT system, international bank cards, etc. Some rules should be further clarified for managing cryptocurrencies and how to save, trade, and transfer them. In relation to financing the implementation of smart projects, bargaining is required to obtain financial credits from the government budget. As well, reforms should be made in the relevant laws and regulations to facilitate foreign investment and encourage the business environment by providing incentives and creating political and economic stability.

Environmental Infrastructure

From an environmental perspective, attention must be given to the smart management of attractions in such a way that capacity and mobility are developed. Based on smart statistics, it is accordingly determined how many people arrive in a destination and visit an attraction per hour and how many leave there, so there is no overcrowding and overtourism along with damage to the environment. In addition, various projects should be designed and implemented in the field of resource extraction as well as energy distribution and consumption system, especially for water, in the across Iran.

Sociocultural Infrastructure

Cultural changes entail long-term planning, so extensive training for ordinary people, officials, and business owners is vital. These trainings should start at young age and at schools in an official manner. In the short term, local and national media can support interactions with tourists.

Marketing-Related Infrastructure

Many tourists have wrong impressions about Iran's internal security, although it is among the safest countries in the region. The tourism target markets should be thus determined. As well, designing a comprehensive marketing plan in some countries, including harmonizing capabilities with the demands of the target community, providing vast information, advertising, and establishing travel agencies can be helpful for the development of tourism in Iran. Moreover, there is a need to design specialized apps for Tabriz tourism with many facilities to cover all services demanded by tourists, including transportation, accommodation, attractions, payments, and healthcare centers. Considering that the transformation of the whole city into a smart one takes a long time, different layers of tourism can be designed inside the city to meet some tourism potentials and provide completely smart services to tourists.

Conclusion

Smart tourism has been approved for a long time due to its benefits for tourist destinations. In spite of this, the barriers to smart tourism development, particularly in developing nations, have been mostly ignored in previous research. Against this background, the present study identified the main challenges facing the UST development in an urban destination, Tabriz. For this purpose, a qualitative method was initially adopted to shed light on the views of smart tourism stakeholders. Theoretical and practical concepts were further presented. The study results demonstrated that infrastructure-related, political, governmental-institutional, economic, environmental, sociocultural, and marketing-related challenges were the main barriers to the UST development in Tabriz. Accordingly, it is suggested to provide the platforms for the involvement of the stakeholders from the macro to micro levels in this city. Long- and short-term strategies should be designed and implemented in this way according to the challenges raised. In this context, extensive investment in infrastructure, preparation of maps, UST development, incentives for the private-sector participation, global interactions to reduce sanctions and tensions, marketing, development of evidence-based policies, and continuous monitoring by stakeholders can help remove the existing barriers.

Limitations and Future Research

In spite of its significant findings and implications, this study had some limitations. First, Tabriz was selected as the study setting, so more research is encouraged to identify the barriers to UST development in other regions in

the future inside and outside Tabriz. Second, this study was conducted in a moderately developing society. Comparing smart tourism barriers between various regions of the world with different levels of development could thus provide new perspectives regarding the challenges faced by such societies. Third, access to the interviewees, especially the foreign tourists, was limited due to some security issues and certain conditions in Iran. Future studies can thus highlight the role of tourists as the most important elements in the tourism cycle.

Disclosure statement

The authors report there are no competing interests to declare.

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