Developing a model for sustainable smart tourism destinations: A systematic review

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ABSTRACT

The main contribution of this paper was to present a new model for smart tourism destinations using the steps of grounded theory as an analytical framework. To build the model, a systematic review of articles published between 2000 and 2017 was undertaken. Strauss and Corbin's framework for grounded theory formed the basis of the review process. The first step, which was open coding, involved the collection of a group of primary concepts and the extraction of analytic categories. In axial coding, the relationship between the categories was determined. Using selective coding, all of the identified categories were integrated and built, and 6 main categories and 28 sub-categories were identified. In addition to making an important contribution to the literature regarding sustainable and smart tourism destinations, this model is likely to be of interest to policymakers to enhance their awareness of the prerequisites and strategies of developing smart tourism destination.

1. Introduction

Tourism is an excellent strategy for kick-starting or boosting economic development in both developing and developed countries, contributed $7.61 trillion USD to the global economy in 2016, and constitutes 9.8% of global GDP (WTTC, 2016). It is argued that through a carefully designed and executed tourism development strategy, policymakers and practitioners can covert a country's natural resources into much-needed economic capital (World Tourism Organization, 2015). Furthermore, if the strategy is successful, a cyclical relationship can be cultivated between growth in the tourism industry and more generally growth in the economy. For instance, one empirical analysis of the linkage between tourism growth and economic growth in the Organization for Economic Co-operation and Development (OECD) and non-OECD countries concluded the following: "unidirectional causality relationships exist from tourism growth to economic development in OECD countries, but bidirectional causality relationships are found between the two variables in Non-OECD countries" (Lee and Chang, 2008, p. 191). This is an especially important point based on the predictions from the World Tourism Organization (WTO) that 1.8 billion people will engage in tourism by 2030 (World Tourism Organization, 2015). Thus, countries are actively developing destination management strategies and tactics to represent a positive image of themselves and to increase their share of tourism-related earnings (Lee, Rodriguez, & Sar, 2012).

Information and communication technologies (ICT) have overhauled the tourism industry, which impacts the way tourism organizations do businesses and interact with their stakeholders (Buhalis & Law, 2008). Technological advances yield major changes in tourism by enabling tourism actors to create markets, management practices, and new competitive strategies. Therefore, technologies are transforming the static and practical aspects of the management of tourism and marketing into a dynamic process (in which managers and tourists use technology as a tool) that allows market players and actors (tourism providers, stakeholders, intermediaries and tourists) in the tourism industry to shape technology and also be affected by it (Sigala, 2018). Information technology supports tourists through various activities including searching for initial information, comparing information, decision-making, travel planning and sharing experiences (Neuhofer, Buhalis, & Ladkin, 2012). E-tourism is just one of the outcomes of the tourism industry's incorporation of technology. Thanks to the widespread use of information and communication technology, e-tourism has created changes in the use of services by creating innovations in the provision of tourism services (Buhalis & Amaranggana, 2013). Due to computing and pervasive connectivity, technology today is no longer just a tool for e-tourism but is used in all aspects of life and travel.

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Because of open data and shared social knowledge that serves as the basis for the tourism experience and the new mechanisms of innovation, tourism is not only an information-intensive field, but information is also the basis of tourism and tourism management is not separated from information technology (Xiang, 2018).

In many ways, smart tourism is a logical evolutionary development of traditional tourism and e-tourism in which the ground for technology-driven innovation has been established. Inspired by the idea of smart cities, smart tourism destinations are innovative tourism destinations built upon a modern technology infrastructure that promotes sustainable and accessible development of tourist areas that are designed to lead to improved tourism experiences and an enhanced quality of life for residents (Gretzel, Sigala, Xiang, & Koo, 2015). Implementing the smart concept within tourism destinations will result in a dynamic interaction between tourists and the destination and will add value to tourism stakeholders (Neuhofer et al., 2012). The ultimate objective of smart destinations is to increase destination competitiveness (Gretzel, Zhong, Koo, Morrison, & Morrison, 2016), to improve the tourist experience, bolster business, or provide a smarter platform for distributing and collecting destination data. In addition, smart destinations facilitate the effective designation of tourism resources and help to integrate tourism providers at the micro- and macro-levels by developing the sustainability of tourism destinations (Lamsfus, Martín, Alzua-Sorzabal, & Torres-Manzanera, 2015). By integrating ideas of sustainability with information technology capabilities, smart destinations promote sustainable economic growth from an economic, social, environmental, and cultural point of view and offer methodologies for effective tourism management through competitive, smart and sustainable approaches (Gretzel, Sigala, et al., 2015; Sánchez, 2016). In this regard, smart tourism are vital for environmental and economic sustainability (Gretzel, Werthner, Koo, & Lamsfus, 2015). Smart tourism destinations combine the twin dimensions of sustainability and information technology. For tourists, smart tourism destinations indicate that data is usefully integrated and available in one place. Sustainable smart tourism can pave the way toward studying tourism more deeply in terms of social, economic, environmental, and cultural issues through a scientific approach. It also provides methodologies that can help promote the management of tourism using a competitive, smart, and sustainable approach (Gretzel, Sigala, et al., 2015).

1.1. Rationale for the research

In recognition of the transformational economic and social power of smart technologies, governments throughout the world are investing in technologies to support smart city projects and consequently smart tourism destinations (Gretzel et al., 2016Gretzel, Sigala, et al., 2015). Although many of these developments are still in early stages (for different reasons), smart tourism is expected to sharply proliferate in the future (Gretzel et al., 2016). However, as expected with the emergent nature of smart tourism, there is a lack of theoretical knowledge as to the potential that smart tourism destinations have as a new way of delivering high-quality services to tourists (Tu & Liu, 2014). Relying on outdated ideas can lead to the inappropriate designation of resources and can undermine the ability of companies and governments in implementing technology to promote the development of tourism destinations(Li, Hu, Huang, & Duan, 2017). Thus, tourism destinations need to utilize updated managerial strategies (Celdrán-Bernabeu, Mazón, Ivars-Baidal, & Vera-Rebollo, 2018). Moreover, technology is not enough for tourism destinations to become smart (Gajdošík, 2017). It is also important to highlight the constituent elements of smart tourism destinations. In this research, we attempt to identify key elements required for the development of smart tourism and to clarify the concept of smart tourism destinations. Therefore, the main purpose of this study is to propose a suitable model for smart tourism destinations and identify its constituent elements (causal conditions, context conditions, intervening conditions, interactions and consequences). Based on the

results of a systematic review of previous work, this paper proposes a model of smart tourism destinations by considering sustainability as one of the basic current concerns.

More specifically, a grounded theory-driven methodology is used. In spite of the advantages of qualitative research on tourism (Cohen, 1998; Connell & Lowe, 1997; Jamal & Hollinshead, 2001) and increased use of this research approach in complex issues, there is still a relatively low volume of qualitative research in the tourism literature (Stumpf, Sandstrom, & Swanger, 2016), especially related to sustainable tourism (Ruhanen, Weiler, Moyle, & McLennan, 2015; Stumpf et al., 2016). With the help of grounded theory as an analytic framework, it is possible to identify and classify differing topics of interest, theoretical perspectives, and methodologies in this burgeoning corpus of research. Developing modern theoretical insights is an important step for achieving progress in tourism research (Stumpf et al., 2016).

The results of this research are highly important for industry and academics. In the context of the growing tendency toward making destinations smarter, tourism planners and managers will benefit from a better understanding of the constituent elements of smart tourism destinations and it will support their efforts in developing competitiveness for destinations. In addition, scholarly researchers will find value in understanding the casual, contextual, and intervening conditions required to develop sustainable and smart destinations. This research is able to support the development of implementation policies regarding sustainable and smart tourism destinations.

The remainder of this article is structured as follows. After supplying a theoretical background and reviewing the literature, the methodology of the research is explained, which includes a description of the procedure used in the systematic review and the use of grounded theory for extracting patterns and themes. In the last section, the research findings are presented and a final model of smart tourism destinations is illustrated.

2. Theoretical background

It is now clear to the international community that tourism is developing at an incredible momentum. Increased awareness of people about environmental, cultural, and economic effects of tourism on destinations has caused the emergence of a sustainable approach to tourism management both in theory and practice. Tourism has a long history of sustainability initiatives and it is a long time that definitions and principles, strategies, and practical plans have been developed for "sustainable tourism"(WTTC, 1998). According to the United Nations, sustainable tourism is defined as a type of tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities(UNEP, 2013). Sustainable tourism should optimally use environmental resources as a key element of tourism development, protect essential ecological processes, natural resources, and biodiversity, respect the socio-cultural originality of host communities and preserve their tangible and intangible cultural heritage and traditional values, and contribute to the promotion of intercultural tolerance and understanding. On the other hand, sustainable tourism should ensure sustainable and long-term economic activities, the fair provision and distribution of socioeconomic resources to all stakeholders through ways such as sustainable employment, money-making opportunities, and social services for local communities, and contribution to poverty alleviation (Shafiei, Farokhian, Rajaee, & Mogheli, 2017).

The need to develop sustainable tourism and emerging trends in the tourism industry has raised the topic of tourism destinations management over the past two decades (Pearce, 2015). Development of a sustainable tourism destination is to provide sustainable tourism attractions along with support for indigenous development. Active environmental management is a major factor that should be taken into account by a sustainable tourism destination. Since tourists can greatly affect the environment, their behavior should be managed in order to

reduce the negative consequences (Manente, 2008). The most important issue for a successful tourism destination is the attraction of visitors and tourists and ensuring the unique quality of the region. This ensures the benefits of all beneficiaries, tourist areas, and local populations. Tourism destinations should mainly focus on sustainable development through sustainable ways in order to achieve long-lasting success(Buhalis, 2000). A destination is classified as a smart area when its sustainable economic growth and better quality of life are based on activities and intelligence (Caragliu, Del Bo, & Nijkamp, 2009). Development of a smart environment through technology and sustainability tools makes it possible to respond to environmental challenges more flexibility and quickly. While taking advantage of the technology benefits, smart tourism destinations should ensure destination sustainability through prestigious and responsible management and optimal use of resources and encourage regional economic development (Dorado, 2016). The main challenge of today's tourism destinations is to find solutions that allow smarter use of resources and improve the quality of life for residents and tourists through sustainable ways. One of the key issues for sustainable development and economic growth is the use of information technology and the development of communication infrastructure. Along with sustainability, information and communication technology is another area that contributes to the economic growth of tourism destination. Considering the increasing economic and environmental impacts of tourism on host communities, more attention should be paid to the role of technology in facilitating and managing tourism (Gretzel, Werthner, et al., 2015).

Information technology has transformed the tourism experience in recent years (Xiang & Fesenmaier, 2017). Our view of information technology in tourism research has changed from a marketing tool to a tool for the generation of knowledge (Xiang, 2018). Technology has transformed the accessibility to tourism products and presents new opportunities related to improved access to quality data and a better understanding of travel behavior. As more and more innovations in technology emerge, new attitudes toward tourism development are required, new products will be developed and there are greater opportunities for research and assessment, which will spur a new paradigm of tourism management. Tourism scholars believe that the era of smart tourism is emerging (Gretzel, Sigala, et al., 2015; Zhuang, 2015). Information and communication technologies also provide opportunities to develop strategies and interventions to improve sustainability. In recent years, cities have also found the potential of using information and communication technology, which includes the development of new policies and strategies for sustainable goals.

Researchers have directed special attention to the concept of smart cities. According to some researchers, the term "smart" is a new slogan to describe the technological, economic and social developments derived from modern technologies (Gretzel, Sigala, et al., 2015). Smart cities can generally be understood as city environments that make extensive use of information and communication technologies (Boes, Buhalis, & Inversini, 2015; Buhalis & Amaranggana, 2013). Innovative services are implemented in urban environments to improve the quality of life of inhabitants (Alami & Tahmasebi Aria, 2016; Buhalis & Amaranggana, 2013). It is argued that the successful building of smart cities is the foundation upon which smart tourism systems at both the conceptual and practical level are built. Smart cities offer new methods for finding solutions to urban problems and are aimed at the creation of a society in which inhabitants, the city, and lifestyles are organically coordinated (McCartney, Butler, & Bennett, 2008). Smart tourism destinations employ elements of smart cities to satisfy tourists' needs and the needs and demands of the city inhabitants (Buhalis & Amaranggana, 2013). The path of smart tourism development, it's modeling, and substructures are therefore rooted in the smart city concept (Boes et al., 2015). Therefore, "smart destinations" can be understood as a distinct approach to urban development that concentrates on integrating information and communication technologies with physical substructures (Gretzel, Sigala, et al., 2015). Given the nature of the focus on tourism

information and the dependence on information technology, the concept of "smart tourism" has been proposed to describe the status quo of tourism development (Gretzel, Sigala, et al., 2015).

The concept of smart tourism is based upon complex systems, environments and networks and technological infrastructure supported by ICT (Buhalis & Amaranggana, 2013; Gretzel, Sigala, et al., 2015; Wang, Li, Zhen, & Zhang, 2016). Smart tourism aims at efficiently operating the whole system in a similar way to other systems such as smart government, smart environment and smart transportation systems. There are many opportunities for destinations to increase their competitive advantages by leveraging the concept of smartness, which enables them to understand travelers' needs before, during, and after their travel (Buhalis & Amaranggana, 2013). Smartness is the result of connectivity and information capabilities activated with technological advancements. In this regard, technological advances have turned all tourism resources into smart tourism resources. The smartness of the resources depends on smart communications and smart data components (Sigala, 2018). Smart tourism connects the digital world and physical world during and after travel, whereas e-tourism is effective for communications before and after travel (Gretzel, Werthner, et al., 2015). More specifically, smart systems can be used to support: (1) the prediction of user needs and the provision of advice with respect to the selection of activities such as interests, food and recreation; (2) the improvement of traveler experiences by providing quality information based on location and customization and interactive services; and (3) the empowerment of travelers to share experiences (Gretzel, Sigala, et al., 2015). From the viewpoint of tourism destinations, concepts such as process automation, productivity increase, development of new products, demand forecasting, crisis management, and value creation define the future of smart tourism (Xiang & Fesenmaier, 2017).

From an information management viewpoint, smart tourism is the process of integrating tourism information resources, network marketing, and modern technologies (Zhu, Zhang, & Li, 2014). The purpose of smart tourism is to develop new information substructures and employ information and communication capabilities to improve management/supervision processes, facilitate services, promote innovation, enhance the tourism experience and improve the competitiveness of companies and tourism destinations. In the field of business, smart tourism destinations permit new ways of managing tourism flows, improving tourism services, modernizing advertising models and creating new collective transactions based on cloud services and big data to present innovation beyond traditional industry boundaries (Gretzel et al., 2016). Establishing a sustainable and smart tourism platform is an opportunity for destinations to be more competitive. Currently, the competitive advantage of a destination originates not only from its exploitation of natural resources but also from its managerial efforts and the ability for optimal resource allocation (Wang, Li, & Li, 2013). This approach has led to a better understanding of the current conditions of the tourism industry and provides methodologies to manage tourism using a competitive, smart and sustainable approach (Gretzel, Sigala, et al., 2015).

To be an effective tool for destination management and development, smart tourism encourages innovation at the level of tourism destinations and highlights the contribution of tourism to sustainable development. Smart tourism is a new step for the use of ICT in the tourism sector. The concept of smart tourism has recently become significant as a strategic tool for the development of tourism in different countries and studies are expanding in different countries (Gretzel, Sigala, et al., 2015). Although its development is still in its infancy (for many reasons), smart tourism is expected to strongly grow in world tourism destinations. In spite of the high potential of smart tourism to provide better services to tourists, use of this technology has not been adequately addressed (Gretzel et al., 2016). Moreover, most of the concepts presented in smart tourism are inspired by research in smart cities (Gretzel et al., 2016; Xiang & Fesenmaier, 2017) and academic works rather than focusing on the theoretical basis for its development.

Furthermore, critiques are largely focused on describing this phenomenon as case studies or discussions on separate technological developments (Gretzel, Sigala, et al., 2015) and current performance is still far from the goal.

Buhalis and Amaranggana (2015) introduced the characteristics of smart cities to provide a comprehensive description of smart tourism destinations, components, and features and conceptualized the framework for smart tourism destinations. This paper examined issues like introducing key concepts and components, activity areas, services and technologies provided by smart tourist destinations (Buhalis & Amaranggana, 2015). Buonincontri and Micera (2016) defined the role of tourism destinations (concerning tourists) according to new technologies as the main means of defining tourism products. This paper presents interesting insights for policymakers and demonstrates how they should use modern technologies for smart purposes to improve their collaborative experience (Buonincontri & Micera, 2016). Studies were undertaken in two European destinations through the analysis of documents, tourist information websites, and in-depth interviews with experts. Wang et al. (2016) used the combined methodology to examine tourism priorities, smart tourism attractions, and weaknesses and strengths and used hierarchical analysis and fuzzy logic approaches (Wang et al., 2016). Boes et al. (2015) described the non-technological aspects of smart tourism destinations. In a case study, the paper developed a framework for smart cities and destinations and stated that leadership, innovation and social capital along with human capital support are the fundamental structures of smartness. In addition, ICT and technology applications are empowering points that help build smart destinations (Boes et al., 2015). The focus of most of the aforementioned papers has been on smart destination technology innovations and their effects on development of the tourism industry, plans for the development and implementation of smart tourism destinations (Boes et al., 2015), and strengths and weaknesses (Wang et al., 2016).

Xiang and Fesenmaier (2017) examined the role of information technology, especially the Internet of things (IoT) in tourism development and introduced big data analysis as a new paradigm for tourism design, marketing and management of tourism destinations (Xiang et al., 2017). These papers mainly focus on the following: the concepts of smart tourism (Zhu et al., 2014) and smart tourism destinations and its dimensions; conceptualization of the main components of smartness (Wang et al., 2013; Xiang & Fesenmaier, 2017); understanding how to connect these key components to each other to create common value in smart tourism; and a framework for visualizing elements of smart tourism destinations (Buhalis & Amaranggana, 2013).

These studies have shown that despite the high quality of some studies published on smart tourism, there are still many opportunities to increase our understanding of this area. Despite the development of smart tourism destinations, the concepts are not well conceptualized (Gretzel et al., 2016). However, because this is a relatively new field of research, there hasn't been a complete synthesis of the existing papers or analyses of the research approaches in the field of smart tourism. Therefore, to examine the current studies, evaluate the knowledge of smart tourism destinations and guide future research, a systematic review of the literature in this field is necessary. In response to this gap, this research used grounded theory as an analytical framework to extract information from papers under review. Using this method can provide a profound analysis of the literature within this domain. Reviewing the literature is particularly important and critical to the academic development of a research discipline and helps to consolidate developing and developed research disciplines (Lee & Scott, 2015). Hence, a review of the literature of this field was conducted to facilitate, stimulate and direct future studies. Given that smart tourism is a new force for innovation, creativity and competition for tourism purposes, this paper attempts to identify the components related to smart tourism destinations. Our research question is, "What are the constituting elements of a sustainable smart tourism destination model?" We then conduct a systematic review of the literature in this area using the

method proposed by Wolfswinkel, Furtmueller, and Wilderom (2013) to answer this question.

This study contributes to an understanding of the literature in terms of the development and extension of smart destinations to meet smart tourism objectives. This research is a general overview of the concept of smart tourism destinations. Identifying these constituting elements will create a theoretical framework for policymakers seeking to enhance their awareness of the prerequisites, strategies and consequences of developing smart tourism destinations. Therefore, we need to focus on the most important conditions for the development of sustainable smart tourism destinations. This study focuses on the elucidation of the key element of smart destinations and presentation of a model for sustainable and smart tourism destinations. The research intends to provide a theoretical contribution for future operationalization of the concept.

3. Research methodology

Using the steps of grounded theory as an analysis framework, the purpose of this systematic review was to explore the various aspects of smart tourism destinations and extract the building blocks of sustainable smart tourism destinations to develop a conceptual model. A systematic literature review is an explicit and comprehensive method for identifying, synthesizing and evaluating, and combining the results of existing studies on a specific topic of interest (Fink, 2005). Different authors have developed different procedures for the review process (Bandara, Furtmueller, Gorbacheva, Miskon, & Beekhuyzen, 2015; Levy & Ellis, 2006; Sylvester, Tate, & Johnstone, 2013; Vom Brocke et al., 2009) but these procedures actually share a similar underpinning. The main challenge is to find the most appropriate research tool to obtain a comprehensive summary of the literature (Confente, 2015). A systematic review was recently used in tourism research to investigate topics such as gender and risk (Yang, Khoo-Lattimore, & Arcodia, 2017), the acceptance of user-generated content by tourists for travel planning (Ukpabi & Karjaluoto, 2018), sustainable communication in tourism (Tölkes, 2018), mixed method research in tourism (Khoo-Lattimore, Mura, & Yung, 2017), virtual and augmented reality (Yung & Khoo-Lattimore, 2017), innovation in hospitality and tourism (Gomezelj, 2016), and sustainable tourism indicators (Kristjánsdóttir, Ólafsdóttir, & Ragnarsdóttir, 2018).

The grounded theory method was employed in this review (Montazemi & Qahri-Saremi, 2015; Wolfswinkel et al., 2013). Grounded theory is a qualitative research design that enables the exploration of a specific phenomenon through an inductive process, which usually generates a theoretical understanding of the phenomenon (Strauss & Corbin, 1990). The approach is useful for conducting a comprehensive and theoretical analysis related to a topic (Wolfswinkel et al., 2013). The main objective of grounded theory is to explain the target phenomenon according to the concepts, categories and propositions and the relationships between them (Strauss & Corbin, 1990). In this kind of research design, data analysis begins with open coding (identifying categories, propositions, and dimensions), continues with axial coding (exploring strategies, conditions and consequences) and ends with selective coding (theory generation).

Watson and Webster (2002) argued that an effective review creates a firm foundation for the progress of knowledge. Grounded theory is not merely useful for describing raw data or for theory testing; rather, it enables the researcher to develop a theory-based or concept-centric idea by properly synthesizing other approaches with that same idea (Wolfswinkel et al., 2013). Furthermore, grounded theory creates opportunities for building new theory where there is little research or where new insight is required (Matteucci & Gnoth, 2017). Wolfswinkel et al. (2013) explored methods for conducting systematic literature reviews in information systems and introduced a five-step process that uses grounded theory for content analysis (Table 1). This model is employed in the current study and is described in further detail below. The five-step approach for extracting information in this article is

Table 1
A five-stage grounded theory method for reviewing the literature in an area (Wolfswinkel et al., 2013).

1. Define
    1.1 Define the criteria for inclusion/exclusion
    1.2 Identify the field of research
    1.3 Determine the appropriate sources
    1.4 Decide on the specific search terms
2. Search
    2.1 Search
3. Select
    3.1 Refine the sample
4. Analyze
    4.1 Open coding
    4.2 Axial coding
    4.3 Selective coding
5. Present
    5.1 Present and structure the content
    5.2 Structure the article

similar to the method used in articles by Khoo-Lattimore et al. (2017), Tölkes (2018), Yang et al. (2017), and Yung and Khoo-Lattimore (2017) with the difference being that this paper used grounded theory as an analytical framework for extracting information in the analysis step.

Step 1: Define

Stage 1: Define the criteria for inclusion/exclusion

In the first step, the criteria applied for including certain papers and excluding others should be made explicit. The selection of primary papers is governed by inclusion and exclusion criteria. Papers published in English during 2000 to 2017 were examined first. A search for articles with a close semantic relationship with the domain (within the subject area) of research that included selected keywords was conducted. Likewise, papers published in peer-reviewed journals and international conferences were included, whereas non-peer-reviewed journals and personal comments were excluded. Papers with clear processes and research results were included, whereas papers with unclear research processes and research findings were excluded. Table 2 describes the criteria for selecting articles.

Stage 2: Identify the fields of research

Given the novelty of this area of research, the volume of research publications on smart tourism destinations is relatively low. Therefore, all papers deemed to be in line with the research scope were selected for inclusion in the review. Likewise, given that smart tourism has been identified in the theoretical discussion as one of the components of a smart city, articles that had a close semantic relationship with smart cities were also included in the analysis. Additionally, papers related to the effect of information technology on sustainable tourism were explored.

Stage 3: Determine the appropriate sources

The article selection was conducted by searching keywords to find papers relevant to the scope of the review. The employed information resources were papers authored in English in numerous publishers' electronic databases. The electronic databases included Emerald, Science Direct, IEEE Explore, Taylor & Francis and Springer. Google Scholar was also used to validate the previous searches and make sure that no relevant articles had been ignored.

Stage 4: Decide on the specific search terms

The following search terms were applied to the selected databases:

smart tourism, smart tourism destinations, smart city, smart sustainable city, information and communication technology, and sustainable tourism. Based on the protocol specified for this research, primary references were initially selected based on the review of titles, keywords, and abstracts. The search was performed using the keywords existing in the title, abstract or body of articles. Then, titles, abstracts, and keywords of articles were reviewed in order to achieve other terms and keywords used in the research literature and develop our own keywords. Other variations of these keywords were also studied for a better result of the search. Boolean operators were used to gain better search results. Search strings were constructed using Boolean "AND" to join the main terms and "OR" to include synonyms. Moreover, JSTOR[1] Text Analyzer was employed to identify other words and synonyms of our keywords. Search strings were constructed using Boolean "AND" to join the main terms and "OR" to include synonyms.

The following search terms were applied to the selected databases: "smart tourism"[All Fields] AND (smart destinations [All Fields] AND ("smart city,"[Subheading] OR ("smart sustainable city "[All Fields] AND " information and communication technology "[All Fields]) OR "sustainable city"[All Fields])).

Finally, the selected articles were validated based on the 10 criteria of the CASP tool described in Section 2.

Step 2: Search

The focus was placed on articles published in the databases, journals and search engines between 2000 and 2017 given the relative newness of the smart destination phenomenon. However, most papers in this field have been published since 2011. Forward and backward methods were used to search for the intended papers (Fig. 1) (Table 3).

Step 3: Select

The search process yielded 125 papers. It was then necessary to assess the quality of those papers by applying a set of inclusion and exclusion criteria. Using qualitative criteria in qualitative research has been extensively discussed but there is no agreement on what criteria should be applied and how (Campbell et al., 2003). To determine the validity of the identified papers, the Critical Appraisal Skills Program (CASP) tool was employed. This is a known tool to help the researcher estimate the validity and reliability of qualitative studies. A CASP auditing tool was created to assess each paper. The CASP criteria are: obvious description of purposes, research methodology, research plan, application strategy, data collection, relationship between the researcher and participator, accuracy, statement of the findings, research value and ethical issues. Based on the assigned scores, 40 papers were extracted. The lowest average score of the extracted papers was 31 and the highest score was 48, and all of the extracted papers were in the score range of excellent (40–50) and very good (31–40). Also, all of the papers were selected from high-quality databases and journals. The information related to the journals of each paper are presented in the appendix (Figs. 2 and 3).

Step 4: Analyze

Grounded theory requires that three stages of coding are performed, i.e., open coding, axial coding and selective coding. Qualitative data analysis and information coding are performed by using Nvivo11 to explore the related concepts. This software package is a powerful tool that is used to facilitate qualitative data analysis (Sotiriadou, Brouwers, & Le, 2014).

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[1] https://www.jstor.org/analyze/

Table 2
Article review criteria.

| Parameters	Inclusion criteria	Exclusion criteria
Paper's language	Studies written in English	Studies not written in English
Time of presenting papers	Papers published between 2000 and 2018	Papers published before 2000
Research subjects	Articles with a close semantic relationship with the domain of research and that include keywords that are searched	Articles with different subject and research areas with research objectives
Types of studies	Papers published in the peer-reviewed journals and at relevant international conferences	Non-peer-reviewed journals, personal comments
Status of research information	Papers with clear processes and results of research	Papers with unclear research processes and research findings
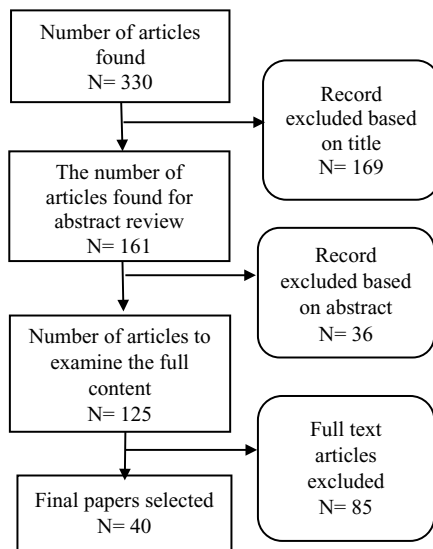
Fig. 1. Literature search overview.

Table 3
The number of papers found and screened.

Publishers' electronic databases	Number of papers found	Final papers
Science Direct (sciencedirect.com)	24	7
Springer (springerlink.com)	30	11
Emerald (emeraldinsight.com)	17	2
IEEE explore (ieeexplore.ieee.org)	15	1
Taylor & Francis (taylorandfrancis.com)	12	8
Google Scholar (scholar.google.com)	27	11
Total	125	40

Stage 1: Open coding

It is first necessary to establish a mechanism for identifying the core concepts and their characteristics and dimensions. In grounded theory, this mechanism is conducted through open coding. As a result, the initial categories of the phenomenon under study are extracted by asking questions about the data and comparing the cases, events and other states of the phenomena to determine the similarities and differences from the initial raw data (O'leary, 2004; Strauss & Corbin, 1998). In this stage, the categories of smart tourism destinations are formulated through segmenting the information. Since this is an under-researched topic, classification of the data should be conducted in a systemic manner. Open coding is used for identifying, labeling, or creating a group of concepts and insights based on the extracted codes (Wolfswinkel et al., 2013).

Stage 2: Axial coding

Axial coding is a process through which concepts are disaggregated into their components. To this end, the concepts extracted during the open coding process are selected as categories and other synonymous concepts are linked to them. The categories in axial coding are developed systematically and related to subcategories. One of the consequences of this kind of coding is that a model can be constructed to identify the relationship between each of the categories. Strauss and Corbin (1990) call this the "paradigm pattern" and its general structure contains six categories including causal relationships, context, intervening conditions, core phenomenon, action/interactions and consequences. The core phenomenon is an idea that is the basis of a process and all other components are linked to it (Goulding, 2000).

Given the research purpose, sustainable and smart tourism destinations were selected as the main category. The other categories are composed of the factors below.

Causal conditions: These components pave the way to create the core phenomenon and influence it.

Context: This includes organizational factors that affect the strategies. The governing context provides special conditions in which strategies control, manage and respond to the phenomenon.

Intervening conditions: These are special conditions that effect interaction and they modify causal conditions and are effective for strategies and interactions (Goulding, 2000).

Interactions: These are specific actions or reactions that are obtained from the core phenomenon.

Consequences: These are the outcomes of implementing the strategies (Strauss & Corbin, 1990).

In the coding model, causal conditions affect the core phenomenon. The core phenomenon, context and intervening conditions affect the interactions, which also affect the consequences (Creswell, 2005). The categories and concepts related to the main elements of the model are shown in Table 4.

Stage 3: Selective coding

Selective coding is the process of integration and the improvement of categories to formulate a theory. At this stage, theory is developed by considering the relationships between the categories that emerge through axial coding. After identifying the relationship between categories in open coding and axial coding, the categories, secondary categories and their relationships are integrated. Thus, the primary theoretical model is developed based on the obtained data (Strauss et al., 1998).

Based on analysis of the 40 final papers, 6 categories and 28 codes were discovered and labeled as the dimensions of the model of smart tourism destinations. A summary of the three coding steps is presented in Table 5.
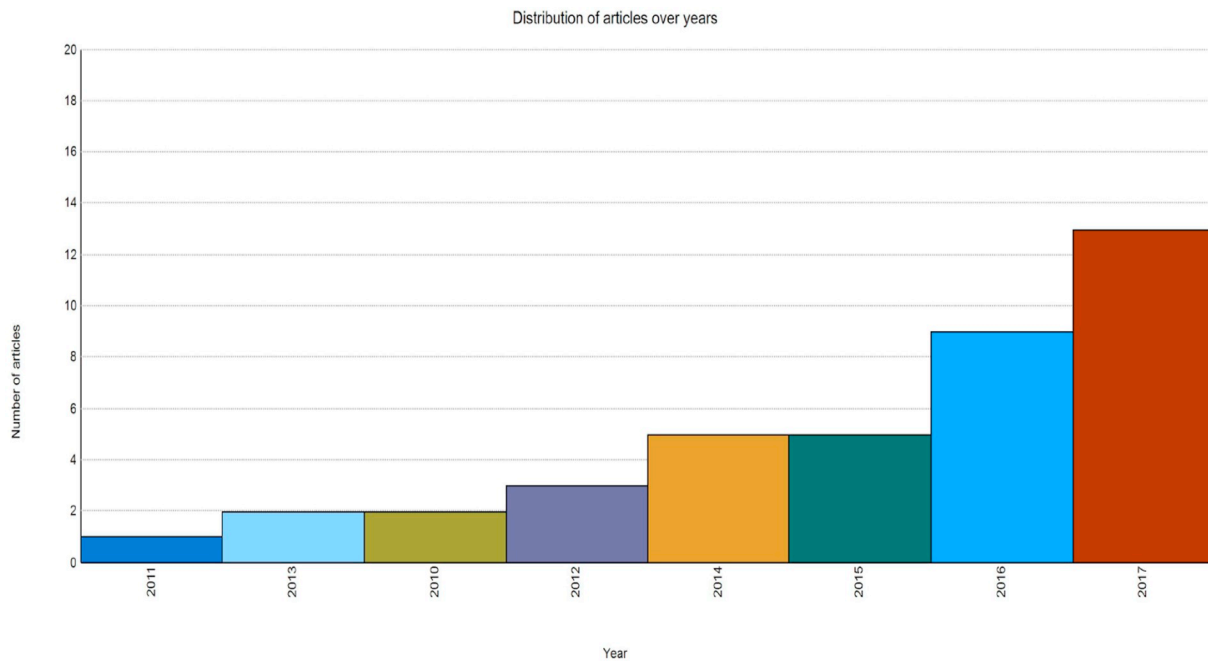
Distribution of articles over years

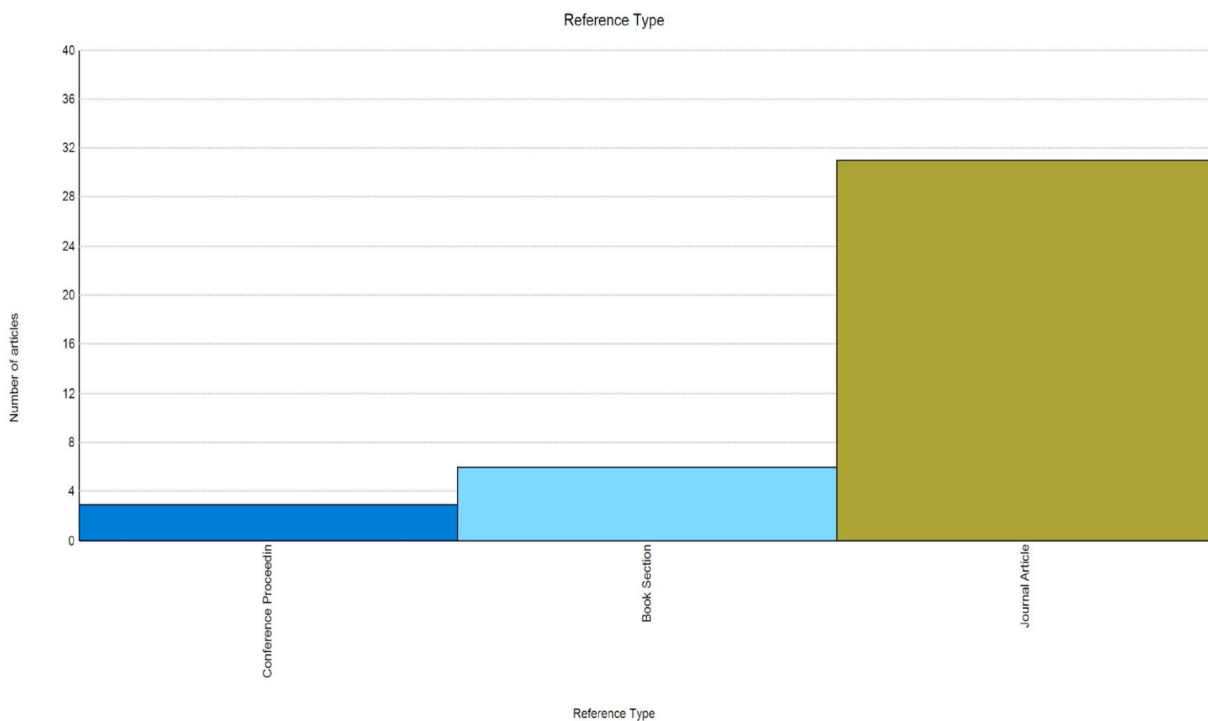Fig. 2. Distribution of articles over years.

Reference Type

Fig. 3. Reference type.

After the paradigm model was completed, its validity and the process used to develop the model was evaluated by academic experts. All of the experts generally confirmed the model although some offered corrective comments. The modifications were performed in a reversible process.

Stage 5: Presenting the findings

In this model, the core phenomenon is sustainable smart destinations. Thus, the concepts related to this phenomenon are classified in a causal category section. All of the strategies related to the development of sustainable smart tourism destinations are grouped in the category of strategy and the context and intervening conditions affecting strategy selection. Finally, the results and consequences of implementing sustainable tourism destinations are determined and explained below.

According to the analyses, the causal conditions affecting the development of smart destinations are the following: increasing internet penetration rate, the use of information and communication technologies, the emergence of the smart city, development of social networks, and global changes. Global transformations and the development of information and communication technologies have affected recent transformations in societies, especially in the tourism industry (Jovicic,

Table 4
The category, concept, and final codes extracted from grounded theory.

Category	Final code extracted	References
Casual Conditions	– Develop Information and Communication Technology – Development of Social Networks, Web 2 and Big Data	(Al-Nasrawi, Adams, & El-Zaart, 2015; Boes et al., 2015; Buonincontri & Micera, 2016; Caragliu, Del Bo, & Nijkamp, 2011; Chourabi et al., 2012; Gössling, 2017; Graziano, 2014; Gretzel, Sigala, et al., 2015; Hara, Nagao, Hannoe, & Nakamura, 2016; ITU, 2015; Jovicic, 2017; Katsoni & Dologlou, 2016; Khan, Woo, Nam, & Chathoth, 2017; Lombardi, Giordano, Farouh, & Yousef, 2012; Nitti, Pilloni, Giusto, & Popescu, 2017; Presenza, Micera, Splendiani, & Del Chiappa, 2014; Ronay & Egger, 2013; Xiang & Fesenmaier, 2017)
	The Emergence of the Smart City	(Boes et al., 2015; Buhalis & Amaranggana, 2013; Chourabi et al., 2012; Khan et al., 2017)
	Global Change Trends	(Boes, Buhalis, Inversini, Morrison, & Gretzel, 2016; Jovicic, 2016)
	Economic and Social Development	(Ali & Frew, 2014a; Ali & Frew, 2014b; Al-Nasrawi et al., 2015; Boes et al., 2016; Seng, 2014; Touray & Jung, 2010)

Category	Final code extracted	References
Context Conditions	Economic and Financial Factors	(Ali & Frew, 2014b; Al-Nasrawi et al., 2015; Blancas, Lozano-Oyola, González, & Caballero, 2016a; Boes et al., 2015; Boes et al., 2016; Buonincontri & Micera, 2016; Caragliu et al., 2011; Giffinger, Haindlmaier, & Kramar, 2010; Graziano, 2014; Hara et al., 2016; Jovicic, 2016; Koo, Shin, Kim, Kim, & Chung, 2013; Lee & Hsieh, 2016; Liao, Jin, Ren, & Luo, 2014; Lu & Nepal, 2009; Petrinić, 2013; Presenza et al., 2014; Vicini, Bellini, & Sanna, 2012; Wang et al., 2016)
	Technological and Infrastructure Factors	(Ali & Frew, 2014b; Al-Nasrawi et al., 2015; Boes et al., 2015; Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; Caragliu et al., 2011; Chourabi et al., 2012; Del Chiappa & Baggio, 2015; Giffinger et al., 2010; Gretzel, Sigala, et al., 2015; Hara et al., 2016; Jovicic, 2017; Lombardi et al., 2012; Petrinić, 2013; Vicini et al., 2012)
	Environmental Factors	(Ali & Frew, 2010; Al-Nasrawi et al., 2015; Boes et al., 2015; Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; Caragliu et al., 2011; Choi & Sirakaya, 2006; Chourabi et al., 2012; Das, 2013; Del Chiappa & Baggio, 2015; Giffinger et al., 2010; Graziano, 2014; Hara et al., 2016; Jovicic, 2016; Lombardi et al., 2012; Petrinić, 2013; Vicini et al., 2012; Zhang, Ji, & Zhang, 2015)
	Social and Cultural Factors	(Ali & Frew, 2010; Al-Nasrawi et al., 2015; Blancas, Lozano-Oyola, González, & Caballero, 2016; Boes et al., 2015; Boes et al., 2016; Buonincontri & Micera, 2016; Caragliu et al., 2011; Choi & Sirakaya, 2006; Giffinger et al., 2010; Graziano, 2014; Hara et al., 2016; ITU, 2015; Jovicic, 2016; Koo et al., 2013; Lee & Hsieh, 2016; Lombardi et al., 2012; Lu & Nepal, 2009; Petrinić, 2013; Presenza et al., 2014; Sánchez, 2016; Schianetz & Kavanagh, 2008; Simion, Mazilu, Pătruñescu, & Ispas, 2010; Torres-Delgado & Saarinen, 2014; Vicini et al., 2012; Wang et al., 2016; Xiang & Fesenmaier, 2017)

Category	Final code extracted	References
Intervening Conditions	Government Support	(Ali & Frew, 2010; Ali & Frew, 2014b; Al-Nasrawi et al., 2015; Boes et al., 2015; Boes et al., 2016; Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; Caragliu et al., 2011; Chourabi et al., 2012; Das, 2013; de Esteban Curiel, Jalón, Herráez, & Antonovica, 2017; Gretzel, Sigala, et al., 2015; Hara et al., 2016; Huang, Goo, Nam, & Yoo, 2017; ITU, 2015; Jovicic, 2016; Lombardi et al., 2012; Nitti et al., 2017; Petrinić, 2013; Xiang & Fesenmaier, 2017)

(continued on next page)

294

Table 4 (*continued*)

Category	Final code extracted	References
Actions/Interactions	Use of Renewable Energy Sources	(Blancas et al., 2016b; Lee & Hsieh, 2016; Tanguay, Rajaonson, & Therrien, 2013; Torres-Delgado & Palomeque, 2014)
	Increase the Attractiveness of Natural Conditions	(Giffinger et al., 2010; Petrinić, 2013)
	Reduce Environmental pollution	(Giffinger et al., 2010; Petrinić, 2013) (Blancas et al., 2016a; Khan et al., 2017; Liao et al., 2014; Schianetz & Kavanagh, 2008; Tanguay et al., 2013)
	Energy Efficiency Reinforcement	(Blancas et al., 2016b; Lombardi et al., 2012; Vicini et al., 2012) (Khan et al., 2017)
	Entrepreneurship and Competitiveness	
	Develop Cultural Infrastructures	(Boes et al., 2016; Caragliu et al., 2011; Vicini et al., 2012)
	Level of Service Quality	(Ali & Frew, 2014a; Buhalis & Amaranggana, 2013; Huang et al., 2017; Lim, Mostafa, & Park, 2017)
	Perceived Destination Image	(Giffinger et al., 2010; Petrinić, 2013)
	Destinations Attractiveness	(Giffinger et al., 2010; Petrinić, 2013) (Boes et al., 2015; Buhalis & Amaranggana, 2013.
	ICT Infrastructure	(Boes et al., 2016; Giffinger et al., 2010; Petrinić, 2013) (Al-Nasrawi et al., 2015; Boes et al., 2015; Buonincontri & Micera, 2016; Caragliu et al., 2011; Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2017)
	Use of Mobile Equipment	(Ali & Frew, 2014a; Boes et al., 2015; Boes et al., 2016; Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; de Esteban Curiel et al., 2017; Del Vecchio Pasquale & Giuseppina, 2016; Graziano, 2014; Gretzel, Sigala, et al., 2015; Li et al., 2017; Lim et al., 2017)
	Use of Cloud Computing Services	(Boes et al., 2015; Boes et al., 2016; Buhalis, 2000; Buonincontri & Micera, 2016; Del Chiappa & Baggio, 2015; Graziano, 2014; Jovicic, 2017; Koo, Park, & Lee, 2017; Li et al., 2017; Wang et al., 2016; Xiang & Fesenmaier, 2017)
	Use of the Internet of Things	(Boes et al., 2015; Boes et al., 2016; Buhalis & Amaranggana, 2015; Buonincontri & Micera, 2016; de Esteban Curiel et al., 2017; Del Chiappa & Baggio, 2015; Gretzel, Sigala, et al., 2015; Jovicic, 2016; Jovicic, 2017; Koo et al., 2017; Nitti et al., 2017; Vicini et al., 2012; Wang et al., 2016; Xiang & Fesenmaier, 2017)
	Use of End User Internet Services	(Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; de Esteban Curiel et al., 2017; Del Chiappa & Baggio, 2015; Gretzel, Sigala, et al., 2015; Koo et al., 2017; Wang et al., 2013)
	Use of Data Analysis Technologies	(Boes et al., 2016; Buhalis & Amaranggana, 2013; Buhalis & Amaranggana, 2015; Gretzel, Sigala, et al., 2015; Li et al., 2017; Lim et al., 2017; Wang et al., 2013; Xiang & Fesenmaier, 2017)

Category	Final code extracted	References
Consequences	Improving the Quality of Life of Residents and Tourists	(Al-Nasrawi et al., 2015; Boes et al., 2015; Boes et al., 2016; Buhalis & Amaranggana, 2013; Buhalis & Amaranggana, 2015; Buonincontri & Micera, 2016; Caragliu et al., 2011; Chourabi et al., 2012; Giffinger et al., 2010; Gretzel, Sigala, et al., 2015; Ivars-Baidal et al., 2017; Khan et al., 2017; Koo et al., 2017; Lombardi et al., 2012; Presenza et al., 2014; Xiang & Fesenmaier, 2017)
	Management of Natural Resources Through Participatory Policies	(Al-Nasrawi et al., 2015; Boes et al., 2015; Caragliu et al., 2011; Chourabi et al., 2012)
	Convergence of Economic, Social, Political and Environmental Goals	(Al-Nasrawi et al., 2015)
	Improving Tourist Experiences	(Boes et al., 2015; Boes et al., 2016; Khan et al., 2017)

Table 5
A summary of the coding stages and moving from data to theory.

Stage	Type of coding	Activity	Output
1	Open coding	Primary coding of papers	Registering 321 open codes
2	Axial coding	Constant comparative method	Developing the features and dimensions of secondary sub-categories
		Identifying and determining the central category	Developing 6 main categories
		Making relationships between sub-categories and the main category	Developing 28 sub-categories
		Extracting the main categories and accreditation of relationships	Primary structure of the model
3	Selective coding	Evolution and interpretation of the theory	Proposing the model

2016). Information technology is an important factor in changing the approach to sustainable tourism in developing and developed countries. Modern technologies in tourism destinations are extensively used to influence experiences and increase the competitiveness of destinations and projects of tourism development (Buhalis et al., 2013, 2015). Likewise, the path for smart tourism development and its modeling and substructures are provided in smart cities (Zhuang, 2015). The emergence and comprehensive access to information technologies (e.g., the increased use of social media) is one of the highly important changes in the global tourism system in recent decades (Gössling, 2017). ICT and Web 2.0 and its associated platforms provide a wide range of interactive and dynamic programs for exchange and cooperation among users (Katsoni et al., 2016). All of these conditions provide the groundwork for the creation, development and implementation of sustainable smart tourism destinations.

One of the intervening and moderating conditions of tourism destination development is government support. The successful implementation of smart tourism destinations is a difficult and long-term task, which requires technological innovation and the participation of the government, policymakers and all beneficiaries at all stages of the process, e.g., from design to implementation and execution (Zhu et al., 2014). The management of smart tourism destinations is based on the participation of citizens and social activists along with the support of government authorities. By recognizing the potential of smartness and acknowledgment of the need to accept this rapid change in technology, governments and other agencies have begun to incorporate smartness in new policies and strategies to enhance dynamic development and economic growth. At the macro level, governments should not only encourage the establishment of tourism based on information in the framework of rules and policies but they should also determine and propose nationwide standard smart tourism frameworks using sustainable approaches.

However, it is necessary to focus on the context conditions for developing smart destinations. A group of economic, social, environmental, technological and infrastructure factors are the most important conditions for the development of sustainable smart tourism destinations. These factors, while influencing strategies, provide specific conditions that are required for integrating smartness into tourism destinations. According to the analyses, to develop smart destinations and increase the competitiveness of tourism destinations, it is essential to find appropriate economic, social, environmental and technological strategies so that the newest technologies are used and natural and cultural resources are exploited. These are trends that ultimately contribute to sustainable development. Creating a smart environment through technology and sustainability tools makes it possible to make more flexible and rapid reactions toward environmental challenges. This leads to the sustainable management of accessible resources (Buhalis & Amaranggana, 2013). Regarding social strategies, activities, such as an improved level of service quality, increased competitiveness of destinations and development of a smart government, are more

effective. Regarding technological aspects, the implementation of technical infrastructures in tourism destinations affect the digital environment to foster cooperation among different beneficiaries and to reinforce knowledge transfer and sharing. Integrating information technology substructure with connected systems makes it possible for tourism destinations to collect and analyze information effectively and support optimized knowledge-based decisions. This improves operational efficiency and the quality of life of both inhabitants and tourists. ICT infrastructure development, the use of cloud computing, the Internet of Things, end-user internet service (Alami & Tahmasebi Aria, 2016; Buhalis & Amaranggana, 2013; Buonincontri & Micera, 2016; Gretzel, Sigala, et al., 2015; Wang et al., 2013; Zhang, Li, & Liu, 2012; Zhu et al., 2014) and data analysis technologies are some of the technological strategies used. Ultimately, the convergence of economic, social, political and environmental purposes, natural resource management through participatory policies, improving the quality of life of inhabitants and tourists and increased experiences of tourists are the results of the development of sustainable smart tourism destinations.

According to the model produced in this study, it can be concluded that when the causal conditions in society utilize modern technologies for the economic and social development of tourism destinations, these conditions become factors for the implementation and successful development of smart destinations. It should be noted that although these factors are considered important for the successful implementation of smart destinations, they are also considered facilitating conditions and incentives affecting the dynamics of the development of smart destinations. Considering that the underlying factors are considered effective factors in the development of the infrastructures of destinations, it is necessary that the conditions are met in such a way as to balance the economic, social, environmental and technological dimensions. Also, these factors will have a two-way impact on system-building strategies. The aforementioned factors can be effective if the government adopts policies and laws that create appropriate support to help achieve better conditions. Timely implementation of economic, social, environmental and technical measures lead to the successful development of smart tourism destinations. These categories of factors are referred to as "strategy" in the proposed model.

4. Theoretical implications

From a theoretical perspective, this study makes significant contributions. The main contribution of this paper is presenting a new model for smart tourism destinations through analyzing factors that affect developing smart tourism. We position this as a key contribution to the body of knowledge in smart tourism. Another key contribution is the ability to understand the casual, contextual, and intervening conditions that are required to develop sustainable and smart tourism destinations. A comprehensive systematic review was performed to explore the various aspects of smart tourism destinations and extract the building blocks of sustainable smart tourism destinations to develop

a conceptual model. Based on the results of a systematic review, this paper proposes a model of smart tourism destinations by considering sustainability as one of the basic current concerns. This model is likely to be of interest to policymakers to enhance their awareness of the prerequisites and strategies of developing a smart tourism destination.

This study introduces a new model for developing smart tourism destinations and attempts to fill the gap in this research area. Identified conditions help researchers gain a better understanding of the factors affecting the development of smart destinations and distinguish the importance of each factor. This study is a first step in recognizing these factors. Knowing these factors, researchers can then examine the impact of each component in developing smart destinations. Therefore, these findings are a strong foundation for designing quantitative studies to illustrate the relationships between the components.

This work provides a practical contribution and is valuable for stakeholders, including destination managers, academicians, and policymakers, because it provides insight into factors that influence the development and design of smart destinations. As policymakers and other political leaders are increasingly interested in harnessing the economic potential of tourism, identifying the elements of smart destinations may help create a framework for the development of destinations. The advantage of the proposed grounded theory methodology in extraction of analytic categories supposes a useful research method for decision-makers. It also allows researchers to conduct an investigation that is interpretive and grounded in data. Finally, using the

model, policymakers can gain insight into different factors and economic, social, environmental and technical conditions lead to the successful development of smart tourism destinations.

Fig. 4 shows the final model of sustainable smart tourism destinations.

5. Conclusions

Smart tourism destinations are the future and there have been scattered attempts in the literature to examine and explore the strategies used to develop and implement them. To consolidate knowledge in this area, a systematic review of those studies was conducted. The coding of papers was completed using a grounded theory method such that the causal conditions, context conditions, intervening conditions, interactions and consequences were identified and a model of sustainable smart tourism destinations was identified. The review revealed a greater propensity for descriptive and conceptual research with prominent observational methods. Clearly, and despite the promise offered by smart tourism, we are still at the forefront of the development and full understanding of smart tourism (Sánchez, 2016).

The model offers knowledge that could be used by policymakers and others involved in sustainable smart tourism to develop the required conditions and substructures for the effective implementation of sustainable smart tourism destinations. Based on the results of this review, the conditions include internet penetration rates and the rate of the use
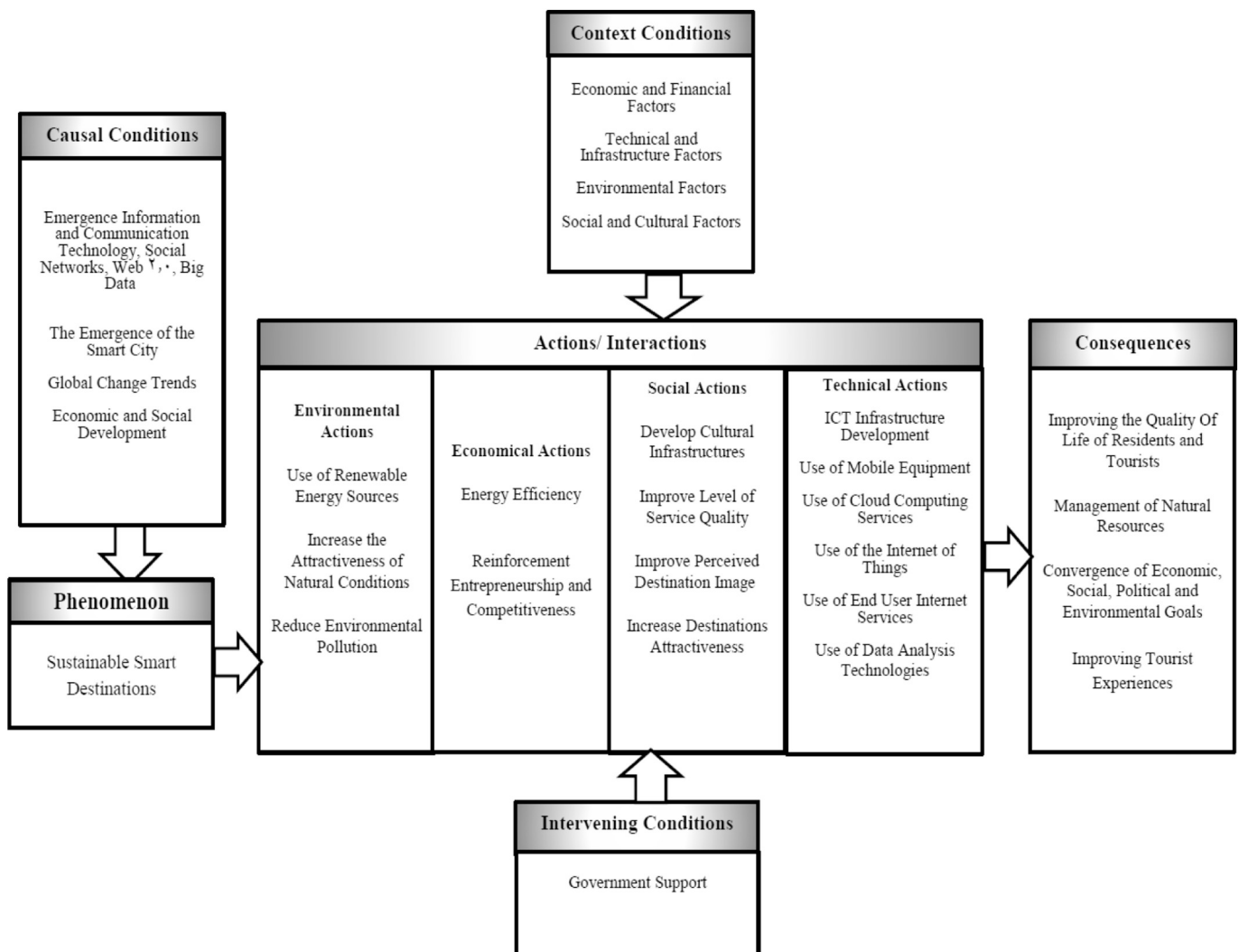

Fig. 4. The final model of sustainable smart tourism destinations.

of information and communication technology, the existence of a smart city infrastructure, the development of social networks and the rate of global changes. When these causal conditions and contexts are fulfilled, the destination is in a better position to be accurately described as a smart tourism destination. Policymakers are advised to pay attention to all economic, social, environmental, and technological strategies and substructures for the effective fulfillment of smart tourism destination strategies.

This research has value for both academics and practitioners. In the long-term, the development of smart tourism destinations will radically alter the tourism industry and offer a better future for tourism-based economies and sustainable tourism. Due to the growth of new information technologies, smartness is increasingly essential for tourism destinations. If the technological, social and economic infrastructure required for smart tourism is established, the broader tourism industry can be further developed. Despite several high-quality published papers about smart tourism destinations, there are still many opportunities to refine our understanding. Awareness of the causal, contextual and intervening conditions and interactions for developing smart tourism destinations will provide a fundamental understanding for policymakers seeking to develop these destinations.

In particular, the following recommendations are proposed for future studies. Causal relationships and components obtained from the model can be considered. In addition, the use of systematic studies to investigate causal relationships between variables and study the variables within the subsystems can be beneficial. The systemic approach is a fairly comprehensive approach to understanding, analysis, planning, and dynamism of tourism. This approach can well analyze the sectors and factors affecting tourism, such as tourists, host communities, relevant organizations and companies, the environment, etc., interconnected. Given that the government support is one of the conditions moderating the tourism development, as investigated by Zhu et al. (2014), it is recommended to study the role of government in the smart development of destinations, clarification of the duties of government and companies, and functional changes in smart tourism. The implementation of these recommendations will produce more exquisite results and will bring great potential for the improvement of studies in this area.

However, this study is not without limitations. The research data was limited to published information in selected journals and conferences. Given that the extracted factors were obtained through a qualitative systematic review, the results should be quantitatively confirmed. Moreover, future researchers working in this area are advised to explore other causal, context and intervening conditions and interactions that have not been investigated here because of practical limitations.

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