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Smart Tourism

The Challenges in Developing Smart Tourism: A Literature Review

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A B S T R A C T

Smart tourism is experiencing rapid development along with the information and communication technology (ICT) revolution. ICT has enabled companies engaged in tourism to be "smarter" in improving their performance and competitiveness. This study aims to determine the challenges in developing smart tourism. This study uses a literature review method. The data analyzed were obtained from several articles in accordance with the research theme. The selected articles are reputable articles that have been indexed by Scopus. After filtering the articles to be analyzed, 31 articles were selected according to the research theme raised. The results of this study indicated that apart from having many benefits, the development of smart tourism also has many challenges. For instance, it requires a lot of money, threatens environmental sustainability, and reduces the need for human resources. These challenges must be considered by stakeholders so that the development of smart tourism can run smoothly and be accepted by the community.

INTRODUCTION

Poon [1] has predicted that "the entire information technology system quickly spreads throughout the tourism industry and no stakeholder will escape its impact". As predicted, to benefit from the changing technological paradigm that is being encountered, many companies today have to alter their strategic management and reinvent organizational best practices as anticipated [2]. The development and competitiveness of tourism cannot be separated from technological innovation [3]. Seeing the current phenomenon where people have a high dependence on information and communication technology (ICT), it is not surprising that the concept of "smart" has begun to be widely applied in various fields, one of which is tourism; so that the term of smart tourism is known. Smart tourism is a new tourism concept that is formed through the process of data collection and analysis combined with the use of the latest information technology to make the travel experience more valuable, efficient, and sustainable [4]. According to [4], smart tourism has three main components, namely smart destination, smart business ecosystem, and smart experience. Lee & Jan [5] explains that smart destination provides their residents mobility, allocation and availability of resources, and sustainable quality of life. Furthermore, it promotes tourism with an integrated smart climate and improves the visit or experience (smart experience). Smart

business refers to the dynamically-connected stakeholders' diverse business environment, the exchange, and co-creation of tourism tools.

The concept of smart tourism is experiencing rapid development along with the information and communication technology (ICT) revolution [6]. ICT has enabled tourism companies to be "smarter" in terms of improving performance and competitiveness in various aspects, such as business, human resources (HR), information processing, customer service, and management [7]. Furthermore, many tourists have become professional consumers who now have technical instruments for building and reconstructing their social interactions [8]. This is what makes business people and destination managers adapt to the new era of tourist experiences. ICT has mediated the tourism experience. In other words, it has changed the way of interpreting the places visited and socially building experiences in three phases, namely before, during, and after the tour [9]. Furthermore, ICT has significantly changed the way tourists make various travel decisions, such as about the accommodation, transportation, and activities available at their desired tourist destination. Seeing the importance of developing smart tourism, it is interesting to investigate this concept of tourism more deeply especially about challenges faced in the development process.

METHOD

This research uses a literature review method. The data analyzed were obtained from several articles about smart tourism. The articles selected are those available in the Scopus database. Scopus used because it is one of the most popular index databases for journals in the world [10]. In the first search with the keyword "smart tourism", 200 articles were found. After narrowing it down by adding the keyword "challenge" and adjusting it to the criteria in Table 2, then obtained 31 articles (Table 1) which were analyzed to answer the research question.

Table 1. Reference articles for data analysis

No	Title/Publication Year	Authors
1	"Smart City and Smart Tourism: A Case of Dubai (2017)"	M. Sajid Khan, Mina Woo, Kichan Nam and Prakash K. Chathoth
2	"Smart tourism destinations: ecosystems for tourism destination competitiveness (2016)"	Kim Boes, Dimitrios Buhalis, and Alessandro Inversini
3	"Tourism Diversification and Its Implications for Smart Specialization (2018)"	Adi Weidenfeld
4	"Digital Omotenashi: Toward a Smart Tourism Design Systems (2017)"	Chaeyoung Lim, Noha Mostafa, and Jaehyun Park
5	"Understanding Travelers' Behavior for Sustainable Smart Tourism: A Technology Readiness Perspective (2018)"	Meena Kumari Pradhan, Jungjoo Oh and Hwansoo Lee
6	"Smart Tourism City: Developments and Transformations (2020)"	Pam Lee, William Cannon Hunter, and Namho Chung
7	"Smart Tourism Sustainability Narratives in Mature Beach Destinations. Contrasting the Collective Imaginary with Reality (2020)"	Joan Miquel Gomis-López and Francesc González-Reverté
8	"Smart service experience in hospitality and tourism services (2019)"	Sertan Kabaday, Faizan Ali, Hyeyoon Choi, Herm Joosten, and Can Lu
9	"Analysis of supply and demand to enhance educational tourism and experience in the smart park of Yogyakarta, Indonesia (2017)"	Ani Wijayanti, Janianton Damanik, Chafid Fadel, and Sudarmaji
10	"Artificial Intelligence Tools for Smart Tourism Development (2019)"	Tomáš Gajdošík and Matúš Marciš
11	"Big Data in Smart Tourism: Challenges, Issues and Opportunities (2019)"	Lorenzo Ardito, Roberto Cerchione, Pasquale Del Vecchio, and Elisabetta Raguseo
12	"Blockchain technology for smart city and smart tourism: latest trends and challenges (2019)"	Kichan Nam, Christopher Dutt, Prakash Chatloth, and M. Sajid Khan
13	"Blockchain Technology for Smart Tourism Destinations (2020)"	Inessa Tyan, Mariemma I. Yagüe, and Antonio Guevara-Plaza
14	"Causal Loop Diagram (CLD) Model in Planning A Sustainable Smart Sharia Tourism (2020)"	Husain, Muhammad Zarlis, Herman Mawengkang, and Syahril Efendi
15	"Challenges of smart tourism in Malaysia eco-tourism destinations (2020)"	Syakir Amir Ab. Rahman, Nur'Hidayah Dura, Muhamad Asrah Yusuf, Hitoshi Nakamura, and Rahmat Abu Nong
16	"Co-designing smart tourism (2017)"	Janne J. Liburd, Tanja K. Nielson, and Chris Heape
17	"Design of Electronic Ticket System for Smart Tourism (2017)"	Anouar Dalli and Seddik Bri
18	"Evaluating how 'smart' Brasov, Romania can be virtually via a mobile application for cultural tourism (2020)"	Arabela Briciu, Victor Alexandru Briciu, and Androniki Kavoura
19	"From photos to travel itinerary: A tourism recommender system for smart tourism destination (2018)"	Mickael Figueredo, Jose Ribeiro, Nelio Cacho, Antonio Thome, Andrea Cacho, Frederico Lopes, and Valeria Araujo
20	"Approach: A Case of Introducing Mobile Service within 4G for Smart Tourism in Taiwan (2018)"	Tung-Fei Tsai-Lin and Yang-Yi Chang
21	"Functionality Evaluation for Destination Marketing Websites in Smart Tourism Cities (2018)"	Tong Zhang, Catherine Cheung, and Rob Law
22	"Modeling nature-based and cultural recreation preferences in mediterranean regions as opportunities for smart tourism and diversification (2020)"	André Samora-Arvela, Jorge Ferreira, Eric Vaz, and Thomas Panagopoulos,
23	"Realizing the Potential of Internet of Things for Smart Tourism with 5G and AI (2020)"	Wei Wang, Neeraj Kumar, Junxin Chen, Zhiguo Gong, Xiangjie Kong, Wei Wei, and Honghao Gao
24	"Residents' involvement in urban tourism planning: Opportunities from a	Lidija Lalicic and Irem Önder

	smart city perspective (2018)”	
25	“Smart service experience in hospitality and tourism services A conceptualization and future Research agenda (2019)”	Sertan Kabadayi, Faizan Ali, Hyeyoon Choi, Herm Joosten, and Can Lu
26	“Smart Specialization for Smart Spatial Development: Innovative Strategies for Building Competitive Advantages in Tourism in Slovakia (2017)”	Kamila Borseková, Anna Vaňová, and Katarína Vitálišová
27	“Smart tourism capability maturity framework: A design science research approach (2019)”	Chaeyoung Lim, Kazuki Baba, and Junichi Iijima
28	“Sustainable smart specialization of small-island tourism countries (2019)”	Korak Bhaduri and Shivendra Pandey
29	“The Influence of smart technologies on customer journey in tourist attractions. within the smart tourism Management framework (2020)”	Shiwei Shen, Marios Sotiriadis, and Yuwen Zhang
30	“Tourist stupidity as a basic characteristic of smart tourism: challenges for destination planning and management (2019)”	David B. Weaver and Brent D. Moyle
31	“Towards a Smart Tourism Destination Development Model: Promoting Environmental, Economic, Socio-cultural and Political Values (2018)”	Mariana Brandão Cavalheiro, Luiz Antonio Joia, and Gabriel Marcuzzo do Canto Cavalheiro,

Source: Author’s own research

The selection of the journals above is based on several criteria summarized in the table below.

Table 2. Literature selection criteria

Inclusion	Exclusion
Published in the last 5 years (2016-2020)	Published before 2016
Available in full text	Not available in full text
An international journal	Not an international journal
Indexed by Scopus	Not indexed by Scopus
In accordance with the research theme	Does not match with the research theme

Source: Author’s own research

An elaboration of the above articles is then carried out after going through the study, which focuses on the challenges in the development of smart tourism. In the selection, analysis, and

coding of records, the author is mindful of the weaknesses of the search process and bias. Any related literature may have been omitted from this analysis due to search engine parameters and requirements.

RESULTS AND DISCUSSIONS

Several things that can drive success in the development of smart tourism are innovation, leadership, social capital, and human capital [11], [12], [13], [14]. The use of data is also an important element in the development of smart tourism. Khan et al. [15] in their research in Dubai, concluded that Dubai has 4 important elements that make it become a smart destination, namely big data, shared data, open data, and rich data. These data can be maximally utilized by using 5G and AI [16]. With open data and rich data, government organizations can collaborate effectively each other. Furthermore, the four elements also make it easier to map what should or need to be developed. However, the use of big data and other advanced technology definitely requires large costs. Wijayanti et al. [17] in her research at Smart Park of Yogyakarta stated that one of the biggest challenges in developing smart tourism is related to costs. In addition, what needs to be considered in developing smart tourism is how to meet the needs of tourists [18], [19], [20], [21], maintain tourist privacy [22], [23], and present smart experiences to them [24]. Smart service experiences provide empowerment, seamless experiences, accurate service delivery, enjoyment, security, and privacy [25].

Apart from big data, artificial intelligence (AI) also cannot be separated from the development of smart tourism. Even though it has many benefits, AI in its development also has challenges, such as acceptance from the public to deal with the new technology [26], [27], [28], [14], the reduced need for human resources, and threatening the privacy of users [29].

Smart tourism should be able to promote the environment, economy, socio-culture, and politics [30], [31], [32]. However, many technologies that have been developed are not concerned with the impacts on the environment. In other words, sustainability solutions are underrepresented [33]. If examined more deeply, smart tourism acts as an attraction for destinations that aim to redevelop image enhancement, reach new market segments, and employ smart solutions for urban renewal and resource efficiency with the aim that these technologies will address global problems, such as environmental problems [34]. In his research related to Marine Tourism, Bhaduri & Pandey [35] argued that the use of ICT in tourism not only has an impact on increasing the number of tourist visits and economic growth. ICT also threatens environmental sustainability because of the resulting CO2 emissions. In addition, smart tourism must implement not only the concept of geographically equal growth but also social inclusiveness for the community as a whole, which is a principle of human rights that should be granted to everyone without exception because technology has contributed to making the tourism experience more available and beneficial to everyone. [36], [37].

The use of smart devices actually results in inconvenience and a lack of interaction [13]. The one who has long used smart devices appears to rely more on them and are accustomed to advanced functionality and high technology demands [14]. The impact is

that when they are in a tourism destination that does not provide smart facilities, they will find it difficult to enjoy the attraction because they are used to using smart devices. Husain [38] added that in the development process, smart tourism involves many parties who have different interests which sometimes causes conflicts between them. In several countries, many people and tourists are not too aware of the existence of smart technology, especially in developing countries, this is also an obstacle in developing smart tourism [39]. Furthermore, Amir et al. [39] specifically detail several challenges in developing smart tourism, such as: “Difficulties with application systems; Limited and slow internet network; Do not afford for digital devices; Less and limited digital technology; Application in all tourism businesses; Less awareness”.

CONCLUSIONS

Based on the explanation above, it can be concluded that apart from having many benefits, the development of smart tourism also has many challenges. For instance, it requires a lot of money, threatens environmental sustainability, and reduces the need for human resources. These challenges must be considered by stakeholders so that the development of smart tourism can run smoothly and be accepted by the community. These challenges must be considered by stakeholders so that the development of smart tourism can run smoothly and be accepted by the community. This research details some of the challenges that occur in the development of smart tourism in various regions. In the future, further research is needed to discuss strategies to address these challenges.

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