THE ATTRIBUTES OF SMART TOURISM TECHNOLOGIES AND THEIR USE IN TRAVEL PLANNING: LITERATURE REVIEW

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Abstract: This work studies literature review on smart tourism destinations and, the consequences and the attributes of smart tourism technologies (STT). Recent researches clarify each attribute of STT separately and define their importance and influence on the consequences of STT such as memorable tourism experiences, tourist satisfaction, destination loyalty, etc. Considering the importance of examining the influence different variables as a mediator or moderator, several suggestions by previous studies have been mentioned to be investigated in the future studies.

Key words: STT, information and communication technologies (ICT), tourist satisfaction, destination, memorable tourism experiences, destination loyalty

Tourism, one of the largest industries in the world (Brandt et al., 2017), is an important component of the socio-economic activities of many countries as this sector creates new jobs, contributes to the improvement of infrastructure and the development of society (Figueredo M. et el., 2017). Recent decades have witnessed the rapid development of ICT which has transformed the tourism industry (Law et al., 2019). The influence of information technologies (IT) on the tourism industry has been attracting attention with the birth of smart tourism (Yoo et al., 2017) and smart technologies are now widely used throughout all stages of a traveler's journey. Therefore, the concept of smart tourism technology has become the most significant part of the tourism industry. Smart tourism has been attracting attention from practitioners and scholars recently because it leads to the integration of tourist

resources and smart technologies, and enables tourism stakeholders to share and exchange important and timely data (Buhalis, 2019; Gretzel et al., 2015b). The prevalence of Internet of Things (IoT), mobile applications (apps), Virtual Reality (VR), Augmented Reality (AR), social media, and smart devices offers immense opportunities for tourism stakeholders to generate, store, and retrieve big data that serve various purposes. In turn, most tourism companies are trying to achieve competitive advantages and improve their destination image by using ICT in smart tourism destinations (Azis et al., 2020; Pai et al., 2020; Buhalis and Amaranggana, 2015). Furthermore, tourists are managing their future travels by using mobile apps, websites and other ICT opportunities rather than relying on suggestions of travel agencies. Because using smart tourism apps in their smartphones are comfortable for tourists to control their future trip plans and receive reviews and feedback from other travelers about their past experience in selecting a tourist destination (Lee et al., 2018).

The World Economic Forum (WEF) mainly assesses the competitiveness of tourism in the tourism sector, but this is not enough to assess smart tourism cities. Because it is focused on general tourism, not smart tourism. WEF indicators only assess the level of readiness for ICT aimed at creating and using ICT infrastructure such as mobile and internet. As for smart tourism cities, the European Union annually implements a project to promote destination and support marketing activities by evaluating the best smart tourism capitals in its region. As the idea of linking the term "smart" to modern technology has emerged in recent years, these concepts have also been applied to tourism destinations, and the term "smart tourism destination" has emerged (Baggio and Del Chiappa, 2014). Smart tourism refers to tourism that is technologically, economically and socially advanced or developed using advanced smart technologies. Gretzel et al. (2015a) conceptualized smart tourism as a technology-oriented tourism experience in destination. Smart city is defined as a city equipped with ICT infrastructure for social development by increasing the economic level, citizen participation and efficiency of government activities. Specific features

of a smart city, which are often mentioned in these definitions, include: ICT connectivity, increased efficiency, sustainability, optimized resource use, environmental friendliness and improved quality of life. In this regard, smart tourism cities are innovative tourist destinations that ensure sustainable development, which will further improve the interaction of visitors with the existing conditions in the destination and the positive experiences they receive through their use, and as a result improve the quality of life. It is also seen as a solution to various problems faced by smart cities (Lee et al., 2020).

By adopting the most advanced technology and combining it with effective organizational models, it is possible to encourage collaboration, knowledge sharing and open innovation between service providers, as well as the development of innovative integrated services offered to visitors. The obvious result of this is to increase the attractiveness of the route and provide tourists with a high level of new and unique experiences. Modern automated methods are effective tools to achieve the goals of intensive use of online environments and the behaviour of visitors through the use of large amounts of data provided by new technological models (virtual reality, augmented reality, robotics, Internet of Things, block chain applications, etc.) allows a better understanding of their actions. Technology in smart tourism is an infrastructure that combines technological equipment, software and network technologies to provide real-time data that allows all stakeholders to make more informed decisions (Gretzel et al. 2015a).

Neuhofer et al. (2015) suggest that STT refers to particular applications that enhance tourists' experiences and generate added value for customers. Several technologies and services, such as the Internet of Things (IoT), cloud computing, ubiquitous connectivity through Wi-Fi, artificial intelligence (AI), mobile communication, radio frequency identification devices (RFID), smart devices, augmented reality (AR), virtual reality (VR), mobile apps, integrated payment methods, social networking sites, and tourism-related platforms (Huang et al., 2017; Gretzel et al., 2015b) are included in STTs. The extant literature indicates that STTs

enrich tourists' experiences, satisfaction, and behavioral intention (Li et al., 2021), and explored the separate impact of specific STTs on tourists' experiences. In particular, there is a major contribution of mobile technologies in providing tourists with more convenient conditions as smartphones, tablets, or other mobile devices can be used to contact any person at anytime from anywhere to interact and share experiences (Kim and Tussyadiah., 2013). Many tourists consider various online social platforms and social media as the main places to share travel-related information and have changed their method to share their experiences. Likewise, tourists are experiencing interactive computer-supported environments with the help of AR and VR technologies (Tussyadiah et al. 2018).

Attributes of STTs

In order to measure the effectiveness of STTs in destinations, most of the scholars have defined smart tourism technology in the literature, and most of them (e.g., Huang et al. 2017; Jeong and Shin, 2019; Lee et al. 2018; No and Kim 2015) have categorized STTs by five unique attributes such as accessibility, informativeness, interactivity, personalization and security. Adopting these key STT attributes, this study identifies the most influential STT attributes that affect tourists' memorable experience in smart tourism destinations, destination image, place attachment and future behavioural intentions. Moreover, the role of destination location is studied as a moderator in the relationship between STTs and tourists' memorable experiences, and as an independent variable which directly influences destination image and place attachment.

Informativeness

Informativeness is the combination of the quality and credibility of information provided by STT in tourism destinations (Huang et al. 2017; No and Kim 2015). According to Jeong and Shin (2019), information quality and credibility play a crucial role in affecting tourists' overall experience at the destination because of the intangible nature of tourism. Kim, Lee, and Hiemstra (2004) state that informativeness has a significant relationship with tourists' perceptions of the

destination. Likewise, information reliability is critical to the value of social media in tourists' information search. When tourists find the information accurate, relevant and credible, they feel motivated and stimulated to enrich their travel experience at smart tourism destinations and enhance their perception of a seller's website's informativeness (Pavlou et al., 2007). In conclusion, the attribute of information is a valuable dimension of STTs in contributing to the competitiveness of the destination.

Accessibility

According to Jeong and Shin (2019), accessibility is the information provided at a destination that individuals can easily access and use by using different types of STTs. Because of the contribution of the high levels of accessibility of STTs to perceived ease of use, tourists enhance their travel experience and satisfaction with their destinations by using more information (Huang et al. 2017; Tussyadiah and Fesenmaier, 2009). Moreover, as there is a significant role of internet access in promoting destinations and attracting potential visitors, accessibility becomes an important factor at tourism destinations by influencing tourists' intentions and behaviors (Shafiee and Es-Haghi, 2017). Tourists enjoy accessing and using different types of STTs easily to obtain information before and during their travels and it makes tourists feel motivated to enhance their experience and level of satisfaction (Sharma and Nayak, 2018).

Interactivity

Interactivity is defined by Huang et al.,(2017) as the degree to which STTs can help to take immediate action, such as real-time feedback and active communication with travelers. Interactivity can provide well-timed and active mutual communication between stakeholders when individuals use STTs (Jeong and Shin, 2019). As high interactivity considerably facilitates the task of information searching, travelers' perception of STTs are positive and it encourages tourists to actively use STTs and provide comments and feedback (Tan et al., 2018). In addition, Jeong and Shin (2019) state that interactivity contributes to the accumulation of dynamic tourist data at the individual level and helps destination marketers design and provide more

tailor-made services by enabling them to identify specific needs of different market segments. In this regard, the interactivity of STT can support the discovery and purchase of travel products.

Personalization

Personalization is individual attention to a particular product, service and information or their customization (No and Kim, 2015; Park and Gretzel, 2007). According to Huang et al. (2017), Personalization is the ability of travelers to obtain specific or perfect information to meet their needs. Other scholars emphasized a positive impact of personalization on tourist satisfaction by reducing the time spent on information search (Schaupp and Bélanger 2005). Basically, personalization enables STTs to provide travelers with the most important and accurate information about available customized products which meet their preferences and needs by collecting and using their individual information (Buhalis and Amaranggana, 2015). For instance, traffic-routing apps are mentioned by Jeong and Shin (2019) as important for tourists to reduce driving time, have less stress from traffic blockage, and ultimately enhance their experience at smart tourism destinations as such apps can provide tourists with the most efficient route.

Security

According to No and Kim (2015), security is an essential attribute in protecting tourists' personal information as it refers to the basic privacy features by representing the degree of tourists' confidence on the safety of private information during various online transactions (Lee et al. 2018). By protecting user's privacy, providing secure transactions is a crucial factor for travelers to choose the right website for their future trip planning. Any failure of a tourist destination in providing safety and privacy needs will seriously affect tourists' revisiting intention because tourists will not complete the transaction due to concerns of privacy and safety when tourists feel any risk or threat in personal information security (Kim, Lee, and Hiemstra, 2004; Jeong and Shin, 2019). Security is critical not only in tourism, but also in many fields, such as commercial markets, financial departments, and public institutions to describe

their website attributes because of users' sensitivity to the abuse of personal information provided (Lee et al. 2018; No and Kim, 2015).

Several recent studies on STTs and their consequences proposed models and examined relations between different variables. Hailey Shin et al. (2021), examining the effects in the relationship among STTs, traveler's technology readiness (TR), satisfaction and future behavioral intention, compared two smart tourism destinations in the United States and South Korea, and the research results showed that traveler's TR carries more important impact on satisfaction that STTs. This work included a research model showing a pathway to improve tourists' revisit intention. Their proposed model considers tourists' satisfaction as the only factor that affects intention and two factors such as STTs' attributes and TR influence on satisfaction meanwhile country plays a role as a factor that affects the whole process. Interestingly, there is an idea that TR moderates the relationship between STTs' attributes and satisfaction. Country has also been considered in the model as a moderator which affects the whole procedure. It is stated in the article that the findings are useful for tourists to enhance their satisfaction by considering their personal characteristics, such as TR. Moreover, the extended application of the models enhances the generalization of the models as well as travelers' perception on technology in different cultures. Another difference from Huang et al (2017) is that this work examined the effects of STTs on travelers' satisfaction after their trip.

Moreover, the research conducted by Pai et al. (2020) to investigate the relationship among STT attributes, travel satisfaction, tourists' happiness, and revisit intention resulted that accessibility is the most significant factor affecting the STT experience which is shown to be notably associated with travel experience satisfaction, and in turn it has a positive effect on both tourists' happiness and revisit intention. According to the outlined model, perceived smart tourism technology has two ways to influence on revisit intention. Firstly, it has an effect on revisit intention through travel experience satisfaction. In the second way, there is a factor of tourist happiness between travel experience satisfaction and revisit intention which connects

them. The study added a new attribute to STTs, security to the ones proposed by Huang et al.(2017).

According to Um and Chung (2019), smart tourism technology attributes have a positive impact on smart tourism satisfaction in 3 cities of South Korea such as Seoul, Busan and Jeju. Due to their research model, the main purpose is to achieve tourist satisfaction of smart tourism city. The authors divided overall satisfaction into smart tourism satisfaction (available and accessible technologies) and service satisfaction (destination service quality), meanwhile analyzed their effects on overall satisfaction. Finally, attraction, accessibility, and ancillary services were adopted, and available packages and activities were removed from six A framework proposed by Buhalis (2000). Amenities are divided into restaurants (amenity) and accommodations as destination components of a smart tourism city. The authors assumed that tourists are satisfied with the service provided if they find that destination service quality is high. There are 3 ways to achieve this goal in this model. First, smart tourism technology attributes effects smart tourism satisfaction, ultimately to overall satisfaction of smart tourism city. Second way is similar to the first one but there is a mediator (service satisfaction) between smart tourism satisfaction and overall satisfaction of smart tourism city. Last, multidimensional construct of destination services influences on overall satisfaction of smart tourism city through service satisfaction.

The research done by Pai et al. (2021) examined the relationships between perceived STT experience, travel experience, and revisit intention. The authors considered that prior studies have overlooked the complexity of tourists' experiences even though they analysed its relation with other variables. Therefore, this study mainly focuses on the three aspects of tourism experiences such as travel confidence benefit, travel enjoyment, and travel satisfaction, considering the mechanism between STT, tourists' experiences and behavioural intentions is still unclear and there is a research gap that needs to be filled. Because satisfaction and enjoyment are two kinds of travel experiences that should be differentiated. It resulted that the promotion of STT can develop the tourism experience and travel enjoyment, travel confidence

benefit, and tourism satisfaction have a positive impact on revisit intention. All three factors of tourism experience mentioned above have a positive impact on revisit intention and the most powerful one is travel confidence benefit while the weakest factor is travel enjoyment.

Jeong and Shin (2019) investigated the most frequently used STTs and examined tourists' overall experience and satisfaction with STTs as well as their revisit intention. They developed a conceptual framework to test their hypotheses related to four attributes of STTs such as accessibility, informativeness, interactivity, and personalization which are the key factors affecting tourists' experience, satisfaction, and revisit intentions. The authors considered security/privacy as a conditioning variable rather than a core attribute of STTs because of the subjectivity of each individual´s perceptions of security/privacy. Perceived security/privacy of STTs moderated the relationship between SST attributes and tourists' memorable experience. Moreover, two potential consequences of tourists' memorable experience such as satisfaction and revisit intention were examined. Importantly, this work focused on the post travel stage taking into account that previous studies investigated travelers' attitude towards STTs in planning their travel with the aim of maximizing their travel satisfaction. The obtained results showed that accessibility was not a main factor to enhance tourists' memorable experience while interactivity was the most influential contributor, and personalization and informativeness were also considered important and influential factors.

These facts can lead to conclude that STT are essential to enhance tourists' memorable experience and satisfaction, ultimately get to destination loyalty. Besides, there are several suggestions which have been mentioned in previous studies as research gaps and future directions. Jeong and Shin (2019) suggested that it is necessary to, firstly, test additional moderators and/or mediators as: destination location, traveller origins or cultural background to enhance tourists' memorable experiences, secondly, assess the effect of STT on destination image. Lee et al. (2018) put forward that self-efficacy of tourists at utilizing STT systems should be

studied as a variable supposing it is potentially relevant to tourist happiness and overall life satisfaction. Um and Chung (2019) suppose that it is crucial to analyze the relationship between STT attributes and destination attributes because STT is applied differently due to city attributes and is being passed on to tourists. According to Azis et al. (2020), measuring memorable tourism experience as multidimensional constructs and their mediating role should be studied in the future research.

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