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Social, Ethical, and Moral Issues in Smart Tourism Development in Destinations

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Abstract

Smart tourism research and development have mainly focused on the benefits of smart tourism technologies to certain stakeholders with transactional relationships in destinations. However, smart technologies in destinations could also cause several negative outcomes, leading to social, ethical, and moral issues. Such issues arise from the power imbalance between different stakeholders of smart tourism development. To mitigate the adverse effects of smart technologies, destinations need to enunciate the essential moral and ethical principles when developing smart tourism. Therefore, adopting descriptive and normative approaches to stakeholder theory, this paper proposes a framework to showcase several methods to address the issues.

Keywords

smart tourism; smart tourism development; social issues, ethical and moral issues, stakeholder theory; Power-Interest Grid

1. Introduction

The United Nations World Tourism Organization (UNWTO) held the first World Conference on Smart Destinations in 2017, where the UNWTO Secretary-General Taleb Rifai emphasized that "Smart tourism is not a trend, but the future of tourism development" (UNWTO, 2017). Indeed, the world of travel and tourism has already adopted various forms of information and communications technology (ICT) to make tourism at destinations "smart." To develop smart tourism, both private and public organizations have been collecting data from digital and physical sources and extracting practical value from them in order to improve travelers' onsite experiences and the value propositions of tourism businesses (Gretzel, Sigala, Xiang, & Koo, 2015; Li, Hu, Huang, & Duan, 2017).

Smart tourism could bring opportunities and challenges that the tourism industry has yet to face. Mehraliyev, Choi, and Koseoglu (2019) indicated that smart technologies affect different tourism industry stakeholders. To build sustainable tourism, it is critical to understand the roles and relationships of the stakeholders involved. However, current smart tourism research in destinations mainly focused on stakeholders with transactional relationships with this industry: travelers as consumers, and governments, tourism businesses, and marketers as suppliers (Mehraliyev, Chan, Choi, Koseoglu, & Law, 2020). Although it is expected for the industry to study smart tourism through the lenses of consumer behavior, technology adaptation, and destination management, the impacts of smart tourism are not limited to these stakeholders. Other tourism stakeholders in destinations involve the local community, the natural environment, and the future generations possibly affected by the smartness of the tourism destinations.

Most past studies rely on the presumption that smart tourism benefits both tourists and destinations (Mehraliyev et al., 2020). However, the new technologies around smart tourism, such as big data, artificial intelligence (AI), and Internet of Things (IoT), may as well lead to negative outcomes stemming from issues such as data privacy and surveillance, manipulation of behavior, a lack of transparency in decision making, and biases in machine learning (Müller, 2020). In order to ensure that the risks associated with smart tourism do not exceed the benefits it generates, researchers should be mindful of the risks that come with the novel technologies in smart tourism destinations and address them properly.

Current discussions and research on smart tourism mostly follow a positivist approach to information technology development: advanced technologies are always viewed as a positive force for tourism destinations and society in general. However, the social, ethical, and moral questions regarding who will be positively or negatively affected by smart tourism development in destinations remain untapped. While new technologies spread, their negative impacts may not be visible in the short run, due to the delayed effect stemming from adopting new technologies (Hilty, Som, & Köhler, 2004). Thus, the negative impacts on tourism destinations may not be ready to be analyzed before the damage is inflicted. As the forming of new policies may lag behind the development of new businesses and practices (Müller, 2020), it may take longer to regulate smart tourism practices and assess their impacts on various stakeholders.

Therefore, researchers and practitioners need to proactively deliberate the potential risks associated with smart tourism and plan accordingly. The recent global effort in limiting giant technology companies reflects this trend (Mozur, Kang, Satariano, & McCabe, 2021). This study adopts inductive and deductive approaches and aims to provide a conceptual framework to tackle the problems and issues arising from developing smart technologies in tourism destinations.

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2. Social, Ethical, and Moral Issues in Smart Tourism Development

A review of smart tourism literature has uncovered research trends, topics, and methodological approaches in researching these smart tourism stakeholders (Mehraliyev et al., 2019; Ye, Ye, & Law, 2020). The main research content involved destination development, marketing, transportation, innovation, social media, tourist behavior, perception and satisfaction, and tourism products and services. For example, Mehraliyev et al. (2020) identified 11 research topics from smart tourism literature, including the effects of smart tourism on consumers, development of applications, and consumer adoption of smart tourism.

Given the exponential growth of recent advancements in ICT, namely big data and AI, time is ripe for a discussion on information technologies' social, ethical, and moral issues. The tourism industry will face similar issues and controversies as those technologies are maturing and widely adopted in tourism destinations. For example, smart tourism destinations have adopted AI algorithms and big data technologies to better understand the tourists for the sake of the tourism businesses and destinations. The unique characteristics of this industry, such as the physical detachment between tourists' usual living environment and the destinations, also pose unique and interesting challenges not shared by other sectors. Therefore, some of the issues could be more salient in the smart technology development of tourism destinations.

2.1 Issues in Smart Technologies

Some issues in the advancement of smart technologies will naturally lead to the same issues in their adoption in destinations. However, tourists may visit remote and distant destinations where the landscape and culture are novel; they may not be familiar with the technical infrastructure or destination's administration. This detachment will exacerbate these issues when tourists traveling in a foreign land (Ioannou, Tussyadiah, & Miller, 2020). The following section focuses on three main issues with smart technologies.

2.1.1 Negative Health and Environmental Impacts of the Usage of Technologies and Devices

Smart technologies may be beneficial for tourists' health and safety: during an emergency, tourists can use their mobile phones to receive real-time alerts, communicate with officials, or use a Global Positioning System (GPS) to reach an exit. However, the very same technologies may pose threats when there is a security breach. For example, tourists may become vulnerable to computer virus attacks, information theft, and damage through cloud computing or IoT technologies (Liu & Liu, 2016). Moreover, adapting to smart technologies may result in technology dependence, and restoring the state before the adaptation may not be possible, which is referred to as socioeconomic irreversibility (Klinke & Renn, 2002; Rammel, 2003; Hilty et al. 2004).

Frequent use of smart technologies via mobile phones may also have negative physical and mental health outcomes. Previous research on young adults revealed that frequent use of ICT, specifically mobile phones, is linked to symptoms of depression, sleep disorders, and stress (Thomée, Dellve, Härenstam, & Hagberg, 2010; Thomée, Härenstam, & Hagberg, 2011). ICT technologies may also have indirect negative health-related effects such as stress due to overstimulation, distraction, and poor ergonomics (Hilty et al., 2004).

Tourists may or may not prefer to use smart technologies while traveling. However, once smart technologies are adopted in the destinations they visit, the tourists may not have the choice to remain free from the risks these technologies bring creating a potential conflict due to the involuntariness in technology adoption (Mehl, 2001; Wiedemann & Brüggemann 2001 as cited in Hilty et al., 2004). Thus, adopting smart tourism technologies without consulting with a large and diverse tourist body may be counter-productive and result in unanticipated dissatisfaction.

Other negative impacts of technology use in tourism also include the construction of smart tourism infrastructure which may produce toxic materials, increase power consumption, create electronics disposal problems, and shorten product service lives (Hilty et al., 2004). The electronic wastes may create environmental degradation in the destinations and around the globe.

2.1.2 Do I Give Up Privacy for Personalization?

Micro-targeting technology heavily relies on a consumer's digital footprints, which inevitably leads to the ethical issue of privacy. Several studies have pointed out privacy as a key issue of smart tourism that needs to be readily addressed (e.g., Buhalis & Amaranggana, 2013; Gretzel, Reino, Kopera, & Koo, 2015; Gretzel, Sigala, et al., 2015; Masseno & Santos, 2018). Often, data are collected from tourists' mobile devices without their conscious awareness. As a result, tourists may feel under surveillance, leading to stress (Masseno & Santos, 2018). Possible data leakage from firms that possess a large amount of customer data raises severe concerns for tourists' privacy and safety (Alneyadi, Sithirasenan, & Muthukkumarasamy, 2016).

The examples of privacy concerns in the tourism industry are not difficult to find. Popular online travel booking sites Hotels.com, L.P. and its parent company Expedia Group are currently under lawsuits for a November 2020 data breach that possibly exposed the customers' personal data (Errick, 2020). In 2018, Marriott International confirmed a data breach that failed to protect up to 500 million customers' personal and guest reservation information (Gressin, 2018). Research has shown that data security failures can affect customers' trust toward an organization, satisfaction level, likelihood of recommending an organization, and revisit intention, directly or indirectly (Berezina, Cobanoglu, Miller, & Kwansa, 2012; Chakraborty, Lee, Bagchi-Sen, Upadhyaya, & Rao, 2016; Chen & Jai, 2019; Zhang, Wei, & Hua, 2019). Thus, serious data breaches could bring irreparable reputation damages and customer attrition for smart tourism destinations.

Research on smart cities has already established frameworks to address privacy concerns (Li, Dai, Ming, & Qiu, 2015; Martínez-Ballesté, Pérez-Martínez, & Solanas, 2013). Existing studies primarily focus on the impact of the data breaches (e.g., Berezina et al., 2012; Chakraborty et al., 2016; Chen & Jai, 2019; Zhang et al., 2019). However, research on smart tourism that explored the solutions or preventive measures for such privacy violations remain scant. In many cases, due to the detachment of the tourists from a remote destination prior to the trips, the tourists may not be aware of all the vulnerability of their data when they utilize technologies to access online information.

2.1.3 Tourists' Free-Will Versus Precision Targeting and Nudging

Many smart tourism studies have focused on market segmentation with big data (Park & Pan, 2018), profit and efficiency with big data forecasting (Pan & Yang, 2017), or even automated advertising with machine learning algorithms (De Bruyn, Viswanathan, Beh, Brock, & von Wangenheim, 2020). All these types of marketing and management techniques rely on a large amount of behavioral data and, in turn, predict and target the wants and needs of specific groups of customers. Market segmentation, personalization, and customization have been a part of marketers' toolkits even before the age of big data (Arora et al., 2008). Still, the new age has taken it to a different level of

power and accuracy. Moving or nudging the customers through the purchase funnel of awareness, familiarity, preferences, consideration, purchase, and loyalty, is the ultimate goal of advertising activities (Court, Elzinga, Mulder, & Vetvik, 2009). Behavioral data has been collected and used to nudge tourists' behavior with applications such as notifications on mobile devices. However, subtle behavior modifications using data have been criticized as manipulation (Hilty et al., 2004).

To go one step further, soon, AI combined with big data will likely understand the consumers better than the consumers themselves. The automated marketing system will surely take advantage of consumers' subtle vulnerability to make a sale or increase loyalty. Who does not want a shot of whiskey when he/she receives a breakup email from a long-time partner? Unfortunately, algorithms do not distinguish good or bad: selling a customer a seat on an airplane is the same as persuading a gambler to borrow the maximum amount of credit in a casino. If not being carefully regulated or monitored, the nudge and manipulation can lead to a dangerous slipping slope.

The tourism industry has a reputation for "indulging" the tourists. With the power of AI and big data, this "indulging" can be multiplied many times and maximized to an extreme. Does this industry have a moral responsibility for the tourists' well-being? To what degree the industrial practitioners shall stop nudging the gambling tourists and tell them to go home?

AI and machine learning algorithms have only one cost function to minimize or one benefit function to maximize. Those programs do not have a balanced view on a moderated level of consumption. However, the maximization of profit for casino owners may not be aligned with the tourist's well-being or societal well-being. Therefore, how to balance the well-being and benefits of multiple stakeholders, beyond maximizing the business profitability in a destination, remains an open question.

2.2 Contradictions in Smart Tourism Development in Destinations

Different from other consumer products, the tourism industry is more likely diverse, complex, experiential and spiritual (Cohen, 1979). Diverse tourists could have various needs for tourism products and services. For example, smart tourism destinations may promote technologically advanced products and services that satisfy technology-savvy tourists. However, some tourists seeking authenticity and personal interaction may find smart tourism products and services annoying. The following section identifies two specific issues that exist for diverse tourist groups and residents in smart tourism destinations.

2.2.1 The Sacredness of Attractions Versus the Need for Safety and Convenience

From the early years of pilgrimage travel, many travel journeys have always been spiritual (Turner, 1973). Tourists travel to religious centers, such as Mecca, Jerusalem, or a Buddhist temple, to get closer to the sacred places while escaping the secular world. These centers are the "garden of Eden," where the humans are exiled from (Turner, 1973). Even the wilderness could be a sacred place – Taylor's dark green religion considers nature as sacred and have intrinsic value (Tomalin, 2016). Thus, the types of technologies that disturb the place's sacred atmosphere could be viewed as non-respectful. The recent debate on whether or not to build cell towers in national parks in the United States (Ketcham, 2020) or a planned cable car to Mount Kilimanjaro in Tanzania (Anderson, 2019) reflects this stream of thoughts, besides conservation concerns. Many museums and religious places also ban mobile phone use respecting religions or sacred artifacts.

However, building cell towers in national parks can help tourists better navigate and communicate through mobile applications. Wider Wi-Fi access does bring convenience and safety, especially for outdoor activities. Moreover, using mobile phones may be essential to some tourists' experiences: they may enjoy taking pictures, sharing the moment with others through social media in real-time, or getting instant information about the things happening around them. However, wider Wi-Fi service availability can also encourage mobile phone use, disturbing the solitude and mental quietness some other visitors seek (Ketcham, 2020). It may bring costs to these visitors by dampening their enjoyment from nature, arts, or religious experiences. When those who benefit from the technologies are different from those who carry the burden, potential conflicts related to unfairness may occur (Mehl, 2001; Wiedemann & Brüggemann, 2001 as cited in Hilty et al., 2004). How does smart tourism balance the three sides of needs – the needs for safety and convenience for some tourists, the needs for quietness and solitude of other tourists, and the needs for sacred atmosphere and respect for the indigenous community? The decisions have to be based on ethical or moral principles.

2.2.2 Tourists' Novelty and Authenticity-Seeking Experience Versus All-Knowing Technology

One of the most important smart technologies for tourism is mobile navigation tools, such as Google Maps. Mobile devices and applications reduce the uncertainty and anxiety when tourists plan a trip and navigate to and within a destination. Traveling and navigating before the age of Google Maps is almost unimaginable now. However, many travelers are seeking novelty and adventure during their travel. Will a perfectly planned and well-executed trip without any hiccups reduce the amount of novelty and a sense of adventure? Where is the fun of serendipitous encounters with local residents off the beaten path? Similarly, a well-planned trip may eliminate every possible surprise a traveler may encounter. A trip to a novel place may turn out to be not novel at all but half-experienced even prior to the trip.

In addition, tourists seek authentic objects and places, authentic experiences, or authentic self (Wang, 1999). However, the AI-equipped algorithms with tourists' digital traces can provide information and attraction customized to everyone's taste and interest. The algorithm could create a filter bubble that excludes information considered unmatched with a user's interests and taste (Pariser, 2011), further leading to the echo-chamber effect, where the interest and opinions are reinforced and amplified (Chiou & Tucker, 2018). As a result, users can only experience what they are expected to see since the destinations will offer what tourists want to see and do in the destination. If a tourist feels pity toward the developing countries, the destination will send him/her to a local orphanage. The tourists will stay in the "filter bubble" infused with information and ideology with which you find an affinity. This information bubble will lead to Cohen's "environmental bubbles" in their travel experience (Cohen, 1972). The tourists will stay in their comfort zone forever, and the authenticity of the place is far beyond reach. The tourists are not experiencing the authentic place but the sound from their own cultural "echo chamber." The conflict of authenticity-seeking tourists with the algorithm's filter bubble creates a perpetual paradox.

Psychologists have validated the value of "getting lost": a sense of being lost could lead to deeper learning. When facing the unknown, a person's brain will try to build the scaffolds in order to bridge the knowledge gap (Park & Reuter-Lorenz, 2009). Schools nowadays designed "escape rooms" to simulate the feeling of getting lost and stimulate creativity for young children (Coffman-Wolph, Gray, & Pool, 2017). By getting lost, a traveler could venture into the "back-stage" of a place and penetrate the facade of a tourist set up as the front stage (MacCannell, 1976). For authenticity-seeking and culture-learning types of travelers, "getting lost" might be the best way for "getting there." Of course,

not every traveler could tolerate this level of uncertainty - the uncertainty levels shall match the levels of the risk-taking tendency of each traveler. Plog's allocentric - psychocentric framework may guide the analysis of the novelty needs of different types of travelers (Plog, 2001). This issue speaks of the necessity of segmenting tourists by their acceptance level of smart technologies and accordingly providing different levels of "smartness" in the destinations, thus segmenting tourists as many stakeholder groups according to their differences in travel needs.

2.3 A Broader View of Stakeholders in Smart Tourism Development

Overall, these aforementioned issues challenge the researchers to move beyond the business-focused angle of smart tourism research and development. Nonetheless, the discussion on sustainability, social well-being, and digital humanism have entered the realm of research in information technology and tourism (Xiang, Fesenmaier, & Werthner, 2020). The lack of consideration for tourists' well-being, the local residents' needs, and the need for the environment lead to the issues listed above, such as the negative impacts of mobile devices, the lack of privacy concerns, over-indulging tourists, ignoring some tourists' needs for authenticity, solitude, quietness, or culture-learning, or the needs of respect and sacredness of host communities.

To quote Albert Einstein, "We can't solve problems by using the same kind of thinking we used when we created them." These social, ethical, and moral issues demand a new conceptual framework in smart tourism research and design. Smart tourism research up to date has an underlying assumption of driving profit, maximizing revenue, and increasing efficiency of businesses, organizations, and the government. However, it is time to raise the questions about the social, ethical, and moral issues behind the smartness: smart for whom and smart for what?

The literature on smart tourism has focused on a group of stakeholders who have financial interests in the tourism ecosystem, such as local governments and businesses (e.g., Fyall, 2011; Zhu, Zhang, & Li, 2014). If the financial interests of particular groups purely drive the decisions on smart tourism destinations, such decisions may not benefit all stakeholders. However, to understand the consequences and potentials of smart tourism, it is critical to understand the needs of all stakeholders and the degree to which they are impacted by smart tourism regardless of their financial relationships with this smart tourism ecosystem. Each stakeholder is likely to possess its own interests, resulting in potential conflicts with other stakeholders. Therefore, we need to expand the concepts and scope of stakeholders in smart tourism development in destinations. Hence, the following section reviews stakeholder theory and power-grid framework and explains the spectrum of stakeholders in smart tourism development.

3. A Conceptual Framework of Stakeholder Theory and Power-Interest Grid

Prior research and the discussion above have highlighted that healthy smart tourism development cannot be achieved without the interconnection and coordination among an expanded group of stakeholders (e.g., Buhalis & Amaranggana, 2013; Gretzel et al. 2015; Stankov & Gretzel, 2021). Thus, the stakeholder theory is introduced first as the conceptual foundation to identify and solve the social, ethical, and moral issues.

3.1 The Stakeholder Theory

Stakeholder theory has been recognized as one of the most commonly used theories in business ethics (Gibson, 2000). Within the stakeholder theory, an organization's capability to maintain daily operations not only hinges on its stakeholders but also relies on the relationship among those stakeholders (Freeman, 2010). Thus, it is essential for an organization to take its diverse stakeholders' interests into its decision-making process and consider investing in areas that can satisfy and benefit such stakeholders. Furthermore, an organization needs to balance diverse stakeholder interests so that managers can maintain support from these groups (Reynolds, Schultz, & Hekman, 2006).

In particular, Donaldson and Preston (1995) discussed three different approaches of stakeholder theory: descriptive, instrumental, and normative. The descriptive approach describes an organization as "a constellation of cooperative and competitive interests possessing intrinsic value" (p. 66); the instrumental approach focuses on linking the stakeholder management with performance goals of an organization; the normative approach dictates the "ought-to-dos": providing ethical and moral principles and deriving solutions in order to balance the interests of stakeholders. This study focuses on identifying the stakeholders and balancing their interests, thus adopts two approaches of stakeholder theory: descriptive and normative.

First, all the relevant entities in smart tourism development in destinations are considered as the entirety of stakeholders, because they are bounded within a geographical location and influencing or influenced by smart tourism development. Buhalis and Amaranggana's (2013) summarized five main groups of stakeholders in smart tourism destinations: tourism organization, government, local residents/communities, tourists, and the environment. Table 1 lists the needs of each stakeholder group, among which the needs of some of these groups could be contradictory to the needs of others.

Table 1. Smart tourism stakeholders

Stakeholder	Needs	Potential conflicts
Travel organization	· Engage local communities, government, and tourists · Balance costs and benefits	· Communication failure · Large investment
Government	·Maintain tax revenue · Destination image · Regulate potential issues	· Short-term driven policy
Local residents/ communities	· Stay informed of changes · Maintain quality of life	· Imbalance in profit sharing · Quality of life decrease
Tourists	· Well-informed products and services · High level of engagement · Local tourism experience	· Inauthentic tourism experience due to the lack of local touch · Overprice tourism product due to big data algorithm
Environments	· Sustainable tourism	· Invisible environmental costs

Adapted from Buhalis and Amaranggana (2013, p. 560)

Although the stakeholders have been identified, the decision-making processes related to smart tourism may not be fair or equitable due to possible conflicts of interest and the differences in economic and political power. As a result, the interests of each stakeholder group may not be equally represented (Li, Lau, & Su, 2020). Mitchell, Agle, and Wood (1997) claimed that working with a substantial number of stakeholders within a decision-making process could be "bewilderingly complex for managers" (p. 857). In particular, the decision-making process for a smart tourism project can generally include a considerable number of stakeholders. Thus, the Power-Interest Grid framework could guide the discussion of the dynamics of stakeholders in smart tourism projects (Mitchell et al., 1997).

3.2 The Power-Interest Grid

Freeman (2010) has categorized the magnitudes of power and interest of the stakeholders and suggested creating a Power-Interest Grid. Such a grid can assist decision-makers in balancing the demand and request from all the stakeholders while keeping the number of stakeholders manageable. Figure 1 adapts the Power-Interest Grid from Ackermann and Eden (2011):

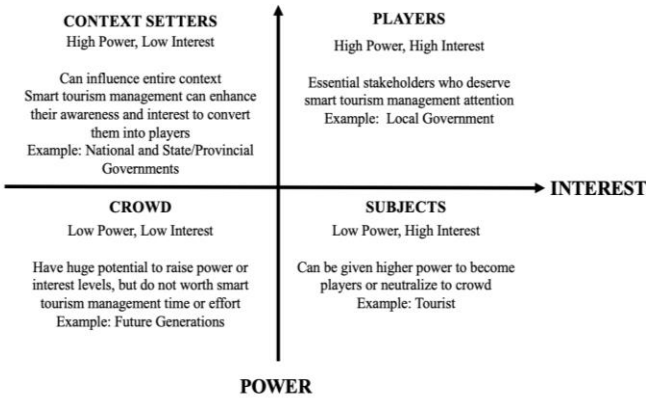

Fig. 1. Stakeholder Power-Interest Grid, Adapted from Ackermann and Eden (2011, p. 183)

Each of the dimensions of grids, power and interest, has two levels: high and low. Therefore, the group of stakeholders can be categorized into four quadrants: Crowd, Context Setters, Subjects, and Players. In the following section, adopting a descriptive approach, we will discuss the stakeholders in smart tourism development in destinations and their positions in this grid.

3.2.1 Crowd (Low Power and Low Interest Stakeholders)

This quadrant of stakeholders has limited interest in smart tourism development and little power to influence the decisions. In this context, local residents/communities that are not adjacent to nor associated with smart tourism infrastructure may fall into this group. On one hand, they may benefit indirectly from smart tourism development, but they are not employed by the tourism industry directly. Smart tourism development projects can increase economic benefits and enhance residents' quality of life by improving urban service and infrastructure (Lin, Zhao, Yu, & Wu, 2019; Santos-Júnior, Almeida-García, Morgado, & Mendes-Filho, 2020). they can also increase social capital by encouraging informal interactions between residents and tourists.

On the other hand, smart tourism projects can also negatively affect this group's quality of life and the local economy. For example, successful smart tourism projects could bring in additional tourists who may squeeze the space for local residents. Moreover, smart tourism projects' profit may not be properly shared among local residents and communities, which can decrease the residents' life satisfaction and hostility toward tourists (Santos-Junior et al., 2020). It is prudent to monitor these stakeholders as their capability to influence and their degree of interest could grow over time and move to other quadrants.

The environment is another stakeholder in the Crowd; it includes the whole surroundings of the destination (Lee, Hunter, & Chung, 2020). This stakeholder may not have any power and have to rely on their delegates – either local residents or the local government – to give them a voice. The people who have a stake in "the environment" are actually the future generations of the residents. Increased tourist volumes may lead to environmental degradation in the formats of the polluted natural environment, the loss of biodiversity, and the threat to wildlife and local ecosystems. Therefore, smart tourism projects may incur invisible environmental costs that other stakeholder groups may not easily observe, but jeopardize the livable conditions for future generations (Xiang, Stienmetz, & Fesenmaier, 2021). Other stakeholder groups (e.g., travel organizations and local residents and communities) should start to be aware of these costs and promote a balanced development when smart tourism development brings in excess volumes of tourists.

3.2.2 Context Setters (High Power and Low Interest Stakeholders)

A typical example of these stakeholders is legislative bodies. In the context of smart tourism, higher levels of legislators on the national and state levels could belong to this group. Prior research has mainly focused on local government, but not the influence of the upper government (e.g., Fyall, 2011; Zhu et al., 2014). It can be challenging for smart tourism destinations to manage relationships with this group of stakeholders. Given upper level governments low level of interest, they generally incline to respond passively. However, they can create a significant impact on smart tourism development. Therefore, it is critical to investigate this group of stakeholders' underlying motivations and reactions in all major developments and involve them based on their specific interests. Therefore, it is prudent to keep them informed about relevant projects. Local decision-makers should pay sufficient attention to these stakeholders to keep them well-informed via efficient communication channels.

3.2.3 Subjects (Low Power and High Interest Stakeholders)

Stakeholders in this quadrant have a high level of interest, yet they have restricted power to influence the decision-making process. Such stakeholders could be supportive allies in the smart tourism development decisions, despite their low power. They are generally more willing to assist with the process and provide their feedback on the specific projects' details, given their high interest level. Hence, decision-makers should keep these people properly informed and frequently ask for feedback to avoid misunderstanding.

Smart tourism development may affect a sub-group of local residents who reside in the tourist area or are adjacent to it. They may or may not work directly for this industry, but the tourist activities may bring crowdedness, pollution, and inconvenience to their lives. These residents may be considered as Subjects. They can influence smart tourism projects by giving feedbacks, voicing their opinions or concerns, or using elective power to pick the next governmental administrators. However, their power is limited in determining the fate and future of smart tourism projects.

Tourists are the ultimate customers of smart tourism projects. Given the diversity of their interests, tourists may have different needs for tourism services, everything ranging from well-designed service products with a high level of engagement, to even a technology detox trip without any smart technologies (Stankov & Gretzel, 2021). Thus, smart tourism destinations may not satisfy all kinds of tourists because of their diverse needs.

The tourists usually do not have a choice in terms of the technical infrastructure in the destinations and the information and services the destinations provide. Many smart tourism technologies (e.g., Google Maps and TripAdvisor) may replace direct communication with the residents with technology-mediated communication since the tourists can afford to have fewer chances to interact with locals. Moreover, big data algorithms can provide recommendations according to tourists' preferences and past purchase history. As a result, authentic-seeking tourists may be unsatisfied due to a lack of local touch in the tourism experience. In addition, despite the convenience of personalization algorithms, tourists may encounter overpriced tourism products due to past purchase history and business-related advertisements (Sanburn, 2012).

3.2.4 Players (High Power and High Interest Stakeholders)

This quadrant of stakeholders is the most critical group that smart tourism decision-makers should manage very closely. They have both a high interest in the development projects and an extensive capability to influence the decision-making process. Local tourism and hospitality businesses and organizations, and local governments are two major groups of Players. They are service providers and have the voice and motivation to engage in smart tourism projects actively. Moreover, in cases like Asian or European countries, the local government is usually the final decision maker for smart tourism projects (e.g., Buonincontri & Micera, 2016; Lee et al., 2020; Li et al., 2017). Such projects can generate tax revenues from travel organizations and businesses due to increased tourist volumes and spending levels. However, the government may possess internal challenges. In a democratic society, most local governments have an election system to select the decision-makers, who may have a limited term. These governmental decision-makers may seek short-term projects that can be visible before their term ends. Nevertheless, smart tourism projects generally require a larger investment and a consistent policy in the long term. Some short-term projects may not bring long-term benefits to the industry and community, especially to other stakeholders who lack the power to intervene in decisions (Fyall, 2011).

4. Ethical and Moral Considerations

The discussion on the Power-Interest Grid reveals that the power and interests are not always balanced: for example, the potential tourists have a keen interest in the destinations, but they currently have little or no power in influencing smart tourism development project; the future generations of the local residents demand a clean, safe, and livable environment, but they do not have any power in influencing the development decisions of today. Thus, the power and interests of these diverse stakeholders need to be redistributed and re-balanced. A logical following question is: "*How can a smart tourism development project engage all stakeholders in making more ethical and moral decisions?*"

When a group of stakeholders needs to be restructured and their powers being redistributed, certain principles should apply. These principles should not only follow economic principles since many stakeholders may not hold economic or business relationships with the ecosystem of smart tourism. Instead, ethical and moral principles should be considered. Ethics are about the concepts of right or wrong and the value of certain actions or actions (Audi, 1999). Morals refer to certain standards or principles in judging people's actions, based on a certain philosophy, religion, or culture (Gert & Gert, 2020). Thus, we took a normative approach to the stakeholder theory in that we assume the following as given: the interests of all stakeholders of smart tourism destinations possess intrinsic values and worthy of consideration (Donaldson & Preston, 1995). Thus, the following principles shall apply to fictional smart tourism developments in destinations.

Principle #1: The levels of power should in balance with the level of interests for each stakeholder, including diverse groups of tourists, local residents, the environment, and future generations.

Principle #2: Each stakeholder should have an equal opportunity for being well-informed and participating in the decision-making process for smart tourism destination development.

5. Balancing Power and Interests of Stakeholder Groups

Following the above ethical and moral principles, it would be critical to change the power and interest balance and manage the stakeholders dynamically. The following three potential solutions change the level of power or interest of certain stakeholders and promote a stakeholder from one quadrant to another (e.g., from the Crowd to Subjects). In addition, setting up appropriate structure, process, and communication during the decision-making process is also crucial. The keys to solving the social, ethical, and moral issues in smart tourism lie in managing the entities in the four quadrants by following the two principles and re-balancing the Power-Interest Grid of all stakeholders, and also set up a fair and transparent process in decision making. Figure 2 visualized the movements of the stakeholders.

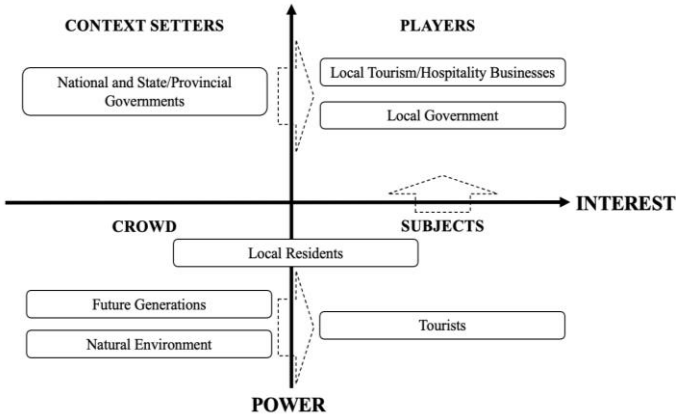

Fig. 2. Visualization of different stakeholder's movements

5.1 Increase Power Level

The tourism destination government and travel organizations mainly hold power in smart tourism development. They perform the functions and the role of managers in a corporation who possess the most power (Donaldson & Preston, 1999). Therefore, some other stakeholders (e.g., potential tourists, and local residents and communities) may not have the power to influence the decision-making process. According to Principle #1, the power balance requires an open discourse among all the stakeholders to discuss power redistribution. The following suggestions can help shift the power structure.

5.1.1 Promoting the Power of Local Residents in the Decision-Making Process

Although the final smart tourism destination project decisions are made by government and travel organization officials, local residents regardless of their employment industry or status should have a direct voice or a chance to influence the decisions. One solution is directly involving them: for example, inviting representative groups of local residents to join the group of decision-makers for smart tourism development projects. The other plausible solution is for the residents to have a voice during the election of government officials or directors of travel organizations. It is only ethical to make the selection process public, and other stakeholders should be able to weigh in or elect the decision-makers. Therefore, the elected decision-maker has a responsibility to balance the stakeholders' needs and make a balanced decision.

5.1.2 Promoting the Power of a Variety of Tourists as Stakeholders

Tourists may have different motivations (e.g., novelty-seeking motivation vs. vacationers) that may not be aligned with smart tourism development. Smart tourism destinations sometimes use smart technology to replace the previous service functions or interactions. The tourist group could be invited as a partner during the decision-making process to increase their

power. In addition, these destinations should consider offering alternatives to tourists to choose from. As a result, tourists are empowered to make personal decisions that they are comfortable with, which may increase their satisfaction level. For example, smart technology users should have their preference on the level of usage and engagement. They should have the freedom to leverage those technologies as they feel safe and comfortable. Therefore, it is critical to provide an opt-out option or an alternative means that can give users a higher level of autonomy. Users shall feel empowered to make their decisions and manage their experience.

5.2 Increase Interest Level of Upper Governments and the Environment as Stakeholders

As the conceptual framework indicates, each stakeholder has their own needs, which in turn determine their level of interest in smart tourism destination development. Decision-makers need to shift the stakeholders' needs in order to change their level of interest.

The upper levels of governments as the current Context Setters have the elections of the officials and the legislative process as their main needs; connecting the two needs with smart tourism development projects is the key. On one hand, other stakeholder groups with higher interest levels (e.g., tourists or the local government) can consider providing extensive feedback to upper governments to increase their interest levels. For instance, tourists can offer their feedback to demonstrate their preferences toward tourism products and services. Such preferences from tourists can trigger the upper government's interests on how to develop tourism in an ethical and moral manner including tourists' angle. On the other hand, local government can align local tourism development goals with upper governments' goals, such as economic development goals and state- or country-level destination image management. When goals align well, upper governments may show a higher level of interest because it is more relevant to their own needs.

For the environment and the future generations as stakeholders, finding their delegates in the current stakeholders, such as local residents or travel organizations, is the key. Such delegates generally have interests and concerns about the sustainability in the future. They can advocate for the potential issues from smart tourism development that the environment and the future generations are not capable to weigh in. In the smart tourism development process, these delegates can share their concerns with other stakeholder groups. Once this information is included in the discussion, an ethical decision-making process will naturally consider the future costs and see beyond the current benefits.

5.3 Structure and Communication of Stakeholders in the Decision-Making Process

Once the power and interests are balanced and appropriate, the decision-making process should follow a manner consistent with ethical principles to evaluate and choose among alternatives. It is critical to recognize and eliminate unethical options and select the best ethical alternative after all the stakeholder groups share their opinions openly. This decision-making process should follow a couple of guidelines in building their structure and communication channels on the basis of Principle #1 and Principle #2. 1) The process should encourage stakeholder groups to consistently act morally and not just in a single meeting or in a specific communication channel; 2) The process should work together collectively to collect all sources of information, generate and evaluate alternatives, and predict potential outcomes and risks. These guidelines can assure the commitment, consciousness, and competency of the structure and communication in the decision-making process.

5.3.1 Set Up the Structure and Process for Participation of All Stakeholders

Smart tourism projects should weigh in all the interested stakeholders' opinions. If the decision-making agenda is unclear or hidden, the decision-maker may be biased toward personal interests or the more powerful stakeholder groups' interests (e.g., different levels of governments or travel organizations). One solution is setting up a balanced structure in the decision-making process: ensuring every stakeholder has a seat at the table and has a diverse board membership body. Another plausible but ad-hoc solution is frequent public hearings. The public hearings can empower the interested stakeholder groups to share their opinions and weigh in the decision-making process.

5.3.2 Transparent and Effective Communication with Tourists and Residents

Most of the smart tourism development projects in a destination follow a top-down approach. Some of the stakeholders (e.g., local residents/communities) may not be well informed in the process until the development is completed. Therefore, an information gap may exist between decision-makers and interested stakeholders. Research in economics has shown that in order to sustain public commons and avoid their depletion (so-called "the tragedy of commons"), the different parties should have accurate knowledge of the public sources, and thus, transparent communication is the key (Ostrom, Burger, Field, Norgaard, & Policansky, 1999). Following Principle #2, building effective communication could help bridge such a gap. The following suggestions can help develop transparent and effective communication during the decision-making process of smart tourism development.

Each stakeholder has their preferred communication channel. Even within tourists, they have various channels to obtain information for their travel plan. The channels can vary from personal interactions (e.g., word of mouth) to social media recommendations (e.g., TripAdvisor). However, most smart tourism development projects rely on official travel organizations and government websites, which may not reach the tourists and the potential tourists. Therefore, decision-makers should carefully review these stakeholders to figure out the popular communication channels to keep them informed. Similarly, beyond public hearing and a formal seat at the table of decision making, the communication preferences of wider resident groups shall also be considered. In addition, smart technology users (e.g., tourists and local residents) should be clearly informed not only the benefits of, but also the costs of smart tourism technology.

Having an effective feedback channel to the Subjects and Crowd can enhance the level of interest of stakeholders and engage them in the decision-making process. Following Principle #2, keeping the Subjects and Crowd informed is a big step to reach equal opportunity in communication. The feedback from the Subjects and Crowd can build a robust smart tourism ecosystem because these stakeholders are knowledgeable given their interests. As a result, the decision-making process could become fairer to all the stakeholders concerned.

6. Conclusions

This conceptual paper highlights the social, ethical, and moral issues in smart tourism destinations. We argue that current research and development of smart tourism overly focus on stakeholders who have transactional relationships with a destination; the concept and the scope of stakeholders should be expanded. In addition, different stakeholders possess different power and interests; the imbalance of the two can lead to social, ethical, and moral issues. Those who have power may have less interest, and those who have interests may not have high power.

We address these issues by proposing two guiding ethical principles. The two principles can lead the readjustments of the Power-Interest Grid in the stakeholder framework; improving the decision-making process and communication channels with all stakeholders is another key in ensuring a fairer and more ethical process in smart tourism development in destinations.

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References

Ackermann, F., & Eden, C. (2011). Strategic management of stakeholders: Theory and practice. *Long Range Planning*, *44*(3), 179-196.

Alneyadi, S., Sithirasenan, E., & Muthukkumarasamy, V. (2016). A survey on data leakage prevention systems. *Journal of Network and Computer Applications*, *62*, 137-152.

Anderson, M. A. (2019, May 16). *Say it isn't so: Controversy arises as Tanzania plans cable car on Mount Kilimanjaro*. Forbes. https://www.forbes.com/sites/maryannanderson/2019/05/16/say-it-isnt-so-controversy-arises-as-tanzania-plans-cable-car-on-mount-kilimanjaro/

Arora, N., Dreze, X., Ghose, A., Hess, J. D., Iyengar, R., Jing, B., Joshi, Y., Kumar, V., Lurie, N., Neslin, S., Sajeesh, S., Su, M., Syam, N., Thomas, J., & Zhang, Z. J. (2008). Putting one-to-one marketing to work: Personalization, customization, and choice. *Marketing Letters*, *19*(3), 305-321.

Audi, R. (1999). *The Cambridge dictionary of philosophy*. Cambridge, UK: Cambridge University Press.

Berezina, K., Cobanoglu, C., Miller, B. L., & Kwansa, F. A. (2012). The impact of information security breach on hotel guest perception of service quality, satisfaction, revisit intentions and word-of-mouth. *International Journal of Contemporary Hospitality Management*, *24*(7), 991-1010.

Buhalis, D., & Amaranggana, A. (2013). Smart tourism destinations. In Z. Xiang & I. Tussyadiah (Eds.), *Information and communication technologies in tourism 2014* (pp. 553-564). Berlin: Springer.

Buonincontri, P., & Micera, R. (2016). The experience co-creation in smart tourism destinations: A multiple case analysis of European destinations. *Information Technology & Tourism*, *16*(3), 285-315.

Chakraborty, R., Lee, J., Bagchi-Sen, S., Upadhyaya, S., & Rao, H. R. (2016). Online shopping intention in the context of data breach in online retail stores: An examination of older and younger adults. *Decision Support Systems*, *83*, 47-56.

Chen, H. S., & Jai, T. M. C. (2019). Cyber alarm: Determining the impacts of hotel's data breach messages. *International Journal of Hospitality Management*, *82*, 326-334.

Chiou, L., & Tucker, C. (2018). *Fake news and advertising on social media: A study of the anti-vaccination movement*. NBER Working Papers 25223. Cambridge, MA: National Bureau of Economic Research, Inc.

Coffman-Wolph, S., Gray, K. M., & Pool, M. A. (2017). *Design of a virtual escape room for K-12 supplemental coursework and problem solving skill development*. 2017 ASEE Zone 2 Conference, San Juan, Puerto Rico.

Cohen, E. (1972). Toward a sociology of international tourism. *Social Research*, *39*(1), 164-182.

Cohen, E. (1979). A phenomenology of tourist experiences. *Sociology, 13*(2), 179-201.

Court, D., Elzinga, D., Mulder, S., & Vetvik, O. J. (2009, June 2009). *The consumer decision journey*. McKinsey Quarterly. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-consumer-decision-journey

De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K., & von Wangenheim, F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, *51*, 91–105.

Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *The Academy of Management Review, 20*(1), 65-91.

Errick, K. (2020, December 18). *Hotels.com, Expedia sued over data breach*. Law Street. https://lawstreetmedia.com/tech/hotels-com-expedia-sued-over-data-breach/

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge, UK Cambridge University Press.

Fyall, A. (2011). 21 destination management: Challenges and opportunities. *Destination Marketing and Management*, 340.

Gibson, K. (2000). The moral basis of stakeholder theory. *Journal of Business Ethics*, *26*(3), 245-257.

Gressin, S. (2018). *The Marriott data breach*. Washington, D.C.: Federal Trade Commission.

Gretzel, U., Reino, S., Kopera, S., & Koo, C. (2015). Smart tourism challenges. *Journal of Tourism*, *16*(1), 41-47.

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: Foundations and developments. *Electronic Markets*, *25*(3), 179-188.

Hilty, L. M., Som, C., & Köhler, A. (2004). Assessing the human, social, and environmental risks of pervasive computing. *Human and Ecological Risk Assessment*, *10*(5), 853-874.

Ioannou, A., Tussyadiah, I., & Miller, G. (2020). That's private! Understanding travelers' privacy concerns and online data disclosure. *Journal of Travel Research*.

Ketcham, C. (2020, June 25). *Wi-Fi in the wilderness*. Sierra: The National Magazine of the Sierra Club. https://www.sierraclub.org/sierra/2020-4-july-august/feature/wi-fi-wilderness

Klinke, A., & Renn, O. (2002). A new approach to risk evaluation and management: Risk-based, precaution-based, and discourse-based strategies 1. *Risk Analysis: An International Journal, 22*(6), 1071-1094.

Lee, P., Hunter, W. C., & Chung, N. (2020). Smart tourism city: Developments and transformations. *Sustainability*, *12*(10), 3958.

Li, Y., Dai, W., Ming, Z., & Qiu, M. (2015). Privacy protection for preventing data over-collection in smart city. *IEEE Transactions on Computers*, *65*(5), 1339-1350.

Li, Y., Hu, C., Huang, C., & Duan, L. (2017). The concept of smart tourism in the context of tourism information services. *Tourism Management*, *58*, 293-300.

Li, Y., Lau, C., & Su, P. (2020). Heritage tourism stakeholder conflict: A case of a World Heritage Site in China. *Journal of Tourism and Cultural Change*, *18*(3), 267-287.

Lin, C., Zhao, G., Yu, C., & Wu, Y. J. (2019). Smart city development and residents' well-being. *Sustainability*, *11*(3), 676.

Liu, P., & Liu, Y. (2016, September). *Smart tourism via smart phone*. 2016 International Conference on Communications, Information Management and Network Security (pp. 129-132). Atlantis Press.

MacCannell, D. (1976). *The tourist: A new theory of the new leisure class*. Nueva York: Schochel Books.

Martínez-Ballesté, A., Pérez-Martínez, P. A., & Solanas, A. (2013). The pursuit of citizens' privacy: A privacy-aware smart city is possible. *IEEE Communications Magazine*, *51*(6), 136-141.

Masseno, M. D., & Santos, C. T. (2018). Assuring privacy and data protection within the framework of smart tourism destinations. *MediaLaws-Rivista di Diritto dei Media, (2)*, 251-266.

Mehl, F. (2001). Komplexe Bewertung—Zur ethischen Grundlegung der Technikbewertungen. *Technikphilosophie*, *4*.

Mehraliyev, F., Chan, I. C. C., Choi, Y., Koseoglu, M. A., & Law, R. (2020). A state-of-the-art review of smart tourism research. *Journal of Travel & Tourism Marketing, 37*(1), 78-91.

Mehraliyev, F., Choi, Y., & Koseoglu, M. A. (2019). Social structure of social media research in tourism and hospitality. *Tourism Recreation Research*, *44*(4), 451-465.

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, *22*(4), 853-886.

Mozur, P., Kang, C., Satariano, A., & McCabe, D. (2021, April 20). *A global tipping point for reining in tech has arrived*. New York Times.

Müller, V. C. (2020). Ethics of artificial intelligence and robotics. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy (Winter 2020 Edition)*. Stanford: Center for the Study of Language and Information.

Ostrom, E., Burger, J., Field, C. B., Norgaard, R. B., & Policansky, D. (1999). Revisiting the commons: Local lessons, global challenges. *Science, 284*(5412), 278-282.

Pan, B., & Yang, Y. (2017). Forecasting destination weekly hotel occupancy with big data. *Journal of Travel Research*, *56*(7), 957–970.

Pariser, E. (2011). *The filter bubble: What the Internet is hiding from you*. London: Penguin Books.

Park, D. C., & Reuter-Lorenz, P. (2009). The adaptive brain: Aging and neurocognitive scaffolding. *Annual Review of Psychology*, *60*, 173-196.

Park, S., & Pan, B. (2018). Identifying the next non-stop flying market with a big data approach. *Tourism Management*, *66*, 411-421.

Plog, S. C. (2001). Why destination areas rise and fall in popularity: An update of a Cornell Quarterly classic. *Cornell Hotel and Restaurant Administration Quarterly*, *42*(3), 13-24.

Rammel, C. (2003). Sustainable development and innovations: Lessons from the red queen. *International Journal of Sustainable Development*, *6*(4), 395-416.

Reynolds, S. J., Schultz, F. C., & Hekman, D. R. (2006). Stakeholder theory and managerial decision-making: Constraints and implications of balancing stakeholder interests. *Journal of Business Ethics*, *64*(3), 285-301.

Sanburn, J. (2012, May 21). *Delta appeared to overcharge frequent flyers for weeks-was that legal?* TIME. http://moneyland.time.com/2012/05/21/delta-overcharged-frequent-flyers-for-weeks-was-that-legal/

Santos-Júnior, A., Almeida-García, F., Morgado, P., & Mendes-Filho, L. (2020). Residents' quality of life in smart tourism destinations: A theoretical approach. *Sustainability*, *12*(20), 8445.

Gert, B., & Gert, J. (2020). The definition of morality. In E. N. Zalta (ED.), *The Stanford encyclopedia of philosophy.* Stanford: Center for the Study of Language and Information.

Stankov, U., & Gretzel, U. (2021). Digital well-being in the tourism domain: Mapping new roles and responsibilities. *Information Technology & Tourism*, *23*, 5-17.

Thomée, S., Dellve, L., Härenstam, A., & Hagberg, M. (2010). Perceived connections between information and communication technology use and mental symptoms among young adults-A qualitative study. *BMC Public Health, 10*(1), 1-14.

Thomée, S., Härenstam, A., & Hagberg, M. (2011). Mobile phone use and stress, sleep disturbances, and symptoms of depression among young adults-A prospective cohort study. *BMC Public Health, 11*(1), 1-11.

Tomalin, E. (2016). *Biodivinity and biodiversity: The limits to religious environmentalism*. London: Routledge.

Turner, V. (1973). The center out there: Pilgrim's goal. *History of Religions*, *12*(3), 191-230.

UNWTO. (2017, February 21). Innovation, technology and sustainability – Pillars of smart destinations. https://www.unwto.org/archive/europe/press-release/2017-02-21/innovation-technology-and-sustainability-pillars-smart-destinations

Wang, N. (1999). Rethinking authenticity in tourism experience. *Annals of Tourism Research*, *26*(2), 349-370.

Wiedemann, P. M., & Brüggemann, A. (2001). Vorsorge aus der Perspektive der Sozialwissenschaft: Probleme, Sachstand und Lösungsansätze. *Forschungszentrum Jülich, Arbeiten zur Risikokommunikation*, H, 82.

Xiang, Z., Fesenmaier, D. R., & Werthner, H. (2020). Knowledge creation in information technology and tourism: A critical reflection and an outlook for the future. *Journal of Travel Research*.

Xiang, Z., Stienmetz, J., & Fesenmaier, D. R. (2021). Smart tourism design: Launching the annals of tourism research curated collection on designing tourism places. *Annals of Tourism Research*, *86*, 103154.

Ye, B. H., Ye, H., & Law, R. (2020). Systematic review of smart tourism research. *Sustainability*, *12*(8), 3401.

Zhang, L., Wei, W., & Hua, N. (2019). Impact of data breach locality and error management on attitude and engagement. *International Journal of Hospitality Management*, *78*, 159-168.

Zhu, W., Zhang, L., & Li, N. (2014). Challenges, function changing of government and enterprises in Chinese smart tourism. *Information and Communication Technologies in Tourism, 10*, 553-564.

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