

# Smart Tourism Studies from an Axiological Perspective

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## ABSTRACT

The concept of Smart Tourism was built to take advantage of the development of IT in the tourism industry and provide added value for environmental sustainability. IT is proven to encourage tourism publication easily, but allows excessive exploitation of the environment, as well as causing other ethical and aesthetic problems. Symptoms of ethical deterioration and aesthetic changes due to digital engineering encourage a study to be carried out, with the aim of exploring the potential deviations of IT from the original development goals. The research method used is systematic content analysis of interdisciplinary literature with insight into axiology and philosophical issues in tourism and smart tourism applications such as social media, data science, and IoT. Social media users often only focus on self-presentation and not think to be environmentally responsible. As a result, there was a lot of damage to tourism objects which eventually became viral in cyberspace. The disclosure of personal data on social media that is actually done consciously by the owner also poses a threat to privacy and illegal actions in using information. So, word "smart" still represents the dominance of IT use and is not yet attached to non-technological aspects such as behavior, awareness, and care.

## SARI PATI

Konsep Smart Tourism dibangun untuk mengambil manfaat perkembangan TI pada industri pariwisata dan memberikan nilai tambah bagi keberlangsungan lingkungan. TI mendorong publikasi pariwisata dengan mudah, tetapi memungkinkan terjadinya eksploitasi lingkungan yang berlebihan, serta menimbulkan masalah etika dan estetika yang lain. Gejala kemunduran etika dan perubahan estetika akibat rekayasa digital mendorong dilakukannya kajian untuk melihat adanya potensi penyimpangan TI dari tujuan pengembangannya semula. Metode penelitian yang digunakan adalah systematic content analysis dari literatur interdisipliner dengan wawasan aksiologi dan masalah filosofis dalam pariwisata serta aplikasi Smart Tourism seperti media sosial, data science, serta IoT. Hasil analisa menunjukkan wisatawan sering kali hanya fokus pada presentasi diri di media sosial dan tidak memperdulikan kondisi lingkungan. Sehingga muncul banyak kerusakan obyek wisata yang viral di dunia maya. Terbukanya data pribadi di media sosial juga menjadi ancaman terhadap privacy dan tindakan yang ilegal dalam menggunakan informasi. Sehingga, kata "smart" masih merepresentasikan dominasi penggunaan TI dan belum melekat aspek non teknologi seperti perilaku, kesadaran, dan kepedulian.

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## INTRODUCTION

The development of IT forms a new paradigm in the tourism business, especially with the presence of mobile devices that can accommodate internet access more broadly (Hunter, Chung, Gretzel, & Koo, 2015). This mobile device is transformed into a smartphone and becomes a device that is very inherent in human life, and continues to be used at all times including when traveling (Wang, Xiang, & Fesenmaier, 2016). The concept of Smart Tourism discusses how IT can be used to manage all tourism resources owned by a city effectively and efficiently, and aims to provide a pleasant experience for tourists (Gretzel, Reino, Kopera, & Koo, 2015). Obviously, the concept of Smart Tourism was built to take advantage of the IT development in the tourism industry.

The use of IT in the tourism is inseparable from the technology acceptance of IT for all existing stakeholders, as well as the emergence of concerns about the negative impact of IT use. Acceptance of IT is influenced by several perceptions such as the perception of benefits and easy of use. Technology readiness is someone's readiness to accept a technology and how their tendency to use the technology (Ling & Moi, 2007; Parasuraman & Colby, 2015). In readiness technology, there are several dimensions, one of which is the optimism dimension, a positive view of IT and the belief that IT offers users greater control, flexibility, and efficiency in the field of tourism. The optimism dimension views IT as providing greater benefits to improve efficiency in the tourism industry. The users who have an optimistic view believe that IT is created to provide benefits for the sustainability of the tourism industry and easy to use.

The dominance of IT in Smart Tourism concept is very substantial, thus, it is obligatory to conduct the study from an axiological perspective. The axiological dimensions include ethics and aesthetics. Ethics talk about human behavior in their lives. Ethics in Smart Tourism concept means talking about human behavior using IT in tourism activities. Here, ethics is a critical and rational reflection on the values and behavior patterns of people's lives in using IT. Today, IT acceptance should be considered as value-laden and not be regarded as value-free. However, in practice, the IT penetration actually raises ethical problems that greatly impact the Smart Tourism ecosystem. These ethical problems arise from various factors involved in the Smart Tourism ecosystem.

Aesthetics are all sensory recognition of any object that can be captured by our senses (Ekosiwi, 2017). The sophistication of today's digital devices can capture the object with great detail. However, by using an application an object that can be engineered. Often, the results of engineering will change the appearance of an object to be far from reality. The beauty of an object that circulates in cyberspace is pseudo beauty. New problems arise here when the pseudo beauty of an object is used as marketing material to attract the visitors. When they arrived at the location, they felt disappointed because the object they encountered there was not as beautiful as sense of axiological in the engineering photos they had seen before. Aesthetics which initially assume about beauty, with the presence of IT eventually raises ethical problems, namely the element of "fraud" by using excessive digital engineering.

The study of ethical and aesthetic implications as the axiological dimension will discuss the implications of the IT in tourism which has potential deviations from the original development goals. The study of ethical and aesthetic implications as the axiological dimension will discuss the implications of the IT in tourism which has potential deviations from the original development goals. However, the impact that arises with the adoption of

IT is also very relevant to get attention. The study is used to answer several questions, namely: for what knowledge in the form of IT is used and how is it related to ethical principles? In the practical level, this axiological dimension is useful to maintain the development of information technology in tourism while respecting universal morality and maintaining human dignity and natural balance. Symptoms of ethical deterioration and aesthetic changes due to digital engineering in the use of IT in the Smart Tourism ecosystem make this axiology study very relevant to do.

The methodology used in this research is the study of literature. This article is the result of a philosophical study through a review of relevant literature, both reputable journals and proceedings. Articles reviewed from several fields of science, be it in the fields of philosophy, tourism, and information technology. By examining a number of fields of science it is expected to provide a comprehensive view of the ethical and aesthetic implications of the development of the concept of Smart Tourism in Indonesia.

## LITERATURE REVIEW

To simplify the understanding of the axiological dimension in the development of Smart Tourism, this section will present an overview of the Smart Tourism business process and the role of IT in it. This conceptual model of Smart Tourism refers to one of the dimensions of Smart City, namely Smart Economy. One variable is the type of industry that can provide a positive economic impact on the city, such as tourism. The tourism industry business process in the Smart Tourism concept can be seen in Figure 1 (Digital Tourism Think Tank, n.d.). The role of IT in the business process is divided into three sessions namely pre-travel (before starting a trip), during-travel (during a trip), and post-travel (after a trip). In the pre-travel session, potential tourists will use various applications to find information about travel plans, such as ticket, accomodation, destinations itinerary, culinary tour, and so forth.

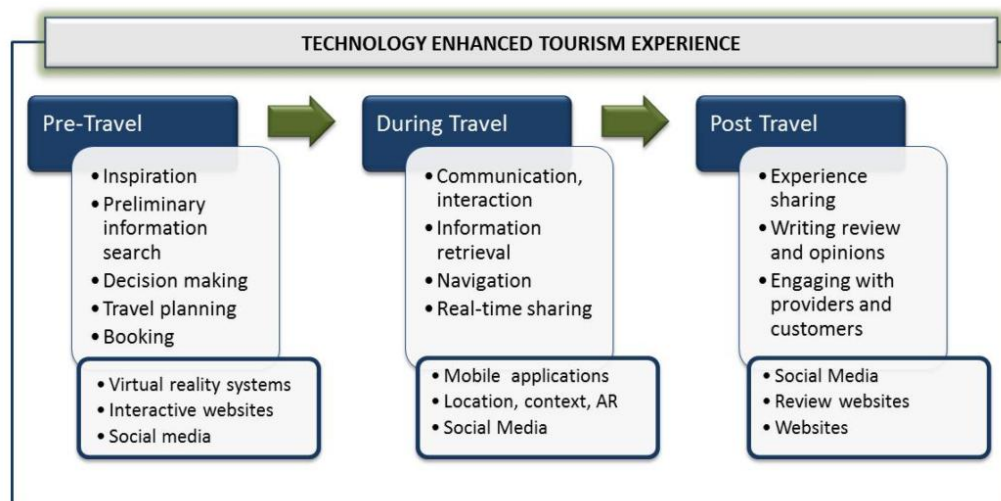


Figure 1. Implementation of IT in the Smart Tourism Business Process

The information is obtained through the website or read previous traveler reviews from social media. The information is used as a reference to develop travel plans. During the trip various applications are also used for communication, finding information, navigation, and sharing information in real-time. After the trip, tourists usually share their tour experiences through various applications, websites or social media.

From literature study was found that discussing the concept of Smart Tourism would involve technological and non-technological factors. Non-technological factors include human capital and environmental sustainability. Human capital factors involve travelers, residents, communities, government (central or regional), and tourism industry players (Boes, Buhalis, & Inversini, 2016; Koo, Shin, Gretzel, Cannon, & Chung, 2016; Koo, Yoo, Lee, & Zanker, 2016; Polese, Botti, Grimaldi, Monda, & Vesci, 2018; Zhu, Zhang, & Li, 2014). While non-technological factors that are also very influential are environment sustainability which focuses on the sustainability of the natural environment and the people who live in tourist sites (Borsekova, Vanova, & Vitalisova, 2018; Buhalis & Amaranggana, 2014; Gretzel, Werthner, Koo, & Lamsfus, 2015; Koo, Yoo, et al., 2016; Lee et al., 2011; Lim, Mostafa, & Park, 2017; Vasavada & Padhiyar, 2016).

## DISCUSSION

Ethical and aesthetic problems arise through a variety of IT technologies and applications used in the Smart Tourism ecosystem. Tourism industry players use IT in all their business processes, and so tourists will continue to use IT to obtain satisfying information and travel experiences. Of the many technologies used in tourism, the use of social media, Big Data technology, IoT applications, and digital engineering will be discussed in detail about what are the ethical and aesthetic problems that arise with the use of these technologies.

### a. The Massive of Social Media Penetration

In the Smart Tourism business process, social media is used from before to after travel, so it is necessary to discuss what ethical problems arise from the use of social media. In a survey conducted by APJII in 2017 concerning the behavior of internet users in Indonesia, the use of social media was second ranked (87,13%). Finding its potential as a medium for disseminating information quickly, many companies engaged in tourism use social media to communicate with users (Li, Guo, Wang, & Zhang, 2019), although the use of social media also poses risks that must be managed properly by tourism businesses.

Optimism in the use of social media is driven by perceptions of the easy of use and perceived benefits, thereby making social media development rise rapidly. The top five most popular social media applications in Indonesia are Facebook (54%), Instagram (15%), YouTube (11%), Google+ (6%), and Twitter (5.5%). Perception of easy of use comes up because social media applications are easy to use by anyone without having to have technical skills in IT. Perception of benefits perceived by users because social media is free and information dissemination is fast. In addition, social media also provides a complete feature where users can share information in the form of text, images and videos (Munar & Jacobsen, 2013). Social media provides an innovative strategic tool for tourism managers to improve company operations in fulfilling the needs of tourists and as one of the tools most often used to interact with tourists (Pantano & Pietro, 2013).

Finding the potentiality of social media, many tourism companies in the tourism sector are using it as an enterprise's official presence, such as: tour agents, ticketing, hotels or accommodations, vehicle rentals, and so on. Promoting businesses using social media is considered cheaper and faster to reach potential customers. Besides the perception of optimism about social media, there are also negative issues that must be considered by the company. One of such issue is how ethics interacts on social media (netiquette). Reputational risk is one of the issues related to netiquette (Purwaningsih, 2016).

Reputation is one of the intangible assets owned by companies other than brands. The use of social media that ignores netiquette can damage the company's reputation. Customers who are not satisfied with a company's product or service will easily make a status or make negative comments through social media (Dolan, Seo, & Kemper, 2019). Since social media users are very diverse, not all dissatisfaction can be conveyed in a good way and language. This dissatisfaction can be considered as part of providing input to the company, but also has a negative impact on the company (Dolan et al., 2019). Social media also provides a feature for users to share information from other users, thus, the status and negative comments can be spread without being prevented. To overcome this the company can just do moderation to sort out which comments are retained or deleted. However, this step also contains risks because if all negative comments are deleted then the company will be considered arrogant and unwilling to accept input.

In addition to visiting tourist service provider accounts, tourists will also look for various previous traveler reviews through social media (Kim, Lee, Shin, & Yang, 2017; Zeng & Gerritsen, 2014). Today many online communities are centered on travel tour discussions such as Virtual Tourists, Independent Traveler, and TripAdvisor, which specifically deliver information related to tourism. Facebook also integrates special applications or additional functions to encourage discussion of travel tours among its users (Pantano & Pietro, 2013). Negative comments about the review of a place, product, or tourism service will certainly influence tourist decisions. Also, the negative reviews play a major role in the decision making process (Pantano & Pietro, 2013; Sedera, Lokuge, Atapattu, & Gretzel, 2017; Sen & Lerman, 2007), one negative review is enough to jeopardize a product or service. Traveler reviews submitted on social media are often subjective. The review can be used as a reference for other tourists, but the experience of each tourist can be different, and may lead to disappointment. In addition to travel reviews, travel photos, and videos (Tran, Huertas, & Moreno, 2017) can also influence the opinions and behavior of potential tourists. Thus, the process of filtering information through social media needs to be done because it is one of the factors that influence the decisions of potential tourists (Sofronov, 2018). Tourism experiences are sometimes subjective, in the same location people can find a different feel. The difference in arrival time can also affect the results of the review, whether in peak season or in low season. However, the general view of tourists who have come to the actual location can provide information that is close to its original condition.

Another ethical problem that appears in social media penetration is behavior change. Social media prepares a space for all users to present themselves. Social media provides the widest possible space for each individual to be creative, especially in presenting themselves (Luik, 2011). This self-presentation is a way to communicate current personal conditions, and convey current activities and locations using words, photos, and videos of various object. Self-presentation is rooted in face-to-face interaction between individuals, so self-presentation through social media can be assumed to eliminate non-verbal elements of communication and the context of communication. Even because it is too focused on self-presentation, tourists come only to take pictures and upload them to social media to present themselves at this time, so that it does not care about the environmental conditions of the object. The 'like' feature provided by social media shows the expression of the followers of the account to the uploaded photo. This feature is used to see responses quickly from the number of likes that appear on the subject of a photo. In the writer's observation, now many tourists come just to



pursue content and even some people who have a target that the photo must be reposted by certain media accounts. They are even willing to risk taking pictures in dangerous places. There are a tendency of social users to only upload photos at the object to pursue the number of likes. When the photo is uploaded on social media and gets lots of likes and comments and also is shared repeatedly, then they will feel that their representation has a place in their community.

Other negative issues related to social media are privacy and security. This problem is related to the representation aspects of social media users that are accommodated by the application. Uploading personal data on social media will disclose all users' personal information so that it can be misused by irresponsible parties (Coutras, Kafeza, & Kafeza, 2011; Woo, Goo, Huang, Nam, & Woo, 2016). The "check in" feature allows a user to report location in real-time, thus posing a threat to privacy and security. Location privacy is the ability of a person to move in a public space under normal circumstances, where the location will not be systematically and secretly recorded for irresponsible use (Coutras et al., 2011). However, because the desire to present themselves is more dominant in using social media, often the issue of privacy is ignored by people. They knowingly upload all details of the trip, even for confidential documents such as visas and ticket boarding.

Massive tourism promotion carried out using social media is indeed attracting tourists to come (Kim et al., 2017), but the increase in the number of tourists allows excessive environmental exploitation. Information technology creates new opportunities and challenges for the tourism sector (Ross, 2005; Ruiz-Molina, Gil-Saura, & Moliner-Velázquez, 2010), while at the same time it can drastically influence the social conditions of the community and the environment (Coutras et al., 2011). Tourism becomes an activity that produces economic benefits, contributes to poverty alleviation, and improves the welfare of the destination community (Moscardo, 2008; Okazaki, 2008). Tourism has a role in socio-economic and environmental changes, for example the loss of biodiversity, waste from tourism activities, waste from the hotel business, or damage to some nature reserves due to negligence or intentionality of irresponsible tourists (Laksono & Mussadun, 2014). Tourism growth is measured in the number of arrivals, stays, and so on. However, tourism growth does not always imply adequate economic prosperity (especially for local people). While tourism development refers to increasing local income and employment, as well as environmental benefits, thus implying development planning in accordance with the carrying capacity of the tourism environment (UNEP, 2009). Problems arise when people come just to take pictures without feeling the need to be responsible for the environment. Problems arise when people come just to take pictures without feeling the need to be responsible for the environment. When a photo becomes viral on social media, and many people come, in a short time the object will be widely known. When the arrival is not accompanied by responsibility to protect the environment, then in a short time the damage occurs as experienced by many places.

#### **b. Data Science Technology**

All information uploaded to the internet will form a large database known as big data. The initial issue raised by big data technology was data privacy issues. Ethically, individuals must know the collection of data about themselves and the amount of information collected only according to their needs. The process of notification, approval, choice and transparency forms the basis of privacy and data protection

regulations. However, the disclosure of personal data on social media allows people to use the data without the consent of the data owner. Privacy can be classified as property rights, any information about themselves is their own. And as a property owner, the individual has the right to control what is owned. However, at present, treating privacy as an individual property right has not received much serious attention (Litman, 2009). Disclosure of personal information on social media can lead to a series of negative consequences such as account abuse that can lead to financial losses. It is inevitable that technological change raises significant legal and ethical problems. So it is necessary to redefine the scope of individual privacy and the exact role of intellectual property protection in the era of big data. In this era, it is very unlikely that individuals can hide their identities (Regan & Jesse, 2018).

Social media also has an effect on increasing the availability of data about travel behavior (Zee & Bertocchi, 2018). Social Network Analysis (SNA) is a technique for extracting social media user information. Often social media users reveal personal information such as travel plans, flight schedules, tourist locations, and so on. When a number of personal data is shared on social media, it opens the possibility for users to become potential targets for attacks, such as spam, malware, socialbots, and identity theft. Even with certain techniques the attacker can also find other significant data, such as bank account information, which is then used for crimes such as fraud, falsification of personal identity, and location. The diffusion of internet technology makes online privacy a major problem facing all internet users. As mentioned above, people often consciously upload their travel documents on social media, which in turn opens up opportunities for crime.

The most attractive way for tourism promotion is to update the latest online information content for all travel services in all sectors. Information must always be available to tourists at any time. The need to get clarification about tourist destinations before and during the trip is very important and positively influences the satisfaction of the tourist experience (Xiang & Gretzel, 2010). Today more and more "smart" systems can accurately measure the needs and preferences of tourists in real-time, known as the recommender system (Neidhardt & Werthner, 2018). Recommender system works by utilizing data that is spread on social media. By using data mining technology, all information uploaded on social media can display the user's profile. Data mining is currently widely used with the aim of predicting customer behavior (Fuchs, Höpken, & Lexhagen, 2014; Höpken, Eberle, Fuchs, & Lexhagen, 2018), by gathering a large number of statistically significant elements and revealing a number of patterns and behaviors (Baggio, 2016). This system extracts information in accordance with tourist profiles, and prepare all tourist information needs that are in accordance with tourist needs (Pan & Yang, 2017; Sertkan, Neidhardt, & Werthner, 2019). This system changes the form of communication that initially faces to face becomes machine to machine. Today's smartphones are also equipped with a Global Positioning System (GPS) system as a navigation device to get to a location. So with the Recommender System application that is equipped with GPS, tourists will be given alternative tourism options and how to get to that location (Xiang & Fesenmaier, 2017). GPS will accurately track and record all tourist activity, location changes, duration spent in one location, even how many times a location is visited (Mckercher, Shoval, Ng, & Birenboim, 2012). In this case IT drastically changed the way tourists interact. Social interaction among tourists and the surrounding community is no longer needed, because tourists have prepared all the information according to their needs via a smartphone.

### c. Internet of Thing (IoT) Application

The development of IoT technology is broadly focused on various innovation paradigms in knowledge, intelligence, and sustainability that can be applied to provide realistic solutions to various problems in society, the environment, and industry (Devadhas, Selvamani, & Joseph, 2019). The use of IoT in the tourism industry is expected to help solve various problems and difficulties faced by tourism information services. IoT can maximize the value of existing tourism resources by changing the way, media, and means of tourism information services (Navío-marco, Ruiz-gómez, & Sevilla-sevilla, 2018). IoT began to be used in Smart Tourism in the form of the Smart Room concept. Smart Room was first introduced at the 2017 Indonesia Internet Expo & Submit (IIES) organized by APJII and in collaboration with several hospitality industries. The Smart Room concept is intended to make it easier for hotel room tenants to control all facilities with touch screen devices (APJII, 2018). IoT technology is based on computer networks that integrate the real world with the virtual world of the internet, where objects and people in the real world can be monitored and exchange information automatically (Royackers, Timmer, Kool, & Est, 2018).

The ability of Smart Rooms to collect and store large amounts of personal data of hotel room guests raises ethical issues, such as privacy and security. Violations of user privacy can occur as a result of the disclosure of unwanted information or the inability to control the disruption of the automation system. Hence, if the Smart Room concept is realized, it is necessary to apply the rules relating to guest privacy to prevent misuse of technology, guarantee the protection and security of user data, and avoid intentional or unintentional violations of privacy laws (Marikyan, Papagiannidis, & Alamanos, 2019).

### d. Digital Engineering

Mobile devices are the main tools used by tourists, so there are no more tourists traveling without mobile devices and internet access (Foroudi, Gupta, Sivarajah, & Broderick, 2018; Liberato, Aires, Liberato, & Rocha2, 2019). The advantages of using mobile applications in the tourism are the power to enrich tourist experiences at destinations, produce value changes in feeling information, and create interaction between tourists and the surrounding environment. Mobile devices then transformed into smart phones have many functions that accommodate the information needs and self-presentation of tourists. After social media is so easily accessed by a smartphone, the next thing to discuss is the camera features available on the smartphone. Considering that photos are a major need for tourists, smartphone developers are also competing to prepare the latest camera features and various editing applications. These features and applications can be used to edit photos in various modes or are known as digital engineering. By using this digital technology, photos will be easily changed or created without referring to the real object at all. The credibility of the photo which initially was as "describing facts" then changed to "illustrating fiction" (Setiawan & Bornok, 2015).

Digital digitization poses an ethical and aesthetic threat to photography that emphasizes aspects of objective facts, such as journalistic photos or documentary photos. However, this phenomenon is actually rife in the context of tourism, because an interesting photo will encourage other users to share it on social media and be used as a reference by other users, although it does not show the actual conditions. Photos from digital engineering look visually appealing, so people who see will expect to find conditions like those seen in photos when visiting these locations. If it is returned in the aesthetic



concept, then how can an object be captured by the senses, then the photos from this digital process will no longer be able to describe the actual condition of the object. When someone comes there, they find different conditions, because the photos seen previously do not provide information on the actual object. There are various perspectives among tourists who value nature for aesthetic reasons, so that when a visualization changes due to digital engineering, the aesthetic value will also change. Thus, ethics and aesthetic which are fundamental factors in the concept of tourism have changed. Though the attraction of tourist visits is closely related to the value and originality of the object.

### **LIMITATION AND FUTURE RESEARCH**

This study only examines the impact of the use of IT on tourism in terms of literary studies. To strengthen the results it is necessary to conduct research that tests the acceptance of the Smart Tourism concept to the stakeholders involved. Research can also be carried out to measure whether the current implementation of Smart Tourism truly benefits the surrounding community.

### **CONCLUSION**

The results of the study of the use of IT in Smart Tourism viewed from this axiological perspective indicate the existence of deviations from the use of IT from the original purpose developed. Referring to the definition of Smart Tourism above, this concept was built to take advantage of IT in the tourism industry. Smart Tourism research is now more directed at the dominance of IT development, especially IoT. While the components that build Smart Tourism are not only IT but there are also human factors, both tourists and local people, which have not been much studied by researchers. The Smart Tourism study also needs to be supplemented by a study of the impact that has arisen with IT penetration in the tourism industry, so that it can become a comprehensive study. One of these studies is the axiological dimension which includes ethical, aesthetic, and the implications for society and the environment. Ethical issues discuss behaviors, norms, habits, and customs that apply to all elements involved in Smart Tourism. Ethics in interacting in cyberspace as well as threats to privacy and data security become issues that need serious attention. Also there are significant behavioral changes in tourists where the dominance of IT use is greater than the essence of tourism itself. Aesthetics will relate to the beauty of an object, which in this case began to erode due to the presence of digital engineering applications in smartphones. Implications of information technology in the tourism sector also have positive and negative impacts on local communities and the environment. IT facilitates the promotion of a tourism location both via the web and social media. This resulted in an increase in the number of migrants, thus causing problems of environmental exploitation and socio-cultural changes in the local community. Currently the word smart on this concept is still represented in terms of technology, whereas smart should also represent all behaviors in this ecosystem including awareness and concern for using IT wisely. Furthermore, the word smart should also be represented by the participation and innovation of all stakeholders. The expected form of innovation and participation is an awareness of using technology while still paying attention to the positive and negative impacts, for example helping to prevent the occurrence of internet crimes and feel partly responsible for protecting the environment sustainability.

Of the various IT innovations in Smart Tourism, the most widely used is social media. This technology can be used by many people without having to have special IT qualifications. The presence of social media today is really like a double-edged knife, on the one hand it

will accelerate the promotion of a tourism object, but the arrival of people also has a threat to the environment if it is not accompanied by responsibility for environmental sustainability. The pursuit of content to be uploaded on social media, and the satisfaction of their self-presentation in fact makes people lose that they also have the responsibility for environmental sustainability. The awareness from various elements is needed so that the Smart Tourism concept can maximize the potential value of IT without having to reduce the essence of tourism itself, while maintaining the culture of the local community, and the balance of nature at the tourist objects. Developers and regulators need to reorganize data security policies and codes of conduct to protect user privacy. Tourists are also expected to look carefully at the use of IT and social media, while still paying attention to netiquette. The management of various tourism industries also need to evaluate the use of IT and innovatively prepare products or services that are competitive while taking into account the concept of customer privacy and data security. Technology is man-made, and ultimately humans will decide whether to use it or not. Stakeholders in the region must also plan the use of information technology in developing tourism carefully, maximizing their positive impacts and minimizing their negative impacts, especially for the local community and the natural environment.

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