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Smart tourism village, opportunity, and challenge in the disruptive era

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Abstract. Tourism villages in the disruptive era inevitably have to adapt to technological advancements and the needs of millennials. The speed and clarity of information is a demand for the development of tourism villages today in addition to the innovation and uniqueness of tourist attractions. Efforts to build a model that is in line with these demands have begun to involve relevant stakeholders, i.e., village tourism managers, local governments, and tourists. Nevertheless, more in-depth studies are needed regarding the local wisdom of rural communities who are key actors in the development of tourism villages. This paper aims to explain the initial research in formulating a development model of smart tourism village based on information and communication technology. The case taken is tourism villages in Sleman district. A sampling of study cases in the form of tourism villages following the categories that have been determined by the Sleman Regency tourism office. Initial search results show that there is no integration between village potential, systematic management, and meeting the needs of balanced tourists. This finding is the first step to formulate an ICT-based intelligent tourism village development model that is effective and efficient while still based on local wisdom in the effort to preserve nature and culture as a determining factor for the sustainability of tourism villages.

1. Introduction

The development of tourism village in Indonesia started since *PNPM Program Nasional Pemberdayaan Masyarakat Mandiri Bidang Pariwisata* (National Program in the Empowerment of Community Participation for Tourism Development) established in 2008 [1] although rural development concept based on traditional tourism has begun before. Improving tourism concept in the rural area started from the idea of rural development by Sri Sultan HB IX in the era of 2000, by establishing Brayut tourism village and Tembi tourism village [2]. This rural tourism development concept was in the form of life in activity, learning together with the indigenous society while enjoying the natural circumstance coloured by agricultural, and cattle as the main occupation [3,4].

The rapid development of tourism village as one of the major tourism industry sectors in Indonesia need clear and integrated guidance, especially in the disruptive era which should be more speedy and informative for tourists. The study of tourism village development with the smart village concept, then become the starting point of the integrated tourism village planning.

Disruption, more than just disruption to the establishment. It is an opportunity for innovation [5]. Also, a disruption could be meant to give a new experience for the customer [6].



2. Tourism village development

According to the data in Biro Pusat Statistik the year 2018, the number of tourism village in Indonesia is 1734 tourism village, spreading out in some islands and provinces with various tourist attraction [7]. (see Figure 1).



Figure 1. Overview tourism village across Indonesia region [8].

Government target to increase the number of tourism villages up to 2000 in 2019 supported by some programs, for example, 100.000 homestay program to support the 20 million tourists and 10 national priority tourism development object across Indonesia [9].

Tourism Village in Sleman Regency develops rapidly both in quantity and quality. If it is compared to other regencies in Yogyakarta Special Province, it can be seen that the self-management tourism village in Sleman Regency is dominance amongst others. Approximately 44 % of the entire tourism village in Yogyakarta Special Province (see figure 2). There are four classifications of tourism village, i.e self-management, developing, growing and embryonic [10]. This classification based on the assessment of village quality of life such as management, the number of visitors, maintenance and environmental conservation. Self-management tourism village is the category for stable quality of tourism activities. Whereas developing a tourism village still need to be assisted. Growing tourism village is the village that has been determined by the local government, and an embryonic tourism village is a village that experiences the initiating stage of tourism village [11,12].

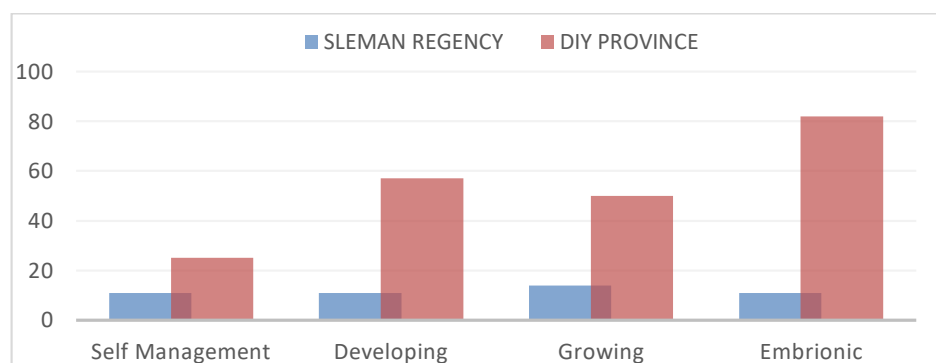


Figure 2. Graphic of tourism village classification between D.I. Yogyakarta province and Sleman regency.

Tourism village development in Sleman regency focused on the uniqueness, local wisdom and local source in sustainable tourism corridor [10]. Based on its tourist attraction, tourism village in Sleman mainly depend on the natural landscape, local tradition and culture of the community, especially related to agriculture and traditional craft industry. This can be shown in Figure 3.

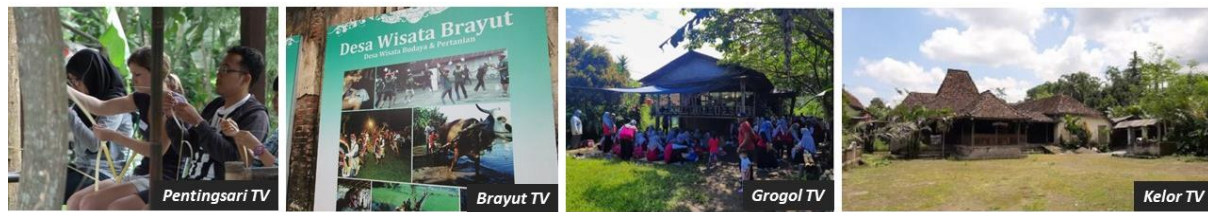


Figure 3. Overview of the tourism villages in Yogyakarta – Sleman region.

3. Smart village development

The concept of tourism village is an effort to empower rural people. It refers to a village with all local resources it has, manages, and presents to tourists [13]. Tourism village can be defined as a village designed consciously- or naturally having capability- to attract visitors to come because of the natural and cultural attraction potentials [14]. Smart Villages are communities in rural areas that use innovative solutions to improve their resilient building on local strengths and opportunities [15]. This focused also to support the Sleman Government vision to reach the smart regency implementation as stated on Sleman Regency Vision 2017 – 2021.

4. How to identify the parameter?

This research aims to investigate the opportunity and challenge of the development of smart tourism village. The research problem begins from the disruption era which is signed by technology development, globalization, and digital innovation. The research context focuses on the development and transformation of tourism village, leading to the transformation onto a smart tourism village. This is based on smart village and sustainable tourism.

UNWTO defines Rural Tourism as "a type of tourism activity in which the visitor's experience is related to a wide range of products generally linked to nature-based activities, agriculture, rural lifestyle/culture, angling and sightseeing. Rural Tourism activities take place in non-urban (rural) areas with the following characteristics: low population density, landscape and land-use dominated by agriculture and forestry and traditional social structure and lifestyle" [16]. Sustainable tourism which is defined as "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" [17]. This paper aims to explain the initial research in formulating a development model of smart tourism village based on information and communication technology.

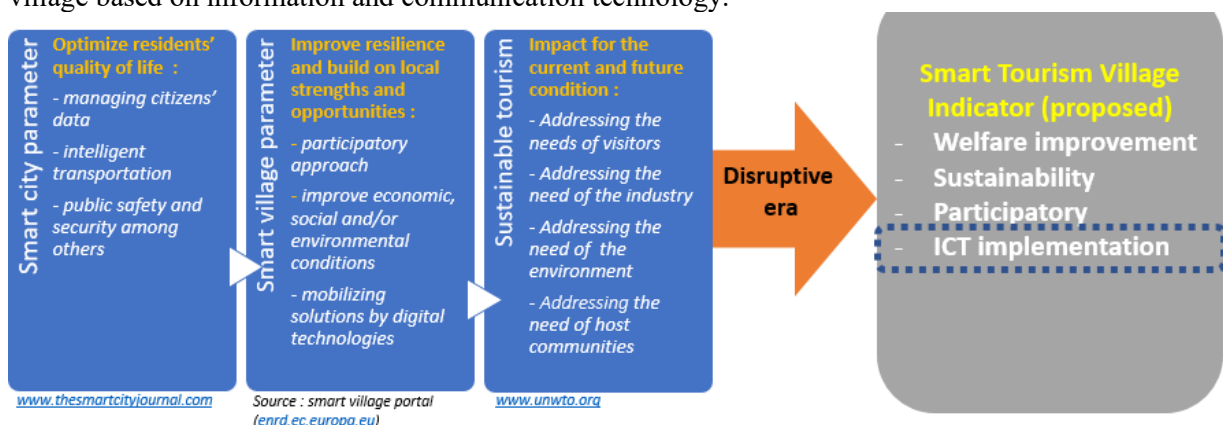


Figure 4. Schematic proposed parameter from the literature review.

In the context of the disruptive era, there are some aspects affected in the development of smart tourism village, such as comprehensible and speedy information of the smart tourism village. Sustainable smart tourism village, and the readiness to face disaster risk including the pandemic. From the indicator of a smart city as well as a smart village, the optimization of the quality of life and participation become

important parameters. While sustainability becomes an important consideration aspect of sustainable tourism development. The increasing life quality and participation include the readiness to mitigate the disaster that can be complemented with integrated ICT. Therefore, ICT implementation becomes the key to Smart Tourism Village development model. The schematic diagram of the proposed indicator and literature review as parameters of smart tourism village can be seen in Figure 4.

5. Research method

This research used Case Study Research Yin [18] with two case studies of self-management Tourism Village in Sleman Regency, i.e Pentingsari Tourism Village and Brayut Tourism Village. Both tourism villages were chosen mainly because of their uniqueness. Both villages are the best rural tourism villages in Sleman with different tourist attractions. Pentingsari was established as tourism village since 2007 with the beautiful natural assets, whilst Brayut tourism village was established in 2000 with the agrarian and traditional houses as a tourism attraction.

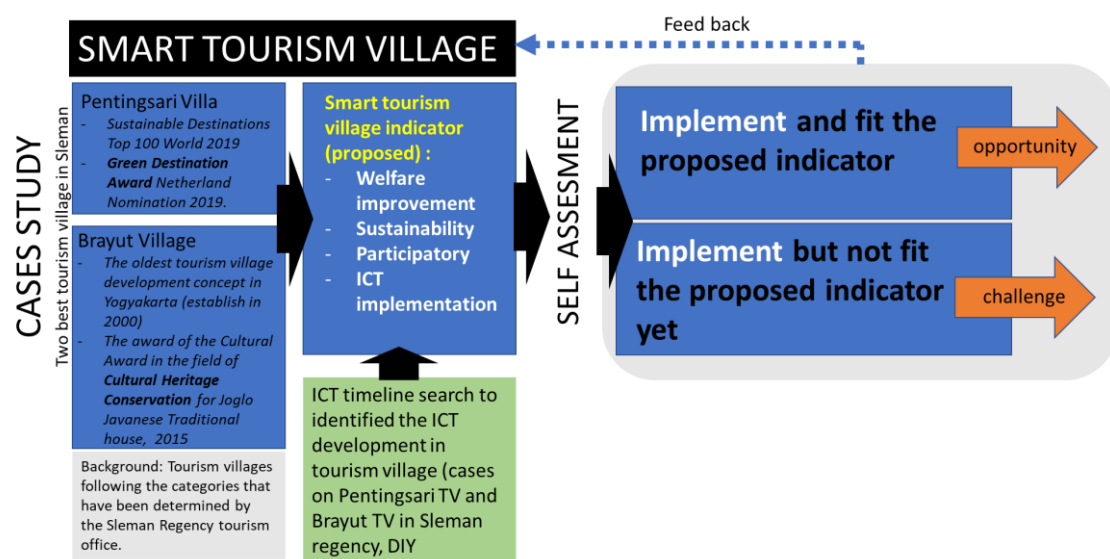


Figure 5. Schematic research method.

Both tourism villages were measured by self-assessment tool, using the proposed parameter, and then the result was classified into 2 categories that have been implemented and optimally fulfilled the standard criteria and parameter. Category 1 is a criterion of opportunity, whereas category 2 is a criterion for challenges. The schematic diagram of the research method is shown in Figure 5. Other tourism villages were being pictured to explore the background of how Sleman Regency Tourism office categorized them.

6. Overview of the study cases

6.1. Pentingsari tourism village

Pentingsari tourism village is 24 kilometre from Yogyakarta City Centre in the north, approaching mount Merapi. This tourism village has achieved several awards such as the Top 100 World Sustainable Destinations 2019, and Netherland Nomination Green Destination Award, 2019. The assessment result can be seen in Figure 6 below,

Self-assessment STV (Smart Tourism Village) into tourism development

STV indicator (proposed)	Existing condition (proper or improper)	Explanation
Welfare improvement	Proper	Increasing of tourist visiting number (average 87 % per year - before covid)
Sustainability	Proper	Best Practice Tourism Ethics (UNWTO) 2011, ISTA 2017 (Green Bronze Benefit Economy category), and Green Destination Award Netherland Nomination 2019.
Participatory	Proper	Support by various group of community such as Homestay owner, guide, culinary worker, attraction presenters, etc.
ICT Implementation	Improper	The TV already has a simple web but didn't maintain and not integrated with the data. https://desawisatapentingsari.com/

**Figure 6.** Overview of Pentingsari Tourism Village and self-assessment result.

From the results, Pentingsari Tourism Village has implemented the proposed parameter. Nevertheless, in terms of ICT, there has not been maximised although some efforts have been set up for the website of information and communication.

6.2. Brayut tourism village

Brayut tourism village is located 10 kilometres from Yogyakarta City Centre in the north. This village sustains since the year 2000 and leading for tourism village concept together with Tembi tourism village in another regency. One heritage of the main traditional building still exist. It is the *Joglo* House, that has a certificate for heritage building, and it is in well maintained.

Self-assessment STV (Smart tourism village) into tourism development

STV indicator (proposed)	Existing condition (proper or improper)	Explanation
Welfare improvement	Proper	Increasing of tourist visiting number (average 30 % per year - before covid)
Sustainability	Proper	Cultural heritage award in 2015 for traditional Javanese house (Joglo) by Governor of DIY province
Participatory	Proper	24 Homestay living house by local community, involving of Women social group (PKK) in food preparation and young generation in tourism board
ICT Implementation	Improper	The TV already has a simple web but didn't maintain and not integrated with the data. https://desawisatabrayut.wordpress.com/

**Figure 7.** Overview of Brayut Tourism Village and self-assessment result.

The result was similar to Pentingsari tourism village, that ICT support has not been implemented optimally. In terms of the village potentials, both Pentingsari and Brayut have unique potentials of natural attractions and traditional village tourism assets.

7. Manageability by digital technology, why still improper in Tourism Village?

ICT implementation in Tourism Village has not been optimum because there is a different way of thinking and the condition of the rural-urban community. This situation can be identified through three factors: i.e. ICT knowledge, human resource, and stakeholder roles. From the ICT point of view, the ICT concept has not been fully understood by the rural community.

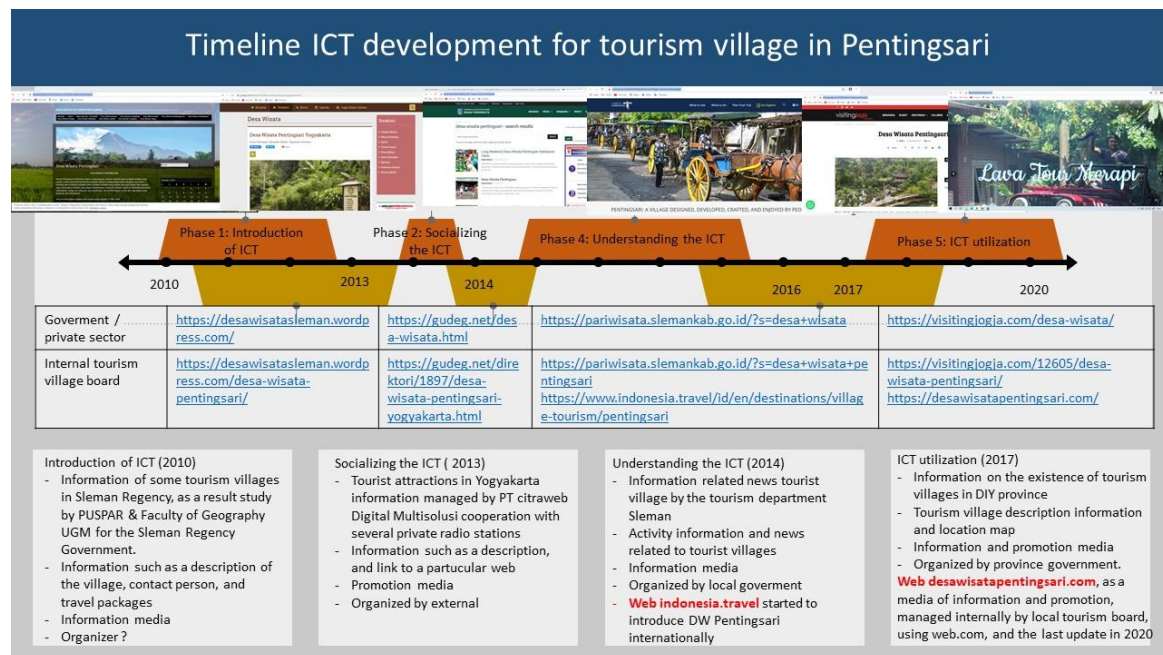


Figure 8. the timeline of ICT development in Pentingsari Tourism Village.

From the tracing investigation about the uses of ICT in Pentingsari tourism village (see figure 8), the development was begun in 2010 when the website of Sleman Regency tourism information was developed by the collaboration of Center of Tourism Study (*PUSPAR*) and the Geography Faculty of Gadjah Mada University. The socialization period started with the information on tourist village attractions through private portals such as gudeg.net as a promotion media. During the period of understanding the ICT, Pentingsari Tourism Village developed quite rapidly due to the assistance of several travel agents to promote its existence, even internationally, known Indonesian channel. In 2017, the Yogyakarta provincial government started with tourist village attractions and destinations collection through the website of visitingjogja.com channel. It was then continued by internal website development by Pentingsari Tourism Village Board. So far the use of ICT is still in the form of information collection and promotion media. There is no integration related to the management system of tourism villages such as homestay management and tourist attractions, the number of visits, reviews of tourist basic needs, reviews from the government and development of tourism development infrastructure.

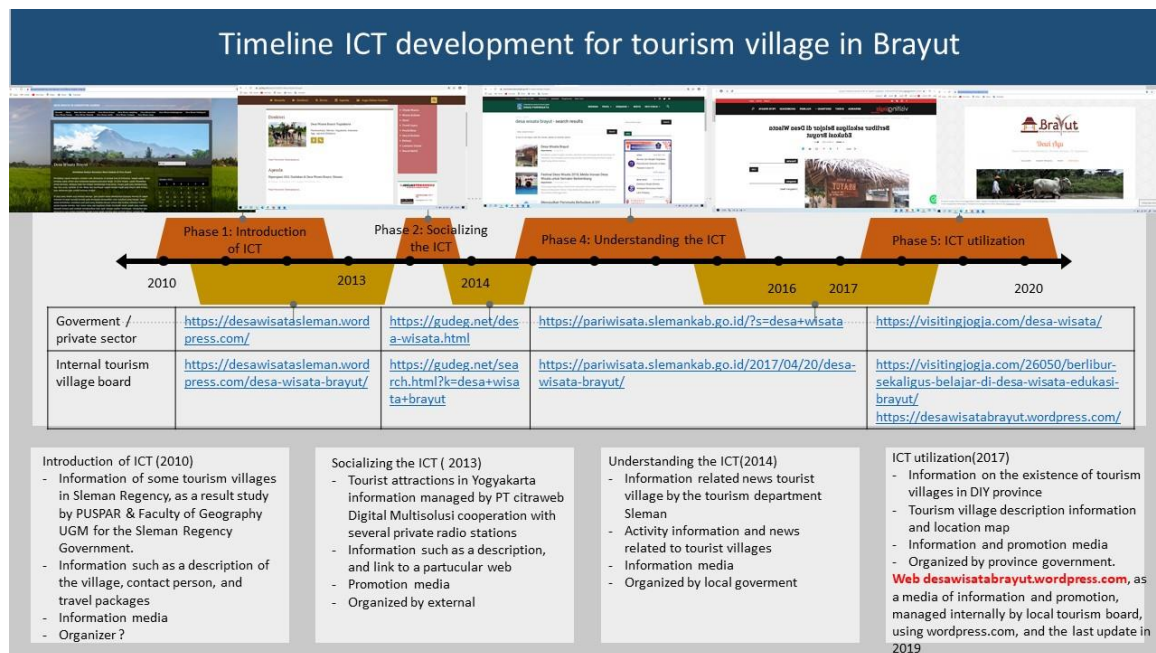


Figure 9. the timeline of ICT development in Brayut Tourism Village.

Meanwhile in Brayut Tourism Village is similar to Pentingsari, starting from the 2010 era with the introduction of ICT as a collection of tourism village information developed by *PUSPAR* and the Geography faculty from Gadjah Mada University. Then the socialization stage was marked by a private portal, namely *gudeg.net*, which was continued in the understanding period with the support of the Sleman Regency Tourism Department. The dissimilarity with Pentingsari is that Brayut is not highlighted on the travel agency because of a lack of external relations. However, the use of ICT began to develop along with the growing interest of tourists, especially after the *ngaYogyess* (Jazz music festival pioneered by Jadug Ferianto, the musician) which was held openly in a traditional tourism village area. The existence of Brayut is also well known through a national film that took place in this village so that the information channel is more sought after by visitors. The web page of *desawisatabrayut.wordpress.com* was developed independently by villagers as an effort to develop a tourist village, but it is still very simple.

Based on the above discussion, it can be said that the use of ICT so far is still in the form of information and marketing media (promotion). There has been no integration with the management of the tourism village, which has been developed both by managers and with the support of external parties such as the district government, educational institutions and NGOs. For example, assessment of tourism villages periodically to determine the village classification by the Department of Tourism, training assistance and village management certification for attractions and homestays and promotional media assistance [19]. Even though management information can be an opportunity for tourists before visiting.

Based on these 2 cases, it can be seen that the urge to develop ICT arises from 2 things. Firstly, external factors with the existence of active tourist bureaus that encourage village managers to learn and be independent. Secondly, internal factors due to the desire of villagers to introduce their village better. The ICT developed was spearheaded by the younger generation involved due to the attractiveness of developing tourist villages is one of the millennial generation's interests. Both of these factors indicate that the capacity of human resources plays a role in progress.

It could be because of the rural human resource capability, which is a bit less educated than human resource in the city. While the stakeholder roles nowadays are supporting physical infrastructure for rural areas. The policy related to the enhancement of ICT has not been fully supported. The schematic diagram of this implementation can be seen in figure 10.



Figure 10. Comparison between Pentingsari Tourism Village and Brayut Tourism Village in 3 aspects.

8. Improperness of ICT implementation by digital technology

Based on the three aspects of assessment, it can be summarised that:

- ICT implementation is needed to improve the integrated IT concept in Tourism Village and develop a simple and user-friendly ICT.
- Human resource development is important to improve community skill especially for operating and developing IT and optimize the rural revenue for human resource development.
- Stakeholder roles to improve the internet network area in Tourism Village, and to develop a supporting program to gain ICT Tourism Village Development supported by the regional institutional board for ICT development.

In an overall view, ICT holds significant roles in developing smart tourism village. Factors that influence ICT development in tourism village are the speed of ICT development, scope coverage of the ICT uses, the management system of ICT, and challenges of the future needs.

Slightly different from the challenges on a smart city which are more directed at cost and heterogeneity [20], so the challenge of smart tourism village is more on the implementation of ICT with the support of local human resources and the role of other stakeholders. Meanwhile, opportunities that support the development of Smart Tourism Village are similar to smart cities, apparently the existence of advance technology supported by the community participants who have experienced in increasing welfare and sustaining the natural environment.

9. Conclusion

The development of Smart Tourism Village still needs supporting elements such as ICT, empowerment of the community, and the government roles. This model is not only from the database side but also at the management system and a self-assessment tool of smart and sustainable tourism village.

The benefit of this model development can be implemented as a material review for the regional planning especially related to the infrastructure of rural development area which is based on cultural and natural attraction. Therefore, the sustainability of the natural rural landscape will be well maintained.

The opportunity to transform from the tourism village to become smart tourism village in Sleman Regency is that community participatory system and sustainability awareness as a part of the social capital of the tourism village community. The challenges handled by tourism village to transform become smart tourism village in Sleman is the ICT integration, human resource skill development, and stakeholder roles. Initial results show that there is still a lack of integration between village potentials, systematic management, and the needs of balanced tourists in the disruptive era.

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