ICTs for Sustainability in Ecotourism, Tarsius Hunt and Trees Scanner as Destination Attraction in Bukit Peramun

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Abstract. Sustainability is often said to be the middle ground in the Tourism debate, especially in the process of developing nature-based tourism. The basic thing is that the development of nature-based destinations often forgets the impact of development, namely the degradation of development areas, especially the destruction of nature. With the development of various technological functions and features, especially technology-based interactive tools and virtual assistance, this challenge must be bridged. In Indonesia, although it's not yet massive, there are destinations that utilize technology as a form of attraction. Bukit Peramun is one of them and by using Augmented reality (AR) and Virtual Reality (VR) to accommodate trips to see information on Tarsius and Trees. Using the tagline "Take Care of the Forest, Take Care of Life", preserving the flora diversity and habitat of Tarsius are Bukit Peramun's goal and aspiration. This research was conducted with a qualitative approach using observation and interview methods, to show how important it is to use ICT, namely AR and VR as part of the attractions at destinations which are also expected to fulfil the conservation goals carried out by Bukit Peramun. As one of the first ecotourism to use ICT in its destinations, this research will show how Bukit Peramun can become an icon of using technology that supports sustainability in Indonesian tourism, especially in ecotourism.

Keywords: Technology for Sustainability, Bukit Peramun, Ecotourism, Cephalopachus Bancanus Saltator

1 Foreword

Bukit Peramun is a forest area consist of 115 hectares, which is located in the area administrative of Air Selumar Village, Sijuk District, Belitung Regency, Bangka Belitung Archipelago Province. The strategic location of Bukit Peramun shown in historical storytelling by the local community as an observation point to observe the movements of pirate and colonial ships from the northern waters area of Belitung which passes through the South China Sea and the Natuna Sea. This shows how strategic the location of Bukit Peramun is. Nowadays apart from the historical story, they also building their areas as one of ecotourism destination.

Apart from the diversity of flora in this area, there is also a special fauna, their endemic species, a tarsius called *Cephalopachus Bancanus Saltator.* This nocturnal animal has eyes like an owl. Their body resembles a monkey with a long tail, the size of an adult tarsius is not more than a kitten. Estimated amount there are less than 100 tarsier on Bukit Peramun. That is why, the Belitung Regency Government really protect their

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habitat so they don't become extinct. By using ICTs as their main attraction, Bukit Peramun's goals is to preserve wildlife, conservation and sustainability on their destination.

While the use of ICTs is increasing in tourism as an effect of the past pandemic, there are still many arguments about it. Some presenting a various of evidence of change with the use of ICTs in tourism and destinations, resulting in a new framework for explaining the emerging aspects and trajectories that characterize the post-pandemic tourism phenomenon (Sigala 2020), such as virtual travel and digital experiences. Other theories also rise attention on the use of technological mediums such as ICTs requires technology acceptance, adoption, and intention to use, which limits the effectiveness of applications and generates conflicts in human-technology interactions, such as information overload, technostress, technology acceptance or end-user performances and difficulties even to the point of misuse (Stankov and Filimonau 2019; Trunfio et al. 2022 in Pasquinelli & Trunfio, 2023; Kim & Park, 2018). The future of the ICTs—tourism relationship will be characterized by a focus on user engagement and interactivity, using these new ICT-based tools/applications to communicate, interact and meet customer needs. Other example is the use of Environmental management information systems (EMIS) as another type of ICT-based tool (ali & Frew, 2012: 16). And one area that need to be expand is how ICTs may contribute to a more sustainable future in tourism (Fennel, 2020: 2). By referring to findings in this research, we can see Bukit Peramun can become *avant-garde* in Indonesia as a smart-ecotourism destination.

Fig. 1. Bukit Peramun location
Source: GoogleMaps/ Bukit Peramun

ICTs on sustainable ecotourism in Bukit Peramun. In January 2023, Bukit Peramun is one of the destinations proposed by the Ministry of Tourism and Creative Economy to take part in the UNWTO Competition: Startup for island destinations. The tourism

village, which is one of the focuses of the Directorate of Destination Management, according to its functions and duties, has resulted that at the village level the one that can use technology as the main attraction is the Bukit Peramun Forest. Bukit Peramun Forest is an advanced and visionary Tourism Destination in the field of technology and informatics and there are not many destinations in Indonesia that make technology the basis for tourism development, besides that because Peramun Hill Forest is in Belitung, this destination is included in the 10 DPP (Priority Tourism Destinations).

The Tarsius Watching tourist attraction is the leading destination activity in Bukit Peramun Area. Tarsius is one of the ancient primates, it is estimated migrated from the Philippines to Belitung Island during the last ice age or around 10,000 last year. The uniqueness of the animal with the Latin name *Cephalopachus Bancanus Saltator* in The Bukit Peramun Forest Area is different from tarsius in general. While other *genus* adapting by changing their behavior and diet, Belitung Island's tarsius have different body shape (a large head and long legs) as the results of their adaptation process.

Fig 2. Bukit Peramun's Cephalopachus Bancanus Saltator as one of their main attraction

Bukit Peramun Forest Area is a conservation area for the Tarsius as an endemic animal from Belitung Island. Tourists can enjoy the experience observing Tarsius because it is included in the selected tour package, with mandatory requirements visiting at night or around 7—9 PM local time, considering the animals' *nocturnal* nature. Observations of Tarsius are also limited for 10 minutes and tourists are prohibited to turn on the camera light, with the aim that the animal stay calm and not get stressed.

Bukit Peramun management is currently developing other technology to track these tarsius via GPS marking and has been implemented directly. But yet another problem arise as the GPS is still too big so the manager is doing further development. Technical crews put a GPS *track record* to be able to see the location of the tarsius using GPS coordinates. Not only the GPS track record of Tarsius, the Peramun Hill forest manager using technology as a basis for developing the preservation of ecotourism attractions. Since these tarsius cannot be breed in captivity and their nature as Monogamous animals—they only have one partner for their whole life, the best practice to preserve their life is to control their habitat. In delivering information and ordering tour packages, Bukit Peramun management uses digital transformation and creates various kinds of technology-based interactive tools or virtual assistance with database systems in cloud hosting. All systems created aims to build interaction between nature and humans through technology.

Bukit Peramun Virtual Guide Virtual Assistance 3D is an application developed to make it easier for guides, travelers with disabilities, and travelers who choose not to do trekking in order to still be able to see and get information about tourist attractions in Bukit Peramun. Peramun Virtual Assistance Application This Android-based Hill Virtual Guide 3D is both *online* and *offline.* This application can downloaded on the traveler's *smartphone* . Later, this application can interactively display information on potential tourist attractions offered independently in Indonesian and English. In addition, tourists can play a 3D animal search by location or coordinates. Hill Virtual Guide 3D application uses *a scanmaker* on photographs attractions that are placed at *the basecamp* or the starting point of Peramun Hill Forest.

Implementing 6As in the Future as part of Sustainability. Bukit Peramun uses various technologies based on interactive tools or virtual assistance with database systems in cloud hosting such as Virtual Assistance AR Know the Tree (KePo), Virtual Assistance Peramun Hill Virtual Guide 3D, Virtual Tour pear to pear with 360 video content support Oculus VR devices, Bukit Peramun tour package booking and payment system, Independent forest fire early warning system and Virtual Photo Spot. Peramun Hill Forest has a variety of ecotourism such as geotourism, nature tourism, educational tourism and night tourism (Tarsius Watching).

In this era of technological advances, 6As are the new standard to develop successful tourism destination, namely in smart-tourism eras (Buhalis, 2000; Arif, et al., 2019). This model consist of traditional 3As and 4As with new significant component available packages. This model is a suitable component in smart-ecotourism destination like Bukit Peramun because they will improve the destination attraction by presenting which packages suits the tourist and suitable for preventing overtourism.

Fig 3 . Components of the 6AsTD framework (Arif, et al., 2019)

Sustainability is often valued as the outcome and implications of smart destinations (Pasquinelli & Trunfio, 2023). This statement can be a consideration of how Peramun Hills should carry out tourism programs in their area. Of the many attractions that exist in these destinations, some of the use of ICTs can be a backfire. Ecotourism images which is still focused on the experience of directly touching and feeling nature cannot be fully experienced through the mediation of ICTs. Another challenges is that not all tourists have the same skills and knowledge in using ICTs.

Conclusion

While they already using ICTs in as their attraction, this destination still in process for building their image as smart-ecotourism destination since they haven't yet fully implemented the 6As components namely the available packages. Challenges such as knowledge and being familiar with the ICTs should be overcome by separating the two tour packages, namely visiting directly and using ICTs mediation or entirely using ICTs because they have actually considered using technology mediation for tourists who have disabilities.

The potential that exists in the Bukit Peramun Forest is very diverse and is optimized by using technology, with the aim of using this technology to make it easier for managers to manage forests, build interactions between nature and humans more effectively and efficiently, so as to increase the attractiveness of tourists visiting t attractions and promoting destinations more broadly.

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