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Priority Strategies for Sustainable Community-Based Ecotourism Management on Kaniungan Besar Island, Indonesia

Strategi Proritas untuk Pengelolaan Ekowisata Berbasis Masyarakat Secara Berkelanjutan di Pulau Kaniungan Besar Indonesia

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ABSTRACT

The primary objectives of this study are to identify business models to serve as the basis for managing sustainable eco-tourism and offer its alternative planning strategies. To support these objectives, some methods were employed, including field observations and in-depth interviews applying questionnaires with stakeholders and visitors. Also, BMC and QSPM integration models were applied to determine the main alternative strategies. Results revealed that the existing eco-tourism management could still not resolve the weaknesses and threats. Thus, it is not in line with the sustainable eco-tourism requirements. However, current management strategies in the study area will likely improve and achieve maximum progress if stakeholders consider its opportunities and strengths. The primary alternative strategy for sustainable eco-tourism management is carrying capacity-based management model formulation.

Keywords: *collaboration, empowerment, Orang Rimba*

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INTRODUCTION

Many countries develop the tourism industry to improve their economic growth and supply employment to the local communities. Uncontrolled mass tourism, however, harms natural resources, culture, and society (de los Monteros, 2002;Weaver, 2017;UNWTO, 2017). The degraded natural resources, mainly water pollution, loss of biodiversity, global warming, and wetland and coral reef destruction, have raised global awareness to manage the tourism industry sustainably (Wearing, S., & Neil, 2009; Ghorbani et al., 2015). The tourism industry, therefore, should consider nature-based tourism that accommodates the environment and well-being of local communities of tourism (Fennell, 2010; Das & Chatterjee, 2015). The nature-based tourism approach considers the integration of the tourism industry and the environment and views visitors' necessities and economic, societal, and cultural impacts (Laitamaki et al., 2016; Navarro-martínez et al., 2020). Eco-tourism is one type of nature-based tourism related to the sustainable tourism model. Eco-tourism is not only nature tourism but combines all aspects, such as environmental conservation, cultural awareness, and empowerment for local communities to achieve sustainable tourism development. Moreover, eco-tourism could offer the following advantages: increased national income, employment of local communities, decreased negative environmental impacts, and local community resilience (Das & Chatterjee, 2015; Navarro-martínez et al., 2020; Hosseini et al., 2021). Eco-tourism, developed in the late 1980s, refers to responsible travel and visitation toward the environment to natural areas by educating local residents and visitors to appreciate nature, promoting conservation, involving local communities, enforcing human rights, and growing respect for multiculturism (Diamantis, 2000; Jalani, 2012).

Small islands are important eco-tourism destinations worldwide (Weaver, 2017). They are typically classified as islands less than 5000 km^2 and have a population of below 1 million people (Bertram & Poirine, 2007). Small islands have high biodiversity, unique terrestrial flora and fauna, special geological features, and attractive landscapes (Médail & Quezel, 1999; Myers et al., 2010; Daby, 2003; Agius et al., 2019). They, however, are highly vulnerable to damage threats due to uncontrolled mass visits and low awareness of preserving the nature of small island sustainability.

Having many small islands, Indonesia is one that has various natural attractions worldwide. Currently, this country has 17,508 small islands that contribute to the overall GDP increase in the tourism sector (The Ministry of Marine Affairs and Fisheries Republic of Indonesia, 2013; Ahmad et al., 2019). Nevertheless, Indonesia's small islands face severe threats related to unsupervised eco-tourism, which decrease environmental quality. Some problems have arisen in Indonesia's small islands, including in small islands of Bontang City; in Karimata Island; in Dodola Island; and in Gili Timur Island (Aspiany et al., 2019; Rudiastuti et al., 2018; Kurniawan et al., 2016; Hidayah et al., 2016). Kaniungan Besar Island, one of Indonesia's small island tourism spots, has high potential and is an attractive destination for developing eco-tourism. This island, however, has a similar fate due to eco-tourism management and infrastructural problems. Sustainable eco-tourism development for the tourism industry through strategy formulation is required by stakeholders for utilizing and managing enterprises from the eco-tourism of Kaniungan Besar Island by following the principle of sustainability.

This study offers a sustainable eco-tourism management model employing the business model canvas (BMC) approach. This model delivers an alternative strategic and effective method for organizations to comprehend, design, create and capture the business value (Osterwalder et al., 2005). The BMC includes nine basic components: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, and critical partnerships to optimize strategic review while reducing debate on working details. The existing BMC will collaborate with internal Factor evaluation (IFE), external Factor Evaluation (EFE), strengths, weaknesses, opportunities, and threats (SWOT), and quantitative strategic planning matrix (QSPM) to determine the most acceptable strategy for eco-tourism management.

METHODS

Kaniungan Besar island is one of 39 small islands in Berau, Indonesia, and is located between longitudes 1°07'0.534" N and latitudes 118°50'34.081"E. This island is included in the Coastal and Small Islands Conservation Areas of the Derawan Islands and Surrounding Waters in Berau Regency, East Kalimantan Province, Indonesia, based on the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 87/Kepmen-KP/2016. Kaniungan Besar island has an area of 76 ha with head of family of 67. According to the East Kalimantan Governor Regulation No. 60/2019, this island

is included in the use zone for eco-tourism and sustainable fisheries. The natural resources found on this island are coral reefs, seagrass, and beaches. Also, dolphins and whales are found around these locations (Wiryawan & Tahir, 2013). Thus, this island offers attractive eco-tourism spots for diving, snorkeling, beach tourism, and tourism spots for observing dolphins and whales.

Data collection was obtained using mixed data, including primary and secondary data. Primary data were collected from field observations and in-depth interviews applying questionnaires. In August 2019, visitors, local people, local government, researchers, NGOs, and tourism operators were selected for the face-to-face interview to assign scores for IFE, EFE, and QSPM analyses. Internal and external factors are arranged in a matrix, which is given a score by a panel of key informants. The scoring process is as follows (Ghorbani et al., 2015):

1. The internal and external factors are rated "not important" and "most important" by providing a coefficient between 0 and 1, representing the relative importance of the factor in success rate and is described by the term "weight in the IFE and EFE matrices".
2. Each factor is scored between 1 (poor) and 4 (outstanding). For the IFE matrix, those scores represent the meaning of less strong/weak (1), strong/weak enough (2), strong/weak (3), and very strong/weak (4). Whereas, for the EFE matrix, those scores define the meaning of less opportunity/threat (1), enough opportunity/threat (2), opportunity/threat (3), and significant opportunity/threat(4).
3. The final score for each factor is decided by multiplying its weight with the calculated score.
4. Further, the final score of each factor is aggregated to define the total final score of IFE and EFE matrices.
5. Lastly, the final score provides an interpretation that less than 2,5 indicating the strengths or opportunities are less than weaknesses or threats and vice versa.

Secondary data, hereafter, were obtained from institutions and literature studies. Descriptive analysis using the BMC approach was employed to identify existing business models. The BMC approach is appropriate for identifying the most critical parts of business development, determining a reasonable strategy, and guaranteeing sustainability (Osterwalder et al., 2005; Toro-Jarrín et al., 2016). The business eco-tourism development model in Kaniungan Besar Island was determined by integrating the BMC approach (Osterwalder & Pigneur, 2010), IFE and EFE matrixes (Mallick et al., 2020), SWOT analysis (Ghorbani et al., 2015), and QSPM model (David, 1986).

RESULTS AND DISCUSSION

Once primary and secondary data were collected, existing BMC identification, evaluation, and alternative strategy determination were analyzed by integrating the BMC approach, IFE and EFE approach, SWOT analysis, and QSPM model. The results are shown below.

Existing BMC for Kaniungan Besar Island's Eco-Tourism

Customer Segments. Osterwalder & Pigneur (2010) stated that customer segments were one of the primary elements in the BMC approach since this element could inspire other elements. Customer segment creates an action to obtain knowledge about what customers need and also drives managers or organizations to deliberate what they are more excellent at compared to other competitors. Understanding the types of tourists can assist managers or organizations to determine the variety of values created (Dolnicar et al., 2018; Fan et al., 2019). According to in-depth interviews and observation results, the existing customer segment in Kaniungan Besar Island's eco-tourism was dominated by domestic tourists, with only a few foreign tourists. The average age of tourists was adults with upper middle income. In addition, most visits to the island were done in groups because tourists can save on transportation and accommodation costs in groups rather than individually.

Value Proposition. The value proposition is central to the BMC approach, focusing on product offerings created and comparing its offerings with competitors (Osterwalder & Pigneur, 2010). With an area of 76 hectares, Kaniungan Besar Island offers a white sand beach and a diversity of coral reefs. Also, whales and dolphins are found swimming around this island. In addition, local community life as fishermen is fascinating and new experiences for tourists to observe.

Channels. Channels depict the process of delivery of the product to customers. Channels are media for companies, groups, or organizations to create good communication and relationships with customers by delivering their value proposition of goods or services (Osterwalder & Pigneur, 2010; Szopa & Pękała, 2012). Kaniungan Besar Island's eco-tourism applied two ways of channels, namely offline and online. Offline uses word of mouth to promote the value proposition of eco-tourism to tourists who have visited. They, then, will promote eco-tourism on this island to other potential tourists. This is still the primary channel that managers use to promote eco-tourism activities to tourists. On the other hand, offline through social media and media networks displays information about profiles, eco-tourism activities documentation, and tour packages related to Kaniungan Besar Island eco-tourism to potential tourists.

Customer Relationships. Customer Relationships explain the relationship types of eco-tourism management established with potential tourists or specific customer segments. This element is vital because the relationship between customers and service providers influences overall experience and satisfaction (Wirtz & Jerger, 2016). Eco-tourism managers on Kaniungan Besar Island implemented two types of customer relationships, namely personal assistance and communities. In personal assistance, tourists communicate directly with eco-tourism managers to obtain help with profiles and tour packages offered by Kaniungan Besar Island eco-tourism through telephone, online chat, and face-to-face. In community relationship, eco-tourism managers involve associations such as government agencies, Indonesian tourist guide, tourism awareness societies, and tourism awareness groups to communicate with potential tourists.

Revenue Streams. The revenue streams present the cash received from each customer segment (Osterwalder & Pigneur, 2010). Most of Kaniungan Besar Island eco-tourism revenue streams were for local people with tourism businesses. The revenue streams were from homestay fees, rental of tourist facilities, culinary, and ship fees. These findings showed that eco-tourism attractions in this area economically impacted the local people. These results are in line with (Qian et al (2017); Ma et al (2019); Setiawan et al (2021).

Key Resources. Key resources are the primary inputs to create the value proposition companies, groups, or organizations used to serve their customer segments and deliver goods and services to customers (Osterwalder & Pigneur, 2010). The primary resources in Kaniungan Besar Island eco-tourism were natural, human, and physical resources. Natural resources were crucial as the attraction of eco-tourism on this island, comprising landscape, beach, coral reefs, sea grass, and biodiversity. Human resources mainly were the local people living on this island. The eco-tourism business still relies on human labor for operating tourism activities. Physical resources were the various facilities available on Kaniungan Besar Island, including accommodations, transportation, toilets, food stalls, a jetty, and clean water.

Key Activities. Key activities depicted the most important activities to create the value propositions for making its business model work (Slávik & Bednár, 2014). The key activities of this island were eco-tourism, including looking at beautiful natural scenery, playing at the beach, snorkeling, scuba diving, observing aquatic organisms, and observing local people's livelihood. In eco-tourism, tourist satisfaction is the most influenced key activities because of the impact on returning tourists to the destination and the desire to recommend it (Carvache-Franco et al., 2020).

Key Partners. Key partners are the relationships among people or companies that aim to operate their activities and reach customers (Osterwalder & Pigneur, 2010). The primary partners on this island were entrepreneurs in eco-tourism, the Indonesian tourist guide association, tourism awareness groups, tourism awareness societies, NGOs, Central and local government, and universities.

Cost Structure. Cost structure describes all costs incurred while working under a specific business model (Osterwalder & Pigneur, 2010). The cost structure incurred by eco-tourism businesses on this island included operation costs, maintenance costs, employee salary, and promotion costs (Table. 1).

Table 1. The existing BMC of Kaniungan Besar Island eco-tourism

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
• Entrepreneurs in tourism • Central and local government • Universities • NGOs • Tourism awareness groups • Indonesian tourist guide association • Tourism awareness societies	• Looking at beautiful natural scenery • Playing at the beach • Snorkeling • Scuba diving • Observing aquatic organisms • Observing local people's livelihood *Key Resources* • Natural resources • Human resources • Physical resources	• Attractive landscape • Underwater beauty • Rich biodiversity • Socio-cultural environment	• Personal Assistance • Communities *Channels* • Word of mouth • Social media • Media network	• Domestic and foreign tourists
Cost Structure • Operation costs • Maintenance costs • Employee salary • Promotion costs			*Revenue Streams* • Homestay fees • Rental of tourist facilities • Culinary • ship fees	

Source: Field Data (Processed), 2022

After the existing BMC was identified, each critical element in Table 1 was analyzed by SWOT analysis to determine the internal and external factors (Table 2).

Table 2. SWOT Analysis of the existing BMC

No	Elements	Strengths	Weaknesses	Opportunities	Threats
1	Customer Segments	Tourists are well-segmented and have a significant interest in the value proposition	There is no particular service program to maintain tourist loyalty	There is post-pandemic relaxation	Competitors are in a similar segment
2	Value Proposition	There are diverse ecotourism attractions	accessibility is poor	Eco-tourism has started to become a trend for some tourists	Ecology is vulnerable to tourism activities
3	Channels	The distribution of direct and indirect information is stable	information cannot be controlled	There is digital trend information	Competitors are increasingly aggressively promoting
4	Customer Relationship	good relationship with the community exists	service standards are inconsistent	There is awareness of eco-tourism business people to build networking	Competitors offer a more attractive package
5	Revenue Streams	Revenue is predictable due to stable tourist behavior	Eco-tourism revenue is not optimal	There are potential sources of revenue from various attractions and activities eco-tourism	Environment condition is unstable
6	Key Resources	There is natural resources diversity	There are lack of infrastructures	There is increased interest in eco-tourism	There is environmental degradation and potential disasters

No	Elements	Strengths	Weaknesses	Opportunities	Threats
7	Key Activities	There is community-based eco-tourism	Eco-tourism development is not scientific-based	It is in line with sustainable eco-tourism development policy	Investment policy in eco-tourism management leads to overcapacity
8	Key Partners	There is partnering with multi-stakeholders	Development among stakeholders is not integrated	There is assistance from universities or other key partners	There are overlapping interests and authorities
9	Cost Structure	Operational costs can be well predicted based on the number of tourist visits	There is no capacity building for efficiency cost	Technology applications can reduce operational costs	Unstable political conditions and economic changes can affect eco-tourism business processes

Source: Field Data (Processed), 2022

IFE analysis. Table 3 presents that the internal factors obtained from field observations and in-depth interviews consisted of nine strengths and nine weaknesses. Then, these factors will be investigated in the IFE matrix. Results shown that nine strengths factors have weights between 0.014 and 0.111 and effectiveness scores between 3 and 4. Nine factors, moreover, related to the weaknesses, which weigh 0.021 and 0.097, and effectiveness scores between 1 and 2. For strengths, "tourists are well segmented and have a significant interest in the value proposition", "the distribution of direct and indirect information was stable", and "good relationship with the community" had the highest final score. Whereas " revenue was predictable due to stable tourist behavior", "community-based ecotourism", and "partnering with multi-stakeholders" had the lowest final score. The most significant weaknesses factor with the highest final score was "uncontrolled information", "less optimal ecotourism revenue", poor accessibility", and "inconsistent service standards". In contrast, "poor accessibility", "inconsistent service standards", and "no particular service program to maintain tourist loyalty" had the lowest final score. The total value of internal factors was calculated as 2.465, less than 2.500, indicating that the strengths were less than the weaknesses.

Table 3. Internal Factor evaluation (IFE)

No	Internal factors	Weights	Effectiveness score	Final score
Strengths				**1.743**
1	Tourists are well segmented and have a significant interest in the value proposition	0.111	4	0.444
2	There are diverse ecotourism attractions	0.097	3	0.292
3	The distribution of direct and indirect information is stable	0.083	4	0.333
4	Good relationship with the community exists	0.069	3	0.208
5	Revenue is predictable due to stable tourist behavior	0.028	3	0.083
6	There are natural resources diversity	0.049	4	0.194
7	There is community-based ecotourism	0.028	3	0.083
8	There is partnering with multi-stakeholders	0.021	3	0.063
9	Operational cost can be well predicted based on the number of tourist visits	0.014	3	0.042
Weaknesses				**0.722**
1	There is no particular service program to maintain tourist loyalty	0.063	1	0.063
2	There is poor accessibility	0.097	1	0.097
3	Information cannot be controlled	0.097	2	0.194
4	Service standards are inconsistent	0.097	1	0.097
5	Ecotourism revenue is not optimal	0.063	2	0.125
6	There is lack of infrastructures	0.021	1	0.021
7	Ecotourism development is not scientific-based	0.021	2	0.042
8	Development among stakeholders is not integrated	0.021	2	0.042
9	There is no capacity building for efficiency cost	0.021	2	0.042
Total		**1.000**		**2.465**

Source: Field Data (Processed), 2022

EFE analysis. Table 4 displays opportunities and threats, with nine factors obtained from field observations and in-depth interviews. The weights allocated for opportunities factors were between 0.021 and 0.083, and the effectiveness scores ranged between 3 and 4. For threats, nine factors have weights between 0.021 and 0.090 and effectiveness scores between 1 and 2. Concerning the opportunities, the more critical factor towards a sustainable eco-tourism management was "it is in line with sustainable eco-tourism development policy", followed by the "technology applications can reduce operational costs", and "there is increased interest in eco-tourism". On the contrary, "there is post-pandemic relaxation", "eco-tourism has started to become a trend for some tourists", "there is digital trend information", and "there are potential sources of revenue from various attractions and activities eco-tourism" had the lowest final score. In terms of threats, the highest weights belong to the following factors: "Ecology is vulnerable to tourism activities", "competitors are in a similar segment", and "competitors offer a more attractive package". In contrast, "there are overlapping interests and authorities", "unstable political conditions and economic changes can affect eco-tourism business processes", and "there are environmental degradation and potential disasters" had the lowest final score. Accordingly, the total value of external factors was 2.486, indicating less than 2.500, which means that the threats overweight the opportunities.

Table 4. External Factor evaluation (IFE)

No	External factors	Weights	Effectiveness score	Final score
Opportunities				**1.813**
1	There is post-pandemic relaxation	0.021	4	0.083
2	Ecotourism has started to become a trend for some tourists	0.021	4	0.083
3	There is digital trend information	0.042	3	0.125
4	There is awareness of ecotourism business people to build networking	0.063	4	0.250
5	There are potential sources of revenue from various attractions and activities ecotourism	0.042	4	0.167
6	There is increased interest in ecotourism	0.076	3	0.229
7	It is in line with sustainable ecotourism development policy	0.083	4	0.333
8	There is assistance from universities or other key partners	0.069	3	0.208
9	Technology applications can reduce operational costs	0.083	4	0.333
Threats				**0.674**
1	Competitors are in a similar segment	0.083	1	0.083
2	Ecology is vulnerable to tourism activities	0.090	1	0.090
3	Competitors are increasingly aggressively promoting	0.049	2	0.097
4	Competitors offer a more attractive package	0.083	1	0.083
5	There is unstable environment condition	0.056	2	0.111
6	There are environmental degradation and potential disasters	0.042	2	0.083
7	Investment policy in ecotourism management leads to overcapacity	0.049	1	0.049
8	There are overlapping interests and authorities	0.021	1	0.021
9	Unstable political conditions and economic changes can affect ecotourism business processes	0.028	2	0.056
Total		**1.000**		**2.486**

Source: Field Data (Processed), 2022

SWOT strategies. Once investigated the most crucial internal and external factors, the SWOT model was applied to formulate planning strategies by combining all features, including strengths and opportunities (SO), strengths and threats (ST), weaknesses and opportunities (WO), and weaknesses and threats (WT). Applying pairwise matching of SO, WO, ST, and WT strategies, nine alternative strategies have been designed for sustainable eco-tourism management. The SO strategies identify strengths relevant to the opportunities, while ST offers actions to overcome threats using strengths. Also, WO recognizes how to take advantage of opportunities by overcoming weaknesses, and WT is a defensive way to overcome weaknesses due to threats. The two best SO strategies are "community-based ecotourism management model formulation", and "optimization of communication networking through the hybrid model." Further, the two best suggestions in ST strategies include "strengthening disaster and accident mitigation systems in ecotourism activities", and "law enforcement to prevent illegal and destructive utilization". Also, the three best recommendations in WO strategies comprise "vocational education for improving ecotourism service standards", "improvement of ecotourism business infrastructures", and "strengthening the business capacity for ecotourism business actors", Lastly, the

two best WT strategies are "carrying capacity-based management model formulation", and "strengthening the coordination system in decision-making for ecotourism management" (Table 5).

Table 5. Sustainable eco-tourism management based on SWOT analysis

	Planning strategies
1	Community-based ecotourism management model formulation
2	Optimization of communication networking through the hybrid model
1	Strengthening disaster and accident mitigation systems in ecotourism activities
2	Law enforcement to prevent illegal and destructive utilization
1	Vocational education for improving ecotourism service standards
2	Improvement of ecotourism business infrastructures
3	Strengthening the business capacity for ecotourism business actors
1	Carrying capacity-based management model formulation
2	Strengthening the coordination system in decision-making for ecotourism management

Source: Field Data (Processed), 2022

QSPM strategies. In this study, the QSPM analysis provides the alternative strategy classification for sustainable eco-tourism management on Kaniungan Besar Island. The ranking of alternative strategy is obtained from the value of the total attractiveness score (TAS), where the highest TAS value can be the most acceptable strategy. Table 6 shows that the most acceptable strategy was "carrying capacity-based management model formulation" (WT1 strategy) with a TAS value of 7.78, followed by "community-based eco-tourism management model formulation" (SO1 strategy), and "strengthening the coordination system in decision-making for eco-tourism management" (WT2 strategy), with TAS values of 7.75 and 7.72, respectively. Moreover, three other crucial strategies were "vocational education for improving eco-tourism service standards" (WO1 strategy), "Strengthening the business capacity for eco-tourism business actors" (WO3), and "improvement of eco-tourism business infrastructures" (WO2). TAS values of those were 7.67, 7.63, and 7.59, respectively. On the other hand, "law enforcement to prevent illegal and destructive utilization" (ST2 strategy), "optimization of communication networking through the hybrid model" (SO2 strategy), and "Strengthening disaster and accident mitigation systems in eco-tourism activities" (ST1 strategy) obtained TAS values of 7.55, 7,50, and 7.32, respectively, as the least essential strategies influencing sustainable eco-tourism management.

Table 6. The final result of QSPM analysis

Code	Planning strategies	Total attractiveness score
WT1	Carrying capacity-based management model formulation	7.78
SO1	Community-based ecotourism management model formulation	7.75
WT2	Strengthening the coordination system in decision-making for ecotourism management	7.72
WO1	Vocational education for improving ecotourism service standards	7.67
WO3	Strengthening the business capacity for ecotourism business actors	7.63
WO2	Improvement of ecotourism business infrastructures	7.59
ST2	Law enforcement to prevent illegal and destructive utilization	7.55
SO2	Optimization of communication networking through the hybrid model	7.50
ST1	Strengthening disaster and accident mitigation systems in ecotourism activities	7.32

Source: Field Data (Processed), 2022

CONCLUSION

This study presents the best planning strategies by combining BMC and QSPM integration models through nine critical elements of BMC and strengths, weaknesses, opportunities, and threats factors to enhance sustainable eco-tourism management on Kaniungan Besar Island. The findings reveal that the main strength of Kaniungan Besar Island for eco-tourism is that tourists are well-segmented and have a significant interest in the value proposition. At the same time, the main weaknesses are poor accessibility, uncontrolled information, and inconsistent service standards. On the other side, sustainable eco-tourism management of Kaniungan Besar Island has significant opportunities to develop due to being in line with sustainable eco-tourism development policy and technology applications that can reduce operational costs. However, the findings of this study also have the main threat, such as ecology, which is vulnerable to tourism activities. The best alternative strategies to develop sustainable

ecotourism management in Kaniungan Besar Island are carrying capacity-based and community-based management model formulation and strengthening the coordination system in decision-making for ecotourism management. These results may serve as crucial information for decision-makers in the study area to develop sustainable ecotourism. Thus, in sustainable ecotourism management, ecological sustainability in this study area can be maintained while improving local people's welfare.

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