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IDENTIFICATION OF THE HIERARCHY OF ECOTOURISM CRITERIA USING THE AHP METHOD: REFERENCE FOR DETERMINING PRIORITY VILLAGES FOR ECOTOURISM DEVELOPMENT

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Abstract

The existence of government programs that change the direction of tourism development from mass tourism which is considered to cause degradation of environmental, socio-economic and cultural aspects, to quality tourism, is also a concern for Bali tourism leaders to participate in efforts to change the direction of Bali tourism development through the development of ecotourism. The proof is that many studies/research have been conducted to add new forms of more sustainable tourist destinations in Bali. The study concluded that many villages in Bali have the potential to be developed as ecotourism. The focus of this research is to formulate a hierarchy of criteria for ecotourism development using the AHP (Analytical Hierarchy Process) method. The hierarchy of ecotourism development criteria can be used as an indicator to assess the next ecotourism priority village. This research is a mixed method research, where identification and weighting will be carried out through the Decision Support System (SPPK) with the AHP method. Secondary data collection in the form of research that has been carried out previously and supporting literature related to ecotourism is used to formulate criteria and sub-criteria for ecotourism development. This formulation is used as initial information in the process of weighing ecotourism criteria and sub-criteria. The results showed that there are six ecotourism criteria that can be used in determining priority villages for future ecotourism development including environmental criteria (absolutely more important: 0.281), socio-cultural (0.210), level of community participation (0.168), education (0.166), economy (0.100), and institutional (0.075).

Keywords: Ecotourism, Quality Tourism, Priority Village, AHP

1. INTRODUCTION

The development of information technology, communication, and transportation has influenced the forms of tourist trips undertaken by tourists today. One of them is organizing mass tourism (mass tourism, mass travel) which involves a large number of tourists/groups. Mass tourism in this case is a type of tourism that has several characteristics including large-scale tourism activities, usually packaged in tour packages,

requires large-scale tourism infrastructure facilities and requires strategic locations with adequate area (Kodhyat, 1997).

Over time, mass tourism is seen as having a negative impact, namely causing environmental degradation and degradation of social, cultural, including economic values (Akis, 2011). Such degradation can occur because the development of mass tourism is only carried out with an economic approach without considering the local environmental, social and cultural aspects. Given the magnitude of the negative impacts arising from forms of mass tourism, especially for the environment and ecosystems, various countries including Indonesia are trying to change the direction of tourism development from mass tourism to more quality tourism sustainable. One of the tourism programs made by the government is the development of ecotourism.

Ecotourism is a form of travel to nature which is carried out with the aim of conserving the environment and preserving the life and welfare of the local population (Fennel, 1999). Ecotourism development is considered more beneficial not only for economic life, but also for the advancement of the local community, and is sustainable both in the social, cultural and economic fields. Ekowisata merupakan kegiatan wisata yang bersifat khas, dimana didalamnya terkandung tiga unsur utama diantaranya adalah ekologis, ekonomis, serta *Evaluating Community Opinion* (Western, 1995 dan Dalem 2004). Ecological elements, ecotourism activities that carried out must be environmentally friendly. The economic element, ecotourism activities carried out must be able to provide economic benefits to the surrounding community. The element of ECO (Evaluating Community Opinion), ecotourism activities carried out must pay attention to opinions and involve the surrounding community.

Bali, as one of the best tourist destinations in the world that has many tourist attractions that attract tourists to visit. Sejalan dengan program pemerintah, para tokoh pariwisata termasuk komunitas sadar wisata di Bali tengah berupaya untuk mengubah arah pengembangan pariwisata menuju pariwisata berkualitas (*quality tourism*). There have been many studies/research conducted to add new forms of tourist destinations that are more sustainable, both in terms of environment, economy, social, and culture. The result is that many villages in Bali have the potential to be developed as ecotourism. Such as the research (Adnyana, et al, 2020) which concluded that Peliatan Village has the potential to be developed for ecotourism, other studies concluded that Mas Village had the potential to develop community-based ecotourism (Sulistyawati, 2015), and there was also research which concluded that Kedewatan Village was feasible to be developed as ecotourism (Dewi, et al, 2017).

Each researcher uses different assessment criteria in concluding whether or not a village has the potential to be developed as an ecotourism village. For instance, the criteria for tourist destinations which contain four aspects, namely attraction, accessibility, amenity and ancillary (Cooper, 1995) are used to assess Peliatan and Kedewatan Villages, as well as criteria for physical potential and non-physical potential which were analyzed using the SWOT method to assess the potential of Desa Mas in ecotourism development. The variety of criteria used to assess the potential of ecotourism development villages requires the formulation of criteria to obtain appropriate criteria based on a synthesis of various ecotourism theories. Besides of that, it is also necessary to know the priority level/hierarchy of ecotourism criteria that must exist in the development of an ecotourism village, so that development efforts can run smoothly and effectively. For this reason, the focus of this research is to formulate a hierarchy of ecotourism development criteria using the AHP method (Analytical Hierarchy Process). This hierarchy of ecotourism development criteria can then be used as a reference for indicators for assessing priority villages for ecotourism development.

2. LITERATURE REVIEW

In general, the scope of tourism consists of activities that can be classified into five (Eplerwood, 2002) including rural tourism (rural and agro tourism), marine tourism (beach and sun tourism), cultural tourism (cultural tourism), natural tourism (natural tourism), and business trips (business travel). The position of ecotourism in this case can be said to be unique because it is based on three scopes of activity at once, namely rural tourism, nature tourism and cultural tourism. Ecotourism is an activity of traveling to natural areas that is carried out with the aim of conserving the environment and preserving the life and welfare of the local population (Fennel, 1999). Not only focusing on conservation activities, ecotourism activities can be packaged professionally and contain elements of education, as one of the business fields in improving the economy, taking into account local culture/traditions, and involving the participation of the surrounding community to support the welfare of local residents (TIES, 2006).

In line with the definition of TIES ecotourism, reports (Australian National Ecotourism Strategy, 1994 and research (Alan, 1996) provide the same statement, where ecotourism is nature-based tourism that is closely related to education and understanding regarding the environment and culture that has characteristics. Ecotourism can develop optimally with the support of the following five important aspects (Choy, 1997), such as the pristine natural and cultural environment, local community support, education and experience, are sustainable, and managerial support in ecotourism management.

Ecotourism products and services can generally be classified into six (Nugroho and Negara, 2014), including environmental and cultural sights and attractions, landscape benefits, accommodation and supporting service facilities, tools and equipment, education and skills, as well as awards/achievements towards conservation. In Indonesia itself, ecotourism products and services, especially those related to education and skills, as well as awards/achievements towards conservation are still lacking due to the lack of public understanding of interpretation activities, namely related to efforts to understand an object so that one is able to react and create a relationship positive relationship between humans and objects/nature. Ecotourism must contain at least three main principles (Page and Rose, 2002), namely conservation principles (both those related to ecology and socio-culture/traditions), community participation principles (community involvement in every stage of ecotourism activities), and economic principles (management of resources that can be utilized in a sustainable manner for the benefit of future generations).

3. METHODS

This research is based on the existence of various criteria for assessing villages with ecotourism potential which concludes that many villages in Bali have the potential to be developed as ecotourism. The variety of assessment criteria requires a formulation of ecotourism development criteria based on a synthesis of ecotourism theory. Furthermore, after obtaining the formulation of ecotourism criteria and sub-criteria, the criteria were weighted using the AHP method and the help of Expert Choice software.

Quantitative and qualitative paradigms are used in this study, where the quantitative paradigm uses assumptions and preferences obtained from experts/experts which are then processed using the AHP method and Expert Choice software so that they will produce an assessment weight. The Qualitative Paradigm that used in this research is based on placing informants as data sources to be used and analyzed at a later stage.

3.1 AHP Method

This study uses the AHP (Analytical Hierarchy Process) method, which is a decision support model developed by Thomas L. Saaty. Through this decision support model, multi-factor or multi-criteria problems can be broken down into a hierarchy (Saaty, 1993). The basic concept of AHP is the use of a pairwise comparison matrix which will produce relative weights between criteria. A criterion will be compared with other criteria in terms of how important it is to achieving the goals set. The AHP principle consists of decomposition which includes hierarchical preparation, comparative judgment which includes evaluating criteria and alternatives as indicated by a paired matrix, synthesis of priority to obtain relative weights for the elements of the decision maker, and logical consistency which results in the sequence of decision making. The AHP calculation will be assisted by Expert Choice 11 software, to assess criteria and alternatives which is carried out using a comparison scale in order to obtain a relatively accurate priority scale ratio. The paired comparison scale used is verbal judgments to describe how important the elements/criteria are compared to other elements/criteria.

3.2 Research Stage

Broadly speaking, there are two stages of research that will be carried out in this study, including the formulation of ecotourism criteria and sub-criteria and the weighting of ecotourism development criteria.

a. Formulation of Ecotourism Criteria and Sub Criteria

At this stage secondary data collection will be carried out in the form of research/studies that have been done before and supporting literature related to ecotourism. Furthermore, the criteria and sub-criteria for ecotourism development will be formulated based on the synthesis of ecotourism theory. This formulation is used as initial information in the process of weighing ecotourism criteria and sub-criteria.

b. Weighting Criteria for Ecotourism Development.

After the criteria and sub-criteria have been formulated, at this stage the ecotourism development criteria are weighted using the AHP method. The characteristic of the AHP method is to use the opinion of experts who are experts in the field studied, in this case the fields of tourism, environment, architecture, social and culture, and economy. Expert opinion is to determine the level of importance of one criterion. Opinion of experts/experts to determine the level of importance of one criterion with other criteria was obtained using a questionnaire distributed online. Questionnaire data processing will be carried out with the help of Expert Choice 11 software to produce output in the form of weights and a hierarchy of criteria.

3.3 Data Collection Technique

Data collection techniques through questionnaires and literature study. Questionnaires will be distributed online to experts in the fields of tourism, environment, architecture, socio-culture and economics to find out the level of importance of one criterion over other criteria in the opinion of the experts. The opinions of the experts will then be tabulated and analyzed using the AHP method using the Expert Choice 11 software so that it will produce a weight and hierarchy of ecotourism criteria. Literature study was conducted to help researchers formulate ecotourism criteria and sub-criteria.

4. RESULTS AND DISCUSSION

This section will describe the formulation of ecotourism development criteria obtained from the synthesis of various ecotourism theories and the hierarchy of ecotourism development criteria is known by entering data on the importance level of criteria based on the opinion of each expert into the software *Expert Choice 11*.

4.1 Formulation of Ecotourism Development Criteria

The results of the theoretical synthesis show that there are six main criteria in ecotourism development, including environmental criteria, level of community participation, education, economics, socio-culture, and institutional. The six ecotourism criteria form a single entity that cannot stand alone and must be considered in ecotourism development.



Figure 1. Formulation of Ecotourism Development Criteria
Source: Prasandya, 2021

The six criteria for ecotourism development will then be broken down into several sub-criteria which can later be used as indicators for evaluating villages in Bali in particular and in Indonesia in general. The sub criteria are also obtained from the results of a synthesis of various ecotourism theories that have been described in the previous chapter. There were six environmental sub-criteria, two community participation level sub-criteria, three education sub-criteria, six economic sub-criteria, five social and institutional sub-criteria.

Table 1. Ecotourism Criteria and Sub Criteria Based on Theory Synthesis

| No | Criteria | Sub -Criteria | Source |
|---|----------------------------------|---|--|
| 1 | Environment | Conservation of natural resources and biodiversity | Fennel D.A, 1999; Choy, 1997; Aziz et.al, 2015; Jaini et.al, 2019; Suryabhadgavan et.al, 2015; TIES, 2006; Nugroho, 2014; Angelevska and Rakicevik, 2012 |
| | | Accessibility | |
| | | Waste handling ensures environmental sustainability | |
| | | Environmentally related awards | |
| | | Use of environmentally friendly technology in the area | |
| 2 | Level of Community Participation | cleanliness | Page dan Ross, 2002; Choy, 1997; Eplerwood, 1999; Direktorat Jenderal Perlindungan dan Konservasi Alam, 2000; |
| | | activities | |
| 3 | Education | Management of transportation and accommodation facilities by the local community | Yoeti, 2000; Australian National Ecotourism Strategy, 1994; Alan A., 1996; Choy, 1997; Eplerwood, 1999; Aziz et al, 2015; Jaini et al, 2019; Swarbrooke, 1999; Nugroho, 2014 |
| | | Education and training on understanding the environment, nature, culture/tradition | |
| | | Local community training in the field of local wisdom | |
| 4 | Economy | Availability of tourist information | Page and Ross, 2002; TIES, 2006; Eplerwood, 1999; Aziz et al, 2015; Yusnikusumah, 2017; Swarbrooke, 1999; Angelevska and Rakicevik, 2012 |
| | | The area provides financial benefits to the surrounding community | |
| | | Revenue from ecotourism activities to improve the quality of the area | |
| | | stay | |
| | | Opportunities for additional state revenue from activities carried out | |
| | | Marketing of local products to tourists | |
| 5 | Socio-cultural | Job creation | Page and Ross, 2002; Aziz et al, 2015; Swarbrooke, 1999; TIES, 2006; Nugroho, 2014; Angelevska and Rakicevik, 2012 |
| | | Socio-cultural attractiveness | |
| | | The creation of tourism products prioritizes local values | |
| | | Regional development is adapted to traditional values | |
| | | Protection, maintenance, management of buildings, arts and culture, customs, habits of life | |
| Level of conflict between tourists and local people | | | |

Source: Prasandya, 2021

4.2 Hierarchy of Criteria for Ecotourism Development Based on the AHP Method

This study used 15 experts who have expertise in the fields of tourism, architecture, environment, socio-culture, and economics. Experts are considered to understand ecotourism issues and problems in general so they can formulate an objective rating scale. Questionnaires were distributed online to experts/experts to obtain data on the level of importance of each criterion. Data on the level of importance of each criterion were then processed with the help of Expert Choice 11 software to find out the hierarchy of ecotourism development criteria. Tabulation of data which is a combination of the results of a pairwise comparison scale of all the experts involved will be carried out to find out the final weight and conclusion of the hierarchy of ecotourism development criteria, from the most important to the less important. The pairwise comparison rating scale and the hierarchy of ecotourism development criteria based on a combination of experts/fields of expertise are as follows:

Table 2. Expert Combined Pair Comparison Rating Scale

| | Lingkungan | Tingkat Part | Pendidikan | Ekonomi | Sosial Bud | Institusional |
|--------------------|-------------|--------------|------------|---------|------------|---------------|
| Environment | | 2.90509 | 1.93424 | 2.72778 | 1.13852 | 2.57937 |
| Level of Community | | | 1.34113 | 1.34912 | 1.13207 | 3.09142 |
| Participation | | | | 2.35738 | 1.37973 | 2.68392 |
| Education | | | | | 1.63362 | 1.26747 |
| Economy | | | | | | 2.52216 |
| | Incon: 0.03 | | | | | |

Source: Prasandya, 2021

Table 3. Conclusion Hierarchy of Criteria for Combined Ecotourism Experts



Source: Prasandya, 2021

Based on the results of the data processing above, the inconsistency value is very small, namely 0.03 indicating that the accuracy and consistency of the data are classified as good (valid data). The most important ecotourism criterion is the environmental aspect, because in ecotourism the main activities of tourism trips are directed to natural areas which are carried out with the aim of environmental conservation. This is in accordance with the opinion (Page and Ross, 2002) which says that ecotourism is very dependent on the environment which is very closely related to the preservation of natural resources and sustainable use, both ecologically, socially, economically. A very important ecotourism criterion is the socio-cultural aspect, because when viewed from the scope of ecotourism activities (Eplerwood, 2002), apart from being based on rural tourism and nature (environmental) tourism it is also based on cultural tourism. Authenticity of the natural environment and social sustainability (development adapted to traditional values and strengthening local identity) and cultural sustainability (adapted to the cultural values of the local community) are the main considerations in ecotourism activities.

A slightly more important ecotourism criterion is the aspect of community participation, in this case in accordance with the five main criteria for the development of ecotourism (Choy, 1997), namely the presence of an environment both natural and pristine culture, support from the community, education and experience, is sustainable, as well as skills in management and management of ecotourism. Community participation in ecotourism activities is carried out in every stage of activity, both in the planning, development, implementation, monitoring and evaluation stages so that ecotourism activities can run optimally. An important ecotourism criterion is the educational aspect, where according to (Australian National Ecotourism Strategy, 1994) the educational element is important as an effort to increase understanding regarding the environment and culture. Environmental and cultural conservation education is also carried out so that people and tourists are able to react and create a positive relationship with the object/nature.

An important ecotourism criterion is the economic aspect, where one of the objectives of ecotourism activities is to improve the welfare of the local population (Fennel, 1999). In this case, it is necessary to regulate natural resources so that their utilization can be sustainable and help the local community's economy and support future generations. The real benefits to the community's economy from ecotourism activities can also encourage people to maintain sustainability natural area. The ecotourism criterion with the last (less important) hierarchical level, namely the institutional aspect, is one of the main principles in managing sustainable ecotourism (Yusnikusumah, et al, 2017). The existence of institutions that specifically support ecotourism management activities also ensures the sustainability of the ecotourism activities carried out. When compared with the study of the four important aspects of tourist destinations (Cooper, 1995), which contain elements of attraction (tourist attractions offered by a destination), accessibility (supporting facilities that make it easier for visitors to reach the destination), amenity (facilities that can be used by visitors at a destination), destinations) and ancillary (existence of institutional management of tourist destinations), in ecotourism it is considered necessary to have other criteria that can be used as a reference in creating ecotourism destinations, considering that the distinctive characteristics of ecotourism are different from other types of tourist destinations. For this reason, ecotourism criteria and sub-criteria must be met by a destination so that the tourism characteristics created are in accordance with the goals and expectations of ecotourism development.

5. CONCLUSION

Based on the results of a synthesis of various ecotourism theories, six main criteria are formulated in ecotourism development, including environmental criteria, level of community participation, education, economy, socio-culture, and institutional. The six ecotourism criteria form a single entity that cannot stand alone and must be considered in ecotourism development. Based on the results of data analysis using the AHP method, which occupies the most important hierarchy in ecotourism criteria is the environmental criterion (0.281), the very important hierarchy is occupied by socio-cultural criteria (0.210), a slightly more important hierarchy is occupied by the participation level criterion society (0.168), the important hierarchy is occupied by educational criteria (0.166), a fairly important hierarchy is occupied by economic criteria (0.100), and hierarchy the less important is occupied by institutional criteria (0.075). The hope for future researchers is that the criteria and sub-criteria that have been formulated in this study can be used as a reference or indicator in assessing potential villages in Bali in particular and in Indonesia in general that can be developed as ecotourism villages.

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