Identification analysis of potential object as the basis for the development of karst eco-tourism in western pacitan

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Abstract. This study aimed to discover the potency and policy direction of ecotourism object development on the western Karst Area in Western Pacitan. This research used a qualitative descriptive method with the internal and external potential variables of ten ecotourism objects on the Karst Area in Western Pacitan. Sampling technique was done by interviews, field observations, and documentation towards 70 visitors and 20 people of the local community around the ecotourism object, and 30 managers (Department of Culture and Tourism Pacitan district). The results showed that there are three ecotourism objects with a high, average, and low potential combination. Based on the Potency Analysis and policy direction, Srau beach, Cua Gong, and Tabuhan cave tourism objects have the highest potency to be developed using the 3-E concept (Ecology, Education, and Economy), local community-based ecotourism development, and interpretation based ecotourism development.

1. Introduction
The role of the tourism sector is getting more critical, along with the developments and contributions were given by the tourism sector via foreign exchange earnings, regional income, regional developments, and investments absorption and labours which includes business developments that spread across Indonesia. Based on the Ministry of Tourism, the contribution of the tourism sector towards the national Gross Domestic Product (GDP) in 2014 reached 9%, which is 946.09 trillion IDR. On the other hand, the foreign exchange earnings from the tourism sector in 2014 reached 120 trillion IDR, and the contribution to employment opportunities amounted to 11 million people through the mechanism of "pulling and pushing" to the economic sectors related to the tourism sector, such as hotels, restaurants, transportation, souvenir industries and others. Also, through its multiplier effects, tourism is able to accelerate the economic growth and excogitations of employment opportunity. That is why the acceleration of economic growth and wider employment opportunity can be done through the promotion of tourism developments. Likewise, in the case of Pacitan region, it contributes more than one and a half billion IDR per year.

Along with the enactment of the law concerning the Regional Government, the authority of the regions has become more widespread and demanded to be independent. Including the development of tourism in Pacitan, which has a very important and a strategic meaning, because the tourism sector contributes significantly to the increase of the regional income. This also makes it one of the main objectives of developing tourism in Pacitan, namely to plan areas which have the potential to be developed following regional characteristics, community identity and environmental supports. Therefore, it is expected that the development of tourism destinations can increase the local revenue, increase the income of the community and its welfare. In the environmental aspect, tourism (particularly
Ecotourism (ecotourism) can promote tourism products and services such as the richness and uniqueness of nature and the sea, and also a useful tool for the preservation of the natural environment.

Regarding the development of tourism, there is now a distinct type of tourism which shows a pretty high-interest rate, which is back-to-nature tourism destinations. This kind of tourism takes people to the countryside and mountainous area to enjoy the air that is still clean and far from noise and pollution. This concept has been developed and now known well as ecotourism. The opportunity to develop ecotourism takes the attention of the people from the karst region in the west of Pacitan region. With the worthwhile development of this karst area, it is highly excepted for this development to make this region into a source of income and at the same time, preserve nature.

"Ecotourism comes with a definitional promise to promote responsible travel to natural areas, to make a positive contribution to environmental conservation, and to each the well-being of communities [1]." Ecotourism is responsible travel to natural areas which conserved the environment and improved the welfare of local people [2]." There have been serious problems associated with environmental management in Indonesia. These include institutional, social-economic and ecosystem related problems, but ecotourism to make a positive contribution to environmental conservation [3]." Nature or ecotourism can be defined as tourism that consists in travelling to relatively undisturbed or uncontaminated natural areas with the specific objectives or studying, admiring, and enjoying the scenery and its wild plants and animal, as well as any existing cultural manifestations (both past and present) found in the areas [4]." Responsible travel to natural areas that conserves the environment and improves the well-being of local people [5]." Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems [6]." Ecotourism the consideration of the local environmental consequences of to tourism to the consideration of its global environmental consequences [7]." Ecotourism the destination environment, the provision of economic opportunities for local communities, avoiding adverse social-cultural impacts through visitor presence or host communities, ensuring an educational experience for the visitor [8]." Ecotourism it is generally used to donate a market-differentiated and an ideologically divergent form of tourism that is considered preferable to mass tourism and is more sustainable [9]."

The research question is "How is the Potential Development of the Potential Ecotourism Objects in the Western part of the Pacitan Region of East Java?". The purpose of this study was to understand and examine the development policies of the ecotourism in the karst region of Pacitan. To achieve the mentioned objectives, the focus in this study were:

1) To study the characteristics of the potential of each ecotourism destination in the karst region in Western Pacitan.
2) To determine the ecotourism destinations with high potentials to develop in the karst region in Western Pacitan.
3) To determine the development policies of the ecotourism destinations in the karst region in Western Pacitan.

The condition of the area in Southern Pacitan is generally formed by limestone and is lower than Northern Pacitan. Northern Pacitan is higher, and it contains mining materials such as feldspar, bentonite, calcite, gypsum, phosphate, silicates, iron ore, coal, dolomite, limestone, ornamental stones, lead, Mangan, and common rocks and sand. For more precise information, the condition of the relief of Pacitan can be seen in the following topographic map:
According to Babad Pacitan, the name "Pacitan" comes from the word Pacitan which means snack, food that doesn't make you feel full. This is due to the fact that the Pacitan is a deficient area, so as to meet the food needs, there was so little food that the people were not as full.

In archaeological terms, Pacitan is called Pacitanian. This name probably sounds foreign in its own country, but it is prevalent in foreign countries because almost all regions in Pacitan have evidence of being a place for prehistoric human habitation. The Pacitan prehistoric site lies on the Baksoko River which is believed to be an ancient river and is located in the Gunungsewu karst region which stretches from the southern part of Yogyakarta, from Central Java to East Java.

The karst area in the western part of Pacitan can then be broken down into smaller segments. Factors that influence this grouping are the morphology, lithology, stratigraphy, geological structure, and the geological history that they experienced. The karst regions are broken down to Pringkuku-Donorojo (Dadapan-Widoro) Karst, Kali Bleru 1 Karst, Kali Bleru 2 Karst, Kalialang Karst, Jarum Karst, Ketol Karst, and Gondang Karst.

The total area of the Western Pacitan Karst Region is 218.678 km².

The Western Pacitan karst area is a combination of three sub-regions, which are Donorojo, Punung, and Pringkuku. Based on the scale of Indonesian Earth Map (scale: 1: 25,000), 2001, sheets 1407 – 642 Kalak, sheets 1407 – 644 Giriwoyo, and sheets 1507 – 431 Pacitan issued by the National Mapping and Survey Coordination Agency, the location of the study area is 7° 48′ 18″ S – 8° 7′ 49″ S and 110° 20′ 03″ E – 111° 46′ 03″ E, with the overall area is 345.84 km². The administrative borders of the karst region in Western Pacitan are:

1) North part: Baturetno sub-region (Wonogiri)
2) East part: Pacitan sub-region
3) South part: Indian Ocean
4) West part: Paranggupito sub-region (Wonogiri)

The karst area in Pacitan has an area approximately around 310,982 km² which covers 21.9% of the total area of Pacitan. Based on the distribution and characteristics of the karst region in Pacitan, the karst region is divided into 2 (two) groups, which are the Western Pacitan karst area and the Eastern Pacitan karst area. Pacitan karst also covers several sub-regions located in the south, such as Donorojo, Punung,
Pringkuku, Kebonagung, Tulakan, Sudimoro, and Ngadirojo sub-regions, with an area of 310,982 km$^2$ or one-third of the area of Pacitan.

Karst areas of Pacitan are classified into two major groups based on their distribution and characteristics. The boundary between the two is the Pacitan bay. The distribution of the karst area of Pacitan can be seen in the following Geologica Map of Pacitan:

![Geologic Map of Pacitan](image)

**Figure 2. Geologic Map of Pacitan**

2. **Methods**

This study will explain the potential of each ecotourism object in the karst region in Western Pacitan, the characteristics of ecotourism object visitors and the features of the development support of ecotourism objects in the karst region in Western Pacitan. For this purpose, the appropriate research forms and strategies are needed to achieve the objectives. Research conducted in the karst region in Western Pacitan and its surroundings was a qualitative descriptive study.

Descriptive method is research that seeks to describe a phenomenon or relationship between phenomena that are examined systematically, factually, and accurately [10]. Qualitative research, according to Bogdan and Taylor is "A research procedure that produces descriptive data in the form of written or oral words from people and observed behaviour". Figure 3. Sutopo's Interactive Analysis Model shows clearly the path of research that will be explained below.

2.1 **Data collection**

Data collection had to be done to facilitate the implementation of the analysis. After the data was recorded entirely and correctly, it was necessary to have a grouping and then find the relationship between variables.

2.2 **Data reduction**
Data obtained from the field were written in detailed form or report. Reports were reduced, summarized and selected, focused on the most essential and necessary things.

2.3 Data presentation
Made to see the whole or certain parts of the study to avoid gathering data that would be difficult to handle.

2.4 Draw conclusions
Data obtained after going through reductions and studies, findings were then made. The initial result was not yet clear; after the increase in data, the conclusions were then made. The initial finding was not yet clear; after the increase in data, the findings became clearer, conclusions must be verified during the research. If you feel that the conclusions were not correct/steady, then the data collection activities that had been focused can be done again to support the conclusions. The process of interactive data analysis model can be seen in Figure 3. Analysis Interactive Model below.

![Figure 3. Analysis of Interactive Model](image)

3. Results And Discussion
The development of ecotourism objects that have high potential in the karst area in the western part of Pacitan needs to be planned carefully and wisely by involving various elements of relevant stakeholders including the community, government and the private sector. The concept of ecotourism development is basically directed at the development of ecotourism based on the 3-E concept, the development of local community-based ecotourism, as well as interpretation-based ecotourism development.

3.1 Development of Ecotourism Based on the 3-E Concept (Ecology, Education, Economics)
The important thing in the 3-E concept is maintaining a balance between fulfilling the need to protect natural and cultural resources (ECOLOGY), educational needs for visitors to understand the meaning of places and communities visited and to know the ethics of visiting (EDUCATION) and the need to empower the community economy local so that tourism development can provide economic benefits and improve community welfare (ECONOMY). The development of 3-E-based ecotourism is intended to avoid trade-offs as has been the case in various tourist destinations that only prioritize economic benefits from tourism development but override environmental safety. This often results in the creation of negative impacts on the natural and cultural environment, which are the main assets of ecotourism development. Thus the thing that needs to be underlined is maintaining a balance between the development patterns and ecological characteristics of the natural and cultural environment that is owned, prioritizing the educational aspect in order to manage the environment responsibly and sustainably and emphasizing efforts to develop the regional economy to improve community welfare.
3.2 **Local Community Based Ecotourism**

Developing community-based tourism means promoting tourism with the community. Community-based tourism is tourism that is planned, designed, managed and controlled (monitored and evaluated) by optimizing local community involvement or the involvement of local communities. In other words community-based tourism also represents ownership of development by the community, which means that decisions about matters relating to the development of tourism in their area are taken by local people in a democratic manner based on complete information because the local community will have both positive and negative impacts, both directly or indirectly from the development of tourism in the area.

The development of ecotourism objects that have high potential in the karst region in the western part of Pacitan can be oriented as an effort to empower local communities who have often been remoted and underdeveloped. Tourism activities have the potential to bring about changes that are expected to lead to improvements in terms of both natural and cultural resource management and improving the welfare of local communities in particular. Therefore, the community needs to be well prepared so that the development of tourism in its region can provide benefits to their lives and not create adverse impacts that damage the environment and the resources they have.

In order to conserve resources on ecotourism objects that have high potential in the western karst region of Pacitan, a balanced role is needed between the local community as the host, tourists or visitors as guests, and other elements of stakeholders including the government (in this case can be represented by Perum Perhutani, Forest Service, Environmental Service, Tourism Agency) and the private sector.

Concerning the development of ecotourism objects that have high potential in the western karst region of Pacitan, the community can play many roles both as host, object manager and product provider even as an interpreter or local guide.

3.3 **Local community as hosts**

As hosts, local people are expected to realize that their area has an attraction that causes many visitors to come to enjoy the attraction. Therefore, for visitors to feel comfortable, the local community must be able to act as an excellent host. Local people are expected to be able to realize the components of tourism charm, which consist of safe, orderly, clean, cool, beautiful, friendly and memorable. By creating this atmosphere, visitors will feel at home to enjoy the atmosphere of ecotourism that offers many attractions, including the natural environment and culture of the local community.

3.4 **Local community as the manager of ecotourism resources**

Empowerment of local communities as managers of tourist objects is intended to realize sustainable ecotourism development that provides benefits to natural/cultural resources that become assets of ecotourism and creates local community benefits, thus building symbiotic relationships that will support the maintenance of ecotourism, ecosystems, and biological diversity. Besides, there is also a need for best practice management by maintaining a balance and harmony between natural resources, as well as local communities and tourists as users.

3.5 **Local community as providers of products (goods and services)**

In addition to its role as host and manager, local communities can be empowered in various business activities by providing a variety of products and services such as providers of accommodation services (cottage tourism), local tour guides, food and beverage providers, and so on [12]

Local Community Based Ecotourism Development and Management Model Diagram on High Potential Eco-tourism Objects in the Western Karst Region of Pacitan.
3.6 Interpretation Based Ecotourism

3.6.1. Conservation of resources through interpretation  Interpretation is the main element in ecotourism development. This is because various resources (natural and cultural) that are the main attraction of ecotourism are generally fragile and fragile ecosystems. To manage it in an environmentally friendly manner so that these resources can be utilized sustainably, management is needed through proper interpretation.

In the world of tourism, interpretation is interpreted as a process of explanation to tourists about the importance of places, communities and objects they visit so that they are interested in visiting them again, better understand cultural heritage in tourist destinations, and foster a caring attitude towards the preservation of these attractions. The interpretation facility is an educational facility that is intended to reveal the meaning of the object displayed and to build relationships between objects and visitors. Interpretation is one of the 'languages' of tourism or the language of tourism. With the interpretation facility, visitors will be able to find out more information about an object. [14] states that interpretation is "an educational activity that shows meaning and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than to communicate factual information simply." Whereas Stewart et al. Mentioned that "interpretation is a process of communicating to people the significance of the place so that they can enjoy it more, understand its importance, and develop a positive attitude towards conservation. Interpretation is used to enhance the enjoyment of the place, to convey symbolic meanings, and to facilitate behavioural change ". According to the Society for Interpreting Britain's Heritage "Interpretation is the process of explaining to people the significance of the place that has come to see, so that they enjoy their visit more, understand their heritage and environment better, and develop a positive attitude towards conservation". Thus the function of interpretation is to open up tourist insight so that they can receive important messages and exciting signs that are continuously sent by the world or in this case the objects and tourist attractions they visit. In the end, after accumulating a collection of messages, they will shape their understanding and appreciation for the world, including objects and tourist attractions. The interpretation given to both tourists and the local community has various benefits, such as:
a. Contributing directly to enrich the traveller's travel experience.
b. Increasing tourists' understanding of the relationship between all environmental components that are a tourist attraction and increasing tourists' awareness of the environment they visit.
c. Expanding tourists' insight into all tourism assets found in the environment they visit and providing a better understanding of the overall picture of natural resources.
d. They are providing information to the local community so that they can form wiser decisions relating to the management of natural resource assets.
e. It was reducing the negative impact caused by tourist visits to tourist destinations that can cause the need for repair costs that is unnecessary.
f. It is creating a way to move the concentration of tourists insensitive tourist destinations to other places that are more resistant to impacts so they can protect themselves from environmental damage.
g. Improving the image of the local community and build support from the community.
h. Successful promotion of a tourist destination and tourism is one of the economic strengths of a country.
i. It is helping the growth of pride of the community in the resources that are owned by the region.
j. It is motivating the community to take steps to protect and preserve the environment in a way that is reasonable (logical).
k. Helping to maintain the preservation of significant and historic places and the natural environment by increasing public awareness [15].

For this reason, to develop interpretations to support environmental management sustainably, it is necessary to plan appropriate definitions. The tourism interpretation planning model diagram that describes the interpretation planning model in the field of tourism including ecotourism which underlines the importance of paying attention to the reasons (why), for whom, how and how to manage (management) and how to do monitoring (monitoring). Tourism Interpretation Planning Model Diagram:

![Tourism Interpretation Planning Model Diagram](image-url)
3.6.2. Local people as interpreters or local guides

In an effort to develop ecotourism-based interpretations in ecotourism objects that have high potential in the karst region in the western part of Pacitan, the most important thing is to provide local guides who have adequate capability and knowledge of local ecology including knowledge about flora and fauna that forms ecosystems on high potential ecotourism objects in the western karst region of Pacitan, which is endemic. Local guides have an important role as the spearhead in managing tourists or visitors to be environmentally friendly so that they can support efforts to conserve biological natural resources and the mountain ecosystem visited. Besides that, an explanation must also be given to visitors to respect the customs and culture of the local community.

In terms of providing an explanation of the natural environment in ecotourism objects that have high potential in the karst area of the western part of Pacitan, knowledge transfer from biologists to local guides is essential because local tour guides will be a key element that can realize regional management in ecotourism objects that have high potential in the western karst region of Pacitan in a sustainable and environmentally friendly manner. So that the sustainability/existence of resources in the area will be enjoyed by future generations without reducing its value, the concept leads to the management of all resources such that economic, social and aesthetic needs can be met while maintaining cultural integrity, various essential ecological processes, biodiversity and different life support systems.

The assessment of the potential of the western part of the karst ecotourism area in Pacitan uses a scoring technique between the research variables. Based on the analysis of ecotourism potential, there are two ecotourism objects with high potential classification. These ecotourism objects are Goa Gong and Goa Tabuhan. Ecotourism objects with possible medium classification are five objects, namely: Srau Beach, Watukarung Beach, Klayar Beach, Luweng Jaran and Luweng Ombo. In contrast, ecotourism objects with a low potential classification are three, namely: Nampu Beach, Goa Putri and Kalak Goa.

The group of high potential objects shows that the ecotourism objects are based on uniqueness and scarcity that are not found elsewhere. In addition, these ecotourism objects become superior potential in the Western karst area of Pacitan. In addition, the cause of ecotourism objects has high potential is that some of the potential variables obtain maximum scores at each assessment of the variables concerned. This condition is indicated by the conditions of the four objects that have quality and uniqueness, marketing reach scale, level of visits, accessibility, tourism facilities, infrastructure, community preparedness and other considerations.

Ecotourism objects with medium classifications are Srau Beach, Watukarung Beach, Klayar Beach, Luweng Jaran and Luweng Ombo. This ecotourism object objects that are currently developing and are still in the stage of improvement. Some objects have already been managed, but most have not received management. One of the objects included in this criterion is Watu Karung Beach and Srau Beach, which have begun to be managed and given complete facilities for the convenience of tourists. However, currently, the conditions of the facilities available are mostly damaged and not functioning. So that causes the potential quality of the object here to be reduced.

Ecotourism objects with low potential classification are found in three destinations: Nampu Beach, Goa Putri and Kalak Goa. The ecotourism potential of this object has not developed well in terms of marketing reach, visitors, ecotourism facilities and infrastructure or terms of accessibility. Based on the potential value of each variable, the study of most ecotourism objects in this region has not yet developed. This is due to a lack of infrastructure support and insufficient management. The value of the quality of existing tourism resources also lacks due to the lack of distinctiveness of the phenomenon.

In general, the karst region in the western part of Pacitan has an aesthetic (beauty) element, its uniqueness and rarity that cannot be found in other tourism objects. So that if the purpose of ecotourism which has a low potential value, can be appropriately managed, it can advance the quality of the tourism sector in the Regency of Pacitan. For more details on the map of the potential ecotourism of the karst region in the Western part of Pacitan Regency can be seen as follows:
Figure 6. Possible ecotourism of the karst region in the Western Map of Pacitan

4. Conclusion

The potential of each ecotourism object on the western karst area of Pacitan regency is based on a combined potential analysis between internal and external potential. Three ecotourism objects classified as high combined potential, these ecotourism objects are The Srau Coast, The Gong Cave and The Tabuhan Cave. Ecotourism objects with average combined potential classification are Klayar Beach, Nampu Beach and Watukarang Beach. Whereas, the ecotourism object with a low combined likely classification are Putri Cave, Kalak Cave, Luweng Ombo and Luweng Jaran.

Determination of high-potential ecotourism objects to be developed on the western karst area of Pacitan region. An ecotourism object which has acquired high potential categories are Srau Beach, Gong Cave and Tabuhan Cave. This object is a potentially great object to be developed on The Western Karst area of Pacitan Region.

Determination of policy direction on developing the high potential ecotourism objects on The Western Karst Area of Pacitan Region is based on concept, local community based and interpretation based ecotourism development.

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