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# Resource Empowerment and Optimization of Beach Tourism Facilities in Delegan, Gresik, East Java

M. Mustain<sup>a,\*</sup>, Sujantoko<sup>a</sup> and Anggita Deva Ariyanti<sup>a</sup>

<sup>a)</sup> Department of Ocean Engineering, Sepuluh Nopember Institute of Technology, Surabaya, Indonesia

\*Corresponding author: mmustain@oe.its.ac.id

## ABSTRACT

The discipline of Integrated Coastal Zone Management (ICZM) is still growing, especially in Indonesia, but its implementation is still relatively young. This study focuses on beach tourism. Ecotourism development and management is one of the efforts to utilize local resources that must be optimal. Delegan Gresik Tourism Beach, East Java, is a management research area for ecotourism development. This research aims to determine the potential of existing resources in Delegan Beach attractions and make scenarios for development plan efforts. This is done through Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and interviews to determine resource potential, development alternatives and priorities, both through analysis of internal and external factors. The results of this study show that forms of stakeholder participation influence the determinants of the development of natural tourism areas on Delegan Beach. The resulting development directions include the use of various resources, the development of facilities as community business opportunities, the empowerment of community skills, the Improvement of regional socialization, and efforts to preserve the environment.

**Keywords:** Coastal Zone Management, Delegan Gresik Tourism Beach, Ecotourism development, Management research.

# 1. INTRODUCTION

Indonesia is an archipelagic country with 17.508 islands and a coastline of 95.181 km, ranking second after Canada. Indonesia has a sea area of 5.8 million square kilometres, which is 71% of the total area of Indonesia. This fact can advance the economy if it can be appropriately utilized. Apart from that, supported by the diversity of tourism in Indonesia, it plays a huge role in areas with high potential.

With the length and breadth of beaches in Indonesia, they are susceptible to erosion and sedimentation [1-7], which impact coastline changes so that beaches are damaged. Coastal protection efforts can be done naturally with mangroves and bamboo [8,9] or by creating artificial structures like breakwaters. Conventional breakwaters [10-16] are only

suitable for shallow waters while floating breakwaters [17-22] can be applied for moderate waters. By controlling coastal damage, it will be possible to improve the quality of the natural environment and the area's economic aspects. Developing and managing ecotourism is an effort to utilize local resources optimally. In this context, tourism is an inseparable part of conservation efforts, empowering the local economy and encouraging higher respect for cultural differences. Ecotourism connects natural tourism trips that have a vision and mission of conservation and love for the environment.

Coastal ecotourism is an approach to tourism development that aims to maintain biodiversity, preserve local culture, and improve the welfare of local communities. In developing Delegan Gresik beach ecotourism, an in-depth understanding of sustainable tourism management principles, strategies, and practices is required. In research conducted [23,24], several strategies for developing ecotourism for Delegan Gresik Beach have been identified. Efforts made include increasing accessibility, preserving biodiversity, and empowering local communities. This strategy aims to achieve a balance between the use of coastal natural resources while still paying attention to environmental sustainability and obtaining sustainable economic benefits [24]. The Delegan Gresik Beach ecotourism development strategy was identified as an effort to increase accessibility, preserve biodiversity, and empower local communities. This strategy balances utilizing coastal natural resources while considering environmental sustainability and obtaining sustainable economic benefits. Through this strategy, it is hoped that tourism activities can be developed to support local economic growth while maintaining the uniqueness and beauty of Delegan Beach [23,24].

The ecotourism potential of Delegan Beach as a tourist attraction in Gresik includes the natural beauty, biodiversity and cultural richness of Delegan Beach, which are essential factors in developing ecotourism. This potential creates opportunities to attract tourists and improve the local economy through sustainable tourism activities. Thus, this ecotourism potential can be utilized as a source of economic income for local communities. This condition is less critical than

preserving and promoting natural and cultural riches. Therefore, management is essential in developing Delegan Gresik beach ecotourism (Fig.1). Effective management includes good planning, wise management of natural resources, close monitoring, and community participation. In this context, good management will help ensure the sustainability of Delegan Beach ecotourism by maintaining a balance between economic, social and environmental interests. Effective management also involves policy development, stakeholder collaboration, and appropriate technology to improve the visitor experience.

This research will study the factors of the internal and external conditions of tourist attractions, both qualitatively and quantitatively. Then, the results of this mapping can be used to take strategic steps for future development needs and priorities.



Figure 1. Map of Research Location in Delegan, Gresik Beach

## 2. METHODOLOGY

Referring to the introduction, we need to conduct a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to understand the current situation and the potential for Delegan's coastal ecotourism development. SWOT analysis is a practical approach to identifying internal strengths, weaknesses, opportunities, and threats in a particular context [23,25,27]. In the context of Delegan's coastal ecotourism development, SWOT analysis will help evaluate the key factors that can influence the success of development. Also, formulate appropriate strategies to take advantage of existing opportunities and overcome the challenges [27].

In the SWOT analysis of Delegan Gresik beach ecotourism development, internal forces include abundant natural resources, beach beauty, biodiversity, and cultural wealth. These factors can be a solid basis for developing attractive tourism products and differentiating Delegan Beach from other destinations. However, internal weaknesses must also be addressed, such as inadequate tourism infrastructure and limited accessibility [23]. In addition, the SWOT analysis will also identify external opportunities that can be utilized, such as increased public interest in ecotourism, technological

developments that can support tourism development, and government support in increasing sustainable tourism [27]. However, external threats must be faced, such as climate change, environmental degradation, and competition with other tourism destinations [23, 28].

A SWOT analysis can identify important factors to consider in developing Delegan Gresik Beach ecotourism. The results of this analysis will be the basis for formulating appropriate development strategies by utilizing internal strengths, overcoming weaknesses, seizing opportunities, and dealing with existing threats. Thus, the development of Delegan Gresik Beach ecotourism can be carried out sustainably, maintaining natural beauty and local wisdom and providing sustainable economic and social benefits for the local community. This research was carried out in detail in the following sequence of work. The SWOT analysis conducted on the development of Delegan Beach ecotourism aims to identify the factors that affect such tourism and ensure that the development strategy prepared can be synchronized with these factors [19]. These factors will be grouped into external and internal factors, with internal factors including the strengths and weaknesses of Delegan's coastal tourism management, while external factors include opportunities and threats in the external environment.

## 2.1 Internal Factors

Strengths are factors that provide competitive advantages in managing Delegan beach tourism, such as enchanting natural beauty, rich biodiversity, unique cultural potential, good quality of service, and involvement of local communities in tourism development. Weaknesses are internal factors that become obstacles or weaknesses in managing Delegan beach tourism, such as inadequate tourist infrastructure, lack of accessibility, less effective promotion and marketing, and less sustainable management.

# 2.2 External Factors

Opportunities are external factors that can be utilized to develop Delegan beach tourism, such as increasing public interest in ecotourism, technological developments that can support tourism development, government support in increasing sustainable tourism, and potential collaboration with the private sector and international institutions. Threats are external factors that can pose a threat or challenge in the development of Delegan beach tourism, such as climate change and its impact on beaches and biodiversity, environmental degradation due to human activities, competition with other attractive tourist destinations, and changes in policies or regulations that can affect tourism management.

# 3. DISCUSSION RESULTS

# 3.1 Environmental Identification of Delegan Gresik Beach

# 3.1.1 Internal Environment Identification

In identifying the external environment of Delegan Village, SWOT analysis is used. The SWOT analysis is conducted to see how internal factors can affect strategy formulation. Interviews and surveys were conducted with relevant stakeholders to support the analysis results. The internal factors identified are as follows. Four internal factors (strengths) are identified: a) Delegan Gresik Beach has a beach with white sand and beautiful scenery that tourists can enjoy. Daligan Beach has an area of 2.5 hectares, and the sand is white. The waves at Dalegan Beach are pretty stable, so it is safe to be used to play by visitors. This condition is one of the attractions for tourists. b) Around Delegan, Gresik Beach has many food and beverage vendors and typical Gresik souvenirs. There are places to eat in the tourist area to meet the needs of visitors on vacation in these tourist attractions. It is not just a food stall; it also sells typical souvenirs of Panceng, Gresik that can be taken home to give to relatives. c) Road access to Delegan Gresik Beach is paved, making it easier to get to Delegan Beach and d) Delegan Gresik Beach has complete facilities to support tourists' comfort.

There are four internal factors (weaknesses) identified: a) The location of the beach is relatively far from the city centre of Gresik. The distance from Delegan Village to the subdistrict capital is 1.5 km, which can be reached in about 10 minutes. At the same time, the distance to the district capital is 53 km, which can be reached in about 1.5 hours. The distance to the provincial capital is 65 km, which can be reached in about two hours. b) Delegan Gresik Beach tourism branding is still not optimal. Delegan Gresik Beach Object branding is still somewhat lacking, evidenced by the lack of vigorous village government and the Gresik area to promote this tourist attraction. On the website and social media of Delegan Village itself, it is also very rare to brand this tourist attraction. c) Narrow access roads for cars, buses, and trucks. The width of the road to the beach is Delegan 4 meters. This fact certainly cannot be crossed when passed by four- wheeled vehicles or more on the narrow road. d) Suboptimal space utilization. The number of gazebos where to rest here is still relatively small. In addition, several gazebos are blocked by car parks. So tourists are hindered from seeing the panorama of Delegan Gresik Beach.

# 3.1.2 Identification of the External Environment

In identifying the external environment of Delegan Village, SWOT analysis is used. The SWOT analysis is conducted to see how external factors can affect strategy formulation. Surveys and interviews with relevant stakeholders were conducted to support the analysis results. The external factors identified are as follows.

- A. The identified Opportunity Factors are as follows:
  - a) There is support from the Gresik district government.

- The Gresik Regency Government supports the development of Delegan Gresik Tourism Beach, both in terms of funding and policy. The Gresik Regency Government, which acts as a regulator, strongly supports tourism development through existing policies. In addition, the Gresik Regency DPRD is trying to be more proactive in absorbing the community's aspirations as a consideration in making policies related to managing tourist attractions. Regarding funds, the government provides donations to support village operations and tourism in the Gresik district.
- a. Tourists interested in travelling in the new standard era. Delegan Gresik Beach tourism is increasingly in demand by domestic tourists. The increase in tourist visits after this pandemic has recorded an increase. This increase can undoubtedly be used by businesses engaged in the tourism sector to get new customer segments, especially after the death of the tourism sector in 2019 until the end of 2020 due to the COVID-19 pandemic. Delegan Gresik tourism managers and the surrounding community use this to revive their economy after the Covid-19 pandemic.
- The existence of urbanization can be used to create a comfortable and calm atmosphere in tourist areas. In 2021, it is estimated that 55.19% of Indonesia's population will live in urban areas, so the opportunity for urban residents to travel to tourist villages is increasing. Projections calculated by the International Monetary Fund (IMF) illustrate that there will be a dynamic trend in the Indonesian population. The change in social conditions reflects that there will be more urban communities in Indonesia, undoubtedly impacting the increasingly crowded and crowded urban situation. It is inversely proportional to the rural atmosphere, which is very far from the situation. People in rural environments can use this fact to offer a very comfortable and quiet rural environment as one type of tourism.
- c. The online existence of Travel Agencies and Gresik government social media accounts can be used for online promotion. Marketing activities need to be done to support the sustainability of a business. The existence of an online travel agency can be used as a medium for tourism village marketing. Many domestic tourists use Online Travel agencies to find information about tourist attractions. In addition, in this modern era, social media is very intense in the community, including promotion through social media accounts that can be used to introduce tourism to the community.

# B. Threat factors identified include the following:

 Tourism industry competition in East Java is relatively high. Based on data from the Central Bureau of Statistics of East Java Province, tourism objects in East Java Province are classified into several categories. This condition includes tourist villages, lakes, museums, waterfalls, beaches, sports, and artificial parks. The number of tourist attractions makes the competition very high. Thus, developing new tourist objects that offer unique and exciting things is increasingly necessary to attract tourists' attention. Thus, developing new tourist objects that offer unique and exciting things is increasingly necessary to attract tourists' attention.

- b. This is evidenced by a Bloomberg website article stating that Indonesia is in the No. 8 position as a country with the deadliest pollution level. This condition is due to forest fires in several areas on the islands of Sumatra and Kalimantan and industrial activities centred on Java. Natural conditions greatly influence tourist areas because of the advantages the tourism business offers, including the atmosphere and potential natural resources that tourists can enjoy. This condition continuously carries the risk of environmental damage.
- c. Safety and comfort conditions. Safety and comfort while travelling are crucial aspects that need to be considered. The increase in tourists coming to Delegan Gresik Beach makes the atmosphere less conducive. Currently, tourists tend to look for attractions that are not too crowded. Therefore, it is necessary to have optimal land use so that tourists still feel safe and comfortable when travelling.
- d. Some Delegan Beach Gresik Regency tourist attractions have their uniqueness. Nowadays, humans are more interested in things that are said to be viral. The Gresik Regency itself has 15 tourist attractions. One of the closest to Delegan Beach is Surowati Hill. Therefore, the tourist attraction must have a uniqueness that can interest tourists, primarily related to Surowati Hill, which may be a competitor or rival in reaching tourists. However, if it can be packaged well, the existence of this neighbouring tourist attraction can be patented to move forward together and complement each other so that it can equally increase the presence of tourists.

# 3.2 The Process of Formulating the Ecotourism Development Strategy of Delegan Gresik Beach

Several aspects need to be considered in preparing a Delegan Gresik beach ecotourism development plan, which is as follows:

- a) The results of the Secondary Data Study show that Delegan village has the potential to develop, namely, considerable human resource potential tourism potential because it has a beach with white sand, calm waves, and beautiful scenery. With support from the Gresik regency government, the potential of facilities and infrastructure is complete, as well as road access to paved tourist areas.
- b) The results of the interview study were obtained as Natural

- Resources, and the existence of natural resources in Delegan Village affects the development of coastal ecotourism. Each region has its uniqueness and
- attractiveness in terms of its natural resources. Natural resources also play a role in meeting the needs of local communities and become a unique tourism development potential.
- Human Resources Good human resources are vital to developing Delegan Gresik Beach ecotourism. The main focus is on involving local communities through socialization and mentoring. Stakeholders argue that quality human resources affect the success of ecotourism development in the area. Infrastructure adequate infrastructure is an essential factor in developing Delegan Gresik Beach ecotourism. Good infrastructure support helps smooth community and tourist activities and is the primary support for developing tourist areas. Economics and assistance to micro businesses and MSMEs around Delegan Gresik Beach are essential in helping local communities' economies. It is hoped that this assistance can improve the standard of living of coastal communities and create wider job opportunities. Economic variables affect the development of the Delegan Gresik Beach ecotourism area.

# 3.3 Direction for Ecotourism Development of Delegan Gresik Beach

The management and development of natural resources managed by the government also have many weaknesses. They focus more on specific sectors, causing sectoral egoism and fewer conditions for local communities, as well as consuming expensive legal supervision costs and weak law enforcement. However, it does not mean that government management is not good. Indeed, there needs to be a respectful collaboration between the formal aspects represented by the government and the non-formal aspects represented by local communities.

Programs or activities with aspects of human resource empowerment, infrastructure, and the environment (Table 1) are as follows:

Table 1. Development Direction

Development	Human Resource	Development Direction
factors Attraction	Empowerment There is assistance to the local community in order to provide concepts related to comfortable tourism.	Making Delegan Beach a beach known by tourists because of its distinctive uniqueness and that is not found on other beaches so that it can become a business opportunity for the local community.
Accessibility	There is a briefing to the community regarding the importance of road access for the common good and the community needs to be aware to give up part of the land for road widening.	Improvement and improvement of the road network that is the access to tourism activities in the Dalegan Beach tourist area so that tourist access is easier and visitors to Delegant Beach also increase.
Facilities and Infrastructure	Providing socialization to the community related to tourism that is currently trending to give an overview of the evaluation of facilities and infrastructure at tourist attractions.	Providing attractive photo spots for tourists so that it can become a business opportunity. Development of an area for a gazebo that can be used to enjoy the beach view.
Skills and Education	Providing socialization and community counseling. Also the provision of skills training to make crafts that are typical of the local community.	Create a training place that can be in the form of a training center to provide education and understanding for the local community in the field of skills and professions for tourism and business activities. Preparing competent personnel so that they can compete and get job opportunities in tourism activities.
Tourism Branding	Providing an overview of media that can be used by the public to brand tourists and also provide ideas for local tourism development. Training for the creation of a special website for Delegan Beach.	Establishing cooperation with travel agencies in various regions, so that it can facilitate the provision of access to information to prospective tourists more widely and efficiently. Making community business activities along the main route of the special Delegan area.
Environment	Providing an understanding of the importance of protecting the environment to support mutual comfort.	Providing counseling and understanding to all levels of society and business actors about the importance of awareness of protecting, protecting, and preserving the environment in tourist areas as a result of the impact of tourism activities.

# 4. CONCLUSION

Delegan Gresik beach management is variable natural resources, human resources, infrastructure and economy. Delegan Gresik Beach ecotourism development provides recommendations in the form of development strategy directions, which include:

- Human Resource Empowerment:
   Building a training centre to provide education and skills to the local community in the field of tourism in order to create a competent and professional workforce in the tourism and business sectors.
- Tourism Branding:
   Establish cooperation with travel agencies to expand access to information for prospective tourists and develop

community business activities as landmarks that mark the characteristics of the Delegan Beach tourist area.

- 3. Tourism Destination Development:
  Utilizes the unique natural resources of Delegan Beach and combines them with community activities that attract tourists, considering input from the local community.
- Ecotourism Management:
   Assistance in the development of micro-businesses and MSMEs around Delegan Gresik Beach to help the economy of local communities, as well as the construction of training centres for the education and skills of local communities.

By implementing this strategic direction, it is hoped that the ecotourism development of Delegan Gresik Beach can achieve common goals. This fact is expected to benefit the community and the surrounding environment significantly..

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## REFERENCES

- 1. Sujantoko, Pratikto W A, Prastianto R W, Maulana M I and Vebriyanti A 2021 *Int. J. Mar. Eng. Inn. & Res.* 7(1) pp 26-32
- 2. Sujantoko, Pangestu P A, Saputro A, Ekianto B P P, Hasanudin, Kurniati N, Kusumawardhani R and Hartanto D 2023 *Int. J. Mar. Eng. Inn. & Res.*, 8(2) pp 141-149
- 3. Sujantoko, Mustain M, Wahyudi and Ikhwani H 2023 *IOP Conf. Series: Earth & Env. Sci.* 1198 012004
- 4. Mustain M and Sujantoko 2023 IOP Conf. Series: Earth & Env. Sci 1166 012024
- 5. Mustain M and Sujantoko 2021 *IEEE Oc. Eng. Tech. & Innovation. Conf.: Oc. Obs. Tech. and Innov. in Support of Ocean Decade of Science (OETIC)* Jakarta Indonesia pp 13-17
- 6. Sujantoko, Mustain M and Ekianto B P P 2024 IOP Conf. Series: Earth & Env. Sci. 1392 012005
- Sujantoko, Mustain M and Narendra G M A 2024 IOP Conf. Series: Earth & Env. Sci. 1392 012006
- 8. Rosyid D M, Sujantoko, Armono H D, Djatmiko E B, Prastianto R W, Mulyadi Y, Kurniati N, Wardhani M K and Wardhana W 2021 *Sewagati* 5(3) pp 1-11
- 9. Armono H D, Bromo B H, Sholihin and Sujantoko 2022 *Fluids* 7(1) pp 1-13
- 10. Sujantoko, Pratikto W A, Wahyudi, Ikhwani H and Saputro D 2024 *Int. J. Eng. Appl.* 12(5)
- 11. Sujantoko, Pangestu P A, Pratikto W A, Mustain M, Wahyudi and Ikhwani H 2023 *Int. J. Mar. Eng. Inn. & Res.*8(2) pp 232-238
- 12. Armono H D, Winarto A, Sujantoko and Suastika I K 2021 *IOP Conf. Ser.: Earth & Env. Sci.* 799 012011
- 13. Sujantoko, Rasman I F, Mustain M, Pratikto W A and Frestiqauli S 2024 *IOP Conf. Ser.: Earth & Env. Sci.* 1298012001
- 14. Sujantoko, Pramestika G A, Mustain M, Ikhwani H and Hadiwidodo Y S 2024 *IOP Conf. Ser.: Earth & Env. Sci.*1298 012007
- Sujantoko, Fuad H F H, Azzarine S, Raehana D R 2024
   E3S Web of Conferences 576 02004
- 16. Sujantoko, Pangestu P A, Silva F G K, Ahmad R P, Firman M R 2024 E3S Web of Conferences 576 02005
- 17. Sujantoko, Djatmiko E B, Wardhana W, Mustain M and Ahidah D R 2024 *Int. J. Eng. Appl.* 12(1) pp 44-53
- 18. Sujantoko, Ahidah D R, Wardhana W, Djatmiko E B and

- Mustain M 2024 IOP Conf. Ser.: Earth & Env. Sci. 1321012010
- 19. Sujantoko, Wardhana W, Djatmiko E B, Armono H D, Putro W S and Almuzaki R H 2021 *J. Tek. Hidraulik* 12(1), pp 39-51
- 20. Sujantoko, Djatmiko E B, Wardhana W and Hidayatullah A 2021 *J. Tek. Sipil* 28(3) pp 289-300
- 21. Sujantoko, Djatmiko E B, Wardhana W and Mustain M 2023 *Int. J. Eng. Appl.*, 11(5), pp 298-307
- 22. Sujantoko, Djatmiko E B, Khadijah S L A, Azzahra G 2024 E3S Web of Conferences 576 02006
- 23. Ikhwani H, Mustain M, Satrio D, Sujantoko, Hadiwidodo Y S, Putro M H M and Nasution P H O 2023 *IOP Conf. Series: Earth & Env. Sci.* 1198 012006
- 24. Prayogo R A and Suyono B 2020 *J. Sosioteknologi* 19(2) pp 183-191

- 25. Mustain M, Garang I J, Ikhwani H and Sujantoko 2022 *Int. J. Eng. Appl.* 10(2) pp 158-166
- 26. Mustain M and Leonard R 2019 Int. J. Eng. Appl. 7(4) pp 45-151
- 27. Harfst J, Wirth P, Lintz G and Bieberstein C 2010 Strengths, Weakness, Opportunities and Threats of European mining regions (SWOT) Report I (Dresden, Institute of Ecological and Regional Development)
- 28. Mustain M, Sujantoko and Prasetyo M A 2022 *Int. Rev. Civ. Eng.* 13(4) pp 246-254