Article

Tourism Suitability Index Assessment and Development Strategy in Werahung Beach, Ambon City, Maluku

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ABSTRACT

Tourism is a strategic sector that plays an important role in economic growth, job creation, and improving community welfare. Werahung Beach is one of the beaches in Ambon City that offers stunning natural scenery and has the potential to be a major attraction for tourists. This study aims to evaluate the level of tourism suitability and identify sustainable tourism development strategies based on physical and social aspects to formulate appropriate development recommendations. The data collected includes the results of the Tourism Suitability Index (TSI) analysis used to evaluate the suitability of the area based on physical parameters and SWOT data used to determine the development strategy for Werahung Beach. The research method used in this study is a mixed method with data collection techniques through field observation and documentation. The results of the study showed the TSI value for each station as follows: Station I (71.87%), Station II (69.53%), and Station III (65.62%). Werahung Beach has a total IT value of 69%, which is included in the S3 category (Quite Suitable). The SWOT analysis shows that the development strategy for Werahung Beach is in Quadrant III with IFAS (0.53) and EFAS (0.33).

Keywords: Werahung Beach; Tourism Suitability Index; SWOT; Development Strategies.

ABSTRAK

Pariwisata merupakan sektor strategis yang berperan penting dalam pertumbuhan ekonomi, penciptaan lapangan kerja, dan peningkatan kesejahteraan masyarakat. Pantai Werahung merupakan salah satu pantai di Kota Ambon yang menawarkan pemandangan alam yang menakjubkan dan berpotensi menjadi daya tarik utama bagi wisatawan. Penelitian ini bertujuan untuk mengevaluasi tingkat kesesuaian pariwisata dan mengidentifikasi strategi pengembangan pariwisata berkelanjutan berdasarkan aspek fisik dan sosial untuk merumuskan rekomendasi

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pengembangan yang tepat. Data yang dikumpulkan meliputi hasil analisis Tourism Suitability Index (TSI) yang digunakan untuk mengevaluasi kesesuaian kawasan berdasarkan parameter fisik dan data SWOT yang digunakan untuk menentukan strategi pengembangan Pantai Werahung. Metode penelitian yang digunakan dalam penelitian ini adalah metode campuran dengan teknik pengumpulan data melalui observasi lapangan dan dokumentasi. Hasil penelitian menunjukkan nilai TSI masing-masing stasiun sebagai berikut: Stasiun I (71,87%), Stasiun II (69,53%), dan Stasiun III (65,62%). Pantai Werahung memiliki total nilai TSI sebesar 69% termasuk dalam kategori S3 (Cukup Sesuai). Analisis SWOT menunjukkan bahwa strategi pengembangan Pantai Werahung berada pada Kuadran III dengan IFAS (0,53) dan EFAS (0,33).

Kata Kunci: Pantai Wrahung; Indeks Stabilitas Wisata;SWOT; Strategi Pembangunan.

1. Introduction

Indonesia is an archipelagic country with a sea area of around 5.8 million km², consisting of 3.25 million km² of ocean and 2.55 million km² of Exclusive Economic Zone. Indonesia has a coastline of 99,093 km, making it the country with the second-longest coastline in the world after Canada (Sasmito & Suprayogi, 2019). The vastness of the sea and the many islands and small islands in Indonesia hold the potential for marine and coastal resources, both biological and non-biological (Aprilya et al., 2024). Based on 2020 Ministry of Maritime Affairs and Fisheries data, the economic potential of the maritime sector is estimated to reach US$1,338 billion, or equivalent to Rp19.6 trillion per year. These geographical conditions provide great potential for Indonesia to utilise marine resources, including their development in the fisheries industry, shipping, maritime trade, and marine tourism sectors (Central Bureau of Statistics, 2023).

Ambon City, known as "The Spice Island Exotic Marine Paradise," has extraordinary wealth and beauty of marine life. The diversity of its underwater ecosystems makes Ambon one of the leading destinations for diving and snorkeling activities in Indonesia. This potential should be further optimized to provide economic and social benefits to the community. However, data from the Maluku Provincial Government (2020) shows that the contribution of the tourism sector to the Gross Regional Domestic Product (GRDP) of Ambon City only reached 1.78%, much lower than the national average of 2.4%. In fact, this contribution is also far behind other strategic sectors, such as the management industry (5.48%) and the agriculture, forestry, and fisheries sector (23.28%). This condition is further exacerbated by a significant decline in the number of domestic tourist visits during the period 2022 to 2024. In 2022, the number of domestic tourists visiting was recorded at 252,417 people, but it fell to 179,112 people in 2023 and fell again to 88,214 people in 2024. This decline in the number of domestic tourists reflects the gap between the existing tourism potential and current management (Mawar et al, 2023).

Werahung Beach, located in Negeri Hukurila, South Leitimur District, Ambon, is one of the destinations that reflects the challenges and great potential in developing marine tourism in Eastern Indonesia. The primary visual attraction is the uniqueness of its coastline, which resembles the letter "U" with large rocks on both sides, and the natural landscape, which resembles a small peninsula. The diverse and beautiful marine ecosystem and coral reefs have the potential for the development of diving and snorkeling tourism. Another uniqueness that can be seen at Werahung Beach is the existence of the "Sasi Laut" tradition preserved by the local community, which also strengthens the potential of this area (Muin & Rakuasa, 2023).

Werahung Beach has great potential, but its development has not been optimal due to various problems. Lack of supporting infrastructure, limited accessibility, and the absence of previous research evaluating the suitability of the area and its management strategies exacerbate the existing information gap. Thus, a comprehensive analytical approach is needed, covering physical and social aspects, to ensure that destination management is directed and sustainable. One relevant approach is the use of the Tourism Suitability Index (TIP) to assess the suitability of

the area based on physical and environmental parameters, and a SWOT analysis to explore visitor perceptions of the strengths, weaknesses, opportunities, and threats. The synergy between TIP and SWOT provides a more complete picture of the suitability of the area for tourism activities and strengthens the basis for formulating sustainable and adaptive development strategies to local conditions.

Previous studies by Sumarmi et al. (2022) at Soge Beach, Pacitan Regency and and Firdaus & Tutri (2017) at Nagari Kotobaru, Tanah Datar Regency showed that both methods were effective in optimizing the management of destinations that already had basic infrastructure. Another study by Arinta et al. (2023) at Sipelot Beach, Malang Regency, adopted a similar approach in an area that had developed with active tourism activities and fish auction facilities. Both studies confirmed the relevance of the TSI and SWOT methods in supporting the management of tourist areas that had been operating functionally. Unlike the approach applied to developed areas, this study offers novelty through applying the method to Werahung Beach, which is still a pioneer and has not been touched by structured tourism development. This novelty lies not only in the location selection but also in the more exploratory and simple analytical approach.

This study aims to evaluate the suitability level of the Werahung Beach tourist area in Ambon City by analyzing the Tourism Suitability Index (TSI) based on physical and environmental parameters, and to formulate recommendations for sustainable tourism development strategies using the SWOT analysis approach. The recommendations produced can be a reference for the government in formulating tourism management policies, for managers in improving service facilities and infrastructure, and for the community in encouraging active involvement in tourism activities. The application of the results of this study is expected to increase the comfort and level of tourist visits and contribute to increasing regional income.

2. Literature Review

Coastal tourism management requires a comprehensive approach to optimize tourist attractions without ignoring environmental and social sustainability. Coastal tourism has become a significant attraction for both local and international tourists, especially because of the natural beauty it offers (Hafsar et al., 2022). The use of coastal resources for tourism must consider tourism suitability so that management continues to support sustainability (Oroh et al., 2023).

TSI is used to assess the suitability of a tourism area based on physical and environmental parameters. These parameters include beach width, water depth, beach type, water base material, current speed, water clarity, beach slope, coastal land cover, presence of dangerous biota, and freshwater availability (Yulianda, 2019). Each parameter is given a weight and score to produce a level of suitability which is categorized into S1 (Very Suitable), S2 (Suitable), S3 (Conditionally Suitable), and N (Not Suitable) (Ronting et al., 2021). This suitability assessment is important to minimize environmental impacts, control tourism activities, and set boundaries for tourism area management to remain in line with sustainability principles (Mutmainah et al., 2016). TSI also plays an important role in supporting sustainability by helping to estimate environmental impacts, control tourism activities, and provide boundaries for tourism area management (Revolina et al., 2020). This allows the identification of important factors that can support improving the quality of tourism destinations, including planned and sustainable management of coastal resources (Watina et al., 2018). TSI has limitations because it does not include social dimensions, such as tourists' perceptions of facility quality and accessibility. To complement this deficiency, additional analysis, such as SWOT, is needed as a strategic approach that can evaluate tourists' preferences and needs.

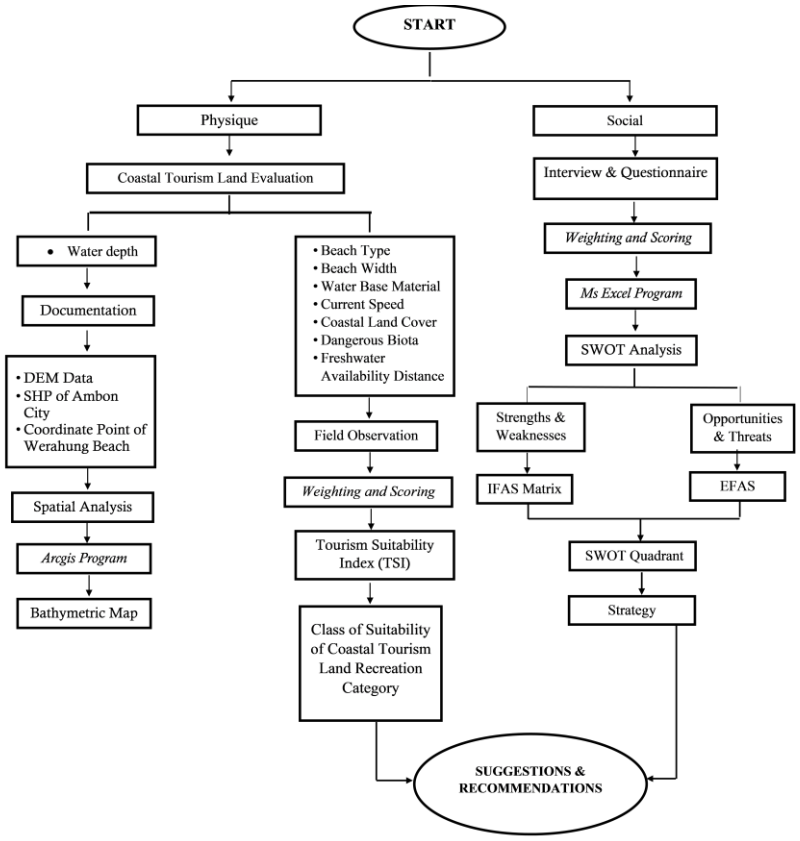
SWOT Analysis is a strategic tool used to analyze the strengths, weaknesses, opportunities, and threats in managing tourist destinations. This approach allows managers to explore local potential and develop risk-based strategies that follow market needs and environmental conditions (Kartini, 2021). This analysis helps identify internal potential, such as natural beauty,

as well as external threats, such as climate change or lack of supporting infrastructure, so that mitigation strategies can be formulated effectively. Research conducted by Sumarmi et al. (2022) highlighted that the use of these two methods allows for an evaluation of the potential and challenges faced in managing tourist areas. Arinta et al. (2023) confirmed that the combination of TSI and SWOT can help formulate more effective development strategies by considering ecological and social sustainability. The multidimensional approach between TSI and SWOT ensures that the development of tourist destinations not only meets the needs of tourists but also maintains ecological sustainability and provides benefits to local communities (Cahyani et al., 2023).

3. Method

This research was conducted at Werahung Beach, which is located in Hukurila Village, South Leitimur District, Ambon City. The selection of the location and time of the study, namely on September 5-16, 2024, was based on the dynamics of increasing tourist visits along with the virality of Werahung Beach on social media. This situation provides a good opportunity to study the potential and challenges of developing new destinations in an empirical context. The duration of the study, which was two weeks, was determined by considering the conditions of the transition to the rainy season and the need for gradual data collection to maintain the validity of the results. The equipment and materials used in this study include mobile phones, laptops, ArcGIS Map software, roll meters, and Google Earth Pro, with secondary data support in the form of BATNAS data. The use of geospatial-based technologies such as Google Earth Pro and ArcGIS is considered relevant in this study, given their ability to collect, analyze, and visualize spatial data effectively (Zhou et al., 2021).

Figure 1. Research Flow Chart



Source: Researcher (2024)

This series of studies began by identifying physical and social factors at Werahung Beach. The physical factors of Werahung Beach are divided into eight main parameters, namely: water

depth, beach type, beach width, water base material, current speed, coastal land cover, dangerous biota and distance of fresh water availability. The physical and social factors of Werahung Beach were obtained from field observation data, interviews, and questionnaires. Field observations were carried out directly with data at the research location object.(Nikmah, 2023). The field observation area is divided into three stations, namely, the middle, left side, and right side of the tourist area. This division is based on the differences in physical conditions in each section, so it needs to be divided into three stations so that the results obtained are more specific. An interview was conducted to find out the subjective views of travellers and the surrounding community towards tourism at Werahung Beach (Sari et al, 2021). Questionnaires were also used in this study; the questionnaires used a Likert scale of 1-4. The questionnaire contains questions related to tourists' perceptions of the physical conditions of the area, facilities and infrastructure, comfort, security, and quality of service at Werahung Beach.

Information obtained through questionnaires and interviews involved 48 respondents selected using accidental sampling. Respondents were selected based on their availability at the time of the study. As many as 75% of respondents came from the age group of 18-25 years, while the remaining 25% were over 25 years old. The research method used was a descriptive method with a mixed methods approach, which combines quantitative analysis through the calculation of the Tourism Suitability Index (IKW) and qualitative analysis through the SWOT matrix to formulate tourism development strategies. The Tourism Suitability Index used uses Yulianda's parameters (2019), which can be seen in Table 1.

Table 1. Tourism Suitability Index (TSI) Parameters

Parameter	Station								
	B	S1	S	S2	S	S3	S	N	S
Water Base Depth (m)	5	0-3	4	>3-5	3	>5-10	2	>10	1
Beach Type	5	White sand	4	White sand with a little coral	3	Black pair with a little bit of steep coral	2	Steep rocky mud	1
Beach Width	5	>15	4	10-15	3	3<10	2	<3	1
Basic Materials of Water	4	Sand	4	Sandy coral	3	Muddy sand	2	Mud	1
Current Speed	4	0-0.17	4	0.17-0.34	3	0.34-0.51	2	>0.51	1
Coastal Land Closure	3	Coconut, open land	4	Shrubs, savanna	3	High thicket	2	Mangrove forests, settle-ments, ports	1
Dangerous Biota	3	There isn't any	4	sea urchins	3	Sea urchins, stingrays	2	Sea urchins, stingrays, sharks	1
Freshwater Availabi-lity Distance (km)	3	<0.5	4	0.5-1	3	>1-2	2	>2	1

Source: Yulianda (2019)

The calculation of the Tourism Suitability Index (IKW) is done by adding up the values of each parameter that have been multiplied by the weight and score that have been determined. The value obtained is then divided by the maximum value set for the tourism category, which is 128, and the result is multiplied by 100 percent to obtain the percentage of suitability of the tourism area. The results of the IKW calculation are then used to classify the suitability of the tourism area into four categories; (a) S1 = Very Suitable with a value of 125 - 150%, (b) S2 = Suitable with a value of 94 -<125%, (c) S3 = Suitable with a value of 61 -<94%, (d) N = Not suitable with a value of <35- <61%. The suitability value is used to determine the limiting and driving factors of a coastal tourism area, which will help provide suggestions and recommendations.

SWOT analysis is applied to formulate tourism development strategies in Werahung Beach. SWOT analysis has four main components, namely: strengths (*strengths*), weaknesses, opportunities, and threats. After the four components are identified, an assessment is carried out on each factor using the IFAS (Internal Factor Analysis Summary) method for internal factors,

and EFAS (External Factor Analysis Summary) for external factors (Rangkuti, 2008). Factor assessment is done by giving a weight and a rating. According to the SWOT analysis formula, the total weight of all factors must be 1.00. The calculation of the weight of each factor (Bi) is calculated by adding up the ratings given for each factor (Ri), then dividing by the total number of factors analyzed (Σn). In simpler terms, each factor is weighted based on its rating, and the result is divided by the total number of factors analyzed.

Determination of weight and rating for each factor is followed by calculation of factor score, which is obtained by multiplying the weight (Bi) and rating (Ri) that have been set. In the next stage, the scores of all internal factors are added up to produce the total IFAS score, while for external factors, the scores are added up in EFAS. Based on the calculation results, a strategic position mapping of tourist destinations is then carried out through the SWOT matrix quadrant. The SWOT analysis aims to convey relevant information to stakeholders, decision-makers, and the public, thereby facilitating the decision-making process based on comprehensive research and observation (Suhardono & Suryawan, 2024).

4. Result & Discussion

4.1. Tourism Suitability Index

The Tourism Suitability Index (TSI) is used as a reference in assessing the level of suitability of an area to be developed as a destination for tourism. This assessment considers various physical, ecological, and environmental comfort aspects that affect the feasibility of tourism activities. The evaluation is carried out by considering eight main parameters relevant to coastal area characteristics. Each parameter plays a vital role in describing the quality of the coastal environment and its support for tourism activities. The following is an explanation of each parameter.

4.1.1. Water Depth

Fa Water depth is a very important factor in determining areas that will be used as coastal tourism areas, especially for bathing and swimming activities (Revolina et al., 2020). This factor greatly affects safety when swimming, and the depth of the water must be relatively shallow (Wahyuni et al, 2021). Waters with shallow depths are physically good enough to be used as a location for bathing and swimming tourism. The appropriate depth for beach tourism is 0-3 m, this depth will provide a sense of security so that tourists still pay attention to safety factors (Yulius et al., 2018).

Table 2. Werahung Beach Type

Beach	Station	Water Bottom Depth
The Weir	I	>10
	II	>10
	III	>10

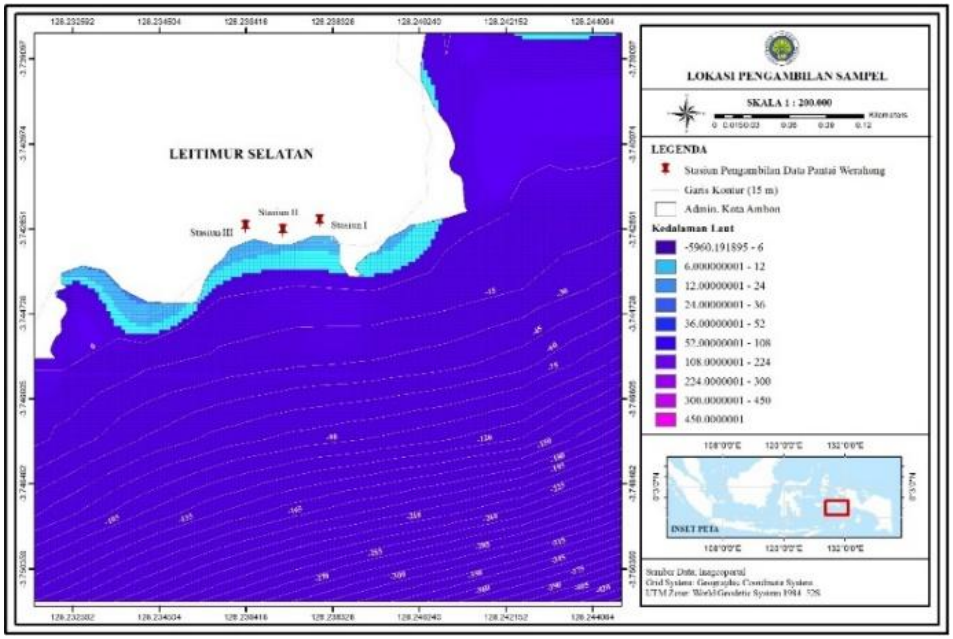
Source: Researcher (2024)

Based on the measurements conducted at three observation stations, it is known that all parts of Werahung Beach have water depths of more than 10 meters. This depth is categorized as quite deep for coastal areas, which limits water recreation activities such as unsupervised swimming. With these conditions, providing safety facilities such as warning signs or swimming area barriers is very important to maintain the safety of tourists. In addition, high depths also have the potential to limit the activities of families with children, due to the lower level of safety compared to shallow beaches.

The depth distribution map shows that almost the entire Werahung coastal zone is dominated by dark blue, indicating a water depth of more than 10 meters even in areas near the coast. No gradual depth gradation zone was found, but the depth change occurred quite suddenly from the shoreline to the open sea. This condition indicates the characteristics of a steep seabed, which is

usually caused by geomorphological factors such as faults or strong erosion processes in coastal areas. For tourism activities, this condition must be anticipated by limiting swimming zones and clarifying safe boundaries in the waters. The use of safety buoys is also recommended to increase the safety of tourists visiting Werahung Beach.

Figure 2. Depth of Werahung Beach Waters



Source: Researcher (2024)

4.1.2. Beach Type

Weirahung Beach is a type of white sand with only a few corals. This characteristic positively impacts tourist attractions because white sand tends to be preferred by tourists for various activities, such as sunbathing, playing in the sand, or walking along the beach. The type of beach sand in Werahung is caused by the sedimentation process that occurs due to the process of transporting soil material and gravel from the mainland by river water.

Table 3. Werahung Beach Type

Beach	Station	Beach type
The Weir	I	white sand with a little coral
	II	white sand with a little coral
	III	white sand with a little coral

Source: Researcher (2024)

Werahung Beach, with its white sand and few corals, still requires vigilance from tourists. Although there are few corals, the presence of corals hidden under water or sand can cause injury, especially when walking or swimming. Corals located near the shoreline can cause ocean currents to bring tourists closer to rocky areas without them realizing it, especially during low tide.

4.1.3. Beach width

The width of the beach greatly affects various tourism activities. The wide beach width allows tourists to feel more comfortable and have more freedom in doing various activities. The measurement of the beach width is done by dividing the beach zone into three stations. The three predetermined stations are then measured. The measurement results at Weirahung Beach show that the beach width at station I is 11.20 m, station II is 12.30 m, and station III is 8.13 m.

According to Hafizin (2018), the difference in beach width at various points can affect the tourist attraction and determine areas that are more suitable for certain activities, such as water

sports, picnics, or group activities. The limited beach width at Weirahung Beach can reduce the attraction and comfort for tourists. The limited beach area limits the space for visitors to do various recreational activities such as playing in the sand, sunbathing, or picnicking, making the beach atmosphere more crowded and less comfortable. Beaches with limited space often face challenges in accommodating large numbers of visitors, which can affect the comfort of tourists.

Table 4. Width of Werahung Beach

Beach	Station	Basic width (m)
The Weir	I	11.20
	II	12.3
	III	8.13

Source: Researcher (2024)

4.1.4. Basic Water Materials

The bottom material of the water is a crucial element that includes various sediment types such as sand, mud, gravel, and rocks. The type and composition of this material play a role in influencing the underwater ecosystem, including biodiversity, as well as current and wave patterns. The dominant bottom material, such as sand or mud, often determines the characteristics of the water, such as water clarity and its ability to support marine life. The physical and chemical properties of this bottom material also affect water quality and the overall health of the aquatic ecosystem. More stable bottom materials can help prevent erosion, while finer materials like mud tend to slow water flow and increase sedimentation.

Table 5. Werahung Beach Type

Beach	Station	Basic water materials
The Weir	I	sandy reef
	II	sandy reef
	III	sandy reef

Source: Researcher (2024)

Based on field data, Werahung Beach has a basic water material in the form of sandy coral. The basic water material, consisting of sandy coral, offers various benefits for beach tourists. Sandy coral material creates an attractive environment for activities such as snorkeling and diving, where tourists can enjoy the beautiful coral reefs and biodiversity. Sandy corals also contribute to water clarity and enrich the visual experience for tourists who enjoy the underwater scenery. The existence of marine biota and coral reefs on the seabed is an indicator of measuring the level of fertility of waters (Aipassa et al., 2022).

4.1.5. Current Speed

Ocean currents move vertically and horizontally to achieve balance. Their movement is caused by various forces that affect the surface, column, and bottom of the water (Permadi et al., 2015). Current speed is closely related to the safety of tourists at Werahung Beach, especially in swimming and bathing activities. Strong currents can be a safety risk, while calm currents provide a sense of security for visitors (Pratiwi et al., 2023).

Table 6. Werahung Beach Current Speed

Beach	Station	Current velocity (m/sec)
The Weir	I	0.206
	II	0.271
	III	0.298

Source: Researcher (2024)

Based on the suitability matrix for coastal tourism, the current speed at station I was recorded at 0.206 m/s, station II at 0.271 m/s, and station III at 0.298 m/s. These results indicate that Werahung Beach is included in the "suitable" category for tourism activities. The ideal current

speed provides significant benefits, including reducing the risk of accidents while swimming or providing a sense of security and comfort for tourists, especially in water activities.

4.1.6. Dangerous Biota

Dangerous biota is an important factor that must be considered, especially for tourists at Werahung Beach. (Chasanaha & Haeruddinc, 2017).This is in line with the opinion of Muqsit et al. (2020), who stated that tourists should be aware of recreational activities if there are dangerous biota in the location. These dangerous biota include sea urchins, stingrays, jellyfish, and the most dangerous are sharks. The presence of dangerous marine biota has a direct impact on tourist comfort. According to Lelloltery et al. (2016), the absence of dangerous marine biota can provide a sense of security for tourists, so they can enjoy the beach experience without worrying about the risks from hazardous biota. This condition is important in managing beach tourism destinations, where safety is the main priority.

Table 7. Dangerous Biota of Werahung Beach

Beach	Station	Dangerous Biota
The Weir	I	there is, sea urchin
	II	there is, sea urchin
	III	there is, sea urchin

Source: Researcher (2024)

Based on observations and information obtained from local people and visitors at Weirahung Beach, dangerous biota, such as sea urchins, were found at the three stations studied. Sea urchins can pose a risk of injury to tourists who are not careful when swimming or walking in rocky areas. Thus, the management needs to provide clear information regarding the presence of dangerous biota and advise tourists to be more careful when doing activities on the beach.

4.1.7. Coastal Land Closure

Coastal land closure is a form of utilization of managed areas and natural conditions.a beach area (Fauzi et al., 2021). Land cover at Werahung Beach is dominated by vegetation consisting of sago palms (*Metroxylon Sagu*), coconut palms (*Cocos Nucifera*), ketapang palms (*Terminalia Katappa*), shrubs (*Chamaedaphne*) and open land.

Table 8. Werahung Beach Land Closure

Beach	Station	Coastal land cover
The Weir	I	coconut trees, sago trees, open land
	II	low bushes, sago palms
	III	there is,sea urchin

Source: Researcher (2024)

Based on Table 8, land cover at Werahung Beach at Station I consists of coconut trees, sago trees, and open land; Stations II and III consist of low bushes and sago trees. The presence of these trees creates a comfortable area to relax, rest, and enjoy the natural atmosphere of the beach. Ketapang and sago trees also provide aesthetic value and support the sustainability of the coastal ecosystem by providing habitat for various species of flora and fauna. This vegetation also contributes to maintaining biodiversity and better environmental management around the coastal area. Matrix of suitability of coastal land cover conditions. Station I on Werahung Beach can be classified into the very suitable category, while stations II and III can be categorized as suitable.

4.1.8. Distance of Fresh Water Availability

Tourism activities must be supported by the availability of clean water in the form of fresh water. Fresh water is an important thing in beach tourism activities, as it is needed by tourists to clean up, such as rinsing, bathing, or ablution facilities, and urinating or defecating (Maulana, 2021). Fresh water is one of the eligibility criteria for developing beach tourism (Handayawati, 2010).

The availability of fresh or clean water at Weirahung Beach is relatively close to the beach area, around <0.5 km.

Table 9. Distance to Fresh Water Availability of Werahung Beach

Beach	Station	Distance of fresh water availability
The Weir	I	< 0.5
	II	< 0.5
	III	< 0.5

Source: Researcher (2024)

Based on Table 9, the distance of fresh water availability in Werahung Beach at Stations I, II, and III is quite close, namely <0.5 km. The suitability matrix of the distance of fresh water availability at the three stations I in Werahung Beach can be classified into the very suitable category. Based on the results, the Tourism Suitability Index at Weirahung Beach shows varying suitability values at each station. Station I has a suitability value of 71.87%, followed by Station II with a value of 69.53%, and Station III recorded a value of 65.62%. Overall, Weirahung Beach has a total suitability value of 69%, which is included in the suitability class "S3" or "Conditionally Suitable." Although Weirahung Beach was recently discovered and has not become a widely known tourist destination, these results show good potential for future marine tourism development.

IKW has a vital role in supporting the principles of sustainable tourism, especially in managing new destinations such as Werahung Beach. Using this method, the evaluation of location feasibility considers tourist attractions and sustainability aspects, such as environmental sustainability and tourist safety. The suitability values obtained can be the basis for planning destination management that increases tourist attractions and minimizes negative impacts on the local ecosystem. Several limiting factors need to be considered to improve the suitability of Werahung Beach, such as inappropriate sea depths that can affect safety and comfort when doing activities on the beach. Non-ideal sea depths can increase the risk for tourists when swimming or doing other activities in the waters; in this case, local managers must provide warning signs so that visitors are more careful.

Another limiting factor is the limited supporting facilities that make it difficult for tourists to reach the beach. The accessibility of Werahung Beach can be said to be quite far from the main road, so visitors have to walk through various vegetation or forests. In addition, this location is expected to provide supporting facilities such as food stalls, toilets, bathrooms, accommodation, and so on. These tourism factors are very important to develop because the activities carried out will impact various sectors of the community's economy. This sector can be utilized to encourage economic change and create jobs, increase income, and improve the quality of life of the local community (Kodir et al., 2019). According to Arinta et al. (2019), the existence of the tourism sector will increase the role of several supporting sectors such as travel agents, craft or souvenir industries, tourist objects and attractions, hotels and restaurants, thus supporting development and influencing the comfort index in traveling. The involvement of the local community is a crucial factor in maintaining environmental sustainability and supporting sustainable tourism programs. With collaboration between the government and the community, Werahung Beach can be managed as a tourist destination that is not only safe and comfortable but also contributes to the preservation of natural resources and improves the welfare of the local community. This will support the development of sustainable marine tourism in the future.

4.2. SWOT Analysis

The results of the SWOT analysis show that Werahung Beach tourism has great potential to continue to develop as an industry that has a positive impact and as a leading destination. From the internal factor analysis (IFAS) in Table 10, there is a total score of 2.87, which shows that the dominance of strengths is greater than weaknesses.

Table 10. IFAS Matrix

No	Internal Strategy Factors	Weight	Ratings	Weight X Ratings
Opportunities (O)				
1.	The beach is unpolluted and still natural	0.10	2	0.20
2.	Beautiful beach view	0.20	4	0.80
3.	The strategic location of tourist attractions	0.14	2	0.28
4.	Cheap ticket prices	0.14	3	0.42
	Total			1.70
Threats (T)				
1.	Poor accessibility	0.14	4	0.56
2.	Lack of facilities such as stalls and bathrooms	0.09	2	0.18
3.	Difficulty in accessing cellular networks	0.07	1	0.07
4.	There are no directions or warning signs	0.12	3	0.36
	Total			1.17
	Grand Total	1.00		2.87

Source: Processed Data, 2024

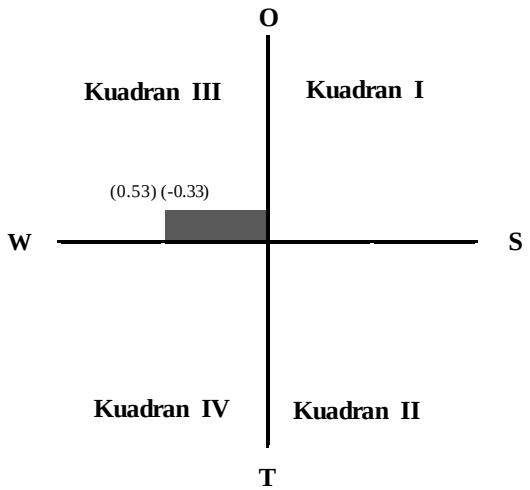
Werahung Beach is a natural beach because it has just been discovered and is still unpolluted. Werahung Beach has beautiful scenery, so many tourists spend their time for recreation and vacation. This beach tourist attraction's location can also be considered quite strategic, as it is about 15 km from the centre of Ambon City. However, several weaknesses must be considered, namely poor accessibility, the condition of the road, which is not all paved, and tourists who must walk through vegetation in the form of sago trees and other plants to get to Werahung Beach. Based on the results of the interviews, visitors also felt the difficulty of accessing cellular networks and the lack of directions and warning signs regarding dangerous biota.

Table 11. EFAS Matrix

No	Internal Strategy Factors	Weight	Ratings	Weight X Ratings
Opportunities (O)				
1.	The high interest of tourists to visit Werahung Beach	0.15	4	0.6
2.	The local people are quite friendly towards tourists.	0.10	1	0.1
3.	The beach's popularity increased due to virality on social media	0.15	3	0.45
	Total			1.15
Threats (T)				
1.	The beach is quite narrow	0.15	2	0.30
2.	The presence of dangerous biota	0.13	2	0.26
3.	Threat of landslides around the coast	0.12	1	0.12
4.	There are many similar tourist attractions around the beach	0.20	4	0.80
	Total			1.48
	Grand Total	1.00		2.63

Source: Processed Data, 2024

Figure 8. SWOT Quadrant of Werahung Beach



Source: Processed Data, 2024

EFAS external factor analysis in Table 11 shows a greater threat than opportunity, with a score of 2.63. The main opportunity that Werahung Beach has is the high interest of tourists. The EFAS results for developing tourist destinations can be obtained from the environment outside the organization(Yunita et al, 2024). The local community is also very friendly to tourists. However, other threats must be considered, namely, the width of the beach is not wide enough, and the threat of landslides around the beach. Based on the results of the interview, almost all of the tourists interviewed encountered dangerous biota at Werahung Beach.

Based on the results of IFAS-EFAS, Werahung Beach is included in Quadrant III, namely "change strategy". The following is the development strategy for Werahung Beach based on the results of the SWOT analysis:

Table 12. Development Strategy

IFAS	**STRENGTH (S)**	**WEAKNESSES (W)**
	• The beach is unpolluted and still natural • Beautiful beach view • The strategic location of tourist attractions • Cheap ticket prices	• Poor accessibility • Lack of facilities such as stalls and bathrooms • Difficulty in accessing cellular networks • Lack of directional signs and hazard warning signs
OPPORTUNITY (O)	**SO**	**WO**
The high interest of tourists to visit Werahung Beach The local people are quite friendly towards tourists. The beach's popularity increased due to virality on social media.	Optimizing the promotion of the natural beauty of the beach through social media to attract more tourists. Utilizing the strategic location of Werahung Beach to develop local tourism packages based on friendly community. Offering cheap ticket promotions to attract high tourist interest in new destinations. Holding small events or festivals on the beach to increase the popularity and virality of the Werahung destination on social media.	Improve road infrastructure and accessibility to optimize the high interest of tourists to Werahung Beach. Provide basic facilities such as food stalls and bathrooms to support the increasing popularity of the beach through social media. Expand communication networks and strengthen cellular signals to support social media-based tourism promotions. Create information boards and safety signs to improve visitor comfort,
EFAS		
THREATS (T)	**ST**	**WT**
The beach is quite narrow. The presence of dangerous biota Threat of landslides around the coast There are many similar tourist attractions around the beach	Highlighting the natural beauty and authenticity of the beach as an attraction to face competition with similar tourist attractions around Ambon. Developing evacuation routes and early warning systems for disasters to anticipate the threat of landslides around the Werahung Beach area. Creating a safe swimming zone and installing warning signs to reduce the risk of dangerous marine life such as sea urchins. Managing the capacity of tourist visits through a daily visitor restriction system so that the beach remains comfortable even though its width is limited.	Accelerate the construction of public facilities (toilet, stalls, rest areas) to improve the comfort and competitiveness of Werahung Beach. Create a safety education program and install warning signs about the dangers of marine life and disaster risks to ensure visitor safety. Improve and repair road access to the beach to reduce difficulties for tourists while increasing advantages over other beaches. Provide simple emergency services (first aid and rescue) to deal with accidents due to natural conditions or dangerous biota.

Source: Processed Data, 2024

Based on the SWOT analysis showing that the development of Werahung Beach is in Quadrant III, several strategic steps can be taken to maximize the potential of this tourist destination. In the SO (Strengths-Opportunities) strategy, optimizing strengths in the form of natural beauty and strategic location is the key to taking advantage of the high interest of tourists. Social media-based promotions need to be strengthened through the use of platforms such as TikTok, Instagram, Facebook, and YouTube. Collaboration with local influencers will also expand the reach of promotions, thereby accelerating the introduction of Werahung Beach to a broader audience. Competitive ticket price offers can be strengthened through group discount

programs, loyalty programs for visitors, and tour packages that combine visits to Werahung Beach and other beaches in Ambon. This approach is expected to increase interest in visits while strengthening Werahung's position as a new competitive destination.

The ST (Strengths-Threats) strategy focuses on utilizing strengths to deal with existing threats. Improving access infrastructure to the beach, such as road repairs and providing tourist-friendly public transportation, is a priority to facilitate visitor mobility. The provision of supporting facilities such as information boards and directional signs along the tourist route will increase the comfort and smoothness of tourist movement. The threat of erosion and landslides arising from the slope of the beach needs to be anticipated through vegetation-based conservation efforts. Planting mangroves (*Rhizophora spp*.) and sea pines as shoreline reinforcements will stabilize the soil while improving the coastal ecosystem. Strong coastal vegetation also functions to slow down longshore currents, reduce abrasion, and minimize the potential for damage to the shoreline due to constant wave movements. The integration of vegetative conservation strengthens the resilience of coastal areas to dynamic pressure from the sea and ensures the physical sustainability of the destination. Increasing visitor awareness of environmental conservation is an integral part of the ST strategy. Educational posters installed at the entrance area and along the tourist route can provide information about the dangers of waste to the coastal ecosystem and the risk of increased erosion. The placement of trash bins in strategic locations and the presence of local officers as supervisors in the field will strengthen the effectiveness of this environmental awareness campaign. This effort not only protects the natural attractions of Werahung but also builds the character of tourists who are more responsible for the environment.

The WO (Weaknesses-Opportunities) strategy directs attention to strengthening basic facilities and infrastructure to optimize tourist potential. The construction of decent road access and the provision of public facilities such as toilets, parking areas, seating, and local culinary tourism spots will enrich the visitor experience. The provision of water recreation rides, such as snorkeling equipment rentals and paddle boards, and the development of small cafes based on the local community will add to the uniqueness of Werahung Beach's appeal. The establishment of stalls by the local community is also an essential part of this strategy. These stalls not only provide direct economic benefits to the local community but also provide additional services that can satisfy tourists' needs for food, drinks, and resting places. The presence of these stalls increases the comfort of tourist visits while strengthening the economic involvement of the community in the development of local tourism. Collaboration between the local government and the local community is the key to the successful implementation of this strategy.

The WT (Weaknesses-Threats) strategy emphasizes the need to improve tourist safety standards at Werahung Beach. Providing community-based security services, installing CCTV at strategic points, and managing safe swimming zones will provide optimal protection for visitors. Handling the risk of dangerous biota such as sea urchins or stingrays requires preparedness from local teams equipped with first aid training. Information about the presence and handling of dangerous biota can be conveyed through brochures, warning signs, and short briefings at the beach entrance area. This handling must be strengthened considering that activities in the beach area are inseparable from the influence of breaking waves and longshore current movements that can take tourists to more dangerous regions if not clearly marked. Information-based mitigation efforts and direct supervision are vital components of the visitor protection strategy.

Previous studies by Arinta et al (2023) at Soge Beach, Sumarmi et al (2022) at Sipelot Beach, and this study occupy different SWOT quadrant positions. The study at Werahung Beach showed a position in Quadrant III, which indicates the implementation of a defensive strategy. This strategy emphasizes efforts to minimize internal weaknesses and avoid external threats, with a primary focus on improving supporting infrastructure and increasing accessibility and safety for tourists. In contrast to Werahung Beach, the results of the SWOT analysis at Soge Beach in

Pacitan show that the area is in Quadrant I. This position reflects the implementation of an aggressive strategy, which aims to utilize internal strengths to achieve external opportunities, primarily through strengthening environmental carrying capacity and preserving local culture as a tourist attraction. The same thing is also shown by Sipelot Beach in Malang, which is in Quadrant I, through a strategy based on community empowerment and integrated ecotourism management. Both locations show higher readiness in optimizing existing potential compared to Werahung Beach, which still requires fundamental improvements before moving on to the advanced development stage.

The difference in quadrant positions obtained from the SWOT analysis emphasizes the importance of determining strategies that are tailored to the conditions of each destination. Determining the strategic position in the SWOT quadrant must be done in an integrated manner through consideration of all strengths, weaknesses, opportunities, and threats that have been identified. This approach allows the formulation of a more focused, realistic, and sustainable development strategy, in accordance with the internal and external conditions of the tourist destination. In the case of Werahung Beach, the recommended defensive strategy is the basis for prioritizing infrastructure strengthening, improving tourism services, and mitigating environmental risks. This strategy can be used as a concrete recommendation that needs to be implemented collaboratively between the government and the local community to support the development of sustainable tourism in the region.

5. Conclusions

Based on the results of the analysis, Werahung Beach has a Tourism Suitability Index (TSI) value of 69%, which is included in the S3 category (Quite Suitable). This assessment is based on eight parameters, including beach type, beach width, water depth, distance to freshwater sources, land cover, vegetation, the presence of dangerous biota, and coral reef conditions. The TSI values for each station are Station I (71.87%), Station II (69.53%), and Station III (65.62%). Supporting factors include beach type, land cover with natural vegetation, and good coral reef conditions that support Werahung Beach tourism. However, limiting factors such as unsuitable water depth and the presence of dangerous biota require further attention.

The SWOT analysis places Werahung Beach in Quadrant III, which requires the implementation of a defensive strategy. The development strategy is formulated in detail through the following approaches: (1) Strength-Opportunities (SO) Strategy, namely strengthening tourism promotion through digital media, developing tourism packages based on local natural potential, and branding the destination as a natural and safe tourism area; (2) Strength-Threats (ST) Strategy, in the form of building adequate access roads, providing public facilities such as toilets and parking lots, coastal conservation through mangrove planting, arranging safe swimming zones to reduce risk, and educating tourists about protecting coastal biota; (3) Weakness-Opportunities (WO) Strategy, in the form of empowering local communities through tour guide training, developing community-based businesses, and improving tourism safety facilities; (4) Weakness-Threats (WT) Strategy, in the form of strengthening area management regulations, implementing tourist visit limits, community-based environmental monitoring, and handling potential risks of interaction with marine biota.

The integration of TSI and SWOT analysis is an essential strategic approach in the preparation of destination development planning. TSI provides an objective picture of the physical suitability of the area, while SWOT enriches the mapping by identifying internal and external factors that influence tourism sustainability. The integration of these two methods produces a development strategy that is more adaptive, realistic, and in line with field conditions, while increasing the accuracy of the direction of destination management. The implementation of the results of this study can be applied to the development of other coastal tourism destinations in the Eastern Indonesia region, which generally have natural ecotourism potential but face

challenges of limited infrastructure and management capacity. The implementation of concrete steps such as the development of access infrastructure, rehabilitation of coastal vegetation, regulation of tourism activity zoning, empowerment of the local economy through community-based business management, and strengthening of tourism-aware institutions is expected to accelerate the growth of coastal tourism in a sustainable and community-based manner. The impact of this research is not only focused on the development of Werahung Beach as a tourist destination, but also contributes as an academic reference for further research related to conservation-based tourism management in coastal areas. The findings and strategies formulated can be a reference for comparative studies or the development of sustainable tourism destination management models in Eastern Indonesia and other coastal regions of Indonesia.

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8. Conflict of Interest

The author declares that he has no conflict of interest with the research subjects in writing this article.

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