

# Tourism Development in Increasing Regional Original Income by Paying Attention to Disaster Aspects in Morotai Island Regency

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**Abstract.** The strategic role and contribution of the tourism sector to the Indonesian economy has encouraged the government to introduce 10 new Bali Tourism Strategic Areas or National Tourism Strategic Areas (KSPN), one of which is the Morotai tourism area. However, the tourism sector has not been able to contribute to the Regional Original Income (PAD) of Morotai Island Regency. This study aims to analyze the development of tourist attractions in increasing Regional Original Income (PAD) by considering disaster aspects in the Morotai Island Regency. The research focused on 28 tourist attractions spread across the South Morotai Regency. Quantitative methods were used in this study. Data analysis was performed using the Promethee method to create decision criteria. The results of the research show that developing tourist attractions that need attention to increase the PAD of Morotai Island Regency are the Pantai Army Dock, Waterfront City 1, Taman Army Dock, Museum Trikora and Museum Perang Dunia II, and Pulau Dodola. The managerial implications include improving accessibility, connectivity between destinations, quality of facilities, and infrastructure by considering disaster mitigation aspects. Second, it encourages investments in building three- and four-star hotels and restaurants. Third, we built a positive image of disaster preparedness in tourist areas to attract tourists.

## 1. INTRODUCTION

Indonesia's tourism potential in the eyes of the world is expected to become a foreign exchange earning commodity for the country. Indonesia hopes that the tourism sector will become an export commodity that can replace energy and minerals [1]. Tourism has played a strategic role in the Indonesian economy. This is reflected in its contribution to the formation of Gross Domestic Product (GDP), state foreign exchange receipts, and employment [2]. The strategic role and contribution of the tourism sector to the Indonesian economy has encouraged the government to present 10 new Bali tourist attractions that are expected to have a national economic impact, similar to tourism in Bali. The 10 new Bali tourist attractions consist of 5 priority tourism destinations (Tanjung Lesung, Banten, Seribu Islands, Jakarta, Tanjung Kelayang Beach, Bangka Belitung, Mount Bromo, East Java, and Morotai, North Maluku), and 5 super-priority tourism destinations (Borobudur Temple, Central Java, Lake Toba North Sumatra, Mandalika, West Nusa Tenggara, Labuan Bajo, East Nusa Tenggara and Wakatobi, Southeast Sulawesi) [3] [4].

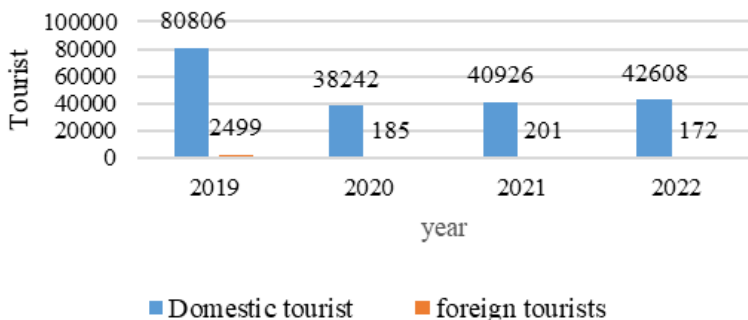
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The Morotai tourist area in North Maluku has the potential to attract both local and foreign tourists. The advantage of Morotai tourism is that it is geographically located on the outermost island of northeastern Indonesia and borders the Philippines and Palau. With its strategic location, Morotai Island became a point of contention during World War II between the Japanese empire and allied forces (the United States and Australia) to control the Pacific route as a base to support the liberation of the Philippines. Morotai is also the only beach in Eastern Indonesia, where there are 18 surfing areas spread across the west, north, and east coasts of Morotai Island. World War II relics are also tourist attractions; relics can be found in the Second World War Museum, Trikora Museum, and individual museums (self-help museums). In addition, there is a shark-point attraction that takes only 15 minutes from the Molokai Hotel Pier [5].

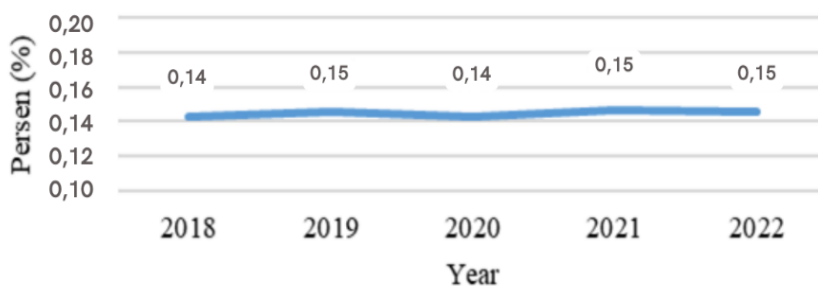
The Morotai Island Regency Tourism Development Area (KPP) comprises of three areas. Tourism Development Area (KPP) I covers the South Morotai District and East Morotai District, with the main service center in Daruba, which is assisted by the service center in Sangowo. Tourism Development Area (KPP) II covers the Southwest Morotai District with a service center in Wayabula. Tourism Development Area (KPP) III covers the North and Morotai Jaya Districts [6]. Morotai Island Regency tourist attractions are spread throughout the subdistrict. The results of verification in the field with the Morotai Regency Tourism Office in January 2024 found 50 tourist attractions spread across the South Morotai District (28 objects), East Morotai District (five objects), North Morotai District (seven objects), Morotai Jaya District (four objects), Southwest Morotai District (two objects), and Pulau Rao District (four objects).

The Morotai tourist area is less able to attract both domestic and foreign tourists. Data on tourist visits show that, from 2019 to 2022, there has been a significant decline from 80,806 people in 2019 to 42,608 people in 2022, with an average annual visit of 51,410 people [7]. In 2020, during the Covid-19 pandemic, the number of foreign tourist visits decreased drastically (figure 1). According to Kalbi Rasyid, Head of the Morotai Island Regency Tourism Office, there are two obstacles for foreign and domestic tourists visiting Morotai Island. First, the Wing Air flight schedule from Ternate to Morotai changed frequently. Second, ticketstos are expensive (ternate.tribunnews.com, 2023). Apart from limited access to the Morotai Island Regency, other obstacles to tourist arrivals on Morotai Island are facilities that are starting to break down, inadequate infrastructure, the quality of human resources that are still less active in supporting the tourism sector, a lack of attention to disaster mitigation in tourism areas, and the existence of land problems. Apart from that, the average length of stay for tourists in Morotai Island Regency is also relatively low, namely 1.46 days/visit, compared to the national average of 2.88 days/visit, while for domestic tourists it is 1.55 days/visit. The average length of stay has a positive effect on the original regional income of West Manggarai [8].



**Fig. 1.** Number of tourists in Morotai Island Regency 2019-2022

As a result of the decline in tourist visits, the tourism sector has not been able to contribute Regional Original Income (PAD) according to the target that has been set. In 2022, the PAD target for the Morotai Island Regency Tourism sector was IDR 1 billion; as of July 2022, it has only reached 20%. In 2023, the realized PAD achievement in the tourism sector as of June 2023 will be IDR 13 million from the total target of IDR 532 million, which comes from guesthouse/villa, recreation, and sports levies. The income for a number of accommodations is currently only IDR 200,000/night, compared to 2022, which will reach IDR 2-3 million/night (halmaherpost.com, 2023). The only tourist attraction that is subject to regional levies is Dodola Island. Overall, the decrease in tourist visits also has a significant impact on the Gross Regional Domestic Product (GRDP) of Morotai Island Regency. The contribution of the tourism sector to the GRDP through the approach of providing accommodation and food and drink is still relatively low (0.15%) (Figure 2) compared to the Central Lombok Regency, which reached 1.1% [9].



**Fig. 2.** Contribution of the tourism sector to GRDP of Morotai Island Regency (provision of accommodation and food and drink)

Apart from having tourism potential, which is included in the National Tourism Strategic Area (KSPN), the Morotai Island Regency has the potential threat of natural disasters. The threat of natural disasters is because the Morotai Islands directly face the Pacific Ocean and the megathrust zone of the Philippine Sea Plate, which makes them vulnerable to disasters with quite high frequency. Daryono (2020), Head of the BMKG Earthquake and Tsunami Mitigation Division, the Morotai region of North Maluku, is one of the active seismic areas in Indonesia because its location of Morotai Island is adjacent to the subduction zone of the Philippine Sea Plate. This active subduction zone has a plate subduction rate of between 10 and 46 mm per year. He continued that the megathrust zone of the Philippine Sea Plate is a potential threat to earthquakes and tsunami disasters in the North Maluku region, especially Halmahera, Morotai, and the Talaud Islands, where the target magnitude is M 8.2 (detik.com, 2020).

Thus, tourism development in the Morotai Island Regency requires serious attention from a disaster perspective. Tourism is a vulnerable, fragile economic activity. One of the vulnerabilities that haunt tourism is the occurrence of natural disasters [10]. Tourism is vulnerable to various natural disasters for several reasons [11], including (1) tourism locations that are prone to danger, such as beaches. High tsunami disasters can occur on the coast of the bay or peninsula, depending on the topographic, seismic, and geological conditions [12]. (2) Lack of tourism preparedness and knowledge; (3) inadequate vulnerability assessment; and (4) limited integration of tourism with disaster management systems.

Based on the research background that has been described, the research objective to be achieved is an analysis of tourism development in increasing Regional Original Income by paying attention to disaster aspects in the Morotai Island Regency.

## 2. MATERIAL AND METHODS

The research used quantitative descriptive methods with the PROMETHEE analysis technique. Preference Ranking Organization Methods for Enrichment Evaluation (PROMETHEE) is an analytical method used to evaluate alternatives with given criteria and make a final ranking decision. Promethee is a method for determining the order (priority) in multi-criteria decision-making (MCDM) based on outranking (determining the order), which is based on the binary relationship between two alternatives. In this method, all indicators mentioned have a significant economic influence [13]. Therefore, each indicator in this study had a weight of 1. Next, determining the selected option (outranking) in PROMETHEE is calculated based on the value  $\Phi^+(\alpha)$  which is called outflow and  $\Phi^-(\alpha)$  or outflow (influenced) [14].

The research variables were developed based on previous research on developed tourist attractions. There are four factors: number of tourists, accommodation, accessibility, and community participation [15]. However, in this research, the author added three additional variables to adjust tourism conditions in the Morotai Island Regency: tourist attractions, disaster danger level, and Internet network availability. Secondary data were obtained from the North Maluku Province Tourism Office, the Morotai Island Regency Tourism Office, Morotai Island Regency BAPPEDA, and Morotai Island Regency BPS. Primary data were obtained through direct observations, in-depth interviews, and questionnaire distribution from January to March 2024. In-depth interviews were conducted with the Acting Regent, the Head of the Tourism Service, Assistant III, and the Head of the Physical Infrastructure Division of the Bappeda, Morotai Island Regency. Tourist questionnaires were distributed to 100 respondents according to the Slovin formula [16]. The scope of this research is focused on 28 tourist attractions spread across the South Morotai Regency. The reason for choosing the South Morotai Regency is that, as the city center, there are many accommodations and the largest distribution of tourist attractions in Morotai Island Regency.

**Table 1.** Variables in developing tourism research

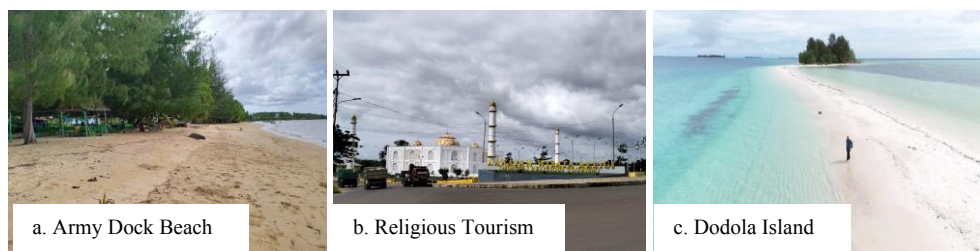
No	Assessment indicators	Potential value				
		Very weak (1)	Weak (2)	Medium (3)	Strong (4)	Very strong (5)
1.	Tourists	Not yet known	<5.000/year	5.000-10.000/year	10.001-15.000/year	>15.000/year
2.	Accessibility	> 5 km from the city center	4.1 – 5 km	3.1 – 4 km	2.1 – 3 km	1 – 2 km
3.	Infrastructure	There are no facilities	1 – 2 Facilities radius 1 km	3 Facilities radius 1 km	4-5 Facilities radius 1 km	> 5 Facilities radius 1 km
4.	Society participation	Don't know	Just know	Development	Planning and development	Planning, development and responsibility
5.	Internet Network	There isn't any	Weak	Medium	Strong	Very strong
6.	Disaster danger level	Very high	High	Medium	Low	Safe from disaster
7.	Attractions	1	2	3	4	5

Source: Modification of the 1977 Gunn model dan Coppock (1971), Pramudya (2008), and Gesvita et al (2017).

### 3. RESULTS

#### 3.1 Description of tourist attractions by type

Tourism in South Morotai District, Morotai Island Regency, has potential tourist attractions (natural, historical, artificial, natural and historical, and natural and cultural), with 28 tourist attractions spread across several villages. Darame Village has three tourist attractions, Daruba has four tourist attractions, Gotalamo Village has three tourist attractions, Joubela Village has two tourist attractions, Juanga Village has six tourist attractions, Kolorai Village has three tourist attractions, and Daeo Village, Falila Village, Muhajirin Baru Village, Nakamura Village, Pandanga Village, Wawama Village, and Galo-Galo Village each have one tourist attraction. Meanwhile, the distribution of tourist attractions in South Morotai District has the potential for natural tourist attractions as much as 39% or 11 locations, history as much as 18% or 5 locations, artificial as much as 25% or 7 locations, nature and history as much as 14% or 4 locations, as well as natural and cultural as much as 4% or 1 location.



**Fig. 3.** Tourist attractions in South Morotai District; a. Army dock beach, b. Religious tourism, and c. Dodola Island

**Table 2.** Tourist attractions and their distribution in South Morotai District

No	Tourist Attraction Name	Village	Types of Tourism
1	Pantai Tanjung Pinang	Daeo	Nature
2	Kawasan Study and Sport Center	Darame	Artificial
3	Taman Army Dock	Darame	Nature and History
4	Pantai Army Dock	Darame	Nature and History
5	Wisata Mangrove	Daruba	Nature
6	Pulau Zum-Zum	Daruba	Nature and History
7	Waterfront City 1	Daruba	Artificial
8	Waterfront City 2	Daruba	Artificial
9	Kawasan Ekonomi Khusus	Falila	Artificial
10	Tank Amphibi	Gotalamo	History
11	Central Bussiness Development (CBD)	Gotalamo	Artificial
12	Wisata Religi	Gotalamo	Artificial
13	Pantai Tanjung Balitako	Joubela	Nature
14	Wisata Air Kaca	Joubela	Nature and Culture
15	Pantai Sagolo	Juanga	Nature
16	Pulau Mitita	Juanga	Nature
17	Wisata Mangrove Tanjung Liku	Juanga	Nature
18	Kuburan Sekutu (T. Dehigila)	Juanga	History
19	Sail Morotai	Juanga	Artificial
20	PT. Jababeka Morotai (D'Aloha Resort)	Juanga	Nature
21	Pulau Dodola	Kolorai	Nature
22	Pulau Kolorai	Kolorai	Nature
23	Pulau Kokoya	Kolorai	Nature
24	Museum Swadaya M. Eso	Muhajirin Baru	History
25	Air Terjun Nakamura	Nakamura	Nature and History
26	Kuburan Sekutu Pandanga	Pandanga	History
27	Museum Trikora dan Perang Dunia II	Wawama	History
28	Pulau Galo-Galo	Galo-Galo	Nature

Source: Survey results, 2024

### 3.2 Supporting Facilities for Tourism Areas in South Morotai District

The development of tourist destination areas must be equipped with tourism support facilities so that tourists feel comfortable and want to linger in the tourist area. Tourism support facilities in South Morotai District consist of accommodations, restaurants, transportation, defense and security, tourism information centers (TIC), health facilities, telecommunications, and banking. However, several tourist facilities need to be considered in tourist attractions, such as toilets and bathrooms. Based on observations and interviews with tourism activists, most toilets at tourist attractions have problems or are damaged, resulting in many complaints.

#### 3.2.1 Accommodation

To support tourism activities for tourists visiting tourist attractions in Morotai Island Regency, accommodation has been provided for 29 hotels/inns/homestays, and the distribution of accommodation is concentrated in the South Morotai District at 70% or 20 units.



**Fig. 4.** Accommodation in South Morotai District; a. Molokai Hotel and b. Dodola Lodging

#### 3.2.2 Restaurants and Eating Houses

There are 120 restaurants or eateries in the Morotai Island Regency, of which 91 are located in South Morotai District. Restaurants and eateries offer seafood as a mainstay meal for tourists. A favorite menu always sought after by tourists is a grilled tuna jawdish. Tuna jaws have become the mainstay menu for domestic and foreign tourists in Morotai. In addition to grilled tuna jaws, various processed tuna dishes have also been used, such as gohu tuna sashimi, tuna belly (tuna fish stomach), tuna steak, special tuna fried rice, and special tuna fried noodles.



**Fig. 5.** Accommodation in South Morotai District; a. Culinary Center and b. Daloha Resort

#### 3.2.3 Transportation

The development of tourism that supports accessibility in Morotai Island Regency includes the provision and development of land and inter-island transportation. Development

of accessibility to facilitate the movement of tourists to tourism destinations. Tourist visits can occur via Tobelo, North Halmahera, or Ternate cities. The crossing option from North Halmahera to Morotai Island is to use the ASDP ferry or speedboat. Meanwhile, crossings from Ternate to Morotai Island can be used for air or sea transportation. Air flights by Wings Air aircraft from Sultan Baabullah Airport, Ternate City, to Pitu Airport, Morotai Island every Wednesday, at 12.00 WIT with a travel time of approximately 45 min, plane ticket price IDR 1,050,000 per passenger. Crossings from Ternate City to Morotai Island by sea transportation are available almost every day, unless the ship is damaged or docked.



**Fig. 6.** Transportation to Morotai Island Regency; a. KM. Geovani and b. ASDP Ferry

### 3.2.4 Defense and security

Defense and security in the Morotai Island Regency are all located in the South Morotai District. The defense and security aspects are considered complete because they consist of three elements: the TNI Leo Wattimena Air Force Base, Military District Command Army (KODIM) 1514 Morotai, and TNI Main Base XIV Lanal Morotai. In addition, there is also the Morotai Island Police, which maintain security and order in the community.



**Fig. 7.** Defense and security aspects; a. Air force, b. Navy, c. KODIM, and d. Police Station

### 3.2.5 Tourism Information Center (TIC)

Construction of a Tourism Information Center (TIC) to support regional tourism development. The presence of TIC is expected to provide complete and accurate information to tourists about various tourist attractions, attractions, accommodation facilities,

transportation, places to eat, tour guides, and other tourist activities in the area. TIC construction in the Morotai Island Regency has been carried out in the Waterfront City (WFC) II area in Daruba Village, South Morotai District, but it is not yet functional and is starting to deteriorate owing to lack of maintenance.



**Fig. 8.** Tourism Information Center (TIC)

### 3.2.6 Health

Health facilities in support of the National Tourism Strategic Area Center in Morotai Island Regency, specifically South Morotai District, consist of Soekarno Morotai Regional Hospital and three health centers: Daruba Health Center, Dehegila Health Center, and Sabatai Health Center.



**Fig. 9.** Health facilities at Soekarno Morotai Hospital

### 3.2.7 Banking

The banking sector in the Morotai Island Regency is located in the South Morotai District. The banking sectors include Bank Negara Indonesia (BNI), Bank Rakyat Indonesia (BRI), Bank Syariah Indonesia (BSI), and the Maluku Maluku Regional Development Bank (BPD). The existence of banking facilities to meet tourists' needs during tourist trips, such as hotel payments, transportation tickets, food, money exchanges, and shopping.



**Fig. 10.** Banking Facilities; a. BRI and b. BPD Maluku Maluku

### 3.2.8 Telecommunication

Most villages in Morotai Island Regency can access the Internet because the Palapa Ring Optical Cable has been installed. Palapa Ring Middle Package is a National Strategic Project which aims to meet telecommunications needs in Indonesia, Morotai is one of the service cities that receives interconnection from Tobelo and Manado.



**Fig. 11.** Telecommunication facilities; a. Telkomsel office and b. Palapa ring network

### 3.3 Tourism Human Resources Development

Sustainable tourism development to achieve quality tourism, visitor happiness, product and service diversity, and technology adoption requires the assistance of quality tourism human resources (HR). Access to human resources that are capable of competing in the tourism sector is one of the main challenges for tourism in Morotai. The availability of labor in the tourism industry is limited. The workers were recorded from the registered business sector, providing accommodation, food, and drinks. From 2017 to 2021, this number continues to decline, which may also be due to the effects of the recent Covid-19 pandemic. In 2017 and 2018 there were 122 people recorded, which decreased to 111 people in 2019; in 2020, there were 101 people, and in 2021, there were 100 people. The number of workers in the tourism sector has consistently decreased from 2017 to 2021, which is in line with the trend of decreasing number of tourism business services, especially in the food and drink supply business sector in Morotai Island Regency. This is inversely proportional to the development of the Labuan Bajo Tourist Area. Generally, the number of business actors has increased. The number of food and beverage providers was 41 units in 2014 and increased to 149 units in 2019, with a growth rate in the last five years reaching 363.41 units [17].

The strategy for improving tourism human resources in the Morotai Island Regency is as follows: first, increasing public perception of quality and sustainable tourism through tourism awareness movements and the application of *Sapta Pesona* values. Second, the quality of human resources (HR) in the tourism industry and creative economy should be improved through competency-based certified training. Third, local community participation should be increased by empowering tourism economic activities. Fourth is the capacity of the local business world (micro, small, and medium enterprises) [18].

### 3.4 Disaster Conditions in Morotai Island Regency

The Morotai Island Regency is an archipelagic region; therefore, disasters can occur due to marine or maritime processes. In addition, the geomorphological conditions of the region include hilly and mountainous areas as well as fluvial and marine plains on the coast of the island that can result in landslides and floods. Tidal waves and tsunamis are two examples of disasters that originate from water. Furthermore, the Morotai Island Regency directly faces a

tectonic plate collision zone consisting of the Pacific, Philippine, Eurasian, or Indo-China plates. Thus, there is a real risk of tectonic earthquakes and tsunamis occurring in this region. Therefore, identifying areas at risk, especially those related to tsunamis, is important, especially for communities spread across coastal areas. Moreover, the residential areas in this district are all located in coastal and fluvial landscapes with loose or alluvial lithologies. This type of rock is very sensitive to seismic vibrations; therefore, it is quite easy to create transverse waves from the rock, which could potentially destroy the entire structure above it. Indeed, the epicenter of an earthquake is not always known; therefore, identifying earthquake-prone areas can be difficult. However, in general, almost all natural landscapes that contain alluvium and marine are included in areas prone to tectonic earthquakes, and most are also at risk of tsunamis. The area around the east to north coast of Morotai Island is the most vulnerable to tsunami waves. This is because this area directly faces the Pacific Ocean, which is the meeting point for local and international tectonic plates [19].

Based on data from the study results contained in the 2024 BNPB inarist, the Disaster Risk Index for the Morotai Island Regency area during the 2017-2023 period has a medium status, namely between 118.44 (2019), and 123.02 (2023) [20]. The risk level for each district or city was determined by considering the elements of capacity, vulnerability, and danger. Overall, the Morotai Island Regency is threatened by several natural disasters, including drought, large waves and abrasion, floods, volcanic eruptions, landslides, earthquakes, tsunamis, and land fires.

### 3.5 Analysis of tourist attractions that can increase Regional Original Income (PAD) in Morotai Island Regency

Based on the results of the analysis of tourist attractions in South Morotai District, it is known that the ranking results for the net flow scores of the 28 tourist attractions that have the seven highest scores are Pantai Army Dock with a score of 0,6508, Waterfront City 1 with a score of 0,5979, Taman Army Dock with a score of 0,5185, Museum Trikora dan Museum Perang Dunia II with a score of 0,4921, wisata religi with a score of 0,3862, CBD Gotalamo with a score of 0,3175 and Pulau Dodola with a score of 0,3069. The following is a picture of the Promethee ranking results (figure 12).

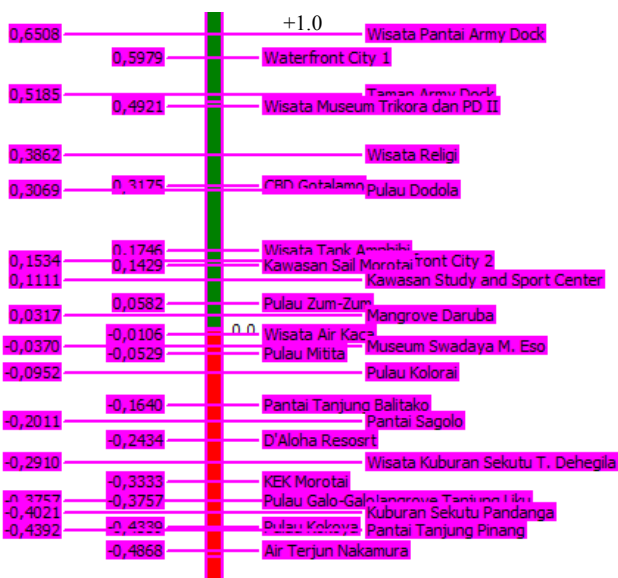
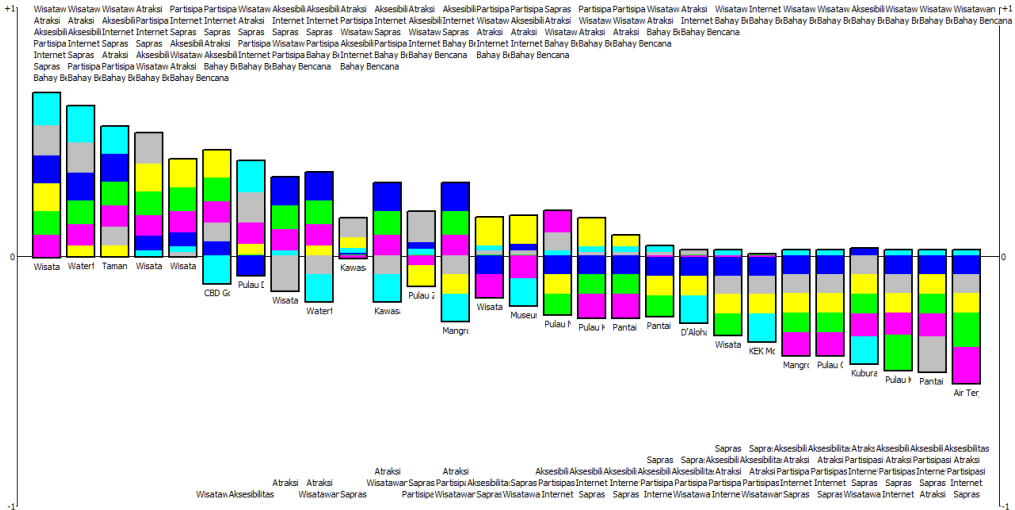


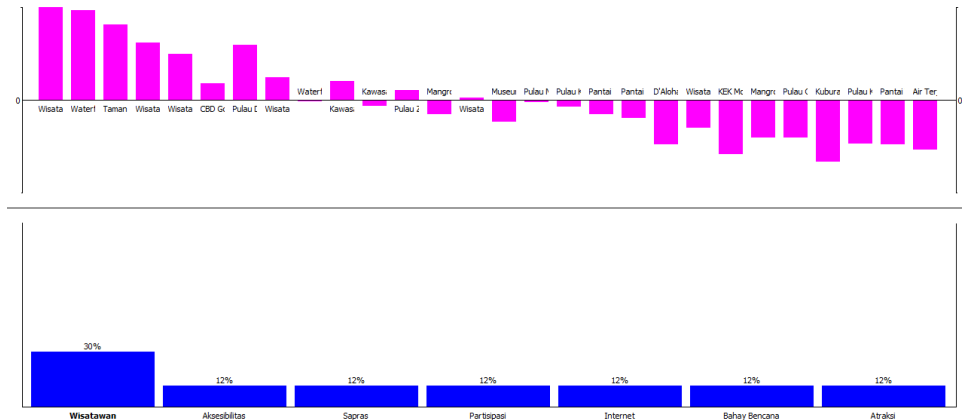
Fig. 12. Results of tourist attraction analysis using Promethee

Furthermore, Promethee Rainbow showed that the wider the box, the larger its size, indicating that the action criterion is more important. Promethee Rainbow results show that the tourist attraction score is the highest because it is influenced by the high number of tourist visits, there are various attractions at the tourist location, the closest access is from the city center, the management of the tourist attraction involves community participation, the internet network signal is very strong, the surrounding facilities and infrastructure are tourist attractions, and the level of disaster danger in tourist attractions (figure 13).



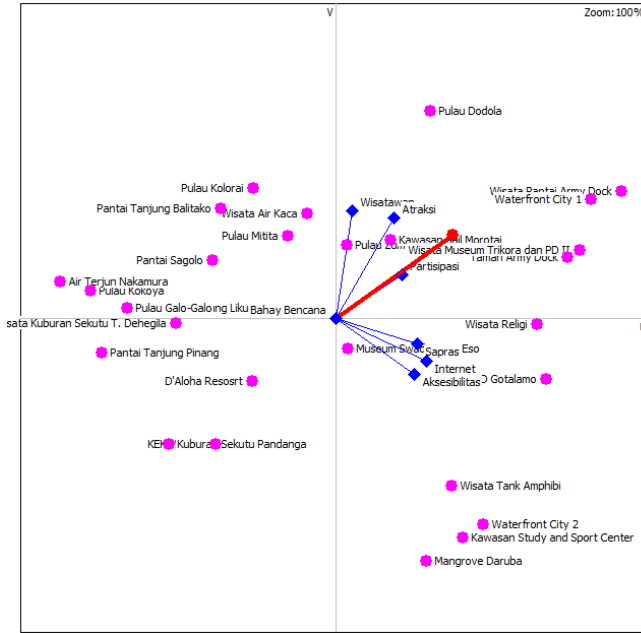
**Fig. 13.** Promethee Rainbow analysis results

In Promethee there is also The Walking Weights, a method for testing the sensitivity of ranking results to changes in the criteria weights. The Walking Weights image is divided into top and bottom; the top is the Promethee complete ranking, whereas the bottom is the criterion weight value. In this study, the balance point for the criteria weights was 14%, and the criteria weights could even be changed. If a small change causes a large change in ranking, it means that it is very sensitive, and vice versa. If the ranking remains stable, even though the criteria weights are changed, then the ranking is reliable. The results of the research show that if the tourist criteria are increased by 30%, several rankings will change, except for positions one to four that do not experience changes, namely, Pantai Army Dock, Waterfront City 1, Taman Army Dock, Museum Trikora, and Museum Perang Dunia II.



**Fig. 14.** Results of analysis of The Walking Weights Promethee

Based on the Geometric Analysis for Interactive Assistance (GAIA) analysis, the GAIA field of tourist attractions is represented by points, and criteria or variables are indicated by axes [21]. The analysis results show that the tourist attractions Pulau Dodola, Pantai Army Dock, Waterfront City 1, Kawasan Sail Morotai, Museum Trikora Museum dan Museum Perang Dunia II, Taman Army Dock, dan Pulau Zum Zum are the best choices to support tourism development in order to increase regional income. Seven tourist attractions were the best choices based on tourism variables, attractions, and community participation (figure 15).



**Fig. 15.** GAIA PROMETHEE analysis results

To support the results of the tourist attraction analysis using PROMETHEE, the author distributed a questionnaire to ask for tourists' opinions regarding the most preferred tourist attractions, where tourists were asked to choose five tourist attractions that could be developed to increase local revenue. The results of the distribution of answers to the questionnaire revealed that the tourist attraction had the seven highest scores, namely the Pulau Dodola tourist attraction, which was ranked highest with a value of 93; the Pantai Army Dock tourist area (82); the Air Terjun Nakamura tourist attraction; and the Museum Trikora dan Museum Perang Dunia II tourist area with a value of 36. The Taman Army Dock and Waterfront City 1 had a score of 31, and Kokoya Island had a score of 19 (Table 3).

**Table 3.** Tourist attractions that tourists like in South Morotai District

No	Tourist Attraction Name	Village	Total
1	Wisata Pulau Dodola	Kolorai	93
2	Kawasan Wisata Pantai Army Dock	Pandanga	82
3	Wisata Air Terjun Nakamura	Nakamura	36
4	Wisata Museum Trikora dan PD. II	Wawama	36
5	Taman Army Dock	Darame	31
6	Waterfront City.1	Daruba	31
7	Wisata Pulau Kokoya	Kolorai	19

Source: Analysis Results, 2024

#### **4. DISCUSSION**

Tourism potential in South Morotai District consists of natural, historical, artificial, natural, and historical tourism, as well as nature and culture, with a total of 28 tourist attractions. The development of tourist areas has been equipped with adequate support facilities, but there are several tourist facilities that need to be considered because they receive many complaints from tourists, such as toilets or bathrooms at tourist sites. The tourism potential of Morotai is a threat to natural disasters. The threat of natural disasters is because the Morotai Islands face the Pacific Ocean and the megathrust zone of the Philippine Sea Plate directly, which makes the Morotai Islands vulnerable to disasters with a fairly high frequency, M 8.2. In addition, the geomorphological conditions of the area include hilly and mountainous areas, as well as river and sea plains on the island's coast, which can result in landslides and floods. Tidal waves and tsunamis are two examples of disasters that originate from water. The Morotai tourist area is located along the coast with loose or alluvial lithology. This type of rock is very sensitive to seismic vibrations; therefore, it is quite easy to create transverse waves from the rock, potentially destroying the entire structure above it. Paying attention to the physical condition of the Morotai area in an effort to develop tourism, aspects related to disasters must be considered.

In the PROMETHEE analysis, tourism development by paying attention to disaster aspects uses seven indicators, the number of tourists, the number of tourists, accessibility, facilities and infrastructure, community participation, internet networks, disaster-prone areas, and tourist attractions. The results of the analysis found that the tourist attractions that can be developed are the Army Dock Beach, Waterfront City 1, Army Dock Park, Trikora Museum, World War II Museum, religious tourism, Gotalamo CBD, and Dodola Island. The factors that affected tourist attractions had the highest scores, namely, the number of tourist visits; there are various tourist attractions at tourist sites; the nearest access is from the city center; the management of tourist attractions involves community participation; the Internet network signal is very strong; the facilities and infrastructure around it are tourist attractions; and the level of disaster danger in tourist attractions. According to Gesvita (2017), the indicators that greatly affect the assessment of tourist attractions are the number of tourists (0.35), accessibility (0.24), infrastructure (0.20), and community participation (0.13) [22]. According to Aldrianto et al. (2021), the location of tourist attractions that rely on natural conditions and limited accessibility is difficult to develop [23]. The results are also in accordance with the findings of a community-based ecotourism performance evaluation study in Satun, Thailand, which stated that the tourism aspect that must be improved is community management and participation [24].

In the future development of the Morotai tourist area, significant preventive measures must be taken through disaster-mitigation initiatives. Developing a disaster early warning system, building disaster-resilient infrastructure, building adequate evacuation routes and locations, and maintaining mangrove ecosystems and coastal vegetation. All efforts were made to reduce the risk of disasters occurring in the Morotai tourist area.

#### **5. CONCLUSIONS**

The Morotai Island Regency Government can encourage Juanga Village to become a tourism village because it is the most popular tourist attraction in the South Morotai Regency. Overall, tourism support facilities are available, but improvements still need to be made, especially in terms of transportation, tourism information centers, and toilet facilities at tourist attractions. The results of the analysis of tourist attractions that need to be considered to improve the PAD of Morotai Island Regency include the Pantai Army Dock, Waterfront City 1, Taman Army Dock, Museum Trikora dan Museum Perang Dunia II, and Pulau

Dodola by considering disaster mitigation aspects. Meanwhile, the aspects that affected the highest score were influenced by high tourist visits, various attractions at tourist sites, the closest access to the city center, the management of tourist attractions that involve community participation, a very strong Internet network signal, the availability of facilities and infrastructure around tourist attractions, and the level of disaster danger in tourist attractions. The managerial implications include improving accessibility, connectivity between destinations, quality of facilities, and infrastructure by considering disaster mitigation aspects. Second, it encourages investments in building three- and four-star hotels and restaurants. Third, we built a positive image of disaster preparedness in tourist areas to attract tourists. The limitations are limited budget allocation and a lack of focus on the development process. Second, there is still a lack of public awareness of the importance of disaster mitigation. Third, there is a lack of investor interest in tourism development in disaster-prone areas. The limitation of this study is that it is still limited to tourist objects in South Morotai District, not counting the analysis of local original income from the tourism sector and tourism development strategies in disaster-prone areas.

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