Diyonumo Island Tourism Potential Using Geographic Information System Application in Gorontalo Utara Regency

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Article Info

Abstract

One of the new tourist objects in North Gorontalo Regency is Diyonumo Island and until now it has not been optimally developed both in terms of its feasibility as a tourist area. So it really needs intervention from both the government and the private sector to encourage tourism development in North Gorontalo Regency which is based on nature. But there is no information system that provides an overview of this tourism potential. So the researchers identified the tourism potential of Diyonumo Island using a geographic information system in North Gorontalo Regency. The method used in this study was SWOT integrated with a spatial approach to analyze each parameter, namely attractions, infrastructure and accessibility. Based on spatial mapping, Diyonumo Island tourism can be recommended as a strategic tourism area for Gorontalo Province. The results of the analysis show that Diyonumo Island has a percentage of 40% of tourist attractions that have the potential to be developed and become a supporting strategy to increase the number of tourist visits.

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INTRODUCTION

Tourism is a recreational activity outside the domicile to get away from routine work or find another atmosphere (Dwyer, 2022). Tourism has provided considerable foreign exchange for various countries. Indonesia is the largest archipelagic country in the world which consists of 17,508 islands or is also known as a maritime country (BPS, 2015). Gorontalo Province is one of the youngest provinces in Indonesia as a result of division from North Sulawesi which was formed based on RI Law Number 38 of 2000 concerning the Formation of the Gorontalo Province. The area of Gorontalo Province is 12,215.44 km2^2, when compared to the Indonesian territory, the area of Gorontalo Province is only 0.63%. Of these six regions, Pohuwato Regency has the largest area followed by Boalemo Regency, while Gorontalo City has the smallest area of 0.54% of the total area of Gorontalo (BPS, 2015)

The Province of Gorontalo has invaluable tourism assets in the form of natural attractions, historical cultural attractions and man-made attractions. Provincial Regulation of Gorontalo stated that Gorontalo Province has 12 strategic tourism areas in several Regencies and Cities. A tourism strategic area is an area that has the main function of tourism or has the potential for tourism development that has an important influence in one or more aspects as contained in Law no. 10 of 2009 (Ibrahim, et al., 2018). North Gorontalo is a region blessed with beautiful islands with natural scenery that have the potential to be developed as a tourism sector such as the beautiful islands are Saronde, Lampu, Mohingito, Bogisa, and Diyonumo (Razak, et al., 2020).

One of the new tourism objects in North Gorontalo Regency is Diyonumo Island. This tourist attraction has beautiful natural scenery, airy hills surrounded by thatch grass as well as several coconut and mahogany trees. Judging from the large tourism potential possessed by North Gorontalo Regency, especially Diyonumo Island, which until now has not been optimally developed both in terms of its feasibility as a tourist area, tourist attractions/activities, it is necessary to intervene from both the Government and the private sector to encourage tourism development in North Gorontalo Regency based on its natural resources.

In Deme Dua Village, North Gorontalo Regency, there are several tourist attractions that have the potential and have their own charm, but there is no information system that provides an overview of tourism potential. So that it is not yet known by the Government or local tourists. Diyonumo Island is a tourist attraction that has the potential to be developed and is worthy of being a strategic tourism area. Stated by Octavianti & Reza, (2020), tourist objects such as Diyonumo has the potential for its beauty to attract tourists to visit it.

METHOD

This research was conducted in Diyonumo Island which is located across the coast of Deme Dua Village, East Sumalata District, North Gorontalo Regency with coordinates 0°59'18.0"N 122°31'25.7"E.

The tools and materials used in the research are: Global Positioning System (GPS) Type Oregon 650 to determine geographic position, camera for field documentation, and stationery. The materials used were questionnaires for indirect interviews, maps of RBI 1:25,000 in 1991, BIG 2013 revision, and satellite imagery.

The data used are in the form of primary data and secondary data, where the primary data is obtained from survey results in the form of observations and interviews, and secondary data is obtained from related agencies, the 1:25,000 RBI map of 1991 with 2013 BIG revision and satellite imagery. The method used are spatial analysis and SWOT. Spatially discusses land cover, tourist attraction, infrastructure, and accessibility based on Geographic Information Systems (GIS) as an information system used to input, store, retrieve, process, analyze, and produce geographically referenced data to support data collection. decisions in planning and management (Tumimomor, et al., 2013). SWOT can be broadly grouped into 4 categories known as Strengths, Weakness, Opportunity and Threat, to find out the direction of the development of Diyonumo island through consideration between Advantages and Disadvantages, as well as Opportunities and Threats (Rosemann, 2014).

The population in this study is the Diyonumo Island Tourism Object, and to obtain supporting data for SWOT analysis the researcher used questionnaires. Distribution of questionnaires distributed to 50 respondents from tourists and using the method of simple random sampling. Fifty respondents are determined from 25% of tourists who come every month. Based on data collected from tour operators, around 240 tourists come every week and around 34 every day. The following are the 3 main points to collect as the primary data:

Tourist attractions, namely all data rela-

ting to the natural potential of Diyonumo Island which is the main attraction for tourists to visit.

Amenities, are data in the form of the availability and condition of Diyonumo Island infrastructure located at tourist sites and supporting facilities around tourist sites.

Accessibility, namely data relating to the ease of reaching Diyonumo Island tourism objects.

RESULTS AND DISCUSSION

Diyonumo Island is located in Deme Dua Village (0059'17.62" N and 122031'27.20" E) with total area of 30.669 ha. Land cover information was obtained from the Rupa Bumi Indonesia Map (RBI) scale 1:25,000 year of 1991, with the 2013 revision of the Geospatial Information Agency Based on *Figure 1* , Diyonumo Island is classified into 3 land cover classes, namely land cover for farms/plantations, land for grass/bare land, and land cover for shrubs.
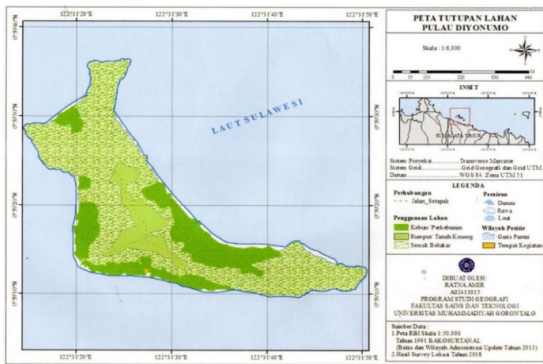
Source: 1991 RBI Map with 2013 Revision
Figure 1. Land Cover Map

Table 1. Dinoyumo Island Land Cover

| Land Cover	Area/ha	Percentage %
Farm/Plantation	7,272	24,938
Grass/bare land	2,950	10,117
Shrub	18,938	64,945
Total	29,16	100

Source: RBI map analysis, 2018

Based on *Table 1*, the land cover of Diyonumo Island shows that the total land cover area is 29,160 ha and the most extensive land cover is shrubs, 18,938 ha with hilly landscape conditions, land cover for farms/plantations 7,272 ha, and grass/bare land 2,950 ha.

Source: 1991 RBI Map with 2013 Revision
Figure 2 Tourist Attractions Map

Tourist attraction is anything that is interesting for someone to visit a certain area (Hall et al., 2014). Tourism object or tourist attractions are anything that has uniqueness, beauty, then value in the form of diversity of natural, cultural, and man-made assets that are the target or destination of tourist visits (Rahayu, et al., 2020). The attractions on Diyonumo Island in *Figure 2* are beautiful natural panoramas, airy hills surrounded by thatch grass, annual plants in the form of coconut and mahogany trees, white sand along the coastline of Diyonumo Island, as well as crowds of local people when welcoming tourists. The area of Diyonumo Island which is quite wide, with this attraction is enough to attract tourists to visit Diyonumo Island when it is developed in a better direction.

Tourist destinations require supporting facilities that can meet the needs and desires of tourists while at the Diyonumo Island tourism location. Such as cottage facilities for tourists who come, semi-open huts as a place to sit and enjoy the beauty of nature, restaurants or stalls are also very important for tourists who come without food or who stay for several days.
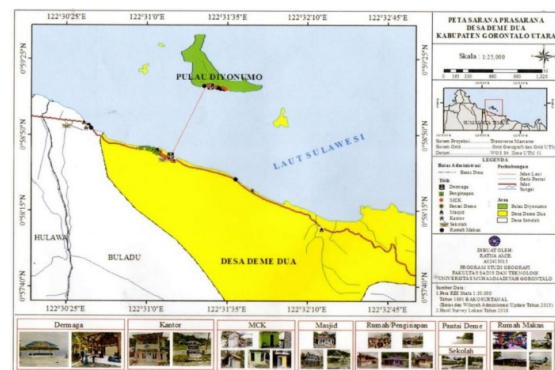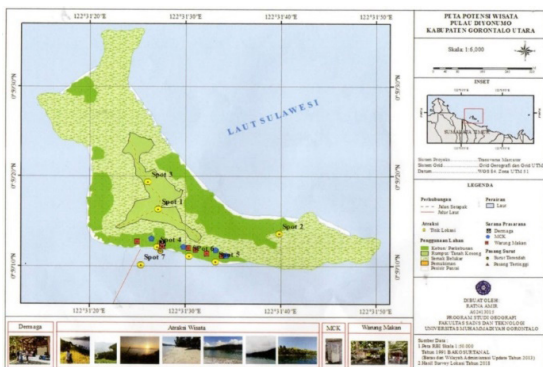

Source: 1991 RBI Map with 2013 Revision
Figure 3. Infrastructure Map

Diyonumo Island has tourist facilities as shown in *Figure 3*, such as a pier, restaurant, toilet and boat. The facilities needed by visitors are inadequate, but the facilities needed by visitors can be found on land around Diyonumo Island, such as places of worship in the form of mosques and lodging.

The availability of transportation facilities used both by sea and by land and directions to Diyonumo Island tourism objects is very important for tourists who make a trip, because with good accessibility it will increase the number of tourists who come to visit on a tour. The location of Diyonumo Island can be reached with a distance of 120 km from Gorontalo City. Harnia (2021) explained that if departing from the center of Gorontalo City, the location of Diyonumo Island can be reached within 2 (two) or 3 (three) hours by road. After taking that trip, visitors will arrive in the area of Deme Dua Village, East Sumalata District. The strait crossing to reach the tourist attractions is 2.5 km from the Deme Dua Village pier by boat.

In the tourism potential of Diyonumo Island spatial analysis, this research uses the RBI Map with a scale of 1:25,000 year of 1991 with 2013 revision. Analysis process is conducted using Geographic Information System. Observation results carried out through primary and secondary data. The primary data collected by doing surveys and interviews with tourists using questionnaires, henceforth to be analyzed using SWOT as a supporting analysis to determine tourist perceptions about the tourism potential of Diyonumo Island. While secondary data is obtained through RBI and sasplanet maps for the accuracy of the data information obtained which is integrated with the Geographic Information System (GIS).


Source: 1991 RBI Map with 2013 Revision
Figure 4. Tourism Potential Map

The results of the study show that Diyonu-

mo Island is bordered by the Sulawesi Sea. Most of Diyonumo Island as shown in **Figure 4** has potential tourist objects or tourist attractions that have the room for development, including hills surrounded by thatch, annual plants such as coconut and mahogany trees, beautiful sunrise and sunset on Diyonumo hill, white sand along the line the beach, the sea which is outstanding to do swimming activities. Access to Diyonumo Island is quite easy, only ± 120 km from Gorontalo City and takes ± 2 hours by road transportation to get to Deme Dua Village. For the sea route to Diyonumo Island, it is ± 2.5 km and takes 5 minutes from the Deme Dua Village pier by using the local people's transportation service which is often called a *sampan*. In terms of the feasibility, Diyonumo Island only has the least infrastructure for tourism, because the adequate facilities still only available on mainland, namely Deme Dua Village and Buladu Village.

The potential of Diyonumo Island is analyzed through a qualitative SWOT approach, in which the intended analysis is to describe the strengths and weaknesses of tourism development as well as the opportunities and threats faced by identifying internal and external factors (Butulipu, et al., 2018). The results of the identification of potential tourist areas using spatial analysis and SWOT analysis, so that Diyonumo Island can be included in a strategic tourism area but with a note that in terms of facilities it must be sufficient. It is necessary to cooperate between the local government and the village government with the local community to provide facilities in the form of gazebos, cottages, and places of worship in Diyonumo Island.
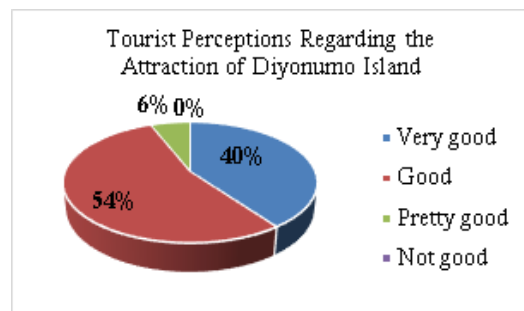
Source: Questionnaires, 2018
Figure 5. Tourist Perception Diagram

Figure 5 shows, of the 50 tourists interviewed, there were 20 respondents or 40% of tourists who viewed the tourist attraction as very good, and 27 respondents or 54% of tourists who viewed it as good and there were 3 respondents or 6% of tourists who considered it quite good.

Table 2. S.W.O.T Analysis

Internal	Strengths (S)	Weaknesses (W)
External	It has an unspoiled coastal ecosystem. Has hills decorated with grass land. Beautiful Blue Beach	Lack of cooperation between Regional and Village Governments, with the community. Lack of publications regarding Diyonumo Island. Lack of adequate Island facilities

Opportunities (O)	S + O	W + O
Source of income and business for the people of Diyonumo Island. It has fairly easy accessibility. There are locations that can be used as a place to stay	Improving and developing small businesses as a livelihood base for the people of Deme Dua Village. The potential of Diyonumo Island as an input can be used as a strategic tourism area	Building cooperation between all elements of the Deme Dua Village community to increase the potential of Diyonumo Island. To broadcast publication about the island area to the wider community and, Build adequate tourism facilities.

Threats (T)	S + T	W + T
Community and tourist activities that can damage Diyonumo Island. Competition between tourism objects in North Gorontalo Regency.	Strive to build adequate facilities and infrastructure such as trash cans, bathrooms, gazebos, or cottage, and places of worship.	Education to increase public awareness in maintaining and preserving the natural resources of Diyonumo Island.

Based on the results of the interviews, it is known that most of the tourists who rate the attractiveness of Diyonumo Island are very good and good. In addition, based on the results of the assessment (Kamah, et al., 2022) the suitability level of Diyonumo Island tourism shows that all the stations analysed are 'very suitable' for beach tourism in the recreation and fishing category.

From the results of the SWOT analysis based on internal factors (Strengths, Weaknesses) in the Island area and external factors (Opportunities, Threats), then Diyonumo Island as an input to become a strategic tourism area can be explained in *Table 2* .

CONCLUSION

Identification results of spatial analysis show that most of Diyonumo Island has tourism potential or attractions that have the potential to be developed. Diyonumo Island tourism conditions can be interpreted through attractions, infrastructure, and accessibility. Based on the results of the spatial analysis integrated with the geographic information system approach, it can be concluded that Diyonumo Island can be used as a tourist attraction with more attention required for several aspects to support this potential in order to meet the needs of tourists. The community and village officials work in synergy with the Regional Government in minimizing the inhibiting factors to make Diyonumo Island a Strategic Tourism Area.

The results of the identification of the SWOT analysis, supporting strategies can be formulated to increase the number of tourists visits as follows: (1) SO strategy, increasing and developing small businesses as a basis for livelihood for the people of Deme Dua Village. (2) ST Strategy, seeking the construction of adequate infrastructure such as trash cans, gazebos, cottages, and places of worship. (3) WO strategy, build cooperation between the Regional Government and the Village officials, with the local community. (4) The WT strategy, education to increase public awareness in maintaining and preserving the natural resources of Diyonumo Island.

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