

Economic Valuation of Forests as a Natural Tourism Service Provider by Using Travel Cost Method in Ecotourism in Kampung Nipah Sei Nagawalan Village Serdang Bedagai Regency

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ABSTRACT

Mangrove ecosystems have the potential to serve as a tourist attraction. The use of mangrove forests as a tourist attraction can develop the economy of the surrounding community. This study aims to analyze the economic value of the Mangrove tourism in Kampung Nipah Sei Nagawalan based on the travel cost method. The number of samples used in this research is 30 respondents, while the sampling technique accidental sampling. Based on the results of the analysis obtained by the magnitude of the economic value of mangrove tourism in Kampung Nipah with the Travel Cost Method is Rp.19.658.622,505/year. The intensity of visits to mangrove tourism in Kampung Nipah is as much as two visits.

Keywords: *Mangrove Tourism, Kampung Nipah, Economic Value, Travel Costs*

1. INTRODUCTION

Natural resources are a great gift given by god to be used by humans as a fulfilment of his life needs. In the economic context described the existence of natural and human resources as consumer producers

The resources provided by nature are divided into three components of resources, namely renewable resources, non-renewable resources and environmental services. Natural resources such as water, air, land, oil, fish, forests, and others – are essential resources for human survival. The loss or reduced availability of these resources will have a huge impact on human survival on this earth. Without air and water for example, humans cannot live.

Resources are needed not because of themselves, but rather as a means of achieving goals. Resources can also produce utilities without going through the production process. Land that has a beautiful panorama, may not be a factor in production, but provide utilities (satisfaction) in the form of scenery that can be enjoyed by the community. Thus, resources not only concern the value consumed, but also concern the value that is not consumed directly.

In other words, the goods and services produced, such as fish, wood, water and even pollution, we can calculate the value of the rupiah or its economic value because we assume that the market exists (market based). So that transactions of goods from natural resources can be done. Natural resources also produce environmental services that provide benefits in other forms, such as benefits (amenity) such as beauty, tranquility and so on. These benefits are often more pronounced over a long period of time.

Given the importance of the economic and non-economic functions of natural resources, the challenge faced by policy makers is how to provide comprehensive value to the resources themselves. In this case, the value is not only the market value of goods produced from a resource, but also the value of environmental services caused by the resource.

Serdang Bedagai Regency is located in the East Coast of North Sumatra and is generally located at an altitude of 0-500 m above sea level (above sea level) with a coastline of 55 km and 1 (one) outermost island namely Berhala Island. It has 15 beach attractions. Sei Naga Lawan area there are two beaches that use the mangrove

area as a tourist attraction, namely Mangrove Beach and Romantic Beach.

Tourist attractions offered mangrove ecosystem in Kampung Kampung Nipah Sei Naga Lawan District Perbaungan Serdang Bedagai regency is enjoying the natural scenery, camping, and no less important is the management of the tourist attraction provides mangrove study packages, starting with the introduction of mangroves, how to nursery and mangrove planting up to the processing of foodstuffs processed from mangrove plants. This mangrove tourism object has economic value for the surrounding community, which can be interpreted as a management effort carried out by humans. In its utilization of natural resources can produce sustainable profits in regeneration.

Judging from the potential of such a large tourist area, it is expected that in the future the mangrove tourism area in Kampung Nipah Sei Nagalawan Village is so large it is expected that in the future this area will become the leading tourist attraction in the Serdang Bedagai Regency. Therefore, the management of tourism objects must be better. However, the obstacles faced are the lack of exact value to know how much economic value the region provides by tourists. The economic value of the region is the sum of all economic values that include, direct value, indirect value, existence value, heritage value, market value even non-market value that exists in the region.

In this study, regional assessment was conducted by looking for Total Economic Value from indirect value and existence value only. To obtain indirect value and existence value is done using travel cost method (TCM) and contingent valuation method (CVM) with economic valuation. Where efforts to improve the quality of the environment in mangrove tourism in Kampung Nipah need to be done in order to remain a preferred recreation option.

2. LITERATURE REVIEW

Mangrove ecotourism is an area devoted to be maintained for the benefit of tourism. Mangrove area is one of the coastal areas with its own uniqueness and uniqueness, because it is located in the estuary or estuary. Mangroves grow and spread in the tropics and subtropics with typical organism.

Some types of beach tourism in mangroves (mangroves) that can be done, among others, such as making roads in the form of bridges between mangrove filler plants. This can be an attraction that will attract visitors. It can also be a restaurant that serves seafood cuisine, the facilities can be built in the form of a stage on low trees, or it can also be in the form of recreational fishing and boating. Ecotourism potential is all objects (natural, cultural, and artificial) that require a lot of handling in order to provide attractive value for tourists.

Ecotourism is the right activity in promoting an environment that is still maintained authenticity as well as being a tourist visiting area. The potential is an

environmental development concept based on the approach of nature maintenance and conservation. An area will be of more value and become an attraction for people if there is something unique and unique to see and feel.

Ecotourism's understanding of nature, participation and learning is based on experience that is principally focused on the natural history of a region, as long as it prioritizes the relationship between man and nature. It aims for sustainable development (conservation and human life) through ethical tourism development programs and models.

There are six benefits in the implementation of ecotourism activities, namely:

- 1) Provide economic value in ecosystem activities within the environment that is used as a tourist attraction;
- 2) Generate profits directly for environmental preservation;
- 3) Provide direct and indirect benefits to stakeholders;
- 4) Use the constituency for conservation locally, nationally and internationally;
- 5) Promote sustainable use of natural resources; dan
- 6) Reduce the threat to biodiversity in the tourism object.

2.1. Economic Valuation of Mangrove Ecosystems

The economic valuation is an effort used to provide quantitative value to goods and services produced by natural resources and the environment regardless of both market value and non-market value. The purpose of the valuation study is to determine the Total Economic Value (TEV) of the utilization of natural resources and the environment and help decision-making to estimate the economic efficiency of various possible uses for ecosystems in coastal and marine areas.

The framework of economic value used in evaluating the economy of natural resources is the concept of Total Economic Value (NET). Total Economic Value (TEV) is the sum of economic value based on use value and non-use value.

2.2. Travel Expense Method

Travel Cost Method; TCM) can be said to be the first method used to suspect the economic value of a commodity that has no market value (non-market goods). This method goes to the basic assumption that each individual is both actual and potentially willing to visit an area to get certain benefits without having to pay a no entry fee.

However, despite the assumption that there is no entrance fee, visitors are actually found to be from a location far from the object visited. In this context there

is a difference in the "price" that must be paid between visitors to get the same benefits. This condition in economic theory is considered as a representation of the demand of visitors (consumers) to these benefits.

Sobari stated that the method of travel costs is a method commonly used to estimate the value of outdoor recreational value of a location or object. This method is a method of indirect measurement of goods or services that have no market value, assuming that visitors to a tourist attraction bear the economic cost of travel expenses and time to visit a place.

The equation is used as follows:

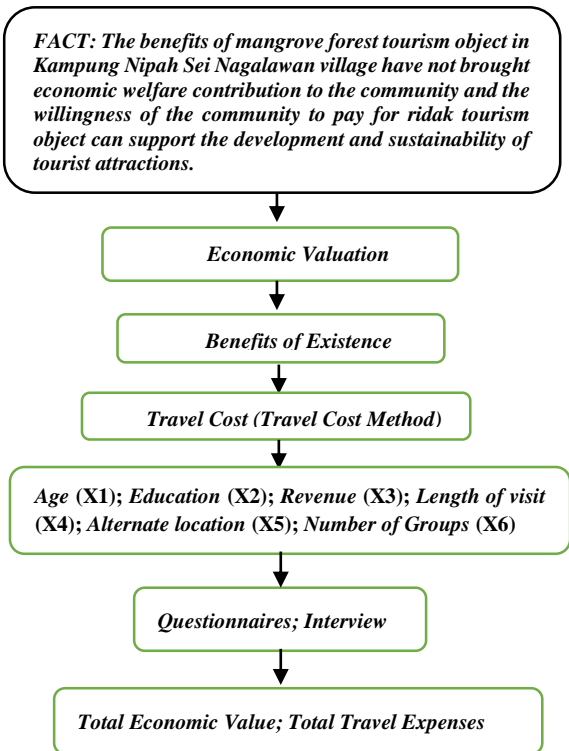
$$V = f(TC, AGE, EDU, INCO, DUR, OPT) \dots \dots (2.1)$$

The equation describes a generic function often used to conduct Travel Cost Method studies. The above functions are also created in linear and log-linear form. In the form of linear functions above are written as follows:

$$V = \beta_0 + \beta_1TC + \beta_2AGE + \beta_3EDU + \beta_4INCO + \beta_5DUR + \beta_6OPT \dots \dots \dots (2.2)$$

- V : Number of individual visits
- TC : Travel expenses incurred
- AGE : Age of visitors
- EDU : Visitor education
- INCO : Visitor revenue
- DUR : Length of visit by visitors
- OPT : Alternative location

2.3. Conceptual Framework



3. RESEARCH METHOD

3.1. Research Location

This research was carried out in the mangrove tourism in Kampung Nipah Sei Nagalawan Village, Perbaungan District, Serdang Bedagai Regency. Where the research location is overgrown with mangroves along the shoreline and many communities are doing utilization activities to the function of mangrove forest resources.

3.2. Population and Sample

According to [13] accidental sampling is a technique of determining samples based on coincidence, namely anyone who by chance, i.e. anyone who accidentally meets with researchers can be used as a sample, when viewed as a person who happens to be found it is suitable as a data source. Descriptive methods take at least 30 correlational subjects.

Based on econometric rules, the number of 30 respondents is sufficient, because if the size of the example is greater than 30, no matter the shape of the population, the theory of withdrawal of examples guarantees a satisfactory result.

3.3. Research Variables and Operational Definition

3.3.1. Research Variable

In this study there are two types of variables, namely dependent variables and independent variables. Dependent variables are variables that are the main concern in an observation. Independent variables are variables that can affect changes in dependent variables and have significant or insignificant relationships for dependent variables later.

The variables in this study are:

- Travel Cost Method (TCM)
- Dependent Variable: Visit Frequency
- Independent Variable (X1): Total Cost
- Independent Variable (X2): Age
- Independent Variable (X3): Education
- Independent Variable (X4): Revenue
- Independent Variable (X5): Length of travel
- Independent Variable (X6): Job

3.3.2. Operational Definition

- a. Economic valuation is an effort made to provide quantitative value to goods and services as measured by rupiah (Rp).
- b. Economic valuation techniques conducted through direct interviews with respondents who utilize natural

resources about their willingness to pay for environmental goods and services and their willingness to receive compensate if they can no longer use environmental goods and services.

- c. Age is a unit of time measure that encourages the existence of an object or living being. In this study, the age in question is the age of the respondents expressed in units of years.
- d. Income is the amount of money received by a person from his/her activities, mostly from the sale of products/services.
- e. The number of family dependents is a dependent person in the family.
- f. The education referred to in this study is the length of formal education that has been achieved by respondents. In this study the length of education was measured from the elementary school level and based on the normal measure of educational travel time.

3.4. Classic Assumption Deviation Test

3.4.1. Normality Test

The normality test is to see if the distributed residual value is normal or not. A good regression model is to have normal distributed residual values. According to [13] the basis of decision making can be done based on probability, namely:

If the probability \geq is 0.05 then the distribution of the regression model is normal.

If the probability $<$ is 0.05 then the distribution of the regression model is abnormal.

The normality test in this study was conducted comparing the probability value of JB (Jarque-Bera) calculated with alpha level of 0.05 (5%).

3.4.2. Heteroscedasticity Test

Heteroscedasticity test is used to determine whether or not the deviation of classical assumptions is the presence of various residual variance problems. A good regression model is when variance from residual to observation is fixed (homoscedasticity).

To detect the presence or not of heteroscedasticity can be used Glejser Heteroscedasticity test. If the regression result shows insignificant at 0.05 degrees (5%), then it is known that there is no problem of heterocystery. Conversely, if the regression result shows significant at 0.05, then it is considered that Heteroscedasticity problems occur.

3.4.3. Multicollinearity Test

The Multicollinearity Test aims to test whether regression models found any correlation between independent variables. The way to declare multicollinearity tests is done by looking at the correlation value (R) in

independent variables. If the $<$ is 0.8 then there is no correlation $>$ between independent variables.

4. RESULT

4.1. Location and Geographical Circumstances

Serdang Bedagai Regency is one of the regencies located in the East Coast of North Sumatra. Geographically Serdang Bedagai regency is located at the position of 3001' 2,5''-3046' 33'' Lintang Utara, 980 44' 22'' -99019' 01'' East Longitude with an altitude ranging from 0-500 meters above sea level. Serdang Bedagai Regency has an area of 1,900.22 Km² (190,022 ha) consisting of 17 sub-districts and 243 villages/ villages.

Administratively, Serdang Bedagai regency is bordered by several areas, namely: North (Malacca Strait), East (Regencies of Batubara and Simalungun), South (Simalungun Regency) and, West (Deli Serdang Regency).

4.2. Characteristics of Respondents

Characteristics are a characteristic of a person or an object, and the most important characteristic in this study is the respondent, because with the characteristics of respondents we can recognize objects to support the results of research. In this study, the number of respondents tested in the Mangrove tourism in Kampung Nipah area was as many as 30 respondents. Here are the characteristics of respondents used in this study.

4.2.1. Age

The age level of visitors who come to visit the Mangrove tourism in Kampung Nipah is one of the characteristics of respondents in this study. The age level sampled for this study was the age level from 17 years old to 50 years old. The distribution of visitor age level will be divided into 5 age groups. The age level of visitors can be seen in Table 1 below.

Table 1. Respondent Age Level Spread

Class	Age Level (Years Old)	Number of Respondents	Percentage (%)
1	17 – 23	20	20
2	24 – 30	8	8
3	31 – 37	2	2
4	38 – 44	0	0
5	45 – 51	0	0
Total		30	

Based on Table 1. from 30 respondents who came to mangrove tourism in Kampung Nipah and interviewed, it was obtained that the number of visitors at the age level of 17-23 years is the most age level of respondents are 20 people, while the least age level is the age level of 31-37 years, namely as many as 2 people in this study was not obtained data of respondents at the age level of 38-44 years and 45-51 years.

4.2.2. Education Level

The level of education that will be characteristic of respondents is the last level of education, namely from elementary school to college. However, in this study, there was no data from elementary to junior high school education level. Characteristics of the level of education of visitors to the Mangrove tourism in Kampung Nipah can be seen at Table 2 below.

Table 2. Respondents' Education Level Distribution

Class	Education Level (In Years)	Total (People)	Percentage (%)
1	No School	0	0
2	Elementary School	0	0
3	Junior High School	0	0
4	High School	20	20
5	College	10	10
Total		30	

Based on Table 2, it can be known that the highest percentage of visitors visiting the Mangrove tourism in Kampung Nipah area is at the high school / vocational education level of 20 people and then followed by the higher education level of 10 people. Visitors who have a high educational background have a broad mindset and have educational motivation so they hope it can be useful to add insight, experience, and knowledge about nature and wildlife. A higher level of education can make one's curiosity about the area of Mangrove Tourism Kampung Nipah and the collection of mangrove plants in it become high compared to someone whose level of education is lower.

4.2.3. Income Level

Of the 30 respondents who visited the mangrove attraction Kampung Nipah, there were various differences in the number of income levels. To make things easier, the income level in the questionnaire will be divided into 4 groups.

The results of grouping respondents' income levels can be seen in Table 3 below.

Table 3. Visitor Revenue

Class	Income Level (Rp/Month)	Total (People)	Percentage (%)
1	< 1.800.000	6	6
2	1.800.001 – 3.000.000	15	15
3	3.000.001 – 4.800.000	8	8
4	4.800.001 – 7.200.000	1	1
Total		30	

The result in Table 3, then the income level of the most respondents is the income level in the 2nd class, namely with the level of Rp.1.800.001 – Rp.3.000.000 with the number of respondents as many as 15 people and the least in the 4th class with a level of Rp.4.800.001 - Rp.7.200.000 with the number of respondents as many as 1 person. The small amount of income will influence a person to make a tourist visit.

High-income visitors will usually do more tourist activities and on the contrary, people with small incomes will make fewer tourist visits. This is because a person's income determines how much he spends.

4.2.4. Length of Travel

Based on the results of interviews conducted on visitors to the Mangrove Tourism Object Kampung Nipah, the length of the trip is grouped into 3 groups. The results of the grouping of length of travel can be seen in Table 4.

Table 4. Recapitulation of Respondents' Data Based on Length of Travel

Class	Duration of Travel (Hours)	Total of Respondent	Percentage (%)
1	< 1	16	16
2	1 – 2	10	10
3	2 – 3	4	4
Total		30	

From Table 4.4, the dominant visitors come to visit mangrove Kampung nipah attractions are visitors with a trip length of less than 1 hour which is 16 people, then visitors with a trip duration of 1-2 hours as much as 10 people and 4 people for visitors with a travel length of more than 2-3 hours.

This shows that the most dominant visitors come to the Mangrove tourism in Kampung Nipah is visitors who are not too far from the location of tourist attractions and do not take too long to get to the location of mangrove attractions Kampung Nipah.

4.2.5. Job

Characteristics of visitors to mangrove attractions Kampung Nipah based on work will be grouped into 6 groups namely Students / Students, civil servants, TNI / POLRI, Private Employees, Farmers, Entrepreneurs / Self-Employed. The results of the grouping can be seen in Table 5 below.

Table 5. Recapitulation of Respondents' Work

Class	Income Level (Rp/Month)	Total (People)	Percentage (%)
1	Student	12	12
2	PNS	4	4
3	TNI/POLRI	2	2
4	Employees	6	6
5	Farmers	3	3
6	Entrepreneur/ Self employed	3	3
Total		30	

Based on Table 5 the highest number of respondents is Students / Students with the number of 12 people, and the least number of respondents is the TNI / POLRI with the number of 2 people. While for respondents in the group of private employees work the number is 6 people,

civil servants' number 4 people, farmers with the number of 3 people and the working group as Entrepreneurs / Self-Employed number of 3 people. This shows that the mangrove attraction Kampung Nipah is in great demand by visitors who are students.

4.3. Valuation of Mangrove Economic Value in Kampung Nipah

Valuation of Economic Value of Mangrove Ecotourism Kampung Nipah Sei Nagalawan Village. To know the value of the intangible benefits of a recreational area can be done through the approach of travel expense method. The total value included in the cost of the trip is the cost of round trip plus the value of money from the time spent on travel and recreational activities carried out.

Economic assessment of Mangrove Ecotourism area of Kampung Nipah Desa sei Nagalawan collected in the form of visitor origin information, visitor round trip costs, consumption costs spent during ecotourism activities, regional entrance ticket prices, as well as other costs such as parking fees, equipment hire fees, and documentation costs.

The costs referred to in this method contain a recapitulation of travel expenses incurred by visitors, including entrance fee, transportation costs, consumption costs and other costs such as the use of public toilets and parking fees for visitors who use private vehicles.

The result of the analysis of 30 respondents obtained the total economic value of mangrove tourism object Area Kampung Nipah Sei Nagalawan Village is Rp.20,002,000, so that the average cost per person is Rp.666,733. Data on average travel costs of respondents can be seen in Table 6 below.

Table 6. Recapitulation of respondents' data based on travel expenses

Class	Origin	Total of Respondent	Total Travel Expenses	Mean
1	Medan	15	Rp.10.455.000	Rp.697.000
2	Karo	5	Rp. 3.565.000	Rp.713.000
3	Deli Serdang	10	Rp. 5.982.000	Rp.598.200
Total			Rp.20.002.000	

Based on the data obtained, it can be seen that the highest average travel cost comes from Karo Regency which is Rp.713.000/person/visit. While the lowest average travel cost comes from Deli Serdang Regency which is Rp.598.200/person/visit. The average travel cost that must be spent from all visitors and from all regions is Rp.666.733/person/visit. The average number of visitors to mangrove tourism object In Kampung Nipah Sei Nagalawan village based on the last 1-year visit data (2018 - 2019) obtained based on a survey of 29,485 people.

Based on the recapitulation of travel cost data issued by respondents in making a visit to mangrove tourism in Kampung Nipah according to the total cost of travel, it obtained the economic value of Mangrove Tourism Area Kampung Nipah Sei Nagalawan Village amounting to Rp.19,658,622,505.

One indicator that can affect the cost of travel is the location of a tourist attraction from the visitor's residence. The existence of this tourist attraction will further affect transportation costs, consumption costs and other costs that will be incurred by each visitor to a tourist attraction. This condition can be seen from the average travel cost from Karo caused by its location that is farther than from other respondents' regions.

5. CONCLUSION

In general, tourist activities are one of the economical goods. Based on the Analysis of Economic Value of Mangrove Ecotourism at Kampung Nipah Sei Nagalawan, it can be concluded that travel costs do affect the tourist preferences' in visiting the tourist attraction. Economically, the number of consumers will increase the amount of demand for a commodity if the price of the commodity is reduced. This condition also correlates to the demand for tourism where if the higher the cost of travel issued by visitors to a tourist attraction location, then visitors have the ability to choose alternative tourist attractions at a lower cost.

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