

## Economic Valuation of Kelapa Island Tourism Area Bima Regency 2024



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**ABSTRACT:** This study aims to analyze the economic value of Kelapa Island tourism area using the Travel Cost Method and Contingent Valuation Method approaches and identify factors that influence the frequency of tourist visits in the Kelapa Island tourism area, Lambu, Bima Regency. The type of research used is quantitative by determining 90 respondents who traveled to Kelapa Island. This research was conducted in the Kelapa Island tourist area, Lambu District, Bima Regency, West Nusa Tenggara. The sampling method used was purposive sampling. The data used in this study are primary data collected through interviews, observations, and documentation with data collection tools in the form of questionnaires. The analytical tool used is SPSS 16 with data analysis using multiple linear regression. The findings revealed that the economic value of the Kelapa Island area using the Travel Cost Method approach amounted to IDR 212,911,666, while the economic value of conservation and development of the Kelapa Island area using the Contingent Valuation Method approach amounted to IDR 10,894,000. Factors that influence the frequency of visits are travel costs, age, income, and facilities.

**KEYWORDS:** Kelapa Island, Travel Cost Method, Contingent Valuation Method

### I. INTRODUCTION

Indonesia is one of the many countries that have tourism areas that are very worthy to be visited by local and foreign tourists. Natural resources in Indonesia are so many and have such great potential, both renewable and non-renewable to be made into the tourism industry. Apart from producing goods and services that can be consumed either directly or indirectly, natural resources also produce environmental services that provide benefits in other forms, for example in the form of beauty facilities, tranquility and others (Hidayatullah, 2020). Tourism is a leading sector in the development of a country. Tourism has experienced continuous expansion and diversification, and has become one of the largest and fastest growing economic sectors in the world (Tolkac, 2015).

One of the regions in Indonesia that has many tourist attractions is West Nusa Tenggara. One of the tourist attractions located in West Nusa Tenggara, Bima Regency, Lambu District is Kelapa Island. Kelapa Island is a small island that is uninhabited because of its distance from where people live. Access to Kelapa Island can only be traveled by boat, or boat. The right time to visit this Kelapa Island tour is during the rainy season or after the rainy season because during the summer a lot of dry grass so it reduces the beauty obtained by tourists. The greater the interest of tourist visits causes the value of an area to get higher so that it is more interesting to do research. The high interest in tourist visits also illustrates the existence of considerable tourism potential (Marcelina, 2021). That potential should be developed in order to optimize economic benefits for the Sape and Lambu communities around the Kelapa Island tourism area.

The economic valuation of the area needs to be carried out for the purpose of knowing how much the estimated value is so that mistakes in planning the allocation of natural resources and development planning can be avoided (Marcelina, 2021). Economic value or economic valuation is one way to define and measure value based on a person's desires or preferences (Calvyn, 2019). This economic valuation is carried out with a non-market value approach using the travel cost method (TCM) and the contingent valuation method (CVM). The reason for using the travel cost method is that the method with this travel cost approach assumes that the travel costs and time sacrificed by tourists to get to the tourist attraction are considered as environmental values that tourists are willing to pay (Juniarta, 2021). Then the reason for using the contingent valuation method here is because this method can be used to estimate the economic value of an object, even though there is no observable behavior to infer values through other means (Lipton, 1995).

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In addition to estimating the economic value of Kelapa Island tourism objects, this research will also examine what factors influence the frequency of tourist visits. According to Maulini (2021) visiting decisions are influenced by several factors such as travel distance, travel costs, age and income. In addition, this decision making can be influenced by factors such as the marital role of tourists, familiarity with destination differences, gender, travel frequency, spouse, life cycle, friends and relatives, cognitive distance, culture, advertising, local experts on destinations, and process. These factors influence the choice of tourist destinations and the reasons for choosing certain destinations over others (Zhang, 2019).

Specifically, this study aims to determine the economic value generated by using the travel cost method and contingent valuation method in the Kelapa Island area, and identify factors that affect the frequency of tourist visits to Kelapa Island.

## **II. LITERATURE REVIEW**

### **A. Economic valuation**

Economic valuation is an attempt to give quantitative value to the goods and services produced by natural resources and the environment, both on the basis of market value and non-market value. Economic valuation of resources is an economic tool that uses certain valuation techniques to estimate the monetary value of goods and services produced by natural resources and the environment. Understanding the concept of economic valuation enables decision-makers to determine the efficient and effective use of natural resources and the environment. This is because the use of economic valuation shows the relationship between natural resource conservation and economic development (Hasibuan, 2014). It is very important to understand what should be done in carrying out economic valuation. In principle, economic valuation aims to give economic value to the resources used in accordance with the real value from the community's point of view. Thus, in conducting economic valuation, it is necessary to know the extent of the bias between the price that occurs and the real value that should be determined from the resources used (Annisa, 2018).

### **B. Travel Cost Method**

According to W. Lipton et al (1995), the travel cost method is generally used to estimate recreation values. This technique assumes that visitors to a particular site incur economic costs, in the form of time expenditure and travel costs, to visit the site. Consequently, these economic expenditures reflect the "price" (albeit implicitly) of the goods and services provided by the site, and are an indirectly observable indication of the minimum amount that visitors are willing to pay to use this site (with all its associated attributes). By observing the characteristics of the individuals visiting the site for example, the specific attributes of their travel to and from the site as well as the total number of visits economists can estimate the "derived demand" for the site. That is, for any given or implicit price, the derived demand relationship will determine the number of visits consumers will "buy" at the site. The engineering travel method has a number of applications that could be used, for example, to measure the impact on consumers' willingness to pay due to changes in the cost of access to a recreational area, or the removal of a site, or changes in environmental quality.

### **C. Contingent Valuation Method (CVM)**

According to W. Lipton et al (1995), the most obvious way to measure non-market value is through direct questions to individuals regarding their willingness to pay for a good or service. Called the contingent valuation method, it is a survey or questionnaire-based approach to the valuation of non-market goods and services. The dollar value obtained for the good or service is said to depend on the nature of the constructed (hypothetical or simulated) market and the goods or services described in the survey scenario. The contingent valuation technique has great flexibility, allowing the valuation of a wider range of non-market goods and services than is possible with any of the indirect techniques. In fact, it is the only method currently available for estimating unused values.

### **D. Willingness to pay (WTP)**

In general, economic value is defined, as the measurement of the maximum amount a person is willing to sacrifice goods and services to obtain other goods and services. Formally, this concept is called a person's willingness to pay for goods and services produced by natural resources and the environment. Using this measurement, the ecological value of ecosystems can be translated into economic language by measuring the monetary value of goods and services. The willingness to pay can also be measured in terms of the increase in income that causes a person to be indifferent to exogenous changes. Exogenous changes can occur due to price changes (e.g. due to resource scarcity) or due to changes in resource quality. So WTP can also be interpreted as the maximum amount someone pays to avoid a decrease in something (Fauzi, 2010).

## III. METHODOLOGY

### A. Research setting

This research was conducted in the Kelapa Island area which aims to see the economic value with two methods, namely the travel cost method (TCM) and contingent valuation method (CVM), and identify factors that affect the frequency of tourist visits to Kelapa Island, this research was conducted in 2024. This type of research is a quantitative approach, the data source used is secondary and primary data. The population in this study was 838 people, then the sample determined using the Slovin formula obtained 90 people. The sampling method in this study uses a type of Non probability sampling with Purposive sampling technique using predetermined criteria.

### B. Economic Value Calculation

**Travel cost method:** Calculating the economic value of Kelapa Island tourism using the travel cost method. Get travel costs using the formula from Sukwika and Rahmatulloh, 2021):

$$BP = TM + TR + PR + KR + LL$$

BP = Travel cost (IDR/person/visit)

TR = Transportation costs (IDR/person/visit)

TM = Admission Fee (IDR/person/visit)

PR = Parking Fee (IDR/person/visit)

KR = Cost of consumption during recreation (IDR/person/visit)

LL = Other costs (IDR/person/visit)

Then the travel costs of each individual are summed up and get the results of the total travel costs, then the calculation of the average cost of visitors is carried out. The average cost of visitors can use a formula such as research conducted by Sihotang (2014):

$$ATC = \sum \frac{BPT}{n}$$

Description:

ATC = Average cost of visitor trips

BPT = Total travel cost of visitors

n = Number of visitors interviewed

To get the economic value of Kelapa Island tourism, we can use the formula adapted from the research of Lestari et al. (2019) and Wibowo et al. (2019):

$$\text{Economic Value} = \text{Average Travel Cost of Visitors} \times \text{Number of Visitors in 2023.}$$

### Contingent Valuation Method:

Willingnes to pay (WTP)

- Estimating the average WTP

$$EWTP = \frac{\sum_{i=1}^n W_i}{n}$$

EWTP = Average WTP value of visitors

Wi = the amount of WTP that is willing to pay

i = respondents who are willing to pay

n = number of respondents

- Summarize the data

$$\text{Total WTP} = \text{Average WTP value} \times \text{Total research population}$$

### C. Analysis of factors affecting the frequency of visitors to Kelapa Island tourism

Analysis of factors affecting the frequency of visitors can use multiple linear regression analysis. The regression equation of the value of visitor frequency in this study is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$$

Information:

Y = Frequency

$\beta_0$  = Constant

$\beta_1 \dots \beta_7$  = Regression Coefficients

X1 = Travel Cost

X2 = Age

X3 = Gender

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X4 = Marital Status

X5 = Education Level

X6 = Monthly Income

X7 = Facility

e = error term

### IV. RESULT AND DISCUSSION

#### A. General description of the research location

Kelapa Island is located in the east of Sumbawa Island, geographically, Kelapa Island is located at 119°13'28.306" East and 8°40'6.902" N-S with a total area of 559.24 Ha. Administratively, Kelapa Island is located in Soro village, Lambu sub-district, Bima district. The island is included in the Forest Area with the function of Limited Production Forest which is within the working area of the KPH Maria Donggomasa Center. The distance of Soro Village from the sub-district capital is 6 km or 20 minutes, while the distance to the district capital is 48 km or 1.5 hours. Accessibility to the island is by boat or ship located at Sape Harbor in Sape Sub-district.

#### B. Calculating the Economic Value of Kelapa Island

##### Travel cost method:

Table 1. Travel cost of respondents in Kelapa Island area

No	Nominal (IDR)	Frequency	Amount (IDR)
1	150,000	1	150,000
2	170,000	1	170,000
3	180,000	3	540,000
4	190,000	1	190,000
5	200,000	24	4,800,000
6	220,000	1	220,000
7	250,000	27	6,750,000
8	265,000	1	265,000
9	270,000	2	540,000
10	280,000	1	280,000
11	300,000	17	5,100,000
12	320,000	1	320,000
13	350,000	9	3,150,000
14	400,000	1	400,000
<b>TOTAL</b>		<b>90</b>	<b>22,875,000</b>

Then obtained from the total sum of all travel costs incurred by 90 respondents, namely IDR 22,875,000. Furthermore, the calculation of the average cost of visitors is carried out:

$$ATC = \sum \frac{22,875,000}{90}$$

ATC = IDR 254,166

To get the economic value of Kelapa Island tourism, you can use the formula:

$$\begin{aligned} \text{Economic value} &= 254,166 \times 838 \\ &= 212,991,666 \end{aligned}$$

From the above results, it can be concluded that the economic value of Kelapa Island using the Travel Cost Method is IDR 212,991,666.

##### Contingent Valuation Method (CVM): Willingness to pay (WTP)

Table 2. WTP value of respondents in Kelapa Island area

No	WTP (IDR)	Amount Respondents	Amount WTP (IDR)
1	5,000	15	75,000

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2	10,000	34	340,000
3	15,000	22	330,000
4	20,000	10	200,000
5	25,000	6	150,000
6	30,000	3	90,000
<b>Total</b>		<b>90</b>	<b>1,185,000</b>

- Calculating the average WTP value

$$EWTP = 1,185,000/90$$

$$EWTP = 13,166$$

Based on the average WTP calculation value of the respondents above, it is obtained at 13,166 so that it is rounded up to IDR 13,000.

- Summarizing data

**Table 3. Total WTP**

Average value of WTP (a)	Total Research Population (Visitors1 year) (b)	Total WTP per Year (a x b)
IDR 13,000	838	IDR 10,894,000

Based on the calculation results in the table, the total WTP of visitors in the context of conservation and preservation of Kelapa Island tourism is Rp. 10,894,000 per year. This value is the economic value of the environment in the context of conservation and preservation of Kelapa Island tourism.

### C. Regression analysis results

From several characteristics of the respondents mentioned earlier, there are several variables that have been determined in this study and calculated using the SPSS 16 application to determine whether the independent variables can affect the dependent variable, namely the frequency of visits to Kelapa Island. The independent variables that affect the dependent variable can be known by using multiple linear regression analysis tools with the OLS (Ordinary Least Squares) approach.

#### Determinant Coefficient Test $R^2$ :

**Table 3. Determinant Coefficient Test  $R^2$**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.589	0.347	0.291	0.421

In the table above, the R - Square value is 0.347, which means that the ability of the independent variables to influence the dependent variable is 34% and as much as 66% is influenced by other variables outside the study such as distance traveled, travel time, number of dependents, monthly expenses and others.

#### t test (partial):

**Table 8. t test (partial)**

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.858	.475		1.806	.075
X1 Biaya Perjalanan	-.002	.001	-.260	-2.280	.025
X2 Umur	-.029	.013	-.277	-2.189	.031
X3 Jenis Kelamin	.188	.115	.157	1.640	.105
X4 Status Pernikahan	.058	.098	.058	.590	.557
X5 Pendidikan	.082	.057	.139	1.441	.153
X6 Pendapatan	.266	.053	.661	4.972	.000
X7 Fasilitas	.155	.067	.211	2.316	.023

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The statistical test results show that the variables of travel cost, age, income and facilities have a significant influence on the dependent variable. In contrast, the variables of gender, marital status and education have an influence but are not significant.

$$Y = 0.858 - 0.002 X1 - 0.029 X2 + 0.188 X3 + 0.058 X4 + 0.082 X5 + 0.266 X6 + 0.155 X7$$

The constant value  $\beta_0$  of 0.858 means that all independent variables, namely travel costs, age, gender, marital status, education, income, facilities are considered equal to zero, so the number of visits is 0.858 times in the last month. From the statistical estimation results, it can be seen that there are several independent variables in this study that have no significant effect on the dependent variable, namely, education, gender and marital status. These variables do not have a significant influence because respondents who visit Kelapa Island tourism.

### 1. Travel Cost (X1) on Frequency of Visit (Y)

The result shows that the coefficient value is -0.002 and the significant value is 0.02 smaller than 0.05, indicating that every additional Rp 10,000, - travel cost to Coconut Island Tourism will reduce the frequency of visitor visits to Coconut Island by - 0.002.

### 2. Age (X2) to Frequency of Visit (Y)

The results showed a coefficient value of -0.029 and a significance value of 0.031 smaller than 0.05, indicating that age has a negative and significant effect on the level of visits. If the age variable gets 1 unit or an additional one year of age, it will reduce the frequency of visits by -0.029. Younger age will affect the increase in visit frequency.

### 3. Effect of Gender (X3) on Frequency of Visit (Y)

From the results of the study, the coefficient value is 0.188 and the significance value of 0.105 is greater than 0.05, the results of the analysis show that the gender variable has a positive and insignificant effect on the frequency of tourist visits.

### 4. Effect of Marital Status (X4) on Frequency of Visit (Y)

From the results of the study, the coefficient value is 0.058 and the significance value is 0.588, which is greater than 0.05, these results indicate that marital status has a positive and insignificant effect, which means that married or unmarried tourists will not affect the frequency of visits to Kelapa Island.

### 5. Effect of Education (X5) on Frequency of Visit (Y)

From the results of the study, it shows that the coefficient value is 0.082 and the significance value is 0.153, which means greater than 0.05, these results indicate that the higher the education of tourists will not have a significant effect on the frequency of visits.

### 6. Income (X6) to Visit Frequency (Y)

The results showed a coefficient value of 0.266 and a significance value of 0.000, which means that the significance value is smaller than 0.05, this result shows that if there is an increase in the income of the respondents, it will also increase the frequency of visits to Kelapa Island by 0.266.

### 7. Facilities (X7) to Frequency of Visit (Y)

The results showed a coefficient value of 0.155 and a significance value of 0.023 which means less than 0.05 from these results indicate that there is a perception of positive facilities which means that the increase in facilities will increase the frequency of tourist visits by 0.155.

## D. Discussion

Research that has been conducted to 90 respondents who were interviewed obtained economic value results with a travel cost approach of IDR 239,844,911 and the average travel costs incurred by respondents for one trip to the Kelapa Island area amounted to IDR 254,166. Then the results of the economic value using the contingent valuation method approach by asking the respondent's willingness to pay got an economic value of IDR 10,894,000, this value is the economic value of the environment in the context of conservation and development of the Kelapa Island area. These results are still relatively small because of several studies that are references such as research conducted by Litriani (2021) estimating the economic value of the Terungkep Crater tomb area using the contingent valuation method approach using willingness to pay or willingness to pay from visitors of IDR 75,937,500. Then there is research conducted by Huzaini (2023) the findings reveal that the total economic value of the Sesaot community forest area in West Lombok using the contingent valuation method approach produces an economic value of IDR 4,528,501,000 per year.

From the comparison of the two previous studies referred to, it can be concluded that the results of the research conducted by the author using the contingent valuation method approach resulted in only IDR 10,894,000. There are several factors that result in these significant differences such as: (1). In the research conducted by the author, the population data obtained from the relevant agencies is relatively small because the data released on the population of visitors to the Kelapa Island area is only

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838 people in 2022. (2). Then the next factor is the respondent's small ability to pay. (3). This study only reveals the value of the respondents' willingness to pay and does not calculate the overall use value in the Kelapa Island area.

In addition to calculating the economic value of the Kelapa Island area, this study also examines what factors influence the frequency of tourist visits in the Kelapa Island area. From the research results obtained that the independent variables are only able to influence the dependent variable only by 34%, which means that 66% is influenced by other variables outside the study. Meanwhile, from the results of the t-test, it is found that the results that have a significant effect on the variable (Y) Frequency of visits are: travel costs, age, income and facilities. From the results of this study the authors can conclude that variables outside the socio-economic characteristics also affect the frequency of visits such as the variable time spent at the location, then the variable length of time knowing the tourist attraction and the distance to the location and others.

### V. CONCLUSIONS

1. The economic value of Kelapa Island obtained using the Travel Cost Method approach is IDR 212,991,666 with an average travel cost spent in one trip of IDR 254,166 per person.
2. The economic value of Kelapa Island obtained using the Contingent Valuation Method approach is IDR 10,894,000. This value is the economic value of the environment in the context of conservation and development of Kelapa Island tourism. While the amount of willingness to pay for Kelapa Island tourism visitors is an average of IDR 13,000 per person. The additional cost will be charged to visitors and directly added to the cost of crossing to Kelapa Island which was originally IDR 150,000 per person will be IDR 163,000 per person due to the additional cost of conducting conservation and development activities for Kelapa Island tourism.
3. Factors that influence the frequency of tourist visits to Kelapa Island include travel costs, age, income and perceptions of facilities on Kelapa Island. These variables have a significant influence on the frequency of tourist visits to Kelapa Island. While variables that do not have a significant influence include gender, marital status and education.

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