Determinant of Economic Value of Beach Tourism Post Aceh Tsunami: An Approach on Travel Cost Method

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ABSTRACT. The beach as a place of tourism is an environment that does not have an explicit market value, in fact the economic value of tourism can have a major impact on the country's economy. This study has two objectives, first to measure the economic value of tourism in the western part of Indonesia (Aceh Province) after the 2004 tsunami and to empirically examine the effect of travel costs, income, age and education on the economic value of coastal tourism. The travel cost method (TCM) is used to measure the economic value of tourism, while multiple linear regression is used to test the effect of economic value determinants. A total of 100 questionnaires were distributed from 803 visitors in 2018 who were selected using accidental sampling technique. The results of WTP (willingness to pay) amounted to 5,464,420, per visitor. This shows that the trend in the number of visits tends to increase with an average number of visits per year of 168,129 people. Furthermore, the Travel Method Cost (TCM) approach obtained a total consumer surplus for one year, so that the economic value of coastal tourism is Rp. 2,159,632,360/year. The results of the study imply that there is a visitor surplus in increasing local revenue (PAD) and the Regional Government needs to seriously control the full management, especially the infrastructure of all tourist locations in increasing the rate of regional economic income.

Keywords: Number of visits, travel expenses, income, age, education, Travel Cost Method (TCM).

I. INTRODUCTION

Tourism is the most important sector in the global economy in both developed and developing countries, such as shark attractions and marine species management in Australia. This sector can increase economic value when tourism becomes a sustainable industry (Huveneers et al., 2017). Economic value is one of the commonly used research bases and is an operational framework concept related to empirical phenomena (Holzner, 2011; Johnson, 2019). The tourism industry has many forms, consisting of natural tourism, historical tourism, and cultural tourism (Asmoro, 2019). One of the natural tourism sectors that is growing and in demand is tourism which is located in coastal areas. As a result, the coastal area becomes a source of economic strength so as to improve the welfare of the local population, as explained by Paul et al. (1997), Ringuet (2003), and Peng and Olsen (2017). Indonesia as one of the archipelagic countries has a fairly extensive coastal area (Baransano, 2011).

Several coastal areas in Indonesia that have become drivers of added economic value, including

Sukabumi (Aryanto and Mardjuka, 2005), Central Maluku (Wawo et.al, 2008), Sawarna Banten (Armandinata and Pharmawati, 2015), Serdang Bedagai (Simanjuntak et. al, 2015), Pangandaran (Zulpikar et al., 2017) and Gili Matra (Suryawati et al., 2018). Iboh Sabang, Aceh (Saputra, 2019), Pulau Weh, Aceh (Agus A, 2019). Based on the results of the study, it is concluded that the said coastal area can increase economic value and is important as an ecological resource for the community and government. Therefore, these coastal areas need special attention from the government for the development of the tourism industry. One of the beaches in the Aceh coastal area that needs attention is Ujong Blang Bireuen Beach. Currently Ujong Blang Bireuen Beach is a tourist spot visited by local tourists, the tourism area affected by the tsunami has become a source of community income and local revenue. The conditions that should be arranged in the area have not been realized by all parties, it is necessary to develop the Ujong Blang coastal tourism area so that it becomes a catalyst for national and regional development, especially the Bireuen region

of Aceh Province, Indonesia.

Coastal tourism areas are environmental objects / goods that do not have an explicit market value, but the economic value of this object can be estimated (Zambrano-Monserrate et.al, 2018). Analysis of the economic value of coastal tourism areas can be carried out using non-market valuation approaches such as Contingent Valuation (CV), Hedonic pricing (HP) and Travel Cost Method (TCM) (Kolstad, 2011). TCM is based on disclosing consumers' recreational preferences through their behavior in recreational activities, such as time and money spent accessing certain locations (Zambrano-Monserrate, 2016).

Different from previous studies, this study has its own strengths because the area studied is a post-tsunami site, and this study has not yet created priorities for the tourism industry and there is additional testing of economic determinants of value.

From an economic point of view, there are eight factors that benefit tourism development in Indonesia. (1) increasing business opportunities, (2) job opportunities. (3) Increase in tax revenue. (4) Increase in national income.

Acceleration of the income distribution process. (6) Increasing the added value of cultural products. (7) Expansion of the domestic product market (8) The creation of a multiplier effect in the economy as a result of spending by tourists and investors (Siregar, 2004). Many factors that contribute to the economic value of this object can be estimated (Zambrano-Monserrate et.al, 2018). The gender of tourists and the frequency of trips to coastal tourism areas significantly affect their WTP (Liu, 2019). The assessment of the downward eroded coastal tourism area was carried out using a willingness to pay study (Saengsupavanich, 2019).

The method used for ecosystem assessment is Willingness to Pay (WTP) for determined ecosystem benefits (Nandagiri, 2015). Beaches as tourist attractions have no explicit market value, but the economic value of this object can be estimated (Zambrano-Monserrate et.al, 2018).

Haab and McConnel (2002) state that in conducting valuations using the travel cost method, there are two critical steps that must be taken: First, determining the behavior of the model itself, and Second, determining the choice of location. The first concern concerns whether the Travel Cost Method that is built must first determine its preference function hypothetically, then build a behavior model, or whether to directly build a behavior model. The second matter concerns whether we should model all or several places as a model.

In principle, this method examines the costs incurred by each individual for visiting recreational areas. This Travel Cost method can be used to measure the benefits and costs as a result. (1) Changes in access fees (entrance tickets) for a recreation area. (2) Adding new recreation areas. (3) Changes in the environmental quality of recreation areas (4) Closing of existing recreation areas.

II. METHODS
2.1 Data and Samples

The scope of the observation is the Ujong Blang Beach tourism area, Bireuen Regency. In this study the data used are primary and secondary data, where primary data is obtained from questionnaires and field observations in the form of frequency of visits, visitor travel costs, visitor income, visitor age, visitor education and visitor Willingness to Pay (WTP), while data secondary services were obtained from the Management of Ujong Blang Beach, Bireuen Regency, government agencies related to research data such as the Office related to Tourism and Culture (Bireuen Regency) and Aceh Province, the Regional Planning and Development Agency (BAPPEDA Bireuen), and the Central Statistics Agency (BPS) in the form of number of beach tourism visitors in the last 1 year (2018). Questionnaires were distributed from January to July 2018.

2.2 Data analysis technique

In determining the demand function for visits to tourist attractions, the individual Travel Cost Method approach uses econometric techniques such as the Poisson Regression Method. The hypothesis built is that visits to tourist attractions will be strongly influenced by travel costs (travel cost method) and is assumed to be negatively correlated, so that a demand curve that has a negative slope is obtained. The equation above describes a generic function that is often used to conduct Travel Cost Method studies. To make it more operational, the Travel Cost Method request function is often made in a linear or log linear form.

In linear form, the request function is often written as

follows: $V = \beta_O + \beta_1 C + \beta_2 S + \beta_3 M + \beta_4 T + \beta_4 Q$

While in log-linear form the function is written in the form:

$LnV = \beta_O + \beta_1 C + \beta_2 S + \beta_3 M + \beta_4 T + \beta_4 Q$

After knowing the demand function, we can measure the consumer surplus which is a proxy for the value of WTP (Willingness to Pay) or the desire to pay from consumers for recreational locations. This consumer surplus can be measured through the formula:

$$WTP = CS = \frac{N^2}{2a1}$$

For linear demand function,

$$WTP = CS = \frac{N}{a1}$$

Multiple Linear Regression of the factors that affect the number of domestic tourist visits and the Travel Cost Method (TCM) Total Value is used to determine the economic value of Ujong Blang beach tourism with the TCM approach using the formula:

For nonlinear model:

$$\text{Consumer surplus} = \frac{Number\ of\ visits\ average\ 2}{-2 \times Travel\ cost\ coefficient}$$

$$\text{Consumer surplus} = \frac{Number\ of\ visits\ average}{Travel\ cost\ coefficient}$$

Economic Value = Total consumer surplus x number of visitors 1 year

III. RESULTS AND DISCUSSION

TABLE 1. Data On The Number Of Visitors From Each Zone, Travel Costs, Income, Age, Education Level, And Total Population Of Each Zone

No.	Zone	Number of Respondents	Total Population	Average Travel Costs (Rp)	Income (Rp)	Average age (Year)	Average education (Age)/
1	Kota Juang District	30	56.213	50.750	1.328.33	25	13
2	Pesangan District	15	36.667	53.000	884.667	26	12
3	Jeumpa District	10	54.679	62.400	1.295.000	26	12
4	Bener Meriah Regency	25	148.616	255.050	1.960.000	31	14
5	Central Aceh Regency	20	213.732	420.100	2.013.636	32	13
	Total	100	509,907.00	841.300	7.481.636	141	51

Source: Processed Data (2018)

Travel cost components consist of transportation costs (fuel costs), food and drinking costs, service fees and other costs. The average travel cost incurred by visitors to visit Ujong Blang Beach ranges from IDR 50,000 to IDR 450,000. In general, the average age of visitors to Ujong Blang Beach ranges from 25 to 32 years.

After knowing the information about the percentage of visitors from each zone, the population of each zone and the number of visitors each week obtained from observations of the number of visitors recreation on Ujong Blang Beach in 2018, during January - June, observations were made towards the number of visitors who have recreation in the Ujong Blang Beach area and the average visitor per week is 1150 people. The 100 respondents were then grouped based on the zone or area of origin of the visitors. Then it can be calculated the degree of visit per 1000 population per year, to calculate the degree of visit per 1000 population per year using the formula (Dixon, Jhon A. 1996: 62) as follows:

$$Visits\ per\ 1000\ population = \frac{(\leftarrow) \times N \times 52 \times 1000}{P}$$

Vi = Number of visitors from Zone I n = number of sample (100)

N = Visitors each week (1150)

P = number of population from zone I

TABLE 2. Visit Rate Per 1000 Population Of Each Zone To Ujong Blang Beach

Zone	Number of Population	Respondent		Visit Rate/1000
		Person	Percentage (%)	
Kota Juang District	56,213	30	30	319.14
Peusangan District	54,679	15	15	164.05

Jeumpa District	36,667	10	10	163.09
Bener Meriah Regency	148,616	25	25	100.59
Central Aceh Regency	213,732	20	20	55.96
Total	509,907	100	100	802.83

Source: Processed Data (2018)

Estimation of Total Travel Cost

Furthermore, after knowing the visit rate per 1000 inhabitants per year for each zone, then the total trip cost value is calculated which is obtained from the sum of the travel costs to and from Ujong Blang Beach with the average time required during the trip which has been converted into monetary value by using the prevailing wage rate in the study area.

TABLE 3. The Total Cost Of The Trip To Visit Ujong Blang Beach From Each Zone.

No	Zones	Visit Rate / 1000	Travel Time (Minute)	Conversion Opportunity Cost Travel Time (Rupiah)	Travel Cost (Rupiah)	Total Travel Cost (Rupiah)
1	Kecamatan Kota Juang	319.14	15	2.550	50.750	53.000
2	Kecamatan Peusangan	164.05	45	3.400	53.000	56.400
3	Kecamatan Jeumpa	163.09	25	7.650	62.400	70.050
4	Kabupaten Bener Meriah	100.59	120	20.400	255.050	275.450
5	Kabupaten Aceh Tengah	55.96	150	25.500	420.100	455.600
	Jumlah	802.83	355.00	59.500	841.300	910.500

Source: Processed Data (2018)

TABLE 4. Demand Curve TABLE

No	*Calculation*	Surplus Value (Rp)
1	*½x(144626.6–144844.4)x(500–0)*	54.450
2	*½x(144844.4–159930.6)x(1000–500)*	3.771,550
3	*(144844.4– 159930.6)x500*	79.820,456
4	*½x(159930.6–159487.9)x(1500–1000)*	112.925

5	*(159930.6–159487.9)x1000*	159.327,969
6	*½x(159487.9–159045.2)x(2000–1500)*	110,675
7	*(159487.9–159045.2)x1500*	23.907,281
8	*½x(159045.2–159159.9)x(3000–2000)*	57.350
9	*(159045.2–159159.9)x2000*	318.160,755
10	*½x(159159.9–11157.274,5)x(4000–3000)*	74.001,313
11	*(159159.9–11157.274,5)x3000*	33.312,664
14	*½x(11157.274,5–0)x(7500–4000)*	19.525,230
15	*(11157.274,5–0)x4000*	44.629,098
	Total	756.791,715

Source: Processed Data (2018)

Based on the TABLE above, the total use value of visitors to Ujong Blang Beach with a zero entry ticket rate is Rp. 756,791,715, - and a deatweight social loss of Rp. 54,450, - The current entry ticket rate is Rp. 2,000, - to calculate the consumer surplus per year is to deduct the total use value of visitors to the multiplication of Rp. 2,000 with 159,045.2. To Rp. 756,791,715 - Rp. 318,090, - = Rp. 438.70, - total consumer surplus per year. The average value of visitors' willingness to pay for the facility development is IDR 438.70 / 802.83 = IDR 5,464,420 per visitor.

IV. CONCLUSIONS

Based on the research results, the following conclusions can be given:
1. Factors that affect the level of visits to Ujong Blang Beach are as follows: (a) Travel costs of Rp. 98,124.31 from each respondent based on the division of zones (b) Visitor income of Rp. 7,481,636 (c) The average age of the respondents is 26 years (d) The average education of the respondents is high school graduate (12 years).
2. With the Travel Cost Method (TCM) approach, the total consumer surplus for one year is obtained, the average value of the consumer surplus is Rp. 756.79,715 per year, and the average value ojf willingness to pay visitors to the facility development is Rp. 5,464,420 per

individual.
3. The economic value of Ujong Blang Beach tourism based on the Travel Cost Method approach is Rp. 2,159,632,360.00/year.

ACKNOWLEDGMENT
1. The relationship between the variable travel costs and the number of visits variable in the results of data processing shows that the travel cost variable has a significant positive effect on the number of visits variable.This states that the greater the travel costs paid by tourists, the lower the demand for these attractions.
2. The relationship between the income variable and the number of visits variable on the results of data processing, the results show that the income variable has a negative relationship with the number of visits variable, so if one unit

decreases each independent variable it will cause a decrease in the intensity of visits

as much as the value of the respective regression coefficient with the assumption that the other variables are in constant condition. This suggests that the smaller the visitor's income, the less the level of tourist visits to the ujong blang beach tourism object.

3. The relationship between the variable age and the number of visits variable on the results of data processing shows that the age variable has a positive relationship to the variable number of visits. This is because the higher the age, the increased participation in traveling so that the demand for these trips will increase.

4. The results of data processing show that the education variable has a negative relationship with the variable number of visits to Ujong Blang Beach. The research object is the beach which is a natural tourism object. This research is also conducted every Saturday and Sunday. It is found that visitors who come also have a low level of education (mostly young people). The lower the level of education, the less demand for tourism.

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