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Economic Valuation of the Komodo National Park West Manggarai Regency, East Nusa Tenggara

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Abstract

The study aims to determine the economic value of Komodo National Park (KNP) is an important information for the community and the government, so that area development policy should still consider the possibility of preservation and sustainability. The breakdown was done by descriptive qualitative and quantitative approach with the method of linear regression analysis. While it is to know the economic value of the attractions the KNP approximated by calculating the value of consumer surplus. The results showed that the factor of the cost of the trip, age of travelers, professional backgrounds and income levels have a significant influence on the level of tourist visits to the KNP. The cost of the trip and the age of the negative effect, while the background of the profession and the level of income give effect to a positive against the rate of tourist visits to the KNP. The Total value of the economic attractions of the KNP is estimated at IDR 60,358,019,952,567,-. Economic value this is the value potential that can be achieved if the management can still be maintained.

Keywords: *National Park; Tourism; Economic Value*

Introduction

The tourism sector in East Nusa Tenggara (ENT) has been established as a leading sector in boosting regional economic development and society. This is in line with the fact that NTT has the number and variety of interesting attractions, and even in some areas of the districts of the city has been widely known and became a tourist destination is important for domestic and foreign tourists. Variety of attractions can be mapped over the natural attractions, cultural and historical attractions even the attractions culinary with a variety of exotic attraction and specific. Can also mentioned as a National Park (NP) Kelimutu mount in Ende, with the beauty of the three colors lake. Komodo National park (KNP) with mainstay lizard giant komodo dragon (*varanus comodoensis*) and is the only one in the world can be found in the region of West Manggarai regency.

Geographically, the KNP is situated in West Manggarai Regency, ENT province. The KNP is composed of three major islands, namely Komodo Island, Rinca Island and Padar Island as well as some cluster of islands, with the land area of the KNP covering an area of 603 km^2 (33.19%) of a total of 1,817

km^2. In 1980 TNK set with the purpose to protect the animal the komodo dragon and its habitat. There are 277 species of animals which is a mix of animals coming from Asia and Australia, which consists of 32 species of mammals, 128 species of birds, and 37 species of reptiles. Along with the komodo, there are 25 species of land animals and birds, including protected animals, because of the limited number or the limited area of deployment. There are 253 species of coral, with around 1,000 species of fish.

The number population of the region's is 4,000 people (Balai TNK, 2019). With the condition of the appeal of KNP-owned, causing an increase in the number of visits there. In the year 2014 recorded the number of visitors as many as 80 thousand people while the year 2018 increased by 170,000 people. This means that during that period an increase in the number of visitors in average by 22.5%/year. And the highest proportion is of foreign tourists reached 60% more (KNP Board, 2019).

Marrocu et al (2015) and Ghulamrabbany et al (2013) who cited Zulpikar et al (2018) stated that the tourism sector is large and growing rapidly in the global economy and significant effect both in the positive and negative aspects of the environmental, social, cultural and economic.Hampton and Jayacheya (2015) stated that tourism gives the effect of a positive for the development of employment opportunities, improvement of incomes, investment, infrastructure development, environmental protection, development of culture of local communities. Kurniawan et al (2016) quoted Zulpikar et al (2018) states that on the one hand tourism as an important means to encourage the acceleration of economic development, but if not planned well, it will have an impact to the decrease of biodiversity and environmental pressures, especially in areas or islands of ability or capacity is limited.

Based on the consideration above, then the study of the sustainability of the region in particular reviewed the aspects of ecological and economic region and the surrounding community is an activity that can be implemented within the framework of the provision of information for the development of the policy arrangement of the object in a sustainable manner. For that economic assessment (economic valuation) of the area is important information for the community and the government, so that policy development of the area remains to consider the possibility of the preservation and sustainability of their utilization. The purpose of this study is 1) to analyze factors that influence the number of tourist visits to the KNP attractions, and 2) analyze the economic value of the TNK attractions.

Theoretical Framework

1. The Concept of Economic Valuation

Tietenberg and Lewis (2012) stated that economists classify the total economic value of resources into three groups, namely use value, option value and the non-use value. Use value reflects the direct use of natural resources and the environment. An example is the fish of the sea, wood forest, water irrigation, and so on. Some experts refer to it as passive use value or no consumtive use value. Option value reflects the value of a location for use in time to come. This value reflects the desire to pay from the options to preserve the environment. Given that this value is derived from the actual value, then the value of the options also reflects the desire to maintain the possibility of preserving value of potential in time to come. The third category of non-use value, reflecting the desire of more of people to are willing to pay for improving or preserving resources that are not used. The value of non-use includes the value of the inheritance (bequest value) and the existence value.

Suparmoko, et al (2014) classify values on the basis of the actual market value, based on market replacement and the value based on the survey. Market value which can actually be classified more on the immediate value which is the economic rent earned from the direct utilization of a natural resource. Thus

also an indirect value in the form of the value of productivity, the value of the shadow, the value of prevention, value of opportunities, and so on. Value based on the market substitute is mapped into the value of assets/wealth (hedonic price), the level of wages and the cost of the trip (travel cost). While the value based on the survey, obtained through the choice modelling and contingent valuation (CVM). Value is the satisfaction received with the estimate that future generations will get benefits from protected areas. Value without use (non-use value) are widely derived from equity between generations, the utility functions and the existence of environmental values intrinsic (Bateman et al., 1996).

Bulov and Lundgren (2007) stated that one way to find out the monetary value of the goods which are not marketed is by performing the assessment/valuation of the environment. When an item is not marketed as usually, then the resources used do not provide the space to achieve social benefits is high. By estimating the value of the goods that is not marketed can provide an opportunity to use resources more efficiently. Pearce and Turner (1990) cited Bulov and Lundgren (2007) stated that the total economic value is an overview of the demand curve for environmental goods. The total economic value is the accumulation of the direct use value plus the value of indirect use value, option value, bequest value and the existence value.

2. Travel Cost Method

Tietenberg and Lewis (2012) stated that the travel cost method can predict the value of a recreational resource by using information about how many visitors that spend time to build a demand curve the desire to pay from the long time used. Freeman (2003) cited Tietenberg and Lewis (2012) identify two variants of this approach. The first variant is traced through the number of trips to the location. This allows for the developed model the function of the cost of the trip. And the value of the services obtained is the part below the forecasts of the demand curve a visit to a location which is the aggregation of all visitors. The second is traced through the decisions of visitors to visit a location and or other locations. The second variant includes the model are typical, namely model a variety of satisfaction from changes in the value of quality.

The assumptions used in the TCM approach is that the utility of every consumer of the activity, for example recreation, can be separable. Therefore, the function of the demand for recreational activities is not influenced by the demand of other activities such as watching, shopping, and others. The concept of TCM is a method used by complement between travel goods and goods that used to travel up to the tourist destination. The cost of the trip is used as a proxy over the tourist areas, if the total cost is increased then the number of visits decreased, so that the:

The rate of visits = f (travel cost, income, age, number of children, health....)

Changes in the cost of travel and the predicted changes in the number of visitors for create function requests. The valuation method requires data on the cost of transportation to the place of tourist destination, the number of visits in a certain period of time, the location of the domicile, and socio-economic factors (such as income, age, number of family members, level of education). The Data used to develop the demand curve of the individual and the aggregate. The Area under the demand curve is the estimation of the economic value of a tourist destination such.

Dvorak (2007) cited Spacek and Antouskova (2013) stated that the travel cost method is a method that is consumer-oriented and used widely to assess the services and or facilities provided such an environment for recreation, nature reserves and so forth. The reason behind the travel cost method that the travelers will visit a tourist site if the traveler can obtain the benefits provided at that location. The money

spent to reach these locations in the form of the cost of the trip is a manifestation of the willingness to pay of tourists. Change of magnitude the cost of the trip shows the changes to the number of trips made.

The method of Travel Cost has been applied widely in developed countries, especially to analyze the demand for recreation in the open nature. This approach is based on the simple concept of Harold Hotelling (1931) which mentions the habit that is observed can be used to create a demand curve and determine the value of natural resources and the environment. Can also be used to calculate the consumer surplus from natural resources and the environment that has no market through questions that focused on the increase in the cost of travel as a market substitute. This method is discussed and developed by Clawson (1959), Clawson and Knetsch (1966) and (Perman, et al, 2003). TCM is one of the most common techniques used in the evaluation of non-market to estimate the recreational value of a specific site (Hanley and Barbier, 2009).

Demand function the cost of travel for recreation is generally derived directly from the function of satisfaction of tourists visiting tourist sites. The preferences of tourists present from the number of trips to a tourist location in a certain period of time (Ezebilo, 2016). Major assumptions of the TCM is that the number of visits will be reduced in line with increasing travel distance (Bockstael, 2007 cited Ezebilo, 2016).

Ezebilo (2016) states that by using the framework of maximization of satisfaction/utility, the preferences of a traveler to a tourist location can be represented in the function the satisfaction of directly that is : Max u (R, q|s, a), with limited cR + zq = y; in which : the level of satisfaction of tourists when consuming two different goods; R is the number of trips to a tourist location; q = the amount of consumption of all other goods; s = vector of characteristics of the location; a = attribute of the business; c = the cost of travel to the location; z = price of the composite of the whole of other goods and y = income.

From the above equation, it is obtained a function of demand Marshallian to recreation are: R = f (c, z, y; s, a) = -Vc (c, z, y; s, a)/Vy (c, z, y; s, a). By integrating the functions of demand Marshallian and estimate the area under the demand curve and above the price line, obtained consumer surplus. Consumer Surplus this is the difference between the maximum amount a traveler to want to pay the cost of travel to the location with the cost of travel to that location. Consumer Surplus describes the economic value of the tourist sites that are visited, and generally this value is not represented in the actual market.

Results and Discussion

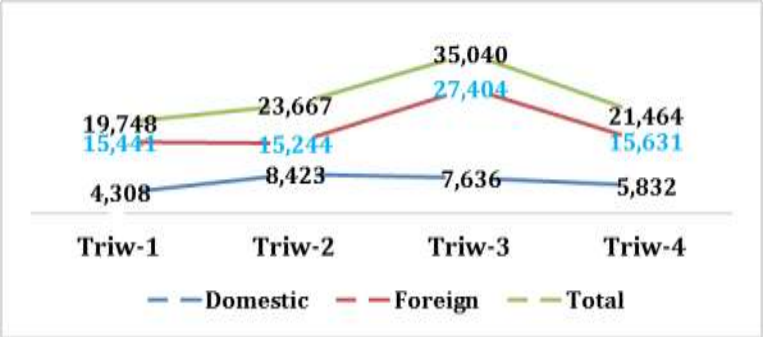
1. The Number of Tourists

The number of tourists visiting to Komodo National Park (KNP) between the years 2012-2018 showed a significant increase both domestic tourists and foreign tourists (Hall TNK, 2019). At that time the average number of tourists who visit as much as 29,230 people while the foreign tourists as much as 79,012 people. Or with other words the number of foreign tourists who visit almost three times more than tourists. The average number of tourist arrivals in the period, there were as many as 108,292 people.

The difference in the number of visitors on both types of these travelers, illustrates that the KNP as a tourist attraction the world over have a strong attraction for foreign tourists to travel to the venue. Although it should be understood that there are many factors that are disturbing a person to do a tourist visit to some attractions. But from the data the number of visits is no more convincing that the position of the KNP as a tourist destination of the world with the existence of animals of komodo as one of the only endemic need to still be maintained in a sustainable manner.

The development of the number of tourists in the period of one year also showed the presence of differences. The number of tourist arrivals is relatively higher in the third quarter is between July-August, while for tourists the most in the second quarter which is between the months of March-June (figure 1). The high number of tourist arrivals in quarter three, allegedly closely associated with that time in the country of origin of tourists is vacation time so they generally make use of it to make a visit to various tourist destinations in other countries, including KNP.

Figure 1.
The Average Number of Tourists (person) according to the Quarter to the KNP between the Years 2012-2018



The number of domestic tourist visits according to the time of the quarter did not show significant differences, although slightly larger occurred in the second quarter compared to quarter other. It is suspected that the habit of travelling is not solely affected by the vacation time such as during school holidays and / or holiday religious holiday, but more on the take advantage of the opportunity when performing a working visit and or business.

2. The Component of Cost Tourist

The components of the costs incurred by a traveler during travel can be mapped over the transport costs and the cost of non-transport. Components of the cost of transportation includes the cost of travel from the region of origin (tourists) to Labuan Bajo and from the Country of origin to Indonesia (foreign tourists) and proceed to Labuan Bajo. Furthermore, the cost of the trip from Labuan Bajo to KNP. Meanwhile the cost of non-transportation includes the cost of hospitalization, cost of hire a tour guide, the cost of consumption, cost of equipment rental diving/snorkeling, the cost of the purchase of souvenirs and the components of other expenses. The cost of transport of tourists can be distinguished the cost of air transport, sea transport and land transport, both for domestic tourists and foreign tourists.

The average transport costs to be incurred beyond the cost of the ground transportation by a tourists each IDR 3,407,778,- per person. While that by foreign tourists is much larger, amounting to IDR 16,855,556,- per person. The magnitude of transport cost illustrate about the capacity of the area attractions KNP that can give you a multiplier for the transport sector. Thus more and more number of tourists, it is estimated will have an impact for the increase in the number of reception of the transport sector in particular and the region in general.

By considering the average long-stay better in Labuan Bajo and Komodo island as well as the total length of visits (assuming that the total long-stay travelers with a long visit), then the total costs to be incurred by a stay of IDR 4,938,018,- per person. Furthermore, if the traveler will also be issued a number of other costs such as equipment rentals, diving/snorkeling, tour guide and the type of other costs, then total costs to be incurred an average of IDR 12,491,710,- per person.

Of the components of the cost of non-transport should be excluded, seems to be the biggest is the cost of the other and the cost of equipment rentals, diving/snorkeling. The cost of such other form of

ticket entry to the object visited, and other incidental charges to be incurred by a traveler. Based on an idea of the magnitude of the costs to be incurred, whether the cost of transport and non-transport, shows that the tourism sector generally and the KNP is a sector of potential in moving the economy of both the community and the region.

3. The Factors Affecting to the Number of Tourists

To identify the factors that affect the number of tourists visiting the area attractions TNK used to approach the function of multiple linear regression. Based on the availability of data and information which in this case is the willingness of the respondents are willing to present it during the interview especially for foreign tourists who tend to be closed to certain aspects, then the independent variable is the factor that is thought to affect the number of visits (Y), covering the cost of travel (X_1), a long visit (X_2) age (X_3), profession (X_4) and income level (X_5). The results of the analysis as presented in Table 1.

Table 1.
The Results Of The Linear Multiple Analysis Visits Tourists to the KNP

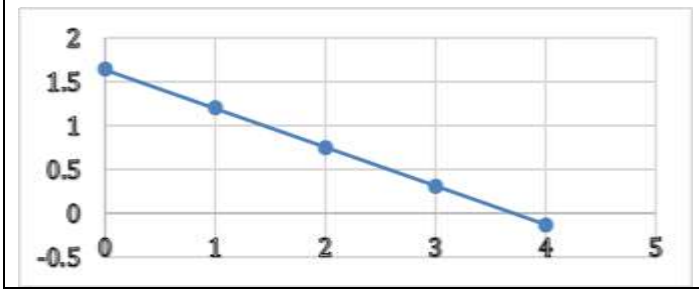
Variabel	Coeficient	"t" Value	Sig.
Intercept	1.641	13.294	0.000
Travel cost (X_1)	-0.443	-6.325	0.000*
Long of visit (X_2)	-1.652	-0.693	0.494
Age (X_3)	-0.605	-2.433	0.022*
Profession (X_4)	6.107	1.972	0.059*
Income level (X_5)	17.913	4.556	0.000*
F-*count* :	51.948		
R-*Adjusted* :	0.885		
R-*Square* :	0.903		

The value of F-count is obtained from the regression equation of 51,948 and greater than F-table value of 2.56. This means that all independent variables are there together gives an influence on the dependent variable namely the number of tourist visits to attractions KNP.

The results of the "t" test shows that there are four independent variables that have a significant effect (α =0.05) on the number of tourists is the cost of travel, age of travelers, the profession of the tourists and level of income of the travelers. Variable length of the visit does not show a significant influence on the level of tourist arrivals. The value of R^2 obtained value of 0,903, which means that the independent variable in the equation is able to explain the variation in the change in the dependent variable (number of visits) amounted to 90,3%, and the rest can be explained by the independent variables other that is not included in this study. Thus it can be concluded that the factors used in the analysis, statistically good enough to be used in the estimation of the number of tourists visiting the attractions KNP.

Based on the linear regression equation above with the inversion process are used as the basis to estimate an overview of the demand curve stay the top attractions in the area of KNP, namely : Y = 1.641 – 0.443X1, as presented in figure 2.

Figure 2.
The Demand curve the Attractions The KNP
West Manggarai Regency



The number of tourists will increase in line with the declining cost of travel, and vice versa. This information is very important as a reference in developing the area in question, including also the government and the business world who are competent in supporting the development of the area in particular and the tourism sector in general.

The analysis of the economic value of the attractions area of KNP was conducted with the approach of the calculation of the consumer surplus. The regression equation has been obtained which reflects the function of the demand of tourists top attractions the KNP be the basis to estimate how large the economic value of the region based on the variable cost of travel. The value of consumer surplus obtained from an integral over the request function to the lower limit, namely the cost of travel low and the upper limit is the cost of travel highest of the tourists who travel the tourist visits to the KNP. From the results of the study obtained that the lowest cost of IDR 3,407,778,- and the highest is IDR 16,855,556,- so with the function of the demand, there is obtained the integral equations as follows :

$$CS = \int_{16,855,556}^{3,407,778} 1.641 - 0.443X dx$$

The calculation results of the integral equation above, the obtained total value of the consumer surplus of IDR 60,358,019,952,567,-. Based on the average of tourists for the last seven years as much as 108,242 people, then the average value of the consumer surplus per year is obtained by IDR 557,621,071,-. Or the value of the consumer surplus per 1,000 of the population figures obtained by the IDR 557,621,- per year. This figure represents the potential economic value of KNP that can be achieved, if it can be managed better.

Conclusion and Suggestions

1. Conclusion

a. Factor the cost of travel, age of travelers, professional backgrounds and income levels have a significant influence on the level of tourist visits to the KNP. The cost of travel and age negatively affect the level of tourist arrivals, while the background of the profession and the level of income give effect to a positive against the rate of tourist visits to the KNP. This means that the greater the cost of the trip and age of tourists will decrease the rate of visits to the KNP. On the contrary the background of a profession that is getting better, thus also the level of income increases will encourage the increasing number of visits to the KNP.

b. The Total value of the economic attractions of the KNP is estimated at IDR 60,358,019,952,567,-. Economic value this is the value potential that can be achieved if the management can still be maintained. Up to the year 2018 the total value of non-tax receipts Hall TNK as one source of

revenue from the management of TNK IDR 33,124,497,097,-, if compared with the potential economic value that is available is still very low.

2. Suggestions

Need to setup the KNP as a whole, not only in direct contact with a spot of tourist attraction, but starting from the territory of the city of Labuan Bajo as a transit territory up to the territory of the komodo islands as the main target of the tourist area of KNP. The arrangement referred to include aspects of environmental cleanliness from waste, improvement of service aspects, public transportation, lodging and arrangement of the urban environment. This is especially important to provide a sense of comfort (amenity) and safe for tourists visiting the KNP.

References

Balai Taman Nasional Komodo. 2017. Master Plan Pariwisata Alam Taman Nasional Komodo. Labuan Bajo, West Manggarai, June 2017.

Bulov S. and Tobias L. 2007. An Economic Valuation of Periyar National Park. A Travel Cost Approach. Lulea University of Technology, 2007: 070. ISSN : 1402-1773. ISRN: LTU – CUPP--07/70--SE.

Ezebilo, E. E. 2016. Economic Value of Non Market Ecosystem Services: An application of the travel cost method to nature recreation in Sweden. *International Journal of Biodiversity Science, Ecosystem Services and Management.* **12** (4), Page 314-327. http://dx.doi.org/10.1080/21513732.2016.1202322.

Hampton, M.P. and Jeyacheya, J. 2015. Power, Ownership and Tourism in Small Islands: Evidence From Indonesia. *World Development* **70**: 481–495.

Perman, R; Yue Ma; J. McGilvray and Michael Common. 2003. *Natural Resource and Environmental Economics*. Third Edition. Pearson Education Limited, Edinburgh Gate Harlow Essex CM20 2JE.

Spacek, J and Michaela Antouskova. 2013. Individual Single-Site Travel Cost Model for Czech Paradise Geopark. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*. 2013, LXI, No. 7, Pp. 2851–2858.

Suparmoko, M; D. Sudirman; Y. Setyarko and H.S. Wibowo. 2014. Valuasi Ekonomi Sumberdaya Alam dan Lingkungan. First Edition and First Printing. Publisher: BPFE-Yogyakarta.

Tietenber, T and Lynne Lewis. 2012. Environmental and Natural Resource Economics. Ninth Edision. Pearson Education, Inc., Publishing as Addison-Wesley.

Zulpikar, F; Leo Alexander Tambunan; Siti Rahmi Utami, and Warsono El Kiyat. 2018. Economic Valuation of Marine Tourism in Small Island Using Travel Cost Method (Case Study: Untung Jawa Island, Indonesia). Omni-Akuatika, 14 (1): 28–35, 2018 ISSN: 1858-3873 print / 2476-9347 online Research Article.

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