Analysis of Economic Valuation Using Contingent Valuation Method: The Development of National Park of Kerinci Seblat, Jambi

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Abstract

The management or development of TNKS nature tourism in addition to taking economic benefits, must also simultaneously preserve the environment and, bring benefits to the surrounding community. The development of nature tourism (ecotouriem) in KSNP will support the preservation of the area and is expected to increase employment and business opportunities for the community. The purpose of this study was to: 1) Know and analyze the value of PAPs. 2) Knowing and analyzing the value of WTA. 3) Knowing and analyzing the appreciation of the value of PAPs and WTAs and analyzing the value list of local community needs This research method uses survey methods, case studies, censuses, secondary data collection and a combination of these methods. The type of data used in this study consisted of primary data and secondary data. The results of the study the willingness to pay tourists / Willingness To Pay (WTP) on average only IDR.6,275, - While the value of willingness to receive tourist compensation / Willingness To Accept (WTA) an average of IDR.26,800, - greater than the value the average WTP per day, and based on a simulation of the WTP equation that is substituted with the WTA equation, the recommended entrance fee is IDR.6,647.85.

Keywords: national park, WTP, WTA

Introduction

The assessment of National Parks as a tourist attraction is only economic, does't accommodate social and environmental benefits.Many disaggre and also agree because it serveas the guardian of environmental ecosystem which must also be able to provide benefits to the surrounding community.

One of the potential national parks for ecotourism activities in Jambi province is the Kerinci Seblat National Park (TNKS). TNKS is a nature conservation area that contains natural tourism potential, including biodiversity, natural scenery, and socio-cultural characteristics of the local community. The development of natural tourism (ecotourism) in the Kerinci Regency TNKS in Jambi Province will support the sustainability of the Area because its development is based on ecological principles. Besides that, economically, this nature tourism will be able to provide benefits to the community and local government, including the opening of employment and business opportunities that can provide alternative added value for people's livelihoods.

Through nature tourism, the values of native culture and art in Kerinci Regency will be sustained because of increased awareness from the local community and tourists towards nature conservation and cultural assets. The positive impact from the social aspects can be increased if traditional utilization is accommodated by the stakeholders of the TNKS nature tourism. Local communities are given the opportunity to continue traditional practices, so that they become partners in nature conservation of KSNP. From the environmental aspect, the development of natural tourism will not degrade TNKS natural resources, because ecotourism is ecologically based on the principle of carrying capacity of the environment. Jambi Province is a province that has a large forest area, of the total forest area in Jambi Province around 38% are in the national park area KerinciSeblat National Park (TNKS) is one of the national parks which has an area of nearly 1.4 million hectares and located in the administrative regions of 4 provinces in Sumatra, including Jambi Province. The Government through the Minister of Forestry Regulation has set the use of forest areas that are not allowed to cut forests. The fact that shows that there is still illegal logging carried out by unscrupulous people in the

National Park area with the aim of clearing land. The need for good management to overcome the problem of deforestation that occurred in this national park area in order to benefit the government and the community. The economic valuation of the KSNP area is carried out with the aim of knowing how much the economic value of the KSNP area can then be used to take a sustainable management policy of the TNKS area. The planned construction of 30 roads that split the KSNP is a major threat that is feared to ignite ecological disasters in the area. In fact, when viewed at the beginning of its journey, TNKS was formed from 17 forest groups which were part of the protected forest register in 1921-1926 (established by the Netherlands), nature reserves and wildlife reserves established in 1978-1981, plus the production forest area. The proposed formation of TNKS was carried out based on the research results of the Directorate General of Nature Protection and Conservation and WWF sponsored by FAO (Food and Agriculture Organization) in 1977 - 1980.

The specific objectives of this study are: Knowing and analyzing the value of WTP. Knowing and analyzing the value of WTA. Knowing and analyzing the appreciation of the value of WTP and WTA as well as analyzing the list of local community needs for the development of natural tourism TNKS Kerinci Regency, Jambi Province.

Methods

Place and Time of Research

This research was conducted at the TNKS natural tourism location in Kerinci Regency, Jambi Province. The area in Kerinci Regency is 215,000 ha, which is geographically located between 1o 26o South Latitude and between 101o 08 East Longitude to 101o 50o East Longitude. This research was carried out among others with consideration: as a buffer zone its sustainability is threatened - either because of the still low participation of the surrounding community, or because of the tendency to use economic aspects that are not balanced or harmonious with environmental and social aspects and so on. In addition, this area has great potential to be developed as a sustainable nature tourism area (ecotourism).

Method of Collecting Data

The data collection in this research uses survey methods, case studies, censuses, secondary data collection and a combination of these methods as well as public reaction due to tourism activities.
Because the number of people involved in the informal group of tourism was only 50 people, a census was carried out, namely: secondary data collection from the results of previous research and other literature sources relating to the research topic.

Data Types and Sources

The type of data used in this study consisted of primary data and secondary data. Primary data were obtained from sources directly at the research location, while secondary data were obtained from documentation, research results and so on.

Respondents in this study were tourist rays conducting tourism activities, tourism officers and the community at the study site related to the research, Kerinci Regency TNKS Office, Tourism Office and other relevant Work Units / Agencies at the Regency or Province level were secondary data sources.

Sampling Techniques

The sampling unit of the study included the head of the family or those who obtained direct livelihoods from the natural tourism sector of the KSNP as well as the non-tourist community category located in two villages, namely KersikTuo and Polempek villages that are around the TNKS area. The two villages are both located in KayuAroSubdistrict, but they are not directly bordered (there are still other villages located between the two). The sampling technique is done intentionally (purposive).

For tourists sampling is done by stratified random sampling. Strata of tourists are grouped on domestic tourists (tourists) and foreign tourists (tourists). While strata of formal tourism personnel are on the basis of employment categories. The sampling technique of tourists who are currently or will be conducting tourism activities in TNKS is carried out by combining randomly and intentionally (purposive) of the tourists found.

Analysis

Data analysis was carried out from 2 (two) sides, namely: the supply side and the demand side. The impact of TNKS natural tourism on the surrounding community is an analysis of the supply side. This method uses economic valuation, which is a hyphothetical quation to visitors how they think if the natural condition of TNKS is still good with all services can still be enjoyed or be is be worse and can't be obtained anymore. This analysis is done by first determining the interval values of the WTP and WTA. The main reason is asked to the community, because the community is a priority to feel the benefits directly or indirectly in advance with the natural attractions of TNKS.

Results and Discussion

Contingent Valuation Method with WTP

The survey was applied to the 50 visitors of Kerinci Regency TNKS natural tourism in Jambi Province, all of them in the tourism object of KersikTuo village, KerinciKayuAro District, Kerinci District. Respondents were taken in KersikTuo village, because the main gate to enter the TNKS location in Kerinci Regency was in KersikTuo.

The application of the contingency value approach is done by asking questions to respondents in a purposive manner about the value of their willingness to pay to be able to continue to enjoy the natural tourism services provided in the Kerinci Regency National Park. On the other hand, the question of obtaining an answer to the value of their willingness to ask for compensation (willingness to accept) was also raised-if their chance to continue to be able to enjoy TNKS tourism services was closed.

Table 1. Cumulative percentage of tourist choice data based on WTP / WTA Nature Tourism Kerinci Regency in Keresik Tuo Village

WTP and WTA Value Intervals (IDR/person)	Average value interval (IDR/person)		Percentage of visitors (%)		Cumulative percentage (%)	
	WTP	**WTA**	**WTP**	**WTA**	**WTP**	**WTA**
0 – 500	250	250	8	1	100	62
500-750	625	625	5	1	95	63
750-1000	875	875	9	1	86	64
1000-1250	1125	1125	13	1	73	65
1250-1500	1375	1375	1	1	72	66
1500-1750	1625	1625	2	1	70	67
1750-2000	1875	1875	2	2	68	68
2000-2250	2125	2125	2	3	66	70
2250-2500	2375	2375	1	4	65	73
2500-2750	2625	2625	3	4	62	77
2750-3000	2875	2875	2	7	60	81
3000-3250	3125	3125	1	12	59	88
3250-3500	3375	3375	1	12	58	100

Based on table 1 it is known that the percentage of visitors for willingness to pay / WTP moves from the proportion of the number of visitors from the largest to the smallest average. This means that in the willingness to pay approach with the services of TNKS nature tourism which is still intact, most respondents

prefer the average value which moves to a lower value. For the value of willingness to receive compensation / WTA, the respondents chose the proportion of compensation that moves in reverse, that is, from the smallest average value to the greater average WTA value. With the increase in the value of compensation by their respondents, they demand quantitatively a large compensation if they can no longer enjoy TNKS nature tourism services. This condition in other words can mean that visitors still want a natural TNKS condition with uniqueness and biodiversity that is still intact. They want to hypothetically carry out actual tourism activities while carrying out research activities or observing flora and fauna of Kerinci Regency National Park. Unfortunately, such research and / or observation activities are generally carried out by tourists of a variety of countries. Most archipelago tourists only enjoy the beautiful nature and other environmental services such as a cool climate and enjoy the natural comfort.

Unlike the case with Safri's (2003) research, the percentage of visitors who choose an interval of 0 to IDR.500 is only 2%. This percentage moves the same as this study, which is increasingly towards a higher interval, the choice of visitors to the WTP value also increases. If in the interval 3250 to 3500 in this study the percentage of visitors chose by 1%, then in the study of Safri (2003) the percentage of visitors choice was 3%. For the percentage of visitors who choose the WTA interval they move from the smallest percentage to the largest. If the percentage of visitor choice for WTA in this study moves from 1 (0 to 500), 1, 1 and so on until the last interval of 12%, in the Safri (2003) study for the same object the percentage of visitor choice on the basis of WTA reaches 18% condition This can be understood because the previous research took 100 respondents from visitors to 2 locations at the entrance to TNKS.

Table 2. Value of willingness to pay for tourists in the TNKS natural tourism location
Desa resik Tuo Village Aro Kayu Savings Kerinci Regency Jambi Province 2019

Value of willingness to pay / WTP (IDR/person)	Average interval of willingness to pay / WTP (IDR)	Percent of Visitors (%)	Cumulative Percentage (%)	The choice of the number of visitors (person /year) 5x50	number of wtps	Cumulative amount of WTP value (IDR)
0 – 500	250	8	100	400	100000	100000
500-750	625	5	95	250	156250	256250
750-1000	875	9	86	450	393750	650000
1000-1250	1125	13	73	650	731250	1381250
1250-1500	1375	1	72	50	68750	1450000
1500-1750	1625	2	70	100	162500	1612500
1750-2000	1875	2	68	100	187500	1800000
2000-2250	2125	2	66	100	212500	2012500
2250-2500	2375	1	65	50	118750	2131250
2500-2750	2625	3	62	150	393750	2525000
2750-3000	2875	2	60	100	287500	2812500
3000-3250	3125	1	59	50	156250	2968750
3250-3500	3375	1	58	50	168750	3137500

In total cumulative value of willingness to pay / WTP visitors to still be able to enjoy the natural tourism services referred to as IDR.3,137,500, with an average value of willingness to pay / WTP per day of IDR. 6.275. The results of Afifah's research (2013) with the WTP analysis approach in Kerandangan Nature Tourism Park, West Lombok Regency, NTB Province, obtained an average wtp of IDR. 8,100, - which is slightly higher the average WTP value of the TNKS obtained, the WTP value for the CobanTalun natural

tourism package in Malang, conducted by Hurin, N (2017) received a very large WTP value of IDR 30,000 Arimurty's research results (2015) revealed the amount of PAP value for visitors to Ngebel Lake Nature Tourism in Poronogo Regency, East Java amounting to IDR.10,000

The average value of this PAP is assuming the number of tourist visits for one day as many as five hundred people, meaning that the average day of willingness to pay / PAP in this analysis is considered as a simulation of the entrance ticket price (P1) For comparison, in previous studies (Safri, 2003) the total cumulative value of PAPs reached IDR.37,181,250. This figure is far greater than the total cumulative value in this study, which is IDR.3,137,500. If tourists (foreigners and archipelago) in a year as many as 180,000 people, the average value of WTP committees reached IDR.174.31 for 2019 while the average WTP in 2003 was IDR.74,463. From the various descriptions above it is known, there is no WTP value that reaches above IDR.30,000.

Based on the results of data processing with the program eviews obtained regression results for WTP, with the intersection of WTP = P1.

$$P_1 = 6720,49 - 67,58 \text{ qWTP}..........\text{average: WTP} = P_1$$
$$R^2 = 0,8631\%$$

From the regression equation obtained it can be interpreted that every time an increase in the number of visits by 1 person, the price decreases by IDR 67.58. This condition is in accordance with the law of request. In the case of national plants which have natural tourism content, this condition cannot be applied for the determination of the entrance fee. Tariffs or TNKS entrance tickets are usually set by the government through certain rules that are permanent, even at certain periods it may be that the entrance ticket rates are raised to avoid damaging the natural environment of TNKS if more tourists come. Determination of tariffs or admission tickets must be applied to protect the environment of the natural environment, so that the number of visitors does not increase and the natural resources in the TNKS become damaged. If this phenomenon occurs, it means that the natural tourism management policy of TNKS is merely concerned with economic benefits.

Furthermore, if the value of WTA / compensation is regressed by the number of numbers of projects that select the average value of the specified interval, the following equation will be obtained:

$$P_2 = -3870,17 + 78,99 \text{ qWTA}........\text{average of WTA} = P_2$$
$$R^2 = 0,8045$$

The constant negative rate of the regression results obtained at P2 indicates that without visitors coming the TNKS tourism value remains more intact. Because of the concern over the depletion of TNKS natural resources due to visitors, the desired compensation value must increase. The management of natural attractions should be complemented by activities of environmental interpretation of tourism services. Before visitors enter the area of Kresik Tuo Village, Kec Aro Kayu Aro, a display room building is built to provide information / insight to tourists who will enter TNKS about what is, why, what should be done if the tourists are already inside the area.

Contingent Valuation Method with WTA

Cumulatively, the average WTA value is IDR. 26,800 which is obtained from the total cumulative number divided by the number of visitors on average one day (13,400,000 divided by 500). The cumulative value of the WTA is divided by the number of respondents taken by 50 people, the average value of the WTA.

For the average annual WTA commulatory value of IDR. 74.44. When compared with the cumulative average value of WTA for 2003 (Safri, 2003) it is much higher, reaching IDR.8,942.5. The cumulative value of the WTA is divided by the number of respondents taken by 50 people, the average value of the WTA

Table 3. Value of willingness to accept (WTA) tourists at the location Nature tourism of KSKS Regency of Kerinci Regency in Jambi Province, 2019

Value of prepared ness paid / WTA (IDR/pers on)	Average paid intervals available /WTA(IDR)	Percentage of Visitors (%)	Cumulati ve percentag e (%)	Proportion of numbers of visitors (person / year)	Amount of available payment / WTA (IDR / year)	Cumulative amount of available payment / WTA (IDR)
0-500	250	1	62	50	12500	43750
500-750	625	1	63	50	31250	75000
750-1000	875	1	64	50	43750	100000
1000-1250	1125	1	65	50	56250	125000
1250-1500	1375	1	66	50	68750	150000
1500-1750	1625	1	67	50	81250	268750
1750-2000	1875	2	68	100	187500	506250
2000-2250	2125	3	70	150	318750	793750
2250-2500	2375	4	73	200	475000	1000000
2500-2750	2625	4	77	200	525000	1531250
2750-3000	2875	7	81	350	1006250	2881250
3000-3250	3125	12	88	600	1875000	3900000
3250-3500	3375	12	100	600	2025000	2025000
		50				13 400 000

Fuady, K, Yoswati, D, Thamrin (2016) using the WTA approach based on WTA at the Kenagarian Marine Ecotourism location Mandeh, Koto X1 Terusan District in West Pesisir Selatan Regency, West Sumatra, obtained an average WTA value of IDR.155,588, - as a comparison with our research, the value of WTA is far greater than the average value of WTA obtained (IDR. 26,800, -) The application of research using the WTA approach conducted by Pangemanan, PA (2017) concluded that the WTA value of local communities in the management of tourist destinations underwater volcano MahengetangSangihe Regency, the role of the government needs to be improved both through alternative products and activities as well as coaching by private parties that synergize with each other. Research conducted by Sumakul and Patnasari (2013) in the GunungSewu Karst Area, Pacarejo Village, GunungKidul Regency, Yogyakarta, applied the WTA approach in another way conducted by researchers. Sumakul produced findings, as many as 37.5% of respondents surveyed had a WTA value of less than IDR.100,000,000, - as compensation for landslides. Respondents who have a WTA value of between IDR. 100,000,000,000 to IDR. 200,000,000 are 47.5% while as many as 15% of respondents want a compensation value / WTA above IDR. 200,000,000. The difference in the application of the treatment, approach, WTA, which is different is only the category and the side of the variable analyzed and the interpretation by the researcher.

Contingent Valuation   Method with WTP and WTA

If we see the cumulative value of the WTP cumulative value curve and the WTA cumulative value movement of WTP / willingness to pay starts from IDR.100,000, IDR.256,250 and IDR.650,000, while the communicative value of WTA / compensation is relatively moving from low to high value (IDR.43,750, IDR.75,000, IDR.100,000,). In the final choice interval for the cumulative value of PAP still moving up from IDR. 2,812,500 to IDR. 2,968,750 and in total only IDR. 3,137,500. This value is different from the cumulative movement in the value of asking for compensation, which then relatively decreases from IDR. 3,900,000 to

IDR. 2,025,000, (at an interval of 33,175). It can be said that the respondents really appreciated the existence of TNKS nature tourism object with all the environmental tourism services contained therein. This type of tour is very different from the type of mass tourism. TNKS tourism is a type of natural environmental tourism which normatively not only provides economic benefits through tariffs and their impact on employment and business opportunities for the surrounding community, but must always be simultaneous in protecting the environment. If it only pursues economic benefits and / or ignores the social and environmental aspects, Kerinci can make a helicopter landing area or the TNKS core zone encroachable so that the utilization area is completely ignored.
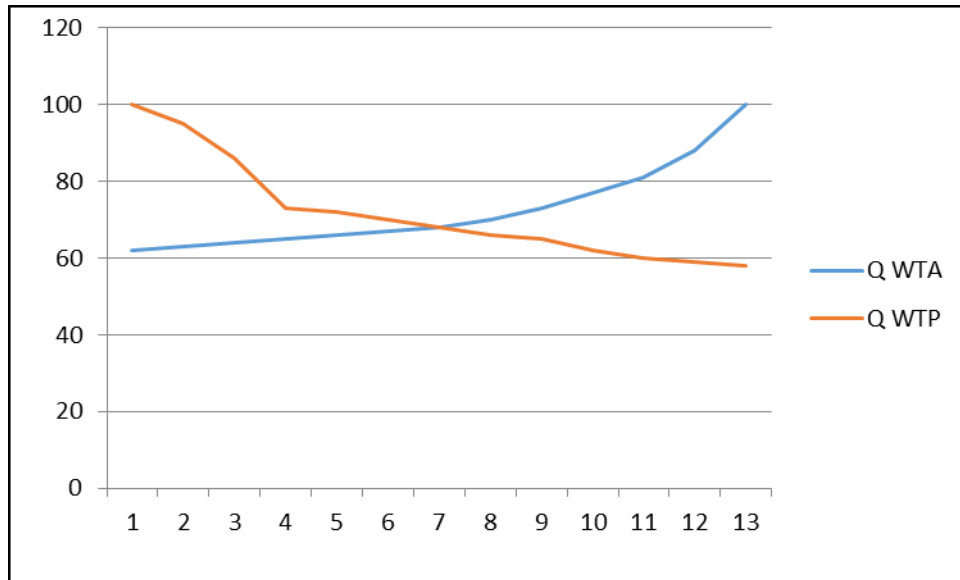

Figure 1. Curve comparison of the cumulative number of WTP and WTA value of tourists who come to the Kerinci Regency TNKS natural attractions.

The application of this contingent value approach must be accompanied simultaneously by the activities of guidance, guidance and counseling by various related agencies to the wider community, especially those who feel around the TNKS area. The community must know and understand, what exactly is meant by the National Park, its benefits, as well as the benefits of the Zona_zona set in TNKS. If only the environmental benefits are highlighted and the economic benefits of both tierl and expectations they cannot or will be achieved, of course, the surrounding community has not yet fully accepted the concept of development that was proclaimed, moreover the management and / or development of TNKS natural tourism objects do not provide work space opportunities or even future misery for them. The existence of this tourist attraction must be understood and can be implemented properly. In the TNKS utilization zone, the community is informed of what commodities can be planted, what activities can be carried out to sustain their lives while not in conflict with environmental sustainability aspects. Certain crop cultivation that has economic recycle, could have been helped in cooperation with the TNKS Balai with PTPN VI The KayuAro Plantation. If seen or compared for example with the pattern of natural tourism development on Puncak Bogor or on Genting Island Maalaysia, there is the development of supporting or complementary nature tourism facilities, among others, by building a cable car from the top of Kerinci to the bottom. This track is only for tourists returning from above. From various accommodation facilities that are made as natural as possible at the entry point, people are guided to make more natural accommodation designs, use of horses for walks, light snacks and so on.

Conclusions and Suggestion

Conclusions:

1. Value of willingness to pay tourists / Willingness To Pay (WTP) on average only IDR.6,275, -
2. The value of willingness to receive tourist compensation / Willingness To Accept (WTA) on average is IDR.26,800, - greater than the average value of WTP per day.
3. Based on a simulation of the WTP equation that is subsidized with the WTA equation, the recommended entrance fee is IDR.6,647.85

Suggestion :

1. The value of willingness to pay tourists / Willingness To Pay (WTP) for the next research must be distinguished between the local tourists and tourists of various countries. The management of TNKS attractions must always consider and benefit the economic and social environment at the same time.
2. The value of willingness to receive tourist compensation / Willingness To Accept (WTA) tourists such as the State should be more detailed up to the TNKS natural tourism object per commodity or service type, and within the TNKS tourist attraction area a written environmental interpretation / picture (flora / fauna).
3. Because the special interest of tourists from various countries is believed to be greater than that of archipelago tourists, it is not wrong to do a difference in entry rates between foreign tourists and foreign tourists. The main facilities for supporting and supporting tourist objects are designed in natural form, and outside the TNKS entrance area, a special building for display room should be built.

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