

The Attitude and the Willingness to Pay of the Climbers for Repairment of the Climbing Path on Mount Talang

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Abstract:- The objective of the study is to calculate the value of the willingness of the climbers to pay for the repairment of the climbing path on Mount Talang using Contingent Valuation Method (CVM), which identifies the attitude of the climbers and the willingness to pay toward it. The research method employs the survey method of questionnaire and direct interview with 100 samples. The sample of the study is the climbers who have climbed Mount Talang. The result of the willingness value of the climbers with the amount of pay is IDR 11.700, explains that the climbers are willing to pay that amount of IDR 10.000 retribution fee for the previous climb. The total value of the climbers' willingness is IDR 183.128.400 per year based on the calculation of the willingness value in 2017. The attitude of the climbers toward the climbing path on Mount Talang shows that 54% of the climbers have shown pro-environmental attitude and 46% have not pro-environmental attitude toward the climbing path of Mount Talang. There is a positive relation between the attitude of the climbers and the willingness to pay in which those climbers who have pro-environmental attitude have a higher willingness value than those climbers who have not.

Keywords:- The willingness to pay, Attitude, Contingent Valuation Method.

I. INTRODUCTION

Indonesia has the most unique mountain range ecosystem in the world. To protect the ecosystem, the government stipulates that the place situated above 2000 mdpl the area. (Indonesia Presidential Decree No 32 Year 1990). There are a lot of mountains in Sumatra. Some of them are made of the sediment piling, like Bukit Barisan Mountain Ranges while others such as, Mount Kerinci, Sinabung Marapi, Singgalang and Talang are the result of the volcano eruption (Damanik and Weber, 2006).

The existence of the mountain ranges triggers the climbing activities in Sumatra Island. Mount Talang is one of the mountains in West Sumatra which is situated in Solok Regency. Mount Talang is an active volcano with the height of 2597 mdpl which is visited by many mountain climbers in West Sumatra. It is the most favorite path visited by the both beginners and professional climbers because it is not too long and no too extreme, has a very beautiful scenery.

Based on the interview with the management of Pokdarwis Kampuang, the climbing activity of Mount Talang through Aia Batumbuak was opened since 2014. The length of the climbing path of Mount Talang through Aia Batumbuak is as far as ± 8 kilometer within 4-5 hours. Along the climbing path, the view is breathtaking and the path has some resting points such as, in Base camp (R5) on the height of 1554 mdpl, Post I (R14) on the height of 1656 mdpl, Post II (R32) on the height of 1964 mdpl, Post III (R51) on the height of 2108 mdpl and Camping Ground on the height of 2345 mdpl. In 2016, the number of climbers in Mount Talang is as many as ± 18.846 orang. It usually increases in numbers on weekends, holidays, Independence Day and New Year (Pokdarwis Kampuang, 2017).

The high intensity of the climbers' activities affects the increase income and the economic growth of the people in surrounding area. On the other hand, the condition affects the quality of the environment along the climbing path of Mount Talang. The attitude of the climbers who don't support the environment causes the decrease of quality and the damage of the environment along the climbing path.

As observed during the climbing on January 11, 2016, there is a lot of wastes besides the climbing posts, on some resting points, Camping Ground and the peak due to the unavailability of waste disposal area. There are no decent resting points (like gazebo) for the climbers and the signs for climbing path have been either broken or do not exist. Besides, some climbing paths starting from Base Camp up to the peak are broken and need repairment. Some climbers also pick Edelweis flowers, which are protected plant that grow around the Camping Ground area. The tent setting up and the picking activities damage the growth of that protected flower.

Based on the observation, it is necessary to repair the climbing path of Mount Talang. The objectives are to keep the cleanliness of the path, preserve the beautiful scenery, preserve the vegetation and the plant diversity as well as maintain the continuation of Mount Talang as a climbing resort.

II. THE RESEARCH METHOD

A. *Materials: The materials used in the research are the forest area map of West Sumatera and topography map of Mount Talang area.*

Instrument: GPS (Global Positioning System), software Arcgis, Camera, Laptop, Questionnaire, Writing tools, Recording Machine.

B. *Analysis of willingness to pay value of the climbers toward the repairment of the climbing path on Mount Talang.*

The willingness to pay value can be predicted by using the mean from the whole calculation of willingness to pay divided by the number of respondents. The prediction of the mean of the calculation for the willingness value is calculated as follows:

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

In which :

$EWTP$ = Temporary Mean of WTP

Wi = the value of WTP to-i

n = The number of respondents

I = The first respondent who is willing to pay.
($i=1,2,\dots,n$)

To calculate the total value of the climbers' willingness to is by multiplying the mean of the value of the willingness to pay with the number of visitors per year.

With the formula :

Total value = the mean of WTP x the number of visitors per year.

C. *The descriptive analysis of the climbers on the climbing path of Mount Talang.*

The attitude of the climbers toward the climbing path on Mount Talang employs the descriptive analysis. The descriptive analysis is the kind of data analysis used to explain the condition or the characteristic of the data sample. It is conducted by using descriptive statistic techniques such as, frequency table, graphic, the central measurement or the distribution. It is conducted to find out the attitude of those climbers who have pro-environmental attitude and those who don't have pro-environmental attitude toward the climbing path of Mount Talang. The descriptive analysis on the attitude in this study uses Likert Scale.

According to Sugiyono (2012), Likert Scale is conducted to measure the attitude, opinion, and the perception of individuals or a group of people about certain social occurrence. In this study, the Likert Scale is conducted to find out the attitude of the climbers toward the climbing path on Mount Talang. To find out about the attitude of the climbers, the respondents choose alternative answers such as, "strongly agree (SS)," agree (S)",

"disagree (TS)", and "strongly disagree (STS)" regarding questions being asked in the Likert Scale. The score of the strongly agree (SS) is 4. The score of agree (S) is 3. To categorize the attitude of the climbers towards the climbing path on Mount Talang uses median score from the total score of the respondents' answers on each question. If the total score is bigger than the median score, it belongs to the category of pro-environment. If the total score is smaller than the median score, it belongs to the category of non pro-environment.

D. *The relation analysis between the climbers' attitude and the willingness to pay for the repairment on the climbing path on Mount Talang.*

To find out the relation between the attitude of the climbers towards the willingness to pay for the repairment of the climbing path on Mount Talang, this study uses bivariat analysis with Crosstab Test because the data in this kind of study is belong to categorical data. The analysis uses SPSS 19 application and to find out the relation between the attitude of the climbers and the willingness to pay for the repairment of the climbing path on Mount Talang, the researchers use Chi Square indicator,; if the P-value is smaller than 0,05, it means that there is a positive relation between the attitude and the willingness to pay. If the P-value is bigger than 0.05, it means that there is no positive relation between the attitude and the willingness to pay.

E. *Place and time of the study*

The study is conducted in Nagari Aia Batumbuak, Sub-district of Gunung Talang, Solok regency along the climbing path of Mount Talang via Aia Batumbuak starting from the climbing post up to the peak of Mount Talang. It is conducted from march to may 2018.

III. RESULT AND DISCUSSION

A. *The characteristic of the climbers on the climbing path of Mount Talang via Aia Batumbuak.*

The characteristics of the climbers that being researched in this study on the climbing path via Aia Batumbuak are place of origin, gender, age, level of education, occupation and the income of the respondents. There are 100 respondents in this study.

85 % of the respondents are from West Sumatera and 15% are from other areas outside West Sumatra. The data explains that the climbing activity is mostly dominated by the climbers from West Sumatera.

71 % of the climbers are men and 29% of them are women. It can be concluded that male climbers are more interested in climbing Mount Talang than female climbers.

86% of the climbers are between the age of 15-25 years old while 14% of them are between the age of 26 - 35 years old. It shows that the majority of the climbers are young people, between 15-25 years old.

49% of the climbers are senior high school graduates. 33% are junior high school graduates. 14% of them are bachelor degree. 3% of them are Diploma graduates. 1% of them are elementary school graduates. The category shows that the education level of the climbers is quite high because almost most of the respondents have finished their high school education.

66 % of the climbers are students or college students. 16% of them are entrepreneurs. 9 % of them are private employees. It can be concluded that only 24% of total respondents which have jobs or earning income.

The variation of their jobs causes the variation of the income level. Income is the total average of the climbers every month. It highly varies from \leq IDR 1.000 000 up to \geq IDR 3.500 000. The income of the climbers affects their willingness to pay for the repairment of the climbing path on Mount Talang. The higher the income, the bigger their willingness to pay for the repairment of the climbing path on Mount Talang, and vice versa.

B. Climbing Activity

Based on the activity data of Mount Talang climbing, the climbers who are from outside West Sumatera spend the climbing fee of around IDR 322.000/person. The fee includes the transportation fee, entrance ticket fee, consumption, supplies, medicines and other equipments. While the climbers from West Sumatera averagely spend \pm IDR 100.000/person. This due to the cost of transportation which is not too high.

Out of 100 respondents, 58% of them ever litter in the climbing path of Mount Talang. The number of litter

disposed by the climbers are 357 cigarette butts, 233 instant noodle packages, 174 snack packages, 80 plastic bags and 57 mineral water bottles and others. So far, the amount of cigarette butts dominates the number of litter.

Out of 100 respondents, 21% of them have ever chopped the wood along the climbing path. Out of this 21% respondents, 60% use it for the bonfires and the rest 40% use it for putting up the tent and climbing tools. The conclusion is that there are still some climbers who chop the wood for the need of climbing activity. It also shows the lack of supervision from the management of the area.

Out of 100 respondents, 11 % of them have ever picked Edelweis on the peak or top of Mount Talang and 89% of climbers never pick or take Edelweis. From the 11 % of those who pick Edelweis, 90% of them do it for personal collection and 10 % of them pick the flowers to be given to friends.

C. The value of willingness to pay for the repairment of climbing path on Mount Talang.

From the calculation result of the willingness to pay value for the repairment, the mean value is IDR 11,700. It shows that the willingness to pay of the climbers for the repairment of the climbing path on Mount Talang is low, compared with the offering value offered to the climbers. Total willingness to pay value for repairment of the climbing path in 2017 is shown in table 1. The calculation result of the total value of the climbers' willingness to pay for the repairment of the climbing path on Mount Talang is IDR 183.128.400 per year.

	Willingness Category	Frequency	Percentage
Willingness to pay	1. IDR 10.000	78	78%
	2. IDR 15.000	10	10%
	3. IDR 20.000	12	12%
	Amount	100	100%

Table 1:- The distribution of answers on the climbers' willingness to pay for the repairment of the climbing path on Mount Talang (Resource: Primary data management result)

Based on the analysis result of the willingness of the climbers to pay for the repairment of the climbing path on Mount Talang, the value is IDR 11.700. The analysis result is explains that climbers are willing to pay IDR 11.700 to improve the repairment of the climbing path on Mount Talang, such as, the facilities, vegetation, climbing path repairment, waste management and preservation of the path just like in hypothetic market.

Based on the offering value that been offered in the questionnaire, the willingness to pay value of the climbers for the repairment of the climbing path on Mount Talang is considered low, that is IDR 11.700. Currently, the climbers spend IDR 10.000, which explains that eventhough the willingness value is considered low, which is IDR 11.700, compared with the current value, it means that the willingness value is still twice higher than the current one.

It is concluded that if the repairment is conducted, the climbers are willing to pay additional fee IDR 11.700 for each climb. In a year the total value of the respondents' willingness to pay for the repairment of the climbing path on Mount Talang will be Rp 183.128.400 per year. The amount is the estimation value, if the repairment of the climbing path on Mount Talang is taken based on the repairment plan in the study. With this estimation amount, the management of Pokdarwis Kampuang, the local government of Nagari Aia Batumbuak, sub-district Mount Talang and Tourism Department of Solok Regency should be able to improve and repair the climbing path on Mount Talang via Aia Batumbuak based on the management repairment planning made in the hypothetic market scenario in this study in order for the continuity of climbing activity.

D. The analysis of the climbers' attitude toward the climbing path on Mount Talang

Based on the analysis, the median value to be used in categorizing the attitude of the climbers is 25.00. Based on the calculation of the answers in the questionnaire for each climber, 54 (54%) out of 100 respondents have more or less or equals scores to the median score of 25.00. It shows that 54 climbers (54%) have pro-environmental attitude towards the climbing path of Mount Talang. While 46 (46%) climbers have less scores than the median score of 25.00. It shows that 46 (46%) climbers do not have pro-environmental attitude towards the climbing path of Mount Talang. The aim the seven statements in the questionnaire about the attitude of the climbers towards the climbing path on Mount Talang is to find out whether they have pro-environmental attitude or not. Each statement item contains the attitude of New Ecological Paradigm (NEP) if every answer for the item is strongly agree (SS) and agree (S). The result of the eight statements about the climbers' attitude towards the climbing path on Mount Talang is arranged based on the attitude of New Ecological Paradigm (NEP), that the climbers show pro-environmental attitude with the percentage of 54 %. It means the climbers have more dominant pro-environmental attitude in reference to New Ecological Paradigm (NEP), in which the climbers have understood how to maintain the relation between the climbers and the environment of Mount Talang and have considered that human beings is in unity with the its ecological nature, so that the climbing path on Mount talang is well-preserved.

Based on the analysis of the eight statements about the attitude other climbers towards the climbing path on Mount Talang arranged by the attitude of New Ecological Paradigm (NEP), 46 % of climbers do not have pro-

environmental attitude towards the climbing path on Mount Talang in reference to Human Exemptionalism Paradigm (HEP) which states that the climbers assume that the environment is separated from human beings with the notion that they can do anything that they want to the environment in the climbing path of Mount Talang or show no concern on it. Hopefully, every climber of Mount Talang can change Human Exemptionalism Paradigm (HEP) into New Ecological Paradigm (NEP) in which human beings are part of the nature itself so that the climbing path on Mount Talang is always well-preserved to be enjoyed by the next generation.

E. The relation of the climbers' attitude towards their willingness to pay for the repairment of the climbing path on Mount Talang

The analysis result in table 2 shows that 4 climbers (54%) out of 100 respondents have pro-environmental attitude towards the repairment of the climbing path on Mount Talang. Nevertheless, out of 54 climbers (54%), 37 climbers are in the low category of willingness, 7 climbers are in the medium category of willingness and 10 climbers are in the high category of willingness. While out of 46 climbers (46%)

Who don't have pro-environmental attitude, 41 climbers are in the low category of willingness, 3 climbers are in the category of medium willingness and 2 climbers are in the category of high willingness. The analysis result explains that the respondents who have pro-environmental attitude mostly (37 climbers) still have low willingness due to their willingness to pay only IDR 10.000 while the respondents who don't have pro-environmental attitude also mostly (41 climbers) still have low willingness due to their willingness to pay which only IDR 10.000.

The attitude towards the climbing path	WTP						Total		Asymp. Sig. (2-sided)
	Low		Medium		High		Jumlah	%	
	Amount	%	Amount	%	Amount	%			
Pro-environment	37	47%	7	70%	10	80%	54	54%	,038
Non pro-environment	41	53%	3	30%	2	20%	46	46%	,030
Total	78	100%	10	100%	12	100%	100	100%	,011

Table 2:- The Crosstab analysis of the relation between the attitude of the climbers towards the willingness to pay for the repairment of the climbing path on Mount Talang (Resources: The primary data management result)

Based on the analysis result, 78 climbers who have low willingness to pay which only IDR 10.000, 47% of them are climbers who have pro-environmental attitude towards the repairment of the climbing path on Mount Talang while 53% of the climbers are those who don't have pro-environmental attitude towards it. It shows that out of 78 climbers who have a low willingness to pay for the repairment of the climbing path on Mount Talang, 53% of

them are those who don't have pro-environmental attitude. In other words, 47 % out of 78 climbers have low willingness to pay.

Based on the data analysis from 10 climbers who have a medium willingness to pay for IDR 15.000, 70 % of them are the climbers who have pro-environmental attitude towards the repairment of the climbing path on Mount

Talang, while the rest of 30 % don't have pro-environmental attitude towards the repairment of the climbing path on Mount Talang. It shows that the climbers who have a medium willingness to pay for the repairment of the climbing path on Mount Talang are those climbers who have a pro-environmental attitude of 70% or 7 out of 10 climbers have the medium willingness to pay.

Based on the analysis data from 12 climber who are willing to pay higher, which is IDR 20.000, 80 % of them are those who have a pro-environmental attitude towards the repairment of the climbing path on Mount Talang, while 20% of them are those who don't. It shows that the climbers who have high willingness to pay for the repairment of the climbing path on Mount Talang are dominated by those who have a pro-environmental attitude, that is 80% or 10 out of 12 climbers who are willing to pay higher.

Based on the result, it can be concluded that the climbers who have a pro-environmental attitude have a lower percentage of willingness for the low willingness value; then, they have high percentage on the medium willingness value and have high percentage on the high willingness value. Based on the statistical test result in table 2, the P-value is $0.038 < 0.05$ which is that if the P-value is smaller or lower than 0.05, it means there is a positive relation. From the statistical analysis result, it shows that there is a positive relation between the attitude of the climbers and their willingness to pay for the repairment of the climbing path on Mount Talang, in which the climbers who have a pro-environmental attitude tend to have a willingness to pay higher than those who don't have a pro-environmental attitude.

IV. CONCLUSION

- The willingness value of the climbers towards the repairment of the climbing path on Mount Talang is IDR 11.700, which shows that the climbers are willing to pay for additional fee for IDR 11.700 from the IDR 10.000 of the retribution fee to do the current climbing. The total value of the climbers' willingness to pay in 2017 is IDR 183.128.400 per year.
- The attitude of the climbers towards the repairment of the climbing path on Mount Talang have a pro-environmental attitude is 54% and don't have a pro-environmental attitude is 46%.
- There is a positive relation between the attitude of the climbers and the willingness to pay in which the climbers who have a pro-environmental attitude are willing to pay higher than those who don't have a pro-environmental attitude.

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