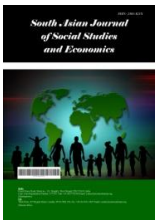

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Economic Valuation of Santolo Beach Tourism in Garut Regency West Java

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Authors' contributions

This work was carried out in collaboration among all authors. Author VPL designed the study, performed the statistical analysis, managed the literature searches and wrote the first draft of the manuscript. Authors ZA, Iskandar and IG directed the project. All authors read and approved the final manuscript.

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ABSTRACT

This study aimed to estimate the economic value of Santolo Beach tourism area. This research conducted from December 2019 until January 2020. The method used in this research is survey method with accidental sampling as the data collecting technique. Travel Cost Method and Contingent Valuation Method applied to estimate Santolo Beach's economic value. The factors influenced the number of visits and Willingness to Pay value identified by multiple linear regression. The results of the research showed that the economic value of Santolo Beach with the Travel Cost Method is IDR 114.26 Billion per year for the linear model and IDR 177.79 Billion per year for the semi-log model while the result from the Contingent Valuation Method is IDR 3.65 Billion per year. The factors that influence the number of visits in the linear model are travel costs, income, education, and distance while in the semi-log model is distance. The variables that influence the value of visitors' Willingness to Pay are income and education for both the linear model and the semi-log model.

Keywords: Contingent valuation methods; economic valuation; Santolo Beach; travel cost methods.

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1. INTRODUCTION

Garut Regency located in the south of West Java Province that has a geographic coordinate of 6º56'49"- 7º45'00" S and 107º25'8"-108º7'30" E, with an approximately 306,519 Ha (3,065.19 km2) area [1]. Garut Regency divided into 3 development region, namely North Development Region, Central Development Region, and South Development Region. Because of its vast area, there are still development gaps between the three regions, and the South Development Region is an area whose development is relatively lower compared to other regions. [2].

In 2020, Garut Regency government prepares the South Garut region as a new Regency. The establishment of the South Garut Regency requires the government to maximize all of the available potentials as a source of regional income. One that can utilize is tourism. South Garut region directly borders with The Indian Ocean, with an 80 Kilometers coastline [3] that makes it a coastal area. The coastal area has uniqueness and beautiful nature as a tourist attraction that can be developed. With a coastline that stretches from the east in Cibalong District to the west in Caringin District [4], the South Garut region has several beaches as tourism potentials that must be optimized as a contribution to the regional income.

Santolo Beach is one of the beaches in Garut Regency. Based on the data from [5], Santolo Beach has a significant number of tourist visits as many as 282,333 persons per year which is the highest compared to other beaches in Garut Regency in 2019. [6] Highlights the important role that the tourism sector plays in creating jobs and generating revenue for a destination's residents and government. The high number of visitors activity proves that Santolo Beach has economic potential that can be utilized by the government and the beach residents.

The utilization of Santolo Beach must also consider its nature as a public asset. The threat toward nature and the environment of a public asset is huge, it is because mostly the users of the goods and services only want to use it without concern about its sustainability. Public perception towards environmental goods and services cannot be quantified or valued in monetary terms (money) also makes the community do not care about environmental sustainability.

This study aimed to estimate the economic value of Santolo Beach tourism. Economic valuation needed to carry out as an effort to provide quantitative value to goods and services produced by natural resources and the environment for both market values and non-market values. The economic valuation of Santolo Beach is necessary. By understanding the economic value of Santolo Beach, it can be used as a reference in the management of natural resources that are not only profitable for the economy but also still sustaining the environment. An economic valuation is a tool that can be used to calculate the benefit-cost of the trade-off [7]. The comparison of costs and benefits allows an explicit consideration of the trade-offs that are inevitably involved in most environmental policy decisions [8]. Also, the Santolo Beach economic overview can be used in regional development decision making.

2. METHODOLOGY

The method used in this research is a survey method with accidental sampling as the data collecting technique. The sample size of the study is determined by using the formula (Slovin's formula) given below:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{286{,}601}{1 + 286{,}601(0{,}1)^2}$$

n = 99, 97 ~ 100

n = sample size

N = Population size (the average number of visitors in the last three years)

e = error of acceptance

The number of respondents interviewed during this study was 100 local visitors. The following criteria were used in the selection of respondents:

- Respondents who only visited Santolo Beach on that day, had no other destination.
- Respondents aged 17 and over.

Types and sources of data in this study are primary and secondary data. Primary data were obtained through interviews with Santolo Beach visitors, while secondary data obtained from the Department of Tourism and Culture of Garut Regency.

2.1 Research Location

This research took place in Santolo Beach, which is located at Cikelet District, Garut Regency, West Java Province, Indonesia (Fig. 1) is research location map.

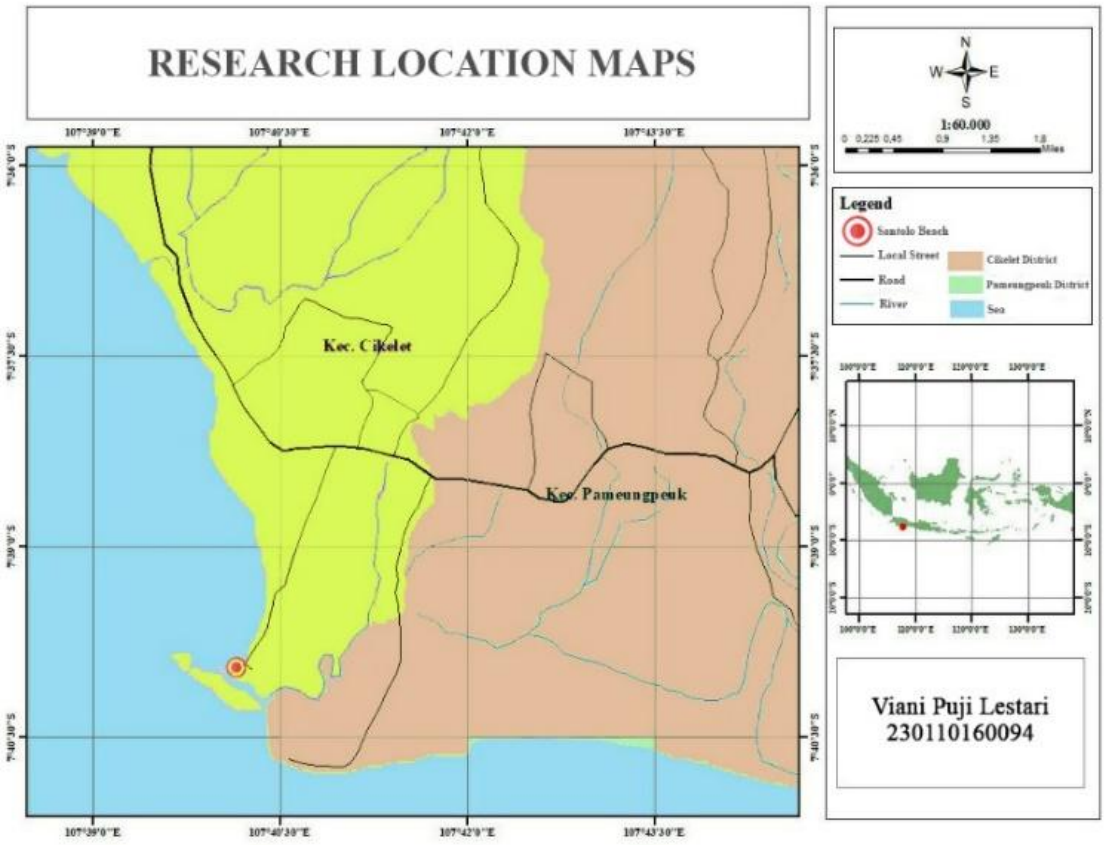

Fig. 1. Research location map

2.2 Data Analysis Method

The data analysis method used in this research is a quantitative descriptive method. Travel Cost Method used to estimate the consumer surplus-value of Santolo Beach visitors and Contingent Valuation Method applied to estimate the visitor's Willingness To Pay (WTP) value. Statistical regression implemented to identify the factors that influenced the visits frequency and respondents' WTP value. Data processing has been done by using IBM SPSS Statistics 24 and Microsoft Excel 2016 software.

2.2.1 Travel cost method

The travel cost method is an indirect valuation method that uses the visitor's travel costs to recreational areas or other attractions as a proxy for the value of the recreational activity or attraction [9,10]. Travel cost method (TCM) is based on the demand theory and assumes that the demand for a recreational site is inversely related to the travel costs that a certain visitor must face to enjoy it [11,12].

This research uses the Individual Travel Cost Method to comprehend the pattern of expenditure by each visitor. The expenses include transportation costs, entrance fees, consumption costs, and other relevant expenses while going to and inside the tourist attraction. Trip frequencies are thought to be influenced primarily by socio-economic-demographic variables [13]. To identify factors that influence the number of visits can be done with multiple linear regression. The demand function equation formulated as follows:

$V_{ij} = f(C_{ij}, I_{ij}, A_{ij}, E_{ij}, D_{ij}, DG_{ij},)$

Where,

V_{ij} : Number of visit per year
C_{ij} : Tourists cost per visit
I_{ij} : Income
A_{ij} : Age

E_{ij} : Education
D_{ij} : Distance
DG_{ij} : Dummy Gender

Demand function in linear and semi log model shown below:

Linear model: $V = \alpha_0 + \alpha_1 C + \alpha_2 I + \alpha_3 A + \alpha_4 E + \alpha_5 D + dummy\alpha_6 G$
Semi-log model: $\ln V = \alpha_0 + \alpha_1 C + \alpha_2 I + \alpha_3 A + \alpha_4 E + \alpha_5 D + dummy\alpha_6 G$

After the demand function obtained, it can be used to calculate consumer surplus-value. Consumer surplus is a proxy from visitors' Willingness To Pay when experiencing Santolo Beach services. Consumer surplus estimated through the following equation.

Linear Model

$$CS = \frac{(a_{0-} a_1 TC)^2}{2a_1}$$

Semi Log Model

$$CS = \frac{V}{2a_1} = \frac{e^{(a_{0-} a_1 T\bar{C})}}{2a_1}$$

Where,

CS= Consumer surplus
a_0= Constanta
a_1= Cost coefficient
$\overline{TC}$= Choke price (the lowest price at which the quantity of visit is equal to zero)
e= Epsilon

2.2.2 Contingent valuation method

The contingent valuation method (CVM) is a simple, flexible nonmarket valuation method that is widely used in cost–benefit analysis and environmental impact assessment [14]. The contingent valuation (CV) method, so called because the valuation is contingent upon the given scenario, asks respondents directly what they would be willing to pay, or willing to accept, in a hypothetical market situation to conserve or expand some public good [15]. In this study, Contingent Valuation Method utilized to determine visitors' Willingness To Pay in improving Santolo Beach environment quality. The stages of the Contingent Valuation Method application based on [16] are:

1. Create a hypothetical market
2. Obtaining bids
3. Estimating average WTP
4. Estimating bid curves
5. Aggregating data

CVM could also be applied to analyze the factor that influences visitors' Willing To Pay by using multiple linear regression. The model formulated as follows:

$$Yij = f(Iij, Aij, Eij, Gij, DGij)$$

The WTP function in linear and semi-log model shown below:

Liniar Model: $Y = \alpha_0 + \alpha_1 I + \alpha_2 A + \alpha_3 E + dummy\alpha_4 G$

Semi-log Model: $\ln Y = \alpha_0 + \alpha_1 I + \alpha_2 A + \alpha_3 E + dummy\alpha_4 G$

Where,

Y = WTP
I = Income
A = Age
E = Education
DG = Dummy Gender

3. RESULTS AND DISCUSSION

Santolo Beach is one of the beaches in Garut Regency that has the characteristics of great sea waves with fine white sand, lined coral rocks, and an immense sea. Based on data from [5], Santolo Beach has the highest number of visits among other beaches in Garut Regency. By conducting field surveys and interviews using questionnaires, descriptive statistics obtained from respondents as Table 1.

From the interviews, it can be seen that the average total cost of visitors is IDR 301,050 per visit. The expenses include transportation costs, entrance fees, consumption costs, and other relevant expenses while going to and inside the tourist attraction.

Table 2. showed that the characteristics of the respondents were mostly in the age range 17-25 years, amounting to 90%. It causes most of the respondents are students (59%). Based on gender, the research respondents were mostly male amounting to 88 %. Most of the respondents had a senior high school education (75%). Most respondents have an income of IDR 1 Million – IDR 2 Million (50%).

Table 1. Descriptive statistics for tourist respondent in Santolo Beach, West Java, Indonesia

Variable	Minimum	Maximum	Mean	Std. Deviation
No of visit/Year	1.00	4.00	1.5600	0.72919
Total cost/Visit (IDR)	150000.00	600000.00	301050.0000	104753.9083
Income/month (IDR)	500000.00	5000000.00	1683000.000	933122.8118
Age (Year)	17.00	32.00	21.0300	3.40070
Education (Year)	11.00	16.00	13.2900	1.77693
Distance (Km)	90.00	212.00	13.1900	25.81664

Table 2. Respondents Characteristics

Characteristics	n	Percentage
Age (Year)		
17 – 25	90	90%
26 – 35	10	10%
Occupation		
Student	59	59%
Private Employee	37	37%
Civil Servant	2	2%
Entrepreneur	2	2%
Gender		
Female	12	12%
Male	88	88%
Education		
Junior High School	8	8%
Senior High School	75	75%
Bachelor	17	17%
Income		
< IDR 1 Million	25	25%
IDR 1 Million – 2 Million	50	50%
IDR 2.1 Million – 3 Million	19	19%
IDR 3.1 Million – 4 Million	15	15%
> IDR 4 Million	1	1%

3.1 Analysis of Travel Cost Method

This research used the individual Travel Cost Method to obtain the demand function. The demand function is obtained by regressing several factors that could affect the tourism activities demand on Santolo Beach, namely the cost of travel, income, age, education, distance, and gender. Regression analysis that has been done, produce the following equation:

Linear model

No of Visit= 3.170 – 0.000001365 Cost + 0.0000002 Income – 0.042 Age + 0.093 Education – 0.015 Distance + 0.29 Male

Interpretation:

1. Constant values (3.170) indicate that when the independent variable has a value of 0, the number of visit is 3.170.
2. If the Cost variable increases by 1, *cateris paribus*, the number of visit decrease by about 0.000001365
3. If the Income variable increases by 1, *cateris paribus*, the number of visit increase by about 0.0000002
4. If the Age variable increases by 1, *cateris paribus*, the number of visit decrease by about 0.0042
5. If the Education variable increases by 1, *cateris paribus*, the number of visit increase by about 0.093
6. If the Distance variable increases by 1, *cateris paribus*, the number of visit decrease by about 0.015
7. If the respondent is Male, *cateris paribus*, the number of visit will increase by about 0.29

Semi-log model

Ln No of Visit = 1.345 – 0.000000702 Cost + 0.0000001074 Income – 0.026 Age + 0.048 Education – 0.009 Distance + 0.170 Male.

Table 3. shown the performance of statistical regression analysis in linear and semi-log models. The values of R^2 for the linear model and semi-log model are 36.9% and 34.4%. That means travel cost, income, age, education, distance, and gender affects the number of visits by 36.9% and 34.4% while the rest of it influenced by some other factors which not explained in this research. The VIF values are below 10, and the Tolerance above 0.1 in both regression models indicate that there is no multicollinearity between the independent variables. The F statistic probability in both models is less than 0.005, which means that the independent variable influences the number of visits simultaneously.

3.1.1 Factors that influence the number of visit

The results of testing individual parameters for the number of visit regression model with a significance level of 5% are shown in Table 4.

Table 4. shows that for linear models, there are four of six variables that significantly influence the number of visits, which are: travel costs, income, education, and distance. As for the semi-log model, variable that significantly influences the number of visits is distance. income and education have a positive effect on the number of visits while travel costs and distance have a negative effect on the number of visit.

The negative relationship between travel costs and the number of visits because, if the costs issued to travel increasingly high then someone will be reluctant to allocate income to visit so the number of visits will decrease [17]. Those signs are matching with the results of research conducted by [18,19,20] that mentioned travel costs have a negative effect on the number of visits.

Distance and the number of visits have a negative relationship. Based on [21], the further the distance, the less desire for someone to travel so that distance has a negative sign. This means that people living closer to the Santolo Beach made many trips while those living far from the Santolo Beach made fewer trips.

Income has a positive sign on the number of visits. The bigger one's income, the greater one's ability to use tourism services so that the number of visits will also be high. Research conducted by [22] also shows that income has a positive effect on the number of visits. Different results found by research conducted by [23] which found that income does not affect the number of visits because the tourist attractions examined in this study are cheap, so visitors who come from different background level and income.

Education has a positive sign on the number of visits. Higher education level influences one's perception of interest in attractions compared to someone whose education level is low [24]. So the higher the education level, the higher the number of visits.

Table 3. Regression analysis performance number of visit for linear and semi-log model

Variable	Linear models			Semi-log models		
	Unstandarized Coefficients	Tolerance	VIF	Unstandarized Coefficients	Tolerance	VIF
	B			B		
Constant	3.170			1.345		
Travel cost	-0.000001365	0.725	1.380	-0.000000702	0.725	1.380
Income	0.0000002	0.472	2.119	0.0000001074	0.472	2.119
Age	-0.042	0.415	2.410	-0.026	0.415	2.410
Education	0.093	0.676	1.480	0.048	0.676	1.480
Distance	-0.015	0.979	1.021	-0.009	0.979	1.021
Dummy Gender	0.29	0.981	1.020	0.170	0.981	1.020
R^2	36.9%			34.4%		
F Statistic	8.696			8.144		
Prob F Statistic	0.000			0.000		

Table 4. T-test result the number of visit

Variable	Unstandarized Coefficients	Linear Model		Semi-Log Model	
		T	Sig.	T	Sig.
	B				
Travel Cost	-0.000001365*	-2.028	0.045	-1.755	0.083
Income	0.0000002*	2.135	0.035	1.930	0.057
Age	-0.042	-1.544	0.126	-1.573	0.119
Education	0.093*	2.263	0.026	1.965	0.052
Distance	-0.015*	-6.570	0.000	-6.282*	0.000
Dummy Gender	0.29	1.615	0.110	1.596	0.014

**significant at confidence interval 95%*

Age and gender did not significantly influence the number of visit. According to [25], age is considered to be a crucial demographic factor by tourism stakeholders because leisure demand can effectively be predicted through visitors' age. However, in this study, age does not affect the number of visits significantly.

The travel patterns between men and women vary based on their travel motivation [26]. According to [27], men travel more than women. However, the regression analysis shows that gender has a positive sign but not significant. According to [28] both males and females alike have the same motivation to carry out tourism activities. Research conducted by [29] also found that gender did not significantly influence tourist motivations to visit.

3.1.2 Consumer surplus

The equation that has been obtained is used to calculate the value of consumer surplus. The assumption of the choke price is IDR 1.5 Million (the lowest price at which the quantity of visits is equal to zero). The calculation of consumer surplus shown below.

Model Linear: CS = $\frac{(a_0 - a_1 TC)^2}{2a_1}$

$CS = \frac{(3.17 - 0.000001365\ x\ 1{,}500{,}000)^2}{2\ x\ 0{,}000001365} CS = 461{,}541$

Model Semi Log: CS = $\frac{V}{a_1} = \frac{e^{(a_0 - a_1 TC)}}{2a_1}$

$CS = \frac{0.656^{(1.345 - 0.0000007\ 02x\ 1{,}500{,}000)}}{2\ x\ 0.000000702} \quad CS = 629{,}751$

Based on the calculation results, the consumer surplus value is IDR 461,541 for the linear model and IDR 629,751 per individual per year for the semi-log model. The consumer surplus value obtained is not much different from the research conducted by [30] which is IDR 566,183 per individual per year for consumer surplus of Batu Karas Pangandaran Beach visitors.

3.2 Contingent Valuation Methods

Contingent Valuation Method utilized to determine visitors' Willingness To Pay in improving Santolo Beach environment quality. The hypothetical market created with a scenario that Santolo Beach experienced an environmental quality degradation so that the management plans to make an environmental improvement so that its functions and benefits always preserved, by maintaining cleanliness both on land and in the waters, provision including repairment of public facilities, monitoring, and prevention of environmental degradation such as pollution or devastation. For those reasons, the manager needs the participation of visitors in this plan. Through this scenario, the respondent would understand the intended hypothesis situation. Each respondent will be asked whether they are willing to pay or not. Value distribution of visitors willingness to pay can be seen in Table 5.

The average visitor's WTP calculated by adding up the overall WTP value divided by the number of respondents. The estimated average WTP is calculated using the formula:

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

Where,

EWTP = Estimated WTP average
Wi = i WTP value
n = Number of respondents
i = the respondent who is willing to pay fees (i = 1, 2, , n)

The average WTP is IDR 12,930. It can be used as a reference in deciding the price of the entrance ticket to Santolo Beach. Which later it could be used in improving the environment and facilities at Santolo Beach.

Table 5. Value distribution of visitor's willingness to Pay of Santolo Beach

WTP (IDR)	Number of respondents		
	Frequency	Percentage (%)	WTP x Frequency
10,000	30	30%	300,000
12,000	25	25%	300,000
13,000	5	5%	65,000
15,000	32	32%	480,000
16,000	2	2%	32,000
18,000	2	2%	36,000
20,000	4	4%	80,000
Total	100[n]	100%	1,293,000

Table 6. Total willingness to pay of respondents in Santolo Beach

WTP (IDR)	Frequency	Population	Total Value (IDR)
A	B	c = (b/d) x e	a x c
10,000	30	84,700	846,999,000
12,000	25	70,583	846,999,000
13,000	5	14,117	183,516,450
15,000	32	90,347	1,355,198,400
16,000	2	5,647	90,346,560
18,000	2	5,647	101,639,880
20,000	4	11,293	225,866,400
Total	100[d]	282,333[e]	3,650,565,690

**e : the number of Santolo Beach visitors in 2019*

3.2.1 Total value of WTP

The total value of WTP is calculated based on the distribution of respondents. WTP value in each class multiplied with relative frequency, then multiplied by the population of each WTP class. The multiplication result then summed to determine the value of total WTP. Calculation can be seen in Table 6.

From the calculation result, the total visitors' WTP value is IDR 3,65 Billion per year, and the population is based on the number of Santolo Beach visitors in 2019. As a comparison with research conducted by [31], the economic value obtained annually from the environmental services of Lasiana Beach is IDR 72,78 Billion per year.

3.2.2 Factors that influence visitor's willingness to pay

Multiple linear regression implemented to discover the factors that influence visitor Willingness To Pay. The analysis results produce the following equation:

Linear Model

WTP (Y) = 3191.486 + 0.001 Income + 98.595 Age + 432.320 Education – 137.911 Male

Interpretation:

1. Constant values (3191.486) indicate that when the independent variable has a value of 0, the WTP value is 3191.486.
2. If the Income variable increases by 1, *cateris paribus*, WTP value increase by about 0.001 on average.
3. If the Age variable increase by 1, *cateris paribus*, WTP value increase by about 98.595 on average
4. If the Education variable increase by 1, *cateris paribus,* WTP value increase by about 432.320.
5. If the respondent is a male, *cateris paribus*, WTP value will decrease by about 137.911

Semi-log Model

Ln WTP (Y) = 8.677 + 0.00000008043 Income + 0.009 Age + 0.034 Education – 0.007 Male.

According to Table 7. can be seen that The R-square values of the linear and semi-log models are 46% and 44.7%, which means that the WTP value influenced by independent variables as much as the R-square value, and the rest of it influenced by other factors that were not explained in this study. The VIF values in both regression models are below 10, which indicates there is no multicollinearity between the independent variables.

Table 7. Regression analysis performance willingness to pay for linear and semi-log model

Predictor	Linear Models			Semi-log Models		
	Unstandarized Coefficients	Sig.	VIF	Unstandarized Coefficients	Sig.	VIF
	B			B		
Constant	3191.486			8.677		
Income	0.001	4,039*	1.987	8.043E-8	3,536*	1.009
Age	98.595	1,089	2.404	0.009	1,310	1.987
Education	432.320	3,377*	1.313	0.034	3,504*	2.404
Dummy Gender	-137.911	-0,234	1.009	-0.007	-0,012	1.313
R^2	46%			44.7%		
F Statistic	20.281			19.228		
Prob F Statistic	0.000			0.000		

Based on the p-value in both of the linear model and the semi-log model, the variables that significantly influence the WTP values are income and education. Income and WTP value have a positive relationship. The higher the income, the higher the value of the WTP given. Someone with high income will have more funds to spend on other costs, one of which is to support the development and improvement of the Santolo Beach environment. According to [32], the bigger the tourists' income, they will have the flexibility to pay higher WTP. This positive influence of income on people's responses to the CVM scenario is proof that they take into consideration their budget constraint [33].

Education gives a positive influence on WTP value. The longer a person attends education, the higher the WTP value given. Based on [34], education level influences an individual mindset, while mindset influences the tourists' behavior. The higher the education level, the greater tourists' concern for the environment, and the value of WTP emitted are even greater. Education raises awareness level of individuals concerning environmental problems [35]. Higher educated people comprehend the need for managing environmental resources better than others who are not well-educated [36].

3.3 Economic Value of Santolo Beach

The calculation of Santolo Beach's economic value by the TCM method executed by multiplying the value of consumer surplus by the number of tourist visits in a given year. The number of tourists visiting Santolo Beach in 2019 was 282,333 people. Then the economic value of Santolo Beach in 2019 was IDR 114.26 Billion per year for the linear model and IDR 177.79 Billion per year for the semi-log model. While the economic value of Santolo Beach using the CVM method was IDR 3.65 Billion per year which is the total WTP value from Santolo Beach visitors.

The results shows that the economic value using the TCM method is greater than the economic value using the CVM method. Meta-analysis benefit transfer of outdoor recreation economic values have been performed by [37] and showed that that CVM studies produced significantly lower estimates of consumer surplus (CS) than the TCM. Also [38] found that TCM produces greater value than CVM for coral reef recreation. The difference in economic values resulting from the TCM and CVM methods can occur because of several things. This is because of the fact that TCM is based on observed behaviour of the respondents in actual markets, i.e. based on revealed preference, whereas CVM is based on expressed or stated preferences [39]. CVM values are usually lower than TCM because respondents are reluctant to express a high value of willingness to pay for CVM questions because they are worried about future entrance fees or other costs and fear that the hypothetical situation posed by the question will become a reality [40,41].

4. DISCUSSION AND CONCLUSION

From the study, revealed that the economic value of Santolo Beach with TCM is IDR 114.26 Billion per year for linear models and IDR 177.79 Billion per year for semi-log models while using CVM, the Santolo Beach's economic value is IDR 3.65 Billion per year. The value is higher compared to other direct value on Beach Tourism, such as in Sawarna Beach, Indonesia [42], estimated amounted IDR 6.72 Billion per year. These expenditures are based on an estimate of 71,767 tourists annually. While the study conducted by [43], estimating the

economic value of Srau Beach Indonesia amounted to IDR 90.49 Billion.

The estimated value of Santolo Beach tourism does not include the total value of both natural resources and other environmental services that have not been counted. This value only comes from tourism activities. If the contribution of the Santolo Beach marine tourism to the community's revenue is measured, then the value will be greater. Estimates of the economic value of Santolo Beach, however, will increase the awareness of everyone involved in the use and management of Santolo Beach tourism. The value of this area can also be proxy for the cost of management and mitigation of the damage or the cost of damage compensation that has been or will be occurred. This value also implies restoration costs that will be projected if the resource is damaged [44]. Restoration cost sets the value of a system as the cost of restoring it to its pre-damaged condition [45].

Based on Garut District Local Regulation No.11 of 2016, which is the reference for tourism retribution fees, the entrance fees for Santolo Beach on weekdays range from IDR 3,000 per person for children and IDR 5,000 per person for adults. While on holidays, the fees ranging around IDR 5,000 per person for children and IDR 7,500 per person for adults. According to information from the management of Santolo Beach, the achievement target of Santolo Beach retribution is IDR 450 Million per year and this target is still far below the economic potential value of Santolo Beach. That matter can be used as a consideration for the manager in settling the price of the Santolo Beach entrance ticket so it can be optimized. The average visitor's WTP (IDR 12,930) can be used as a reference in determining the price for the next entrance ticket to Santolo Beach. If the manager and the stakeholders do not make any efforts to settle the economic value according to the right pricing mechanism, it will have negative impacts on the income of the tourism sector and Santolo Beach itself.

Estimating economic benefits of recreational sites is very important for politicians, policymakers, and the general public, to support them integrating ecological perspectives with economic considerations [46]. Ecosystem service valuation is thus being developed as a means of putting natural capital into the equation of economic ‘development’ and on the agenda of policy-making [47]. This economic valuation information can be used as a reference for the development decision making of Santolo Beach tourism area. Because the return from tourism is expected to improve the welfare of the community. On the other hand, the development of Santolo Beach tourism area must be addressed with caution, because it is feared that high economic value will be lost if the environmental management is poor.

To realize sustainable development, the utilization of Santolo Beach tourism area must also consider its carrying capacity. Carrying capacity is the maximum level of visitor use an area can accommodate high levels of satisfaction for visitors and a few negative impacts on resources [48]. When an area used beyond its capacity, the quality of natural resources changes and gets destroyed [49]. Thus, it needs to be quantified in further research.

Knowledge-based management needs to be done to increase tourists and community awareness about the importance of environmental sustainability of Santolo Beach. Hereafter, Santolo Beach needs to be well managed and equipped with adequate facilities, so that tourists feel more comfortable and more interested in visiting.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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