

# Marketing Economic Valuation of Tourism in Bukit Pentulu Indah through ITCM (Individual-Travel Cost Methods)

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**Abstract.** The purpose of this study is to identify the variables that affect the quantity of visitors visiting Bukit Pentulu Indah by using the traveling cost approach and assessing the economic value of Bukit Pentulu Indah. This research was conducted in the Kebumen District of Central Java Province. Through the distribution of questionnaires, this investigation collects primary data. This study's sample size was 276 individuals. The sampling methodology utilizes an unintentional random sampling technique. Multiple linear regression is the method employed for analysis. The test results indicate that education level, income, travel costs, visit duration, and number of groups have a significant effect on the number of visits, while age, distance traveled, and facility have no effect. The economic value of the tourism attraction at Bukit Pentulu Indah is IDR 3,552,698.88, with a consumer surplus value per visitor of IDR 724.135523.

**Keywords:** ITCM, education, income, travel cost, visit duration, Bukit Pentulu Indah

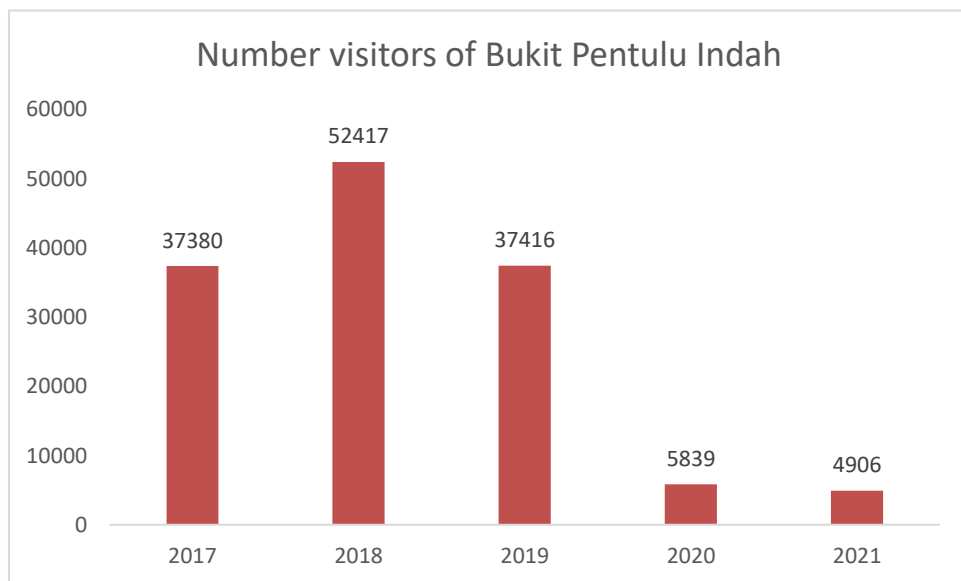
## 1 Introduction

Indonesia has been blessed to have the attractive of natural resources as invite tourists, domestics and foreign tourists. Indonesia' government has been supported to develop the tourism to be well-managed to increase the local economy . The Indonesia community play important role in manage and protect the tourist objects. In Law Number 10 Year 2009 define the freedom of citizens to travel as part to be human right to increase happiness and wealthiness. Tourism is an activity which involves community indirectly and influences the local economy. In the process of developing the tourism sector, it should maximize in the development of surrounding community to increase the economy, social and cultural capital..

The government has come to understand that, if managed and maintained effectively by introducing environmental awareness, the tourism sector may give long-term advantages. In order to succeed in these initiatives, local and national governments must work together and coordinate efforts to protect local natural resources (Sasmi, 2016). According to (Qs. al-A'raf

7:56), which speaks about conservation efforts: "Therefore, conservation activities are to preserve the existence of an environment that is built on love and affection. Ishlah can also mean to put back together something that had been broken or ruined.

Valuation of environment based on the human behavior theory and reflecting the well-being of people in the function of environmental goods and services in receiving economic benefit. Calculating the economic values of environmental resources is beneficial to creates social and economic issues [6]. A forest's direct, indirect, option, and existence values are added up to form the resource's overall economic value. Values for direct use come from ecological services that people directly consume, including gathering food and using wood for fire. Additionally, indirect use values are obtained from ecosystem services that offer advantages outside of the ecosystem, such as carbon sequestration, the natural water filtration function of wetlands, and the ability of coastal mangrove trees to withstand storms. Option values are created by holding onto the right to utilize services in the future that are not currently being used, either by the person holding the option (in which case it is called an option value), or by others or heirs designated by a bequest value. Non-use values relate to the value that people can be aware of the existence of a resource even if they never use it directly. This form of value is frequently referred to as existence value or passive usage value [23]. To estimate the economic value for the tourism destination could be measured through travel cost methods. Travel Cost Methods (TCM) is a non-market approach to measure the value of recreational tourism destinations using the consumption travelers behavior in the related markets [13].



**Fig 1.** Number of visitors of Bukit Pentulu Indah, Year 2017 to 2021

The government of Central Java is expanding the tourism destination due to huge potential of natural, culture, culinary, history and religiosity tourism. One of the regencies who start to develop the tourist sector is Kebumen regency. Kebumen has huge potential tourist destinations

which will be developed by the local government, it is in the south part of Central Java province. The local government has been managing the attractions in natural, man-made tourist and cultural tourist, namely Goa Jatijajar, Goa Petruk, Pantai Logending, Pantai Petanahan, Pantai Karangbolong, waduk wadaslintang, waduk sempor and Krakal hot spring water. However, private organizations also play an important role in developing the tourist sector in Kebumen, which is mostly managed by the community surrounding the tourist destination. One of them is Bukit Pentulu Indah who has the highest visitors compared to others. During Covid 19 pandemic decrease the number of visitors of Bukit Pentulu Indah (see Figure 1), however, the domestic visitors are also appearing in mean of 5000 visitors per year. The main objective of the study is to analyse the factors influences to the frequency of visitors to choose Bukit Pentulu Indah as the tourist destination using Individual Travel Cost Methods approach.

## **2 Literature Review And Hypothesis Development**

Koen Meyers (2009) define the tourist as the destination held from house as the starting point to the destination place to find happiness, enjoy the spare time and other purposes except to stay permanent or working to earn money. Value is an idea that inspires someone to make it come true in the real world. Values are significant and frequently serve as the primary metrics for measuring the quality of products and services. Society frequently equates the concept of value with that of "price." According to [20], the notion of value is something that aids people in weighing and selecting different decision-makers in specific social contexts. According to [20], historical values play a role in shaping and ingraining human personality. Humans do not passively embrace ideals; rather, they actively and creatively do so.

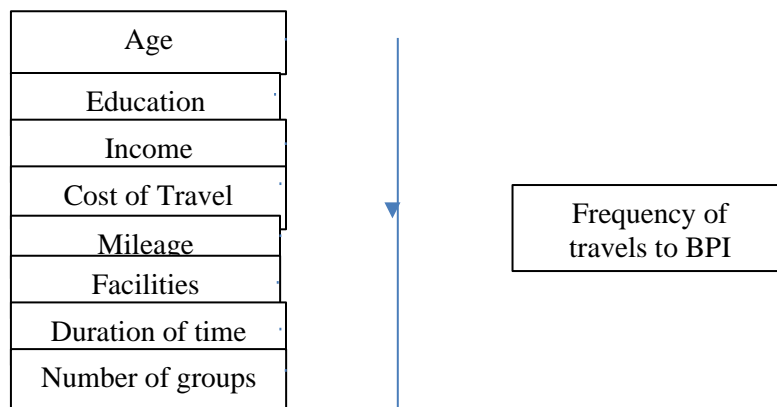
The travel cost approach is used to evaluate the value of the benefit from efforts to change the environmental quality of the recreation area visited (Dixon & Hufschmidt, 1986). Information regarding the amount of money or costs incurred and the time taken to get there are employed. In addition to the expenses made by visitors to a tourist attraction, other elements, such as the travel time between a visitor's residence and the attraction, might influence the number of visitors. Longer travel distances result in lesser levels of visits, and vice versa. Numerous socioeconomic factors, in addition to time, might indirectly affect tourists' decisions to visit a tourist destination. Age, gender, education, and income are socioeconomic factors. An major factor influencing tourists to undertake tours is the income variable. A person's income will be used to cover all costs incurred during a tourist visit, so that income will have an impact on their decision-making. The ability to grasp interest about tourist attractions and the desire or incentive to travel can both be impacted by a person's varying level of knowledge.

While there are many values that guide a person's or a group of people's behavior, economic value is one that determines whether or not there will be financial gain as a result of that action. The contrast between this economic value and artistic value is substantial. Additionally, the environment has a number of economic benefits. Total economic value (TEV), as defined by [21], is a strategy for integrating active and passive environmental use into the larger economic framework. However, according to Young (2005), due to various unique features of the environment, some of which do not even resemble one another within the same type, it is difficult to determine environmental economic values such as heritage value, existential value, and the value of an environmental entity based on the market price mechanism. Based on market-pricing principles, the quantity of demand and supply in the market space cycle determines market

prices. The benefits and costs of the evaluation are then evaluated by environmental economists using multiple techniques of pricing the environmental entities [14]. Because all environmental costs and benefits must be recognized and taken into account by policymakers, decision-makers, and developers when making decisions that will have an effect on the environmental entity, environmental economic assessment is crucial. Economists employ environmental assessment techniques like the Travel Cost Method (TCM) while conducting environmental assessments.

The Travel Cost Method is a quantitative assessment technique that valuers utilize extensively around the globe to determine the economic advantages of recreational center areas like parks, woods, and wildlife sanctuaries. The idea behind TCM is to use individual travel cost data as a substitute for an area's recreational value [25]. This method's foundation uses the willingness to pay (WTP) notion of customers to estimate how much it will cost to visit a recreational location [25]. Visitors must fork out money to cover associated expenses like travel costs like gas, tolls, and parking, as well as fees incurred while at the recreation center such lodging, meals, and ticket charges. The number of times visitors return is a key factor in determining a tourist destination's economic worth. The frequency of journeys is governed by some unique inherent elements, including as experience and motivation [17]. The demand curve for tourists is made up of these two main components.

[18] state that the following data must be gathered in order to use the travel cost method: (a) the number of trips from each origin zone (typically can be defined by the difference in postcode), (b) demographic information of the travel of individual travelers from each zone, (c) the travel cost per mile, (d) the value of time used for travel, or the time costs of the prior travel. According to [26], travel expenses had a large negative impact on how many people visited the Lamego Museum, although education level and female gender had a good impact. According to a study by [7], the economic impact of tourism to the Borobudur Temple during the eruption tragedy was Rp. 18,172,041,544. The frequency of visitors to Borobudur Temple attractions depends on a number of factors, including travel expenses, average monthly income, distance, working hours, age, previous visits, and the effects of the Merapi eruption. It is crucial to calculate and analyze travel costs in order to understand the value of visits and how they affect the growth in visitor demand.



**Fig. 2.** Conceptual Framework

The conceptual framework of this study is to identify the socioeconomics (age, education,

income), the cost of travel, the destination between house and Bukit Pentulu Indah (BPI), Facilities, duration of time, and number of groups who travels to BPI. The hypothesis of this study are defined as follows:

- H1 = Age is significantly positive effect to frequency of visits in Bukit Pentulu Indah
- H2 = Education is significantly positive effect to frequency of visits in Bukit Pentulu Indah
- H3 = Income is significantly positive effect to frequency of visits in Bukit Pentulu Indah
- H4 = Cost of travel is significantly negative effect to frequency of visits in Bukit Pentulu Indah
- H5 = Mileage is significantly negative effect to frequency of visits in Bukit Pentulu Indah
- H6 = Facilities is significantly positive effect to frequency of visits in Bukit Pentulu Indah
- H7 = Duration of time visit is significantly positive effect to frequency of visits in Bukit Pentulu Indah
- H8 = Number of groups is significantly positive effect to frequency of visits in Bukit Pentulu Indah

### 3 Research Methods

The study took Bukit Pentulu Indah located in the Kebumen Regency, Central Java Province. The subject of the study is the visitors and the unit analysis is individual. The total respondents has been measured using the formulation of Isaac and Michael with falsificataion 5% from the population of visitors in 2021 (N=4,906 visitors). The total respondent is 356 respondents and using the accidental random sampling to the visitors of Bukit Pentulu Indah. The variables are defined in Table 1.

**Table 1.** Variable of the study

Variables	Definition of operational	Unit of variable	
Frequency of travels to BPI	The frequency of visitors to BPI in one year		Dependent Variable
Age	The age of visitors and visitors is required more than 18 years old	Years	Independent Variable
Education	Length of school for visitors	Years	Independent Variable
Income	The whole take home pay received by the visitors in monthly	Rupiah	Independent Variable
Cost of travel	Cost, which is spend by the visitor to visit BPI, include transportation, retribution, parking cost, consumption, documentation	Rupiah	Independent Variable
Mileage	The mileage visitors from their home to BPI	Kilometer	Independent Variable
Facilities	The availability of facilities in BPI measured include parking yard, praying room, toilet, restaurants/ shop, photo spot, security, rest area and other.	Dummy variable (0=bad condition; 1=good condition)	Independent Variable
Duration of time	The duration of time visitors spends their activities in the BPI	Hour	Independent Variable
Number of groups	Number of people joining the trip to BPI with the respondents	Person	Independent Variable

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e \quad (1)$$

Definition:

Y : number of visits

$\beta_1$ – $\beta_8$  : parameters

X1 : variable of age (years)

X2 : variable of education (years)

X3 : variable of income (Rp)

X4 : variable of cost of travel (Rp)

X5 : variable of Mileage (kilometer)

X6 : variable of facilities (dummy variable)

X7 : variable of duration of time (hours)

X8 : variable number of groups (person)

The study applied self-administered for filling in the questionnaire. Validity, reliability, normality and multicollinearity are analysed to know the quality of questionnaire and data. The validity test has been analysed (see table 2) and the Cronbach's Alpha is 0.669. The reliability found that the questionnaire for 8 (eight) variables is reliable because the Cronbach's alpha is more than 0.6. The validity could be accepted as valid when the R analysis is larger than R table (R analysis > R table).

Table 2. The validity, Multicollinearity and Heteroscedasticity

Item	R analysis	R table	Status	VIF	Heteroscedasticity
Age	0.189	0.1181	Valid	1.566	0.788
Education	0.144	0.1181	Valid	1.611	0.948
Income	0.270	0.1181	Valid	1.561	0.771
Cost of travel	0.275	0.1181	Valid	1.519	0.679
Mileage	0.262	0.1181	Valid	1.872	0.429
Facilities	0.139	0.1181	Valid	1.025	0.980
Duration of time	0.509	0.1181	Valid	1.637	0.849
Number of groups	0.194	0.1181	Valid	1.234	0.700

The normality test has been applied using exact test Monte Carlo and found the unstandardized residual is equal to 0.389 (normal distributed acceptance) since it is more than 0.05 or 5%. The VIF stated less than 10 which means as no multicollinearity case in all of the variables. Multicollinearity is a statistical concept to recognize of quality models among independent variables. If there is multicollinearity appear in all independent variables means they are reliable in statistical inferences. Heteroscedasticity is to recognize whether the variables has equal variance so the analysis result will be valid. It will exist when the value of heteroscedasticity less than 0.05. In table 2, the heteroscedasticity is more than 0.05 and has meaning that there is no heteroscedasticity in all variables.

## 4 Results and Discussion

Bukit Pentulu Indah (BPI) popular for the young generation since it is completed by the photo spot, gazebo, hammocks for relaxing and children playground. The facilities provided complete, namely toilet, praying room and huge parking lots. Several accommodations and restaurants are also available. BPI is located in the Karangsembung village and carrying out by community based. The most valuable potential tourist attractions of BPI is located in the natural resources of mountain and hill. It is managed fully by the community of Karangsembung village, Kebumen regency, Central Java province (see Figure 2).



**Fig 3.** Bukit Pentutul Indah photo spots.

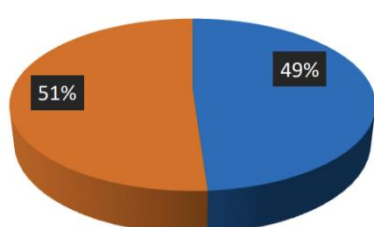
To reach the objective of the study, the multiple linier regression is applied. To understand the pattern of variables, descriptive analysis is carried out (see Table 3). The frequency of visit of respondents is 2 times with age of respondents is 23.76. The respondents' education has mean in 12 years or graduated in high school. The income has minimum in IDR 300,000 and maximum in IDR 8,000,000 with mean in IDR 1,530,362. The minimum cost of travel is 20,000 since the minimum mileage is 5 km. The maximum cost of travel is IDR 300,000 and the maximum mileage is 70 km. Since the number of standard deviation is less than value of mean, the accuracy of the value in each item is higher.

**Table 3.** Descriptive analysis

Item	Min	Max	Mean	Std. Deviation
Frequency of visits	1	8	2.02	1.19
Age	16	52	23.76	6.32
Education	9	18	12.47	2.11
Income	300,000	8,000,000	1,530,362	1,095,191
Cost of travel	20,000	300,000	91,992	61,873
Mileage	5	70	24.97	12.68
Facilities	0	1	0.41	0.493
Duration of time	1	4.5	1.923	0.82
Number of groups	1	7	2.95	1.47

Biodata of respondents could be seen in Figure 3 and 4 which more than 80% visitors are come from Kebumen regency. It concluded that domestics tourists are mostly domestics and local visitors. Respondents have been balanced concerning the gender for male (49%) and female (51%). In further research, the purposes of respondents travel to BPI is recreation (94%), research (1%) and others (5%). The respondents are 41% students; 9% is civil employee; 16% of private employee; 12% entrepreneurs and 22% groups as others. Most of the respondents dominate bring more than 4 person during the visiting BPI (31%). Most of the respondents define that they are visiting BPI twice (31%) and once (42%) within this year 2023.



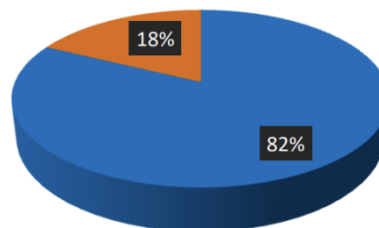


Information:

Blue : Male

Orange : Female

**Fig. 4.** The gender of Respondent



Blue: Inside Kebumen

Orange: Outside Kebumen

**Fig. 5.** The city of residence

The F test was used to assess whether each independent variable had an impact on the dependent variable at the same time. If using SPSS, testing can be done by examining the significance value (Sig.) on the Anova output. The independent variables as a whole have a significant impact on the dependent variable if the significance value is less than 0.05. Based on the F test, the independent variables have significantly affected to the frequency or number of visits to BPI (table 5).

**Table 4.** F test

Modal	F	Significant
Regression Residual	11.178*	0.000 <sup>b</sup>
Total		

b. Predictors: (Constant), Age, Education, Income, cost of travels, mileage, facilities, duration of time, number of groups

According to the results of the t statistical test, the dependent variable was significantly affected by five significant independent factors. Education level affected the number of visitors to the Palgading temple, according to the t-test result of -4.161\* with level significance less than 0.05. These results show that education or length of schooling respondents have impact on the frequency of visits, hence it is reasonable to interpret travel expenses as the sum of all expenses each respondent incurred for one leisure activity. This demonstrates that the amount of money spent does not matter in terms of how many people attend and take in Bukit Pentulu Indah beauty. Budgeted travel expenses had an impact on tourists' decision-making. Additionally, the length of the trip and the time allocated for preparing it have an impact on how Korean tourists choose their destinations to experience an exciting mood, beautiful landscape, and environmental friendliness (Chen and Hsu, 2000).

The decision of tourists to visit the Bukit Pentulu Indah is positive (2.408\*) correlated with income. Meaning that increasing number of people visit the BPI as income levels rise. This is due to the fact that income is crucial for economic activities like leisure activities, which necessitate money or funding from income. According to economic theory, the higher the income earned by each individual (respondent), the higher the level of consumption. As a result, if a person's income level is high, it will increase the desire to visit tourist attractions.

**Table 5. T test**

Item	Coefficient	t-test	R square
Age (X1)	-0.023	-1.842	0.251
Education (X2)	-0.157**	-4.161	
Income (X3)	0.302*	2.408	
Cost of travel (X4)	-1.708*	-5.340	
Mileage (X5)	0.009	1.396	
Facilities (X6)	0.111	0.859	
Duration of time (X7)	-0.253*	-2.566	
Number of groups (X8)	0.156**	3.296	

\*is significant on .05

\*\* is significant on .01

The Education variable's t-test results were 3.296, with a significance level of  $0.000 < 0.05$ . This, indicating that education has a favorable but minor impact on the quantity of visitors. According to the study's findings, education has a favorable but not statistically significant impact, indicating that a person's age and activities have a major impact on their interest in visiting the BPI. Most respondents who went to BPI were high school and college students, as the likelihood of an average number of trips increases with higher education. This is because people with higher levels of education will have more developed perspectives on the significance of visiting the destination of tourist. The decision of tourists to visit the BPI is negatively (-2.373\*) correlated with income. Meaning that less people visit the BPI as income levels rise. This is due to the fact that income is crucial for economic activities like leisure activities, which necessitate money or funding from income. According to economic theory, the higher the income earned by each individual (respondent), the higher the level of consumption. As a result, if a person's income level is high, it will increase the desire to visit tourist attractions. The income variable coefficient has a negative sign (Table 4). Education and number of groups are variable, is significantly affected to the frequency number visits in BPI. The R square is 0.251 means that 25.1% variable could be explained by the independent variable.

$$Y = 8.006 - 0.023X_2 + 0.302 X_3 - 1.708X_4 - 0.253X_7 + 0.158 X_8 + \epsilon \quad (2)$$

The formulation of linier multiple regression could be seen in formulation 2. The highest coefficient in affecting to frequency of visits appear by the duration of time respondents visiting BPI. Negative means that the less duration time of respondents could increase the number of frequency visits of respondents in BPI. The majority of tourists have completed their high school or vocational training and are now enrolled in college. Most of tourists to the Bukit Pentulu Indah tourist attraction go there on the weekends and during vacations, particularly during the Eid holidays, therefore they don't typically consider the educational level element. Additionally, people with higher education levels and those who are employed have a tendency to spend their spare time with their families at home and favor tourist destinations with better facilities and infrastructure. The findings of this study support research by [4], [1], which found that education level had a negative and significant impact on the frequency of visits. The number of visits is, however, positively and significantly influenced by education level, according to studies by Priambodo and Suhartini (2016), [12],[8]..

Income has a significant variable of 0.017. Economic activity and income are intertwined, and if someone wants to take a vacation or go on a leisure trip, they will need enough money, which they can get from their salary. The income variable has a positive coefficient value of 0.302, which is consistent with the economic theory that suggests that as income rises, so does consumption. If the income is higher, more people will visit a destination for recreation on average. This study supports earlier research from Priambodo and Suhartini (2016); [7]; [24] and Fadjar, 2019, which found a strong and positive relationship between income and visits. In contrast to studies by [12] and [10] in 2022 and [19] and Sudharma in 2020, which demonstrate that income has a negative impact on the number of visits in a significant way. Therefore, it may be said that those with greater incomes have more opportunities for recreation than those with lower incomes. An individual's (respondent's) opportunity to set aside a portion of his income for leisure activities increases with increased income.

Travel expenses can be seen as the sum of all expenses that each responder has incurred when engaging in recreational activities at one time. This journey will cost you money in terms of transportation, paperwork, recreational consumption, parking, and other expenses. With a significance level of 0.000, the trip cost variable significantly affects level 5% (0.05). This is important since the number of visits and variable travel costs cannot be separated. The regression coefficient for the trip expense variable is -0.708. According to economic theories, if the cost of a good or service increases, consumers will be more likely to buy fewer goods overall. This implies that the average chance for responders to visit the location of the tourist attraction will be lowered if the travel expenses paid are higher. The study's findings are in line with studies carried out by Priambodo and Suhartini in 2016; [28]; Batubara, dkk, 2020; [7], [10], ; Huda, dkk, 2022; [8], [24] demonstrates that the expense of travel has a negative and considerable impact on the number of visits. While studies by [12] and [10] in 2022 and Sudana and Masniadi in 2021 demonstrate that travel expenses have a positive and significant impact on the frequency of visits. The expense of the trip has the biggest impact on the visit. The amount of a fee paid has an impact on each respondent's decision to take a vacation or not to a particular tourist destination. The frequency of visits tends to decrease as respondents' travel expenses increase. This is because the respondents will select a tourist attraction with more reasonable travel costs that is also closer to their place of residence.

The findings indicated that the visit duration variable has a significant influence at the level of 5% (0.05) with a level of significance of 0.011 and a negative sign coefficient value of -0.253. This implies that both high and low levels of visits to Pentulu Hill Beautiful are influenced by the amount of time people spend at the Bukit Pentulu Indah tourist attraction. Visitors who engage in leisure activities for an extended period of time will grow bored, which will lower their degree of enjoyment. Visitors, on the other hand, feel unsatisfied if their leisure time is cut too short. Visitors will evaluate the cleanliness of the venue, the amenities offered, and the security the longer they are at the Bukit Pentulu Indah location. The findings of this study are consistent with those of Sudana and Masniadi, 2021, [9] and Sudana and Masniadi, 2021, who found that visit time has a negative and significant impact on visitation. The length of visits has a favorable and significant impact on the number of visits, according to studies by [28] and [22].

The number of groups variable has a significant impact at the 5 percent level (0.5) of 0.001 and a positive coefficient of 0.156. According to the hypothesis, the average number of individual visits will rise as the number of groups that tour with respondents increases. This might occur because it's more enjoyable to travel in large groups when visiting a tourist destination, especially one like Bukit Pentulu Indah, which will prevent the respondent from feeling lonely while on the

road. In addition, if more and more groups travel, the associated travel expenses will also be lower. As a result, every extra member in a group will result in more people visiting the Bukit Pentulu Indah tourism destination. The findings of this study support previous studies by Priambodo and Suhartini (2016), Riawan et al. (2017), [24] , [8], and Maharani (2017) that demonstrate a positive and substantial relationship between the number of groups and the number of visits. The number of groups has a negative and considerable impact on the number of visitors, according to study by Bunadi and Syarqawi (both 2019).

## **5 Conclusion**

The conclusion found that education, income, cost of traveling, duration of time for visiting of BPI and number of people as groups are variables significantly to the frequency of visits. In further research concerning the calculation of economic value, the consumer surplus of individual travelers per visit could be measured as IDR 724.135. Based on the individual travel cost methods, the economic value of the object, Bukit Pentulu Indah could be earned as IDR 3,552,608.88 per year. This consumer surplus define low compare to other economic value in almost similar natural tourism destination, likewise Taman Wisata Alam Gunung Pancar in Bogor regency ([22] and Kasih, 2020).

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