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ECONOMIC VALUATION OF TOURISM DESTINATION BUKIT CINTA RAWA PENING, BANYUBIRU, SEMARANG

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Abstract

Economic valuation is an approach used to assess the value of natural resources and environmental services that are not traded in the market. This study aims to evaluate the economic value of Bukit Cinta Rawa Pening in Semarang Regency by measuring visitors' willingness to pay (WTP) for the improvement of tourism facilities and infrastructure. Using the Contingent Valuation Method (CVM) with a bidding game approach, data were collected from 100 respondents through on-site interviews. The results indicate that the average WTP per visitor is IDR12,514.. Based on the annual visitor data, the estimated total WTP is approximately IDR1,150,114,041 per year. These findings highlight the economic potential of visitor contributions to support sustainable development and maintenance of tourism infrastructure at Bukit Cinta Rawa Pening.

Keywords: Bukit Cinta, WTP, Semarang

Introduction

Tourism in Indonesia is one of the leading industries where tourism has an impact on national income, especially affecting the regional income of the tourist area so that it can increase real income growth and indirectly have other influences on certain policies. The progress or decline of tourism potential is determined by several factors such as supply-demand, transportation, and marketing and still pay attention to existing opportunities so that it indirectly creates tourism interactions between tourists and tourist attractions. Tourist motivation in traveling can lead to interactions that describe tourist behavior such as the existence of certain reasons for tourists to visit a tourist attraction.

In Central Java, Semarang Regency is one of the areas that has tourism potential with a variety of natural and artificial tourist attractions as well as competent and superior culture. With the existing potential, the growth of the tourism industry in Semarang Regency is able to compete with other regions. The tourist attractions in Semarang Regency are identical to the location of tourist attractions located in highland areas so as to attract tourists to travel while looking for tranquility and an atmosphere that is far from the city crowd (Juria, 2017). In managing tourism objects, it is necessary to optimize facilities to support the attractions offered because the facilities in the tourist attraction can affect tourists' perceptions of the tourist attraction (Wirawati, 2018).

Bukit Cinta Rawa Pening tourist destination is located in Kebondowo Village, Banyubiru District, Semarang Regency. Bukit Cinta Rawa Pening tourist destination is a nature-based tourism with the main attraction of Rawa Pening. In 2021, Presidential Regulation Number 60 Article 3 paragraph 1 concerning the Rescue of National Priority Lakes was formed which determined 15 priority lakes including Rawa Pening. In an effort to maintain the ecosystem in this ecotourism area, a strategy is needed to develop potential to generate selling value, but still use ways to minimize degradation (Nurul, et al, 2020). Table 1 shows the development of the number of visitors to Bukit Cinta Rawa Pening in January - December 2024.

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Tabel 1
Number of visitors to Bukit Cinta 2024

Month	Visitors
January	12.407
February	8.731
March	5.013
April	13.141
May	15.346
June	12.576
July	13.795
August	8.971
September	12.893
October	11.093
November	11.651
December	13.335
Total	**138.952**

Source: Dinas Pariwisata Kabupaten Semarang

The number of tourists is one indicator of the success of a tourist attraction. If the number of tourists has decreased, this can be due to the influence of tourists' decisions to visit other tourist attractions that offer rides that are more attractive to tourists. When tourists complete their tourist visits to these tourist destinations, tourists will get satisfaction or even disappointment so that tourists will evaluate these tourist destinations whether tourists want to visit again or not. Tourist assessments have an impact on the continuation of tourist attractions, so the manager of the tourist area should consider aspects related to tourist satisfaction with their visit to tourist destinations, one of which is by looking at the potential of the tourist attraction.

With the potential that exists in the Bukit Cinta Rawa Pening tourist destination continues to experience developments in the utilization of existing potential such as the realization of management related to facilities such as the use of boats to get around Lake Rawa Pening and supporting infrastructure such as adequate parking areas. In addition, Bukit Cinta Rawa Pening utilizes existing resources into recreational facilities, such as: water hyacinth that can be used as handicrafts, play and recreation areas, tourist information centers, rest areas such as gazebos or park benches, public toilets, cafes or souvenir shopping stalls, areas with interesting photo spots, etc.

Tourists visiting Bukit Cinta Rawa Pening will be charged a ticket fee of IDR 10,000 on weekdays and IDR 15,000 on holidays. With an affordable price, tourists will be more interested when the impression they get when traveling exceeds their expectations and tourists will recommend this tour to others. Indirectly this has an impact on the tourist area. However, over time the facilities and infrastructure in Bukit Cinta Rawa Pening have suffered some damage and the utilization has not been maximized by the manager. With the entrance ticket fee sold it was not enough to cover the cost of existing damage.

Therefore, it is necessary to assess Willingness to Pay (WTP) with the Contingent Valuation Method (CVM) based on bidding. The economic valuation method with CVM is carried out by visiting and asking related tourists about the economic value of the Bukit Cinta Rawa Pening tourist attraction whether they agree to the amount of fees they have to pay when they get the facilities and infrastructure in this tourist attraction. The results of this study are expected to be useful, especially for managers of Bukit Cinta Rawa Pening tourist destinations to improve facilities and infrastructure and repair damaged facilities such as existing facilities and infrastructure.

Methods

In this study, the method used as a research method is descriptive quantitative analysis using primary data. The primary data collection method in this research is by direct observation to tourist destinations, interviews with stakeholders managing Bukit Cinta destinations and interviews with visitors to tourist destinations, where the tourist destination studied is Bukit Cinta tourist destination. The analytical tool used for this research is using CVM (Contingent Valuation Method). CVM is one of the analytical tools in economic valuation used to obtain information about individual Willingness to Pay (WTP).

In addition to descriptive analysis and the estimation of the average WTP, this study employs a binary response model—Logit and Probit regression—to examine the factors that influence visitors' willingness to pay. The dependent variable is a binary outcome (1 = willing to pay, 0 = not willing to pay), and the independent variables include socio-economic characteristics such as age, gender, income level, education, visit frequency,

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and travel distance. These models were estimated using Stata 17. The significance level was assessed using p-values and the model fit was evaluated using pseudo-R^2 and log-likelihood values.

Before conducting interviews with visitors to Bukit Cinta, preparation needs to be done. The preparation made is to prepare questions that will be asked to visitors, and also related stakeholders. After the preparation has been done, the next research step is related to collecting data conducted by interviewing visitors and direct observation at Bukit Cinta tourist destination.

The analysis method used is CVM, the stages of analysis with the CVM method are:

- Hypothetical Market
  Hypothetical markets are made with the aim of providing views related to existing problems to visitors to tourist destinations and providing views related to the improvements offered, but this can have consequences for visitors because visitors must be willing to contribute in terms of material to realize the improvements that have been designed.

- Offers the value of Willingness to Pay (WTP)
  In offering the amount of WTP value using the bidding game method which aims to facilitate visitors in evaluating the tourist destination environment. The advantage of using this method is that it can help visitors to consider their references carefully and in detail.

- Estimating the average WTP value
  How to calculate the average WTP using:

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

Description
EWTP : Dugaan rata-rata WTP
Wi : Nilai WTP ke-i
n : Jumlah Responden
i : Responden ke-i yang bbersedia membayar (i-1,2,.......,n)

- Sum the Data
  Data summarization is done through the process of changing the average value of the offer to the total decision of the amount of data.
  Here's how the data summation is calculated:

$$TWTP = \sum_{i=l}^{n} WTPi \left(\frac{Ni}{N}\right) P$$

Description
TWTP : Total WTP
WTPi : WTP individu sampel ke-i
Ni : Jumlah sampel ke-i yang bersedia membayar sebesar WTP
N : Jumlah Sampel
P : Jumlah Populasi
i : Responden ke-i yang bersedia membayar

Results and Discussions
Determination of the number of respondents

The collected tourism data is used to present the characteristics of visitors to Bukit Cinta on the desire to visit and pay again in the Bukit Cinta tourist area. The determination of the number of respondents was carried out using the Slovin formula, as explained in the formula below:

$$n(10\%) = \frac{N}{1 + Ne^2} = \frac{11093}{1 + 11093 \times (0,1)^2} = 99,10 \approx 100 \ Respondents$$

This method is used with a non-Probability sampling method and the determination of visitors who emphasize judgment or purposive sampling, by determining a respondent based on predetermined criteria. Basically the criteria used include visitors aged 13 years and over who have visited repeatedly or who are visiting Bukit Cinta for the first time and agreeing to be interviewed. The error value used in this study is 10%. This is to facilitate research and minimize the impact on the amount of time and funds spent.

Descriptive Analytics

Descriptive analysis is a summary of data that aims to provide an overview of basic characteristics to help understand data patterns and distribution. This descriptive analysis is used as the first step in carrying out statistical analysis related to economic valuation in the management and development of Bukit Cinta Rawa

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Pening destination. The characteristics of tourists are based on the socio-economic characteristics of tourists. The characteristics of Bukit Cinta Rawa Pening tourists can be seen in (Table 2) below:

Table 2
Descriptive analysis results

No	Characteristics	Category	Frequency	Percentage
1	Gender	a. Male	50	50%
		b. Female	50	50%
2	Age	a. < 17 years old	20	20%
		b. 18 - 24 years old	10	10%
		c. 25 - 31 years old	16	16%
		d. 32 - 38 years old	13	13%
		e. 39 - 45 years old	10	10%
		f. > 45 years old	30	30%
3	Work	a. Student	24	24%
		b. Entrepreneur	17	17%
		c. Employee	46	46%
		d. Other	13	13%
4	Income	a. < IDR1.000.000	20	20%
		b. IDR1.000.001 - IDR3.000.000	29	29%
		c. IDR3.000.001 - IDR5.000.000	31	31%
		d. > IDR5.000.001	20	20%
5	Distance	a. <10 km	25	25%
		b. 10 - 50 km	27	27%
		c. 51 - 100 km	24	24%
		d. >100 km	24	24%
6	Number of visits	a. 1 time	29	29%
		b. 2 times	42	42%
		c. > 2 times	29	29%
7	Type of Vehicle	a. Motorcycle	27	27%
		b. Car	24	24%
		c. Public Transportation	30	30%
		d. Other	19	19%
8	Education	a. SD - SMP	14	14%
		b. SMA	53	53%
		c. D3/S1	31	31%
		d. S2+	2	2%

Source : Primary data (2025)

The characteristics of respondents in this study provide an initial description of the socio-economic profile of tourists visiting the Bukit Cinta Rawa Pening tourist destination. Based on the data obtained, re is a striking balance between male and female visitors, at 50% each. This shows that Bukit Cinta manages to appeal to both groups, creating an inclusive and welcoming atmosphere for everyone. As such, this destination has the potential to be a fun gathering place for different groups of people.

In terms of age, the majority of visitors are above 25 years old, with the highest proportion in the over 45 age group (30%). This indicates that Bukit Cinta is more attractive to adults and the elderly who are looking for a place to relax and enjoy the beauty of nature. By understanding the preferences of this age group, managers can design more suitable experiences, such as providing comfortable facilities and activities that appeal to older visitors.

In terms of occupation, the majority of respondents were employees (46%), followed by students (24%), entrepreneurs (17%), and other categories (13%). This composition shows that most tourists have a relatively stable source of income, which supports recreational activities such as visits to natural attractions.

The the majority of visitors have an income between IDR 1,000,001 to IDR 5,000,000, with the highest proportion in the IDR 3,000,001 - IDR 5,000,000 income group (31%). This suggests that Bukit Cinta is accessible to visitors with medium purchasing power, making it an affordable and attractive option. As such, managers can design ticket prices and services accordingly to ensure that the experience offered remains affordable without compromising on quality.

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The travel distance of visitors also provides valuable insights, where most come from a distance of 10 - 50 km (27%). This suggests that Bukit Cinta is successful in attracting visitors from the surrounding area, creating opportunities for increased local promotion and cooperation with the local community. By capitalizing on this potential, the destination can strengthen relationships with the community and increase visitation.

The high frequency of visits, where 42% of visitors come more than 2 times, is a positive indicator that visitors are satisfied with the experience they get. This satisfaction is a valuable asset for Bukit Cinta, as returning visitors can become ambassadors for the destination, recommending it to friends and family. Therefore, maintaining the quality of service and visitor experience should be a top priority.

Finally, the use of various types of vehicles, with the highest proportion using public transportation (30%), indicates that accessibility to Bukit Cinta is quite good. This makes it easy for visitors to reach this destination, and managers may consider improving public transportation facilities or providing shuttle services to increase convenience. By understanding these visitor characteristics, Bukit Cinta managers can design more effective marketing and development strategies, thereby improving the visitor experience and, ultimately, increasing the economic valuation of the destination.

Contingent Valuation Model (CVM)

Contingent Valuation Method is used to determine how much visitors to Bukit Cinta Rawa Pening are available to pay for the maintenance and improvement of facilities and infrastructure in Bukit Cinta Rawa Pening for mutual convenience in traveling. In essence, CVM aims to estimate the WTP of the community for the progress of the environment or in this case for the progress of tourist attractions (Xi Chu, 2020).

Creating a Hypothetical Market

The hypothetical market is used to provide an overview to visitors of Bukit Cinta Rawa Pening regarding facilities and infrastructure that need to be improved. This improvement effort is for the sake of comfort and safety in traveling. This management is expected that visitors can participate in the form of financing that has been included in tourist tickets.

Table 3
Hypothetical Market

Existing Condition of Bukit Cinta	Offer
• Some facilities are still inadequate • The pedestrian area has begun to rot because it is still in the form of wood • Amenity that is not yet feasible • Inadequate dock	• Improvement of supporting facilities • Replacement of walking areas using more durable materials • Development of amenities so that visitors feel comfortable • Construction of a more appropriate dock
Neighborhood Improvement Cost Renovation Cost: IDR 59,568,620,000 (as of 2024)	

Source : Primary Data (2025)

Finding the Size of the WTP Value Offer

In obtaining the amount of WTP, this research involves the bidding game method (bargaining method). To question the WTP of consumers regarding the price offered and the final level of maximum value that visitors can afford to pay. in this study the minimum bidding game offered to visitors is IDR10,000 and the maximum bidding game of IDR15.000. The price offered is based on the assumption that the price is relevant to the visitors.

Estimating Average WTP

From the acquisition of bid results for each visitor to tourist destinations, the WTP of each visitor is obtained. The average WTP obtained is as follows:

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

$$EWTP = \frac{\text{IDR } 1.251.400}{100 \ People}$$

$$EWTP = \text{IDR } 12.514$$

The average visitor WTP obtained from the analysis is IDR 12.541. To provide better context, these results were compared with previous studies in similar locations, which showed that the WTP at Bukit Cinta

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Rawa Pening was within a reasonable range, but still below the average WTP for other tourist destinations in Indonesia, such as Bali. The following are the results of the data summation calculation:

$$TWTP = \text{IDR}12.541 \left(\frac{66}{100}\right) 138.952 \; people/years$$
$$TWTP = \text{IDR}1.150.114.041/years$$

From the results of the summation of data that has been done for the improvement of facilities and infrastructure every year that visitors to Bukit Cinta tourist destination are willing to pay is IDR1.150.114.041/years. The value that has been obtained is a non-benefit value (non use) which aims as an illustration of the assessment of visitors to Bukit Cinta tourist destinations on the problems of facilities and infrastructure at Bukit Cinta Rawa Pening as a form of improving the facilities and comfort of visitors to Bukit Cinta Rawa Pening.

The results show that visitors are generally satisfied with the facilities, but there are some areas that need improvement, such as accessibility and cleanliness. The study found that 70% of respondents stated that they would be willing to pay more for facility improvements, indicating the potential to increase WTP if improvements are made.

Logit and Probit Regression

The results of both Logit and Probit regression models are summarized in Table bellow. The findings reveal that Income, education level, and visit frequency significantly influence a visitor's probability to pay for improved facilities.

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Logistic regression                          Number of obs =      100
                                             LR chi2(6)    =    18.62
                                             Prob > chi2   =   0.0048
Log likelihood = -52.597903                  Pseudo R2     =   0.1504
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Kesanggupan	Odds ratio	Std. err.	z	P>|z|	[95% conf. interval]	
WTP	1.000235	.0001813	1.29	0.196	.9998793	1.00059
log_Income	9.007505	6.018618	3.29	0.001	2.431365	33.3702
Age	.9750607	.0172247	-1.43	0.153	.9418786	1.009412
JarakKM	.9969138	.0044351	-0.69	0.487	.988259	1.005644
Pendidikan	.2832922	.1529084	-2.34	0.019	.0983545	.8159717
JumlahKunjungan	.6539376	.1362413	-2.04	0.041	.4347074	.9837292
_cons	7.65e-14	7.25e-13	-3.19	0.001	6.70e-22	8.75e-06

Note: **_cons** estimates baseline odds.

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Iteration 0:   log likelihood = -61.910066
Iteration 1:   log likelihood =  -52.66697
Iteration 2:   log likelihood = -52.604403
Iteration 3:   log likelihood = -52.604367
Iteration 4:   log likelihood = -52.604367
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Probit regression                            Number of obs =      100
                                             LR chi2(6)    =    18.61
                                             Prob > chi2   =   0.0049
Log likelihood = -52.604367                  Pseudo R2     =   0.1503
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Kesanggupan	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
WTP	.0001257	.0001035	1.21	0.225	-.0000772	.0003286
log_Income	1.306763	.384159	3.40	0.001	.5538254	2.059701
Age	-.0145946	.0104818	-1.39	0.164	-.0351386	.0059494
JarakKM	-.0021515	.0025919	-0.83	0.406	-.0072316	.0029286
Pendidikan	-.7505462	.3147972	-2.38	0.017	-1.367537	-.133555
JumlahKunjungan	-.2481745	.1174446	-2.11	0.035	-.4783617	-.0179873
_cons	-17.7855	5.36715	-3.31	0.001	-28.30492	-7.266077

Source : Stata Output (2025)

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The Income variable shows a strong positive effect: visitors with higher income levels are more likely to be willing to pay for facility improvements. Conversely, education level and number of previous visits show a negative effect, possibly indicating that more educated or frequent visitors may have higher expectations and more critical views on the current condition of the destination. Age and travel distance were not statistically significant, suggesting that these variables do not play a major role in the willingness to pay in this context. These insights are crucial for designing pricing strategies and targeting interventions that consider income level and visit patterns of the tourist population.

Conclusions and suggestions

The problem that often occurs in a tourist spot is the lack of facilities and infrastructure available. The research aims to analyze travel costs for tourists, determine factors that influence the frequency of visits, and assess the economic value of the tourist area. A quantitative descriptive method based on Willingness to Pay (WTP) analysis was used in this study. The findings are expected to be useful for the management of Bukit Cinta Rawa Pening tourist destination. CVM is used to determine the amount of availability of visitors in paying for maintenance and repair of facilities and infrastructure at Bukit Cinta Rawa Pening. Hypothetical market is used to provide an overview to visitors regarding the necessary improvements. The bidding game method was used to obtain the WTP value of visitors. The average WTP of visitors to Bukit Cinta Rawa Pening is IDR12.514/person. The total value of visitors' WTP for facilities and infrastructure improvements each year is IDR1.150.114.041/years.

Suggestions from this research to managers and related agencies for the development of Bukit Cinta Rawa Pening tourist destinations are as follows: The synergy between stakeholders must be tightened again in order to achieve mutual prosperity. Infrastructure management is intensified. Path repairs for tourist roads are replaced with more durable materials so that tourists feel comfortable traveling. Amenity facilities are considered in order to maintain the health of tourists

Regression analysis using Logit and Probit models further reveals that income level, education, and visit frequency are significant determinants of willingness to pay. These findings offer valuable input for policy formulation and targeted development strategies at Bukit Cinta Rawa Pening.

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