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ECONOMIC VALUATION OF CULTURAL HERITAGE: STUDY AT PRAMBANAN TEMPLE COMPOUND

Muhamad Sidiq Wicaksono

Student

Master of Tourism Studies

Universitas Gadjah Mada

m.sidiq.wicaksono@mail.ugm.ac.id

Tri Kuntoro Priyambodo

Secretary of Postgraduate Tourism Studies

Universitas Gadjah Mada, Yogyakarta, Indonesia

mastri@ugm.ac.id

Dyah Mutiarin

Lecturer

Universitas Muhammadiyah Yogyakarta

Yogyakarta, Indonesia

mutiarin71@gmail.com

Economic valuation in Prambanan Temple Compound is an important issue in result of increasing tourism activities in cultural heritage sites. Tourism activities in the cultural heritage sites can generate benefits for the economy but also can cause negative impacts on sustainability of cultural heritage in the area. Assessing the economics value of Prambanan Temple Compound will lead to implement sustainable tourism management to prevent exploitation of cultural heritage. This study aimed to determine factors that influence demand and individual willingness-to-pay in Prambanan Temple Compound, economic value of this site, and sustainable tourism scenarios which is best applied in this site. This study is expected as a consideration among tourism stakeholders in formulating sustainable tourism development strategy in Prambanan Temple Compound and also to determine the economic value in the Prambanan Temple Compound, which both of them associated with sustainable tourism management as a way to prevent excessive exploitation caused by high tourism activities in this area. This study using two methods, namely Travel Cost Method and Contingent Valuation Method. The economic value obtained from the method of travel cost amounted Rp.3.026.701.500.108 and the results obtained from the Contingent Valuation Methods with varying level of scenarios are Rp.176.680.767.077 to Rp.219.315.349.218. This value higher than gross revenue from admission which only gained Rp.54.170.046.000 through 2014. This study found that there is a potential economic scenario to gain more revenue for the management when the management could enhance temple compound conservation and services.

Keywords: Cultural Heritage Sites, Sustainable Tourism, Economic Valuation, Travel Cost Method, Contingent Valuation Method

Tri Kuntoro Priyambodo is an associate professor in Tourism Studies Program Universitas Gadjah Mada where he is teaches information technology in tourism. He is a secretary of Post-graduate Tourism Studies in Universitas Gadjah Mada.

Dyah Mutiarin is lecturer in Department of Governmental Studies, Universitas Muhammadiyah Yogyakarta and teaches course in economic, social, and politics in tourism studies Universitas Gadjah Mada. She received Doctor of Philosophy in University Science Malaysia.

Introduction

Economic valuation in Prambanan Temple Compound is an important issue in result of increasing tourism activities in cultural heritage sites. Tourism trends to visit world heritage sites was increased, which is shown number of visitor to Prambanan Temple Compound increased every year from 1,074,138 in 2009 to 1,265,897 in 2012. This trends became threat to this site, notably in impact from highly-visiting to this site (Cochrane and Tapper, 2006). Increase in number of visitors, especially on holiday, which are uncontrolled, can gradually damage the temples' physical. For example, visitors whose trail by foot can damage temples blocks (Suseno, 2014). Huge number of visitors can cause quality degradation of sites accidentally or intentionally (Syahdin and Patunru, 2010). However, tourism might be balancing between conservation and economy benefit for society in surrounding area. World Heritage can gather benefit from tourism activity, such as additional funds for conservation, helps community development as well as public awareness of the importance of conservation area (Cochrane and Tapper, 2006).

Valuing the economics value of Prambanan Temple Compounds will lead to implement sustainable tourism management to prevent exploitation in cultural heritage. This study was conducted to determine factors that influence demand and individual willingness-to-pay in Prambanan Temple Compound, economic value of this site, and sustainable tourism scenario which is best applied in this site. This study is expected to be a reference for stakeholders in formulation the sustainable tourism development strategy in Prambanan Temple Compounds.

Literature Review

Previous studies concluded that methods can be used in economic valuation on cultural heritage such as contingent valuation method, travel cost method, and choice-based method (Noonan, 2003; Subanti, 2005; Dong, et.al, 2011; Fitriana, 2013; Fonseca and Rebelo, 2010; dan Bedate et.al (2004). Rujigrok (2006) finds that cultural heritage can contribute in three benefits: a housing comfort value, a recreation value, and a bequest value. Bedate *et.al* (2004) adopted Travel Cost Method (TCM) to determine consumer surplus of four different cultural heritage sites in Spain. Syahdin dan Patunru (2012) adopted Choice-based method and TCM to valuing the Borobudur Temple. This study finds large visitor consumer surplus of Borobudur Temple, which can lead the manager of Borobudur Temple to raise their entrance fee. In addition to adding revenue, raising entrance fee can restraint visitors rate whose potentially damage Borobudur Temples, directly or indirectly.

Studies on economic valuation on cultural heritage also conclude factors that impact demand of visitors such as level of education, gender, travel cost, income, ages, other destination, and quality of the attraction. (Foncesa, 2010; Supriyono, 2009; Hermawan, 2009; Waris, 2012; dan Sugriani, 2012).

Economic Valuation of Cultural Heritage

Cultural sites are public goods which can not be transfered, so it can not have market value. Cultural heritage goods can valued from its economic benefit and externalities (Snowball, 2008:10). So, its valuation called economic valuation. Valuation technique to valuing cultural heritage is different with valuing technique on goods that have market value (Ready dan Navrud, 2002: 7-8). Valuation technique for valuing cultural heritage based on non-market natural resources economic valuation (Fauzi, 2010:212).

Fauzi (2010: 212) stated, valuation technique on non-market natural resources divided into two groups. The first group is a valuation technique that relies on the implicit price which the willingness to pay (WTP) is revealed through the developed model. This technique is often referred to rely revealed WTP technique (willingness to pay are revealed). Valuation techniques that belong

to the first group are the travel cost method, hedonic price method, and random utility models. The second group is a valuation technique that is based on a survey in which the willingness to pay is obtained directly from the respondents who declare verbally or in writing. Valuation techniques that are included in this group are contingent valuation method, discrete choice models, and models of contingency options.

Goods and services produced from culture can be given a quantitative value using the basic value of the market and non-market values through economic valuation. Economic valuation of culture is also an economic tool for estimates the monetary value of goods and services produced by a culture that uses valuation techniques. Economic valuation of natural resources and the environment is also defined as the imposition of a monetary value on natural resources in accordance with the purpose of its use in this case include the total economic value, the recovery value of the damage/contamination and pollution prevention/damage (Asian Development Bank, 1996:23). In general, the economic value of the measurement is defined as the maximum amount a person wants to sacrifice to obtain goods and services of other goods and services. Formally, this concept is called Willingness-to-Pay (WTP).

TCM approach using travel costs or cost of trip is mainly to assess the environment in sights. This approach assumes that cost of travel and time sacrificed certain travelers regarded as environmental values are tourist Willingness-to-Pay (Suparmoko 2009:108). According to Pagiola, et.al (2004) and Parumog, et. al (2003) TCM deduce the value of the observed behavior of the respondents. By using the total expenditure of respondents, socioeconomic characteristics of respondents, and the number of visits, TCM is used to derive the demand curve of attraction and its benefit indicator, consumer surplus. Through the demand curve, the total benefits of the respondents can be calculated.

The basic purpose of TCM is to know the used value of an attraction by using the proxy approach. Costs incurred to consume services from a tourist attraction is used as a proxy to determine the price of these attractions. according to Fauzi (2010:213) travel expenses can be used to measure the benefits and costs due to changes in the cost of access (entrance fee) for a recreation area. The addition of a new recreation area, changes in environmental quality recreational areas, as well as the closure of the existing recreation.

Contingent valuation method is based on a survey method that is often used to estimate the economic value of environmental or resource that can not be marketed. Although this method can be used to measure the used value and the value of non-used, but in this study the CVM will be used to estimate the value of the non-used of Prambanan Temple Compounds for visitors who benefit directly from the Prambanan Temple Compounds. Non-used value consists of the value of the option (option value) which is defined as the value of direct and indirect benefits in the future, the value of existence (existence value) that describes the value resulting from the preservation of attractions, as well as the heritage values (Bequest value) is inheritance the value of the benefits and non-benefits for the next generation.

Factors that influence the willingness to pay and the number of visits in the Prambanan Temple Compounds consists of travel expenses, income, age, education, and perceived quality of Prambanan Temple Compounds. Age and education affect willingness to pay and the number of visits. Willingness-to-Pay will be divided into scenarios that will be designed in this study then WTP per scenario will determine the economic value of Prambanan Temple Compounds. Travel cost method will use to determine the value of economy consumer surplus, the economic value of the travel cost method is the aggregate consumer surplus

Methodology

This study uses two methods in the analysis stage, the method of travel costs and contingency valuation method. The second equation modeling method is as follows

Travel Cost Method:

$$V = \beta_0 + \beta_1 TC + \beta_2 INC + \beta_3 EDU + \beta_4 AGE + \beta_5 DSB + \beta_6 DQ$$

Contingent Valuation Method

$$WTP_i = \beta_0 + \beta_1 TC + \beta_2 INC + \beta_3 EDU + \beta_4 AGE + \beta_5 DQ$$

where:

- V : number of visits in Prambanan Temple Compounds
- WTP : willingness to pay for Prambanan Temple Compounds
- TC : travel cost to visit Prambanan Temple Compounds
- INC : Income
- EDU : education level
- AGE : age
- DSB : dummy for substitute tourist attraction beside Prambanan Temples Compound
- DQ : dummy for attraction quality perceived of Prambanan Temple Compounds
- i* : scenarios

Scenarios used in this study divided into one initial condition scenario and three improvement scenarios (improvement in environmental, improvement in conservation, and improvement in facilities and amenities). Sample used in this study are domestic and international visitors with quota sampling method with the minimum number of samples using a slovin's calculation method based on the number of visits in 2014 amounted to 94 respondents. Respondents were then divided by the proportion of visitors, foreign, and the type of day excursions. Deployment is done in various types of days (weekdays, public holiday, and weekends) to be able to capture the full characteristics of travelers (Finn, *et.al*, 2000). The analysis tool is divided into two according to the method used, the regression count data for travel cost method and multiple linear regression for contingency valuation method.

Findings and Discussion

Result in Table 1 shows that travel expenses average of Rp.203,276.4 and the average visitor visit Prambanan Temple Compounds as much as 2.8 times a year. The mean value of age of the respondents in this study is 37.85 with an average education of 13.6 years or graduated from high school. 61 percent of respondent used private vehicles to this area which make their travel cost higher than used public transportation. reasons behind this were they were not only visit prambanan temple but also visit other destinations like Malioboro street or Borobudur Temple and using private vehicle was the easiest way to do that.

Table 2 shows mean value of WTP in this study was Rp.42.283 on initial conditions, and Rp.51.028 the first scenario, Rp.51.575,47 in scenario II, and Rp.49.113,21 in scenario III. All values above the current admission fee for visitors at Prambanan Temple Compounds (Rp.30.000). WTP in second scenario was the highest value above the other scenarios, this result suggest that respondent more concern about conservation condition in this area rather than other conditions such as increased the facilities and amenities.

Demand Pattern and Willingness-to-Pay

The pattern of demand for tourist visitors as was done in this study showed that visitors visiting Prambanan Temple Compounds affected by the travel cost, age, income and quality of the tourist attractions. Travel costs have a negative effect on demand for tourist visits despite having a positive value on WTP. Research conducted by Foncesa (2010) which examined on tourist visits to the Museum of Lamego in Portugal have the same result, namely the cost of travel has a negative effect, this happens because visitors tend to prefer sites that are easier and cheaper to access tourism activities because visitors have a limited budget for travel.

Tourist income negatively affect tourist arrivals, it is contrary to the majority of previous studies. Poor and Smith (2004) obtain similar results when conducting empirical research in St. Mary's City Maryland. The reason for this is because tourism is a form of mass tourism could become less attractive for visitors who have a higher income. Travel costs also have a positive influence on the WTP for visitors in all scenarios. The higher the income, the more money that is willing to pay for visitors to enjoy the tourist activities. This is consistent with research Ready and Navrud (2002) that the amount of income affects the willingness to pay for visitors at tourist sites, on the other hand, Quality of attractions also affect the demand for tourist visits and willingness to pay. (Ready and Navrud, 2002).

Economic Value of Prambanan Temple Compounds

The economic value obtained by the method of travel costs and contingency valuation shows that the economic value based Travel Cost Method for Rp.3.026.701.500.108. and economic value by using Contingent Valuation Methods with four scenarios at the initial condition the economic value amounted at average is Rp.176.680.767.077, at the first scenarios the average economic value amounted Rp.219.315.349.218, the average value of the economy in the second scenario amounted Rp.221.667.040.600, while the third scenario amounted Rp.211.088.719.835.

The economic value of the travel cost method that describes the consumer surplus has a value far greater than the economic value of the contingent valuation method that uses a WTP as a basis for the calculation at various scenarios. This is because in developing countries, the visitor does not know exactly how the willingness to pay by their income. It is as expressed by Dong et.al (2011) that visitors usually debasing their willingness to pay. Looking at the economic value based on the travel cost, the actual visitors obtain consumer surplus or benefits far greater than the willingness to pay for them in the Prambanan Temple Compounds.

Sustainable Tourism Approach

Based on the results of economic value with various scenarios, it is known that the scenario II (increased in conservation quality) has an average value of the highest compared to other scenarios. The economic value of the second scenario of Rp.221.667.040.600 compared to the economic value at the initial condition Rp.176.680.767.077, the first scenario (increased in environment quality) for Rp.219.315.349.218, and the third scenario (increased in amenities quality) of Rp.211.088.719.835. This means that visitors assume that the preservation of archeological goods in the Prambanan Temple Compounds must be preserved so that they are willing to pay more to maintain its sustainability.

Conclusion

Analysis of the tourist demand function to Prambanan Temple Compounds through Travel Cost Method, the variables that influence number of visits are travel cost, age, tourist income, and the attractions' quality. While the analysis of the willingness to pay with four various scenarios can be obtained different levels of economic values. Income has a significant influence with the positive

direction on all scenarios, age has a significant negative effect on the initial scenario and the quality of the attractions coined significant value to the positive direction in all scenarios.

The economic value of Prambanan Temple Compounds by using the Travel Cost Method has a value of Rp.3.005.568.275.200. and economic value by using Contingency Valuation Methods with four scenarios, average economic value at initial scenario was Rp.176.680.767.077, the average economic value at first scenario was Rp.219.315.349.218, the average economic value in the second scenario was Rp.221.667.040.600, while the third scenario was Rp.211.088.719.835.

Through the contingency valuation method, an analysis by including four scenarios (initial, improvement of environmental conditions, increase conservation, and improved comfort and safety) through calculation of WTP and the economic value, it can be seen that an increase in the visitors' WTP followed by increase in economic value. Thus, if the Prambanan Temple Compounds' management make improvements in sustainable tourism by improving environmental conditions, conservation and comfort and security can contribute to improving the quality of its attractions as well as the visitors' WTP so that the increase in the price of admission can be done without reducing the number of visitors.

Limitation

This Research that has some limitations in the acquisition of data or analysis. Among deployment questionnaire survey was conducted during the period of February which is the lowest month of visits throughout the year in the Prambanan Temple Compounds. The distribution of the questionnaire in cannot captured the characteristics of visitors during the peak season in December. In addition, the lack of international tourists' data so it can not make a separate analysis between domestic and international visitors so that cannot captured the characteristics of international visitors. Scenarios used are limited to the three possible scenarios, some studies suggest using the choice-method to strengthen the argument in scenarios-based studies. This study is limited in the economic valuation analysis with the approach of tourism activities, not including elements of the community in this area to assessing value of the Prambanan Temple Compounds. Limitations of this study are expected to be improved in future research on world heritage valuation.

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Table 1. Descriptive Statistic

| | Travel Cost | Number of Visits | Income | Education Levels (in years) | Age |
|------------|-------------|------------------|------------|-----------------------------|------------|
| Mean | 203.276,4 | 2,858 | 10.492.311 | 13,63208 | 37,85 |
| Median | 175.000 | 2 | 6.000.000 | 15 | 37 |
| Maximum | 610.000 | 14 | 72.000.000 | 17 | 70 |
| Minimum | 3.500 | 1 | 750.000 | 6 | 21 |
| Obs | 106 | 106 | 106 | 106 | 106 |

Table 2. Williness to Pay at Various Scenarios

| | Initial WTP | WTP at Enviromental Scenario (I) | WTP at Conservation Scenario (II) | WTP at Facilities Scenario (III) |
|--------------------|-------------|----------------------------------|-----------------------------------|----------------------------------|
| Mean | 42.283 | 51.028,30 | 51.575,47 | 49.113,21 |
| Median | 30.000 | 35.000 | 35.000 | 35.000 |
| Maximum | 360.000 | 280.000 | 298.000 | 222.000 |
| Minimum | 5000 | 30.000 | 30.000 | 30.000 |
| Standart Deviation | 48.702,55 | 51.875 | 51.835,63 | 47.658,77 |
| Obs | 106 | 106 | 106 | 106 |

Table 3. TCM and CVM Results

| Variables | Methods | | | | |
|-----------------------|---------------------------|-----------------------------|---------------------------------|---------------------------------|---------------------------------|
| | TCM | CVM | | | |
| | | Initial | Scenario I | Scenario II | Scenario III |
| Travel Cost | -1,42E-06* (-3,073526) | 0,000000522 (1.248572) | 0,000000122 (0.384188) | 0,0000000881 (0.288225) | -0,0000000781 (-0.267290) |
| Income | -2,68E-08* (-4,083153) | 0,0000000287* (7.033442) | 0,0000000275 * (7.706712) | 0,0000000279 * (7.607774) | 0,0000000273 * (7.773647) |
| Age | 0,015193* (2,555155) | -0,002298 (-0.119674) | 0,000691 (0.044497) | -0,008908 (-0.557341) | -0,006404 (-0.432268) |
| Education | -0,15788 (-1,231684) | -0,010876*** (-1.749596) | -0,001889 (-0.380755) | -0,002714 (-0.574934) | -0,004481 (-0.966803) |
| Perceived Quality | 1,036292*** (1,772847) | 0,572356** (2.365477) | 0,182446** (2.563599) | 0,219572* (3.174052) | 0,166419** (1.913492) |
| Attraction Substitute | -1,42E-06* (-3,073526) | - | - | - | - |

Note: * statistical significance at α 1%

** statistical significance at α 5%

*** statistical significance at α 10%