Measuring The Economic Value of Natural Attractions in Rawapening, Semarang District, Indonesia

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Abstract : This study aimed to measure the economic value in Rawapening. This study is expected to be able to seen as an environmentally sound tourist attractions. Because the benefits of natural attractions usually have a variety of natural resources such as biodiversity, benefit directly, and indirectly related to important ecological functions that are not only considered as a tourist attraction an sich. This study uses primary data. The primary data obtained from field surveys to the perpetrator who was visiting tourist Rawapening. The analytical method used two methods. There are ordinary least square and logit estimation. The study found that annual consumer surplus value is greater than the total value of benefits per year. [Journal of American Science 2010;6(10):791-794]. (ISSN: 1545-1003).

1. Introduction

Rawapening region located in the district of Semarang, Central Java Province, which is physically located in four districts, including District Banyubiru, District Tuntang, District Bawen, and District Ambarawa.

Rawapening itself is a vast lake, when the rainy season the pond water surface area can reach 2500 hectares, is the extent of the dry season of about 650 Ha. Rawapening own water sourced from rainwater, rivers, and springs. The main rivers and springs that fill the reservoir is derived from the River Rawapening, emergence, Kedungringin, Rengas, Galeh, Parat, Tolong, Panjang, Legi, and Petung. While for the spring comes from Rawapening, emergence, Jonjang, Petet, Parat. Regions Rawapening included in the Watershed (DAS) Tuntang flowing from the south towards the north or east-northeast, empties into the Java Sea. Rawapening can be said is Tuntang River because the river upstream from around Mount Ungaran in the west and from Mount Merbabu that flow south into Rawapening majority, then from the entrance from Rawapening to the River Tuntang.

Potential tourism areas in RawaPening has potential for being developed. Tourism potential in the area surrounding the Rawapening and can be presented to the tourists is the natural and cultural potential of society as well as tourism objects existing both newly initiated or who has not been excavated. Potential natural scenery, among others, a beautiful lake or swamp, a fairly cool climate is perfect for a place to rest, beside the coffee plantations and hilly topography which can provide varied atmosphere. The potential for such community cultural life of rural communities, traditional art, traditions and customs, handicraft industry, and others.

However, in development, the natural attractions such as Rawapening as if not treated as economic goods, but the character of public goods. This treatment affected the activities related to the rehabilitation, development, and utilization of natural attractions tend to be evaluated in accordance with economic principles. Although we know that nature tourism has a very diverse benefits, including Rawapening tourist area located in the district of Semarang, Central Java Province.

Therefore, this study is expected to be able to see how far the role of nature tourism is seen as an environmentally sound tourist attractions. Because the benefits of natural attractions usually have a variety of natural resources such as biodiversity, benefit directly, and indirectly related to important ecological functions that are not only considered as a tourist attraction *an sich*.

By looking at the background description above, the study objectives to be achieved by the authors was to find out how the economic value of tourism object in Rawapening Regions. It can be the basis of investment for the development of tourism.

2. Methodology

2.1 Methods and Survey Instruments

Surveying the field with the object of research Regions Rawapening conducted with a sample of all 225 respondents.

The questionnaire consisted of five sections, covering (1) information objects of study and research purposes, (2) motivations, desires, and activities of the respondent, (3) demographic characteristics of respondents; (4) respondents

perception towards tourism, and (5) respondents rating for environmental services of a tourist attraction. Questionnaire consisted of multiple choice questions, dichotomous yes or no, and rank-ordered response. In addition there is also an open question that is useful to provide further explanation and offer real value to the ticket if there was an increased quality of tourism in the area Rawapening.

2.2 Payment Options
Payment option is very important for researchers to select a payment option within the contingency valuation survey. This payment option scenario represents willingness to pay of respondents. Many payment options that can be used as entrance fees, sales tax, utility bills, license fees, or endowment funds. However, the entrance fee into the payment options on this survey. Lee (1997) and Barral et.al (2008) used entrance fee as payment options in their study.

2.3 Hyphotetical Market Scenario
Scenario market hypothesis in this study to obtain valid responses from respondents. The first question in the form of contingency valuation "if the sights Rawapening improved so that better management of the environment, natural resources, fishing, culture, swimming, farming, and recreation. Would you agree if the admission price was increased by Rp Y, - per person? ".

2.4 Model Specification
Model established in the study of contingency valuation method assumes that individuals in this visitor attractions will receive offers admission price to maximize their utility, which can be described in the following equation (Hanemann, 1984; Bowker & Stoll, 1988; Lee, 1997 ; Lee & Han, 2002; Adjaye & Tapsuwan, 2008):

$$V(1, Y - A; S) + \varepsilon_1 \geq V(0, Y; S) + \varepsilon_0 \ldots \ldots (2.1)$$

and vice versa, or in this case the individual visitor attractions will reject the bid price of admission if not able to maximize utilitinya, this condition can be described as follows:

$$V(1, Y - A; S) + \varepsilon_1 \leq V(0, Y; S) + \varepsilon_0 \ldots \ldots (2.2)$$

In both the above equation V is the indirect utility function, Y is income (household income per month), A is the bid or offer price of admission, S represents socio-economic characteristics of individuals or known by demographic characteristics, as well as ε_0 and ε_1 is the stochastic component, variable random independently distributed with mean zero or known by the independently distributed random variables with zero mean.

According to Bowker & Stoll (1988) has been described previously Hanemann, a theoretical model of hicksian compensating and equivalent surpluses that can be obtained from the dichotomous choice, discrete response data. In this case, Hanemann follow a framework willingness to pay (WTP) for a measurement of the individual or the individual surplus equivalent surplus. Individual respondents are assumed to know their utility functions are determined from the following variables ie income, whether there is any improvement attractions, and individual demographic conditions.

Individuals who are faced with a choice of whether to accept or reject the bid level market hypothesis, would have a probability (P_i), where the individuals who will receive offers ticket prices could be expressed in logarithm or log-logit model as follows:

$$\text{Prob (yes)} = F\eta\Delta\eta$$
$$= \left(1 + e^{-\Delta V}\right)^{-1}$$
$$= \frac{1}{1 + e^{-(\alpha + \beta_1 A + \beta_2 Y + \beta_3 S)}} \ldots \ldots (2.3)$$

Where $F\eta$ is the cumulative distribution function, α is intercept, and β_i represents the coefficient of the variable price offer admission, income, demographic conditions, and respondent perceptions. In econometric form, can be written as follows :

$$PROB_i = \gamma + \delta_1 Bid_i + \delta_2 SOCECON_i$$
$$+ \delta_3 PERCP_i + \mu_i \ldots \ldots (2.4)$$

Logit model in equation (2.4) above, then estimated using the method of maximum likelihood (ML), which is a technique commonly used to estimate the logit model.

Next, the travel cost model in this study assumes that the individual's demand for recreation to places affected by the cost of travel, individual preferences, as well as socioeconomic characteristics or socio-economic or demographic characteristics, and respondent perceptions. Thus, the general form that is expressed in econometric notation, can be written again as follows:

$$VISITS_i = \alpha + \beta_1 TC_i + \beta_2 EXPER_i$$
$$+ \beta_3 SOCECON_i + \beta_4 PERCP_i + \varepsilon_i . (2.5)$$

Travel cost model trying to estimate the dependent variable is the number of visits that an individual or a respondent who is affected by the independent variable, which in this case the independent variables such as travel expenses, visited experiences, socioeconomic characteristics, and

respondent perceptions. Techniques used to estimate the ordinary least square. One thing to be aware that this study did not calculate an annuity visitor spending but spending visitors only at the time of their visits to area attractions Rawapening so it is assumed that the respondents no longer make visits to the Regions Rawapening after the survey period.

3. Results and Discussion
3.1 Estimation Results

Estimated travel cost method, the number of tourist visits to the Regions Rawapening influenced by experience (exper), travel costs (travel costs), income respondents per month (income), age (age), gender (gend), education level (educ) , and perception. While the estimates and contingency valuation method, willingness of respondents accepted the offer price of tickets in the scenario market hypothesis (resp) to attractions in the area Rawapening influenced by experience (exper), nominal supply (bid), respondent income per month (income), age (age), gender (gend), education level (educ), and perception. The results are as follows:

Table 3.1 Estimation Results in OLS and Logit

Variable	OLS n = 225	Variabel	Logit n = 225
Exper	-0.54457** (-0.05912)		
TC	-0.32774** (-0.07441)	Bid	1.50163** (-0.23485)
Income	0.17581** (-0.07334)	Income	0.28094* (-0.17486)
Age	0.22387** (-0.0614)	Age	-0.20758 (-0.23377)
Gend	0.01262 (-0.05287)	Gend	0.21403 (-0.44715)
Educ	-0.06728 (-0.06662)	Educ	0.74907** (-0.27049)
PERCP1	-0.14890** (-0.05794)	PERCP1	0.23516 (-0.2186)
PERCP2	0.07937 (-0.05775)	PERCP2	-0.10184 (-0.18143)
PERCP3	-0.04805 (-0.05438)	PERCP3	0.01185 (-0.16727)
PERCP4	0.16298** (-0.05529)	PERCP4	0.01101 (-0.17165)
R^2	0.47226	McFadden R^2	0.32192
Adj R^2	0.45017	LR statistic (6 df)	98.44465
** sig α = 5% * sig α = 10%			

Based on Table 3.1 can be obtained by finding that the factors that influence the number of visits to attractions in the area visited respondents Rawapening is experience (exper), travel costs (tc), the respondents monthly income (income), age (age), the perception of respondents that associated with the decision to visit the area in general Rawapening (percp1), and perceptions related to the preference of respondents to the tourism attraction in the area Rawapening (percp4).

From Table 3.1, we can be known that the factors that influence the willingness of the respondents accepted the offer price of tickets in the market to hypothesize scenarios in Regions Rawapening attractions are offering a nominal admission price to a market hypothesis that is given to the respondent (bid), monthly income of respondents (income), and educational level of respondents (educ).

Another variable is not significant, such as age and sex suggest that visitors who come into a tourist attraction in the area Rawapening not segmented in the range of age groups and specific gender specific, as shown in the above demographic profile. Instead, visitors will also not provide a good assessment for tourism in the area Rawapening, as shown in the perception that the majority of variable rate casual.

3.2 Economic Value in Rawapening

Results in Table 3.2 shows that the value of consumer surplus spelled Rawapening high, and reached Rp 7,410 billion. When compared with the value of benefits per year Rawapening namely equal to Rp 1,654 billion. Of course this comparison pretty far. However, when calculated with the monetary value can be seen that visitors who come to Rawapening enormous benefit.

**Table 3.2
Benefit Value and Surplus Per Year (Rp)**

Variable	Value
Benefit Per Year	1.654.893.456
Surplus Per Year	7.410.798.912

If you see the results above, it should be a commitment to the preservation of natural and social responsibility. For that we need no support from the residents around and visitors to the area of tourism development program Rawapening. In addition, with attention to the environmental costs, including the existence of value, or price of natural resource use over time or between generations, future generations can be expected to contribute to enjoy the natural beauty and the benefits are felt by the current generation.

4. Conclusion

Conclusion of this study is the value of consumer surplus and the value of benefits in the Regions Rawapening apparently given the finding that the value of consumer surplus is greater than the benefits. This study is in line with the findings of Du Yaping (2003), Sri Rejeki (2005), and Mayor et al (2007). The value of consumer surplus in Rawapening amounted to Rp 7,41 billion; while the value of benefits in Rawapening amounted to Rp 1,654 billion.

Recommendations that can be given to the District Government of Semarang and Central Java Provincial Government to develop an environmentally sound Rawapening Regions both in the management and preservation of tourism in the region. Efforts that can be done by withdrawing charges for environmental management in other natural attractions, not least in Rawapening.

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