International Journal of Research in Advent Technology, Vol.4, No.12, December 2016
E-ISSN: 2321-9637
Available online at www.ijrat.org

An Economic Valuation of Ecotourism Using Travel Cost Method Approach

Muryani, Universitas Airlangga[1]
G. Prabugati, Universitas Airlangga

Abstract- Ecotourism has recently become a trend. One ecotourism destination that has been known to the public in Surabaya is Ecotourism Mangrove Wonorejo. The Physical Development in Wonorejo has begun to establish the region into a tourist area. The opening of ecotourism in various areas could attract more tourists, therefore the local government began to strengthen the development in Wonorejo region. The tourism development strategy is necessery especially for conservation strategy. This study employs an application of environmental economic valuation using Travel Cost Method (TCM) at Wonorejo Mangrove ecotourism, Surabaya, East java. Ordinary Least Square regression was used to examine the factors affecting the numbers of visits and to estimate the economic value of Mangrove Wonorejo. Furthermore, this study selected single site by using random utility model (RUM), while single site can use two techniques, that is, individual and zonal (Preez and Hosking, 2010: 2). Two approaches are most commonly used TCM are the Zonal Cost Travel Method-ZCTM and individual travel-cost method ITCM (Bowker et al., 1996: 424). ZTCM is an approach which was first developed by Clawson and more frequently used than ITCM, which is chosen in this research. Basically, the study proves that the Wonorejo Mangrove as an ecotourism object, which has a high economic value, so it is worthy to conserve and develop it.

Keywords – Economic valuation, Ecotourism, Mangrove Wonorejo, Travel Cost Method (TCM), OLS (Ordinary Least Square)

[1] Corresponding author: Department of Economics, Faculty of Economics and Business, Universitas Airlangga, Indonesia. Email: muryani2008@yahoo.co.id.

1. INTRODUCTION

Ecotourism is a concept of developing sustainable tourism that aims to support the conservation efforts of the neighborhood and to increase public participation in the management as well as to provide economic benefits to the local community (Surakusumah, 2012). Ecotourism has become a trend and a demand which thus creates the opportunity to attract more tourists (Hidayati, et al., 2003). Dealing with eco-tourism destination, conservation strategy is used as a tourism development with the hope that the nature conservation can be improved. Accordingly, ecotourism is precise and efficient in maintaining the integrity and authenticity of the ecosystem in the untouched area (Fandeli and Mukhlison, 2000: 2).

One of the ecotourism destinations which is quite familiar in Surabaya is Ecotourism Mangrove Wonorejo. Mangrove conservation which is located in Wonorejo has currently been developed into a tourist area and has attracted a developer to build a housing area for the elites. Wonorejo has a great appeal to the local government to begin building it up as a tourist area because the environmental conditions are green and natural. Since there has been a development in ecotourism in Wonorejo which could attract more tourists, the local government also began to again intensify the tourism potentials of this area (Business Mangrove Wonorejo, 2015).

The development and management of Mangrove Ecotourism Wonorejo requires substantial funds. Considering this, the government and the management can take advantage of tourist demand to support the funding needed for the conservation and management of Mangrove forests. The demand or request of a tour can be calculated and performed in the valuation of Ecotourism Mangrove which is based on travel behavior (Simamora, 2013).

There are some motives for tourist to visit Mangrove Ecotourism Wonorejo, some of them are: education, sightseeing, recreation, interpersonal, business, and sports. Besides five motives mentioned above, there is one new motive called *costs* (Muffiaji, Prakasa, 2012). Rationality in costs is often the decisive consideration for tourists. This believes that more affordable cost can increasingly attract more demands in both domestic and international tourism.

The management of natural resources which refers to sustainable development requires a balance among the economic growth, environmental quality and natural resources (Pearce and Turner, 1990: 23). This may entail the calculation of the benefits of natural resources not only in the economic benefits, but also in environmental costs arising from such utilization. Therefore, it is important to include the economic value of natural resources before setting up a policy related to natural resource management. In order to conserve the environment, the economic value of a resource is reflected in the economic valuation.

Valuation is a method to quantify the economic value of environmental goods and services that do not have a market (Fahrudin, 2008; Fauzi, 2006: 208), such as Mangrove Forest Wonorejo. Supposed to environmental goods and services have a price to reflect the approach to them (Tisdell, 1993 in Okojie and Orisajimi, 2011: 521). The economic value describes the monetary value calculated from the Mangrove Forest tourists' behavior and media used by the government and management to raise funds. These funds werefrom tourists for the development and management of mangrove forest Wonorejo. Therefore, the economic value of Mangrove Wonorejo is very important to be researched.

TCM is an economic valuation method that is both direct/indirect approach travel costs (Fauzi, 2006: 213) and is done by calculating all costs incurred to carry out tourism activities. TCM is the most widely used method for calculating the value to the environment, such as recreation areas (Pak and Turker, 2006: 1). TCM can also be used to determine the function of tourist demand and the factors that affect the number of tourists. These factors can be used as an analysis by the government, managers, local communities, and other stakeholders to develop the tourism potential of Forest Mangrove Wonorejo. By studying these factors, policy makers are expected to build Mangrove Forest ecotourism Wonorejo to be more convenient for the tourists so that the number of tourists will continue to increase, but still preserve the natural Mangrove forests.

Basically, this study is an application of environmental economic valuation focusing on Travel Cost Method (TCM) in a case of Wonorejo Mangrove ecotourism, in Surabaya, East Java. Ordinary Least Square regression was employed to examine the factors affecting the numbers of visits and to estimate the economic value of Mangrove Wonorejo. To estimate the individual consumer surplus per visit used the formula as follows (Garrod and Willis, 1999; 62):

$$CS = \frac{-q^2}{2\beta}$$

CS is the Consumer Surplus value, while q is the number of frequency of visits by individuals, and β is the regression coefficient of Travel Cost. Ecotourism Mangrove Wonorejo economic value was obtained by multiplying the average consumer surplus with the number of tourists (visit rate) in

Ecotourism Mangrove Wonorejo last year (Parsons, 2003: 24). The economic value reflects the economic value of Ecotourism Mangrove Wonorejo the last year. Moreover, this study chose single site by using random utility model (RUM). This single site can use two techniques, namely individual and zonal (Preez and Hosking, 2010: 2). Two approaches are mostly used in TCM are the Zonal Cost Travel Method (ZCTM), and Individual Travel Cost Method (ITCM) (Bowker et al., 1996: 424). ZTCM was first developed by Clawson and is more frequently used than ITCM.The second method is chosen in this research. The study investigates Wonorejo Mangrove as an ecotourism object which has a high economic value, so it is worthy to conserve and develop.

2. THEORETICAL FRAMEWORK

Neighborhood has three functions, namely: [1] as a source of raw material to be processed into finished goods or directly consumed; [2] as assimilator or natural waste processors; [3] as a source of entertainment or pleasure (appointed); and [4] as a human basic life support (Perman, et al. 2003: 19; Suparmoko & Ratnaningsih, 2011: 2). Equipped function is classified in the ecological functions environment. The benefit of this function is often not quantified in the overall calculation of the value of the resource (Fauzi, 2006: 208). Mendelsohn and Olmstead (2009: 326) argues that "the value of an environmental amenities remains of what people are willing to sacrifice for that amenities". This indicates that the value of environmental amenities is given to people who enjoy the amenities. In other words, this value is reflected in the willingness to pay some money in order to enjoy the amenities.

Viewed from the environmental aspect, the Mangrove Ecosystem has some roles, for example: as a breeding ground for the seeds of fish, shrimp, and shellfish from offshore, producing oxygen needed by a variety of living things, lower the gas content of carbon dioxide (CO2) in the air, and contaminants in coastal swamp waters. Another role can be seen in the influence of social/cultural factors, e.g.: seen from its function as beauty, cultural heritage.

Ecotourism can be called as tourist activities which are categorized into functions of environmental amenities. The formulation of ecotourism itself has existed since 1987, proposed by Lascurain (Ecotourism Indonesia, 2007), namely:

> *Ecotourism can be defined as tourism that consists of travelling to relatively undisturbed or uncontaminated natural areas with the specific objectives of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in the areas.*

This formulation was later refined by The International Ecotourism Society (TIES) in early 1990 to "Ecotourism is a travel to natural areas, and is conserved to the environment, as well as improves the welfare of local people" (TIES, 1990). Thus, ecotourism is a form of travel that is responsible to safeguard the environment and improve the welfare of local communities. The concept of ecotourism is a part of the protection and conservation of nature or conservation (Ecotourism Indonesia, 2007). Therefore, the concept of ecotourism cannot be separated with conservation.

Ecotourism is seen to have an economic value which is beneficial to human needs (Fauzi, 2006: 2). As a resource, ecotourism can also be defined as an asset to fulfill and give a service to human (Grima and Berkes, 1989 in Fauzi, 2006: 2). In the view of Adam Smith, the resource is defined as all production factors which are necessary to generate output (Fauzi, 2006: 3). This indicates that the resource has a value in order to meet human needs.

Economic value is one of the methods used to define and measure the value. It is calculated based on individual preferences (King and Mazotta, 2000). The value is based on taste and individual preferences in conventional economics, which can be clearly expressed in the market mechanisms by making use value which has a price (Bahruni, 2008: 35).

Fauzi (2006: 209) and Lipton et al. (1997) in Shamsudin et al. (2009: 176) articulate that economic value is the measurement of the maximum amount of money for a person who wants to sacrifice goods and services in order to obtain other goods and services. The economic value is measured in terms of willingness to pay goods and services produced by natural resources and environment (willingness to pay). By using such measurements of economic value, the ecological value of the ecosystem can be translated into the language of economics. King and Mazotta (2000) concluded economic value as follows.

> *Economic value is measured by someone who is willing to give up in other goods and services in order to obtain a certain good, service, or state of the world. In a market economy, dollars (or some other currencies) are a universally accepted measure of economic value, because the number of dollars that a person is*

> *willing to pay for something tells how much of all other goods and services they are willing to give up to get that item. This often refers to 'willingness to pay'.*

The concept is used to measure the resource of economic value which is total economic value (TEV) (Pearce and Turner, 1990: 130). TEV approach is done by assessing all benefits of a resource. In assessing an economic resource, Fahrudin (2008) employs a three-stage approach, namely: [1] identifying benefits and functions of the resource components; [2] quantifying all benefits and functions added to the value of money; and [3] conducting an alternative assessment and evaluation of resource utilization policies.

Pearce and Turner (1990: 129) classify the value of benefits which describe TEV based on method or process benefits as follows:

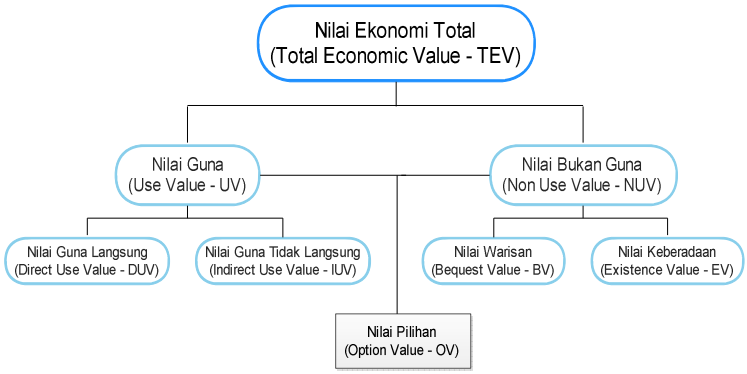

Figure 1. Classification of the Total Economic Value Source: Pearce and Turner (1990)

TEV is the sum of use value (UV) and non-use value (NUV) which is not in order. The former is the value arising from the actual utilization of the resources contained in the ecosystem, whereas the former is not the value generated from some physical interactions between resource and consumer (user). The value which is not in order does not reflect in market prices (Bishop, 1999, in Nurfatriani, 2006: 4).

Economic valuation is a quantification of goods or services of the value of money/monetary, whether or not some goods and services have the market value (Fahrudin, 2008; Barbier et al., 1997 in Shamsudin et al., 2009: 176). Economic valuation is a method developed to assess the environmental goods and services which is known as a non-market valuation (Shamsudin, et al., 2009: 175; Fauzi, 2006: 208). It is used as a tool and consideration for economists, governments, and communities to predict the impact of economic activities on natural resources and the environment, as well as to identify and calculate the monetary value of all economic benefits of natural resources and environment to the community (Shamsudin, et al., 2009: 175).

Specifically, Fauzi (2006: 212) classifies some techniques of economic valuation resource of non-market valuation into two groups. The first group is the economic valuation techniques which rely on the implicit price where the willingness to pay (WTP) is revealed through the model developed. Some of the techniques belonging to the first group is the travel cost method (TCM), hedonic pricing, and random utility models. The second group is the economic valuation techniques which are based on surveys with WTP obtained directly from the respondents, who immediately expressed verbally or in writing (survey Expressed willingness to pay). The techniques which are quite popular in this group are the contingent valuation method (CVM), random utility models, and contingent choice models.

TCM is a method used to assess the resources that do not have market value (non-market resources) by modeling the demand for environmental services, in the form of a recreational activity (Haab and McConnell, 2002 in Firandari 2009: 14). Usually, TCM is used to analyze the demand for outdoor recreation such as national parks and forests (Hanley et al., 1997 to Mr.

and Turker, 2006: 1). In principle, this method examines the costs incurred by each individual to go to places of recreation. For example, fishing as a hobby. For consumers who loves fishing, they will sacrifice their money and time to come to the venue. By linking the consumers' spending patterns to the number of their visits, it can compute the value of consumers to natural resources and environment (Fauzi, 2006: 213).

Substantial travel costs or travel expenses are different for each visitor. The different total cost of the trip indicates that the individual's willingness to pay is different in every tourist. This analysis can be used to estimate willingness to pay (WTP) rating which is based on the number of requests of each visit in different prices. In a simple pattern of the demand for visits to sites declared by Clawson (1959) in Perman et al. (2003: 411) as follows:

$V = f(C, X)$

$V_i = f\ (C_i, X_{1i}, X_{2i}, \dots\dots\dots, X_{ni})$

The above formula tells the number of visits by individual i. It is the travel expenses incurred individual i to visit tourist sites. There are socio-economic factors that affect the number of tourists i.

Parsons (2003: 1) describes two models that can be used in the travel cost method, i.e. single site and multiple sites. Single site is used to estimate the use value of the site, while multiple sites are used to estimate and to compare the value to two or more sites. In general, multiple site is using random utility model (RUM), while single site can use two techniques, namely individual and zonal (Preez and Hosking, 2010: 2). Two approaches are most commonly used TCM are the Zonal Cost Travel Method-ZCTM and individual travel-cost method ITCM (Bowker et al., 1996: 424). ZTCM an approach first developed by Clawson and more frequently used than ITCM.

In principle, ITCM is the same as ZTCM, but a more individualized approach based on individual characteristics were observed (Bowker et al., 1996: 424). ITCM approach used primary data obtained through surveys and used more complex statistical techniques. However, ITCM is relatively more accurate results than ZTCM (Fauzi, 2006: 215). Based on the previous research, this study employs an individual approach to the travel cost method (ITCM). The selection of this approach is based on the analysis of Bowker et al. (1996: 424) who argued that ITCM is better than ZTCM because of some following factors: [1] The statistical efficiency; [2] theoretical modeling consistency in behavior; [3] avoidance of arbitrary defenition zone; and [4] Among Populations Increased heterogeneity within zones.

A simple formula of demand for individual travel cost method can be written as follows (Fauzi, 2006: 215):

$V_{ij} = f(c_{ij}, T_{ij}, Q_{ij}, S_{ij}, M_i)$

V is the number of visits by individual i to place j, c is the travel expenses incurred by individual i to place j, T is the cost of time spent by individual i to place j, S is characteristic of substitutions that may exist elsewhere (alternate sites), and M is a revenue (income) of individual i.

3. RESEARCH METHODS

This study employs descriptive quantitative and qualitative. The data used are primary data and secondary data. Primary data were obtained through questionnaires by respondents who worked in the Mangrove Forest Ecotourism Wonorejo. Secondary data came from government offices and agencies as well as from literature study.

The primary data collection is done by selecting a sample of the population. Sampling was done by purposive sampling method, by selecting respondents who met with the desired requirements. The number of selected samples was determined using Slovin's formula (Sevilla et. Al., 1960: 182). The population of this study is the total population of Surabaya, 2,765,487 which is reduced by the number of people whose age is less than or equal to 14 years with total number of 643 201 and above 69 years with a total number of 711 367. Based on the formula of a significance level α 10 percent of the minimum, the sample size for this study is 100.

ITCM is an individual approach of travel cost method used to estimate the amount of tourist visits to on-site; the data have non-negative characteristic quantities (Siderelis and Moore, 1995: 350). Therefore, the characteristics of the data used are non-negative integer (Preez and Hosking, 2010: 3). To determine the factors that influence the demand for visits Ecotourism Mangrove Wonorejo, the analytical techniques of travel cost method is used to test the truth of hypothesis . The main equation model used is an econometric model using ordinary least square method. The model is adopted and adapted from the previous studies in accordance with the purposes of the study of Mangrove Forest Wonorejo.

By using the software Eviews 6 stationary test, the data were obtained as the result of descriptive statistics as shown in Table 1. The model can be written as follows:

$$V = \alpha_0 + \alpha_1 C + \alpha_2 U + \alpha_3 S + \alpha_4 P + \alpha_5 M + \varepsilon$$

Estimation model used in this study is to determine the effect of total travel costs (C), the total cost of travel to the location of alternative (substitute sites) (S), earnings (M), age (U), and education (P), whereas to determine the number of tourists visiting Ecotourism Mangrove Forest Wonorejo, least squares method or the Ordinary Least Square (OLS) was employed.

To estimate the individual consumer surplus per visit, the following formula was used (Garrod and Willis, 1999; 62):

$$CS = \frac{-q^2}{2\beta}$$

CS is the Consumer Surplus value, while q is the number of frequency of visits by individuals, and β is the regression coefficient of Travel Cost. Ecotourism Mangrove Wonorejo economic value was obtained by multiplying the average consumer surplus with the number of tourists (visit rate) Ecotourism Mangrove Wonorejo last year (Parsons, 2003: 24). The economic value reflects the economic value of Ecotourism Mangrove Wonorejo per the last year.

4. RESULT AND DISCUSSION

Partially, some significant variables affecting the number of tourists are: total cost of travel, total cost of a trip to an alternate site, income, age and education. Verification was done based on the estimation results and statistical testing of hypothesis. The hypotheses are involved: total cost of travel, total cost of a trip to an alternate site, income, education, and age which affect the number of tourists visiting Wonorejo Mangrove Ecotourism. The analysis showed that simultaneously the total cost of travel, total cost of a trip to an alternate site, income, education and age were statistically significant in affecting the number of tourists' visits. Likewise, the observed partial factors affected the number of tourists. The variables which partially proved significant are total cost of travel, total cost of a trip to an alternate site, income, education and age.

The economic value is obtained by the Individual Travel Cost Method by calculating surplus value of each individual consumer annually. Regression results were obtained from the number of visits (Y) with independent variable that later resulted in the demand model of the equation regress back to variable number of visits (Y) and TC1 variable (X1) so that the equation becomes:

Dx = 3.089189 to 0.0000121 P

The economic value was obtained by summing up consumer surplus per visit based on each frequency. In order to obtain the total consumer surplus per visit, five frequencies of visits were Rp. 614.754,10 with an average value per visit for individual consumer surplus of Rp. 122.950,82. The economic value is obtained by multiplying the average consumer surplus per visit with the number of tourist arrivals in a given year (Parsons, 2003: 24).

In this study, the economic value is calculated by multiplying the average surplus with the number of visits last year appropriate to Shrestha, et al. (2006: 7) research, so that the number of visits that is used is the number of tourist arrivals in 2014. Based on the data obtained from LKMD, the number of visits in 2014 was 97.216 in which 30 percent was tourists visiting by car, assuming there were four passengers per vehicle in order to obtain the number tourists as much as 116.659 people, whereas 70 percent of them were tourists who visited by motorcycles, assuming there were two passengers per vehicle in order to obtain the number of tourists as many as 136.102 people. It was known that the total visits of last year was 252.761 people in which 86 percent of them were visitors who enjoyed jogging track as many as 217.375 people, and 14 percent of the remaining was 35.386 people who enjoyed jogging track and a boat. The estimation of the total economic value of Wonorejo Mangrove Ecotourism in 2014 is Rp. 31.077. 245.901,64 per year. The test results demonstrate that the total cost of the travel negatively determines the number of tourist visits. This can be interpreted by the increase of the total trip cost which would result in a decrease in the number of tourists. These results are consistent with the previous studies (e.g. Sari, Dewikusuma. 2011).

The regression coefficient value is 0,00000880 which means that if the total cost of travel has increased by 1 percent, it will cause the number of visits to decrease by 0,00000880 percent, assuming that other variables are constants. There was a negative relationship between travel cost and the number of tourist visits in accordance with the law of demand. The composition of travel total cost are transportation costs (total cost of transport for tourism activities), lodging costs, consumption cost, the cost of a souvenir, and the cost of lost time (time cost). Based on the analysis, it can be seen that the price increase in the total cost of travel has resulted the decline of the number of tourist arrivals.

From the results of regression analysis, the total cost of travel to alternative sites proved that it is statistically significant in determining the number of tourists visiting to Wonorejo Mangrove Ecotourism. There is a positive correlation between the total cost of

travel and the alternate sites with the number of tourists. These results corroborate with the previous research conducted by Sari (2008). Therefore, the increase in the total cost of travel to the alternate sites will also increase the number of tourists visiting. The result as much as 0,00000182 means that if the total cost of travel increases by 1 percent, it will cause the number of visits to increase by 0.00000182 percent, assuming that other variables are constant.

The finding indicates there is an intense competition between the total cost of travel to Wonorejo Mangrove Ecotourism with the total cost of travel to an alternative site in determining tourists visit. If the travel cost to alternative site increases, tourists will choose Wonorejo Mangrove Tour. Conversely, if the travel cost to alternative sites goes down, tourists will choose the alternative sites rather than to Wonorejo Mangrove Tour.

The results of regression analysis showed that income has affected the number of tourists and is proven statistically significant. These results are as expected, that is the income has a positive influence on the number of tourists. The higher of the income, the tourist arrivals will increase. Similar results were also found in the previous studies (e.g. Salma, Irma Afia and Beautiful Susilowati, 2004; Pramudhito, Adhianto , 2010).

The significant income in determining the number of tourists indicates that Wonorejo Mangrove Ecotourism is an exclusive tour destination, which is targeted to the public with certain income levels. Tourists with a given level of income can travel to Wonorejo Mangrove Ecotourism. The regression shows the results relating to the choice of tour form in Wonorejo Mangrove Ecotourism. Travelers can pick up the boat or on foot to go around Wonorejo Mangrove Ecotourism.

The test results indicate that age-related is significant and positive to determine the number of tourist visits. The regression results do not match with the expectations, the age group was significantly and negatively related in determining the number of tourists. The same results were also found in the study of Dewikusuma (2011), and Samsudin, et al. (2013).

Wonorejo Mangrove Ecotourism seen in the form of nature is uneasy terrain, therefore the results are quite odd. However, when explored further, Wonorejo Mangrove Ecotourism is one of the tourist sites that pamper tourists. The ambience of Wonorejo Mangrove forests is surrounded by swamps river with plenty of mangroves, tricked by the provision of adequate water and transportation services. The local communities provide boat rental services for tourists. The boat is more favored but the cost is more expensive than other tourist rides. Therefore, the tour to Wonorejo Mangrove Ecotourism is influenced by age. Tourists with the more income and jobs could have little leisure time. The tour takes time but Ecotourism Mangrove Wonorejo provides some alternatives and solutions to fit the needs and capabilities of tourists.

The significance test results demonstrate that education have a positive effect and proven statistically significant. This rating indicates that education level has affected the number of tourists. The regression results are similar as what have been expected because education is supposed to influence the number of tourist visits. The higher the education level of tourists is, the more number of visits to Ecotourism Mangrove Wonorejo will be.

These similar results agree with previous studies (e.g. Irma Afia and Susilowati 2004; Adhianto 2010) found that education has a significant and positive effect on the number of tourist visits. Shrestha, et al. (2006) found education has a negative effect on the number of tourists significantly. In connection with the Wonorejo Mangrove Ecotourism, it was not only visited by tourists with low education (less educated), but also tourists who are well educated. The function of mangrove conservation has a strong role in promoting this eco-tourism. People can access information about Mangrove, both from the lesson, internet, friends or relatives, and others.

5. CONCLUSION

The most important functions of Wonorejo Mangrove Ecotourism based on visitor perceptions is as a social function of culture (42 percent), where the indicator of family recreation (51.3 percent) and sports facilities (29.6 percent) are the highest value in this function. Ecological functions obtained by 35 percent and an aesthetic function by 20 percent. The results of visitor perceptions towards these three functions show that there is compatibility between the government's goal in adding the area of Green Open Space as the respondents reported. Moreover, Wonorejo Mangrove Ecotourism provides an additional function that is economy function (3 percent).

Based on the regression analysis of OLS (Ordinary Least Square), it was found that simultaneously the total cost of travel, total cost of travel to an alternate site, income, education and age significantly determined the number of tourist visits. Some variables which were proven to significantly affected the number of tourists were the total cost of travel, the total cost of a trip to an alternate site, income, education and age.

Based on the calculations using the Individual Travel Cost Method (ITCM), it was found that the total consumer surplus per visit was based on five frequencies of visits Rp. 625,000.00, with an average value consumer surplus per individual visit of Rp 125,000.00. So, the obtained economic value of Wonorejo Mangrove Ecotourism in 2014 as much as Rp. 31.595.125,00 per year.

There are some recommendation as a consideration for policy making related to development and management of Wonorejo Mangrove Ecotourism. It is suggested that some additional facilities and maintenance be improved in order to attract more tourists. It is also important to pay attention to tourists' characteristics as well as their preferences. Needless to say, Wonorejo Mangrove Ecotourism can gain the optimal income, however it is important to take care of the conservation aspects and social-economy functions.

REFERENCES

[1] Bowker, J. M et al. 1996. Toward A Value for Guided Rafting on Southern Rivers. Journal of Agricultural and Applied Economics, 28, 2, (12):423432.

[2] Fahrudin, Achmad. 2008. Valuation of Economic and Community Development in Areas Coral Reef Conservation , (Online), (http://coastaleco. wordpress.com)

[3] Fauzi, Akhmad. 2006. Economics of Natural Resources and Environment. Jakarta : PT Gramedia Pustaka Utama.

[4] Gujarati, Damodar, 1997. Basic econometrics, Penerbit Erlangga, Jakarta.

[5] Hidayati, Deny, dkk. 2003. Ecotourism: Learning from East Kalimantan. Jakarta: PDII LIPI.

[6] King, Dennis M. and Marisa. 2000. *Ecosystem Valuation*, (Online), (http://www .ecosystemvaluation.org)

[7] Muffiaji, Prakasa. 2012. Exploratory Study Visits Motif Travel Attractions: Ecotourism Mangrove Wonorejo Surabaya . Unpublished thesis . Ubaya Faculty of Economics and Business, Surabaya.

[8] Nurfatriani, Fitri dan Handoyo. 2007. Economic Value of Hydrological Benefit Forests in the watershed Brantas Upstream for Non-Commercial Utilization. *Info Sosial Ekonomi*, 7(3):193-214.

[9] Okojie, Luke O and Olusola. 2011. Valuation of the Recreational Benefits of Old Oyo National Park, Nigeria: A Travel Cost Method Analysis. Journal of Food, *Agricultural & Environment Journal*, 9(1):521-525.

[10] P. Mehmet and Mustafa. 2006. Estimation of Recreational Use Value of Forest Resources by Using Individual Travel Cost and Contingent Valuation Methods (Kayabasi Forest Recreation Site Sample). *Journal of Applied Science*, 6(1):1-5.

[11] Parsons, George R. 2003. "The Travel Cost Model". Chapter 9 in , A Primer for Nonmarket Valuation 269-329.

[12] Pearce, D.W. dan R.K. Turner. 1990. Economics of Natural Resources and The Environment. Harvester Wheatsheaf.

[13] Perman, Roger et al. 2003. Natural Resources and Environmental Economics. Third Edition. London: Pearson Education Limited.Preez, M. D. dan Hosking. 2010. The Value of the Trout Fishery at Rhodes, North Eastern Cape, South Africa: A travel cost analysis using count data models. Nelson Mandela Metropolitan University Working Paper 182 (7):1-17.

[14] Samsudin, Nurhayati dkk. 2010. Economic valuation of National Park Aplication of Travel Cost Method (TCM), (Online), (http://pustaka.unpad.ac.id)

[15] Secretary of the Organization Ecotourism Mangrove Wonorejo . 2015. The Jewelery of Wonorejo Mangrove forest, (Online), (http://micwonorejo.wordpress.com)

[16] Suparmoko, M. dan Maria. 2011. *Environmental Economics*. Second Edition. Yogyakarta: Faculty of Economics and Business UGM.

[17] Surakusumah, Wahyu. 2012. *Ecotourism*, (Online), (http://file.upi.edu/Direktori/ FPMIPA)