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# Tourists' Preferences for Sustainable Tourism: The Case of Pok Tunggal Beach, Yogyakarta Indonesia

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**Abstract:** Tourists as the main actor in tourism industry play an essential role in achieving sustainable tourism. Tourist preference for physical environment and infrastructure development in the tourism destination can affect the achievement of sustainable tourism. This study aims at measuring tourist preference for sustainable tourism management and calculating the economic value of the tourism destination. For this purpose, the Pok Tunggal Beach tourist area in Yogyakarta Indonesia was considered as a case study site. A survey with 200 local tourists was conducted using the Choice Modeling (CM) technique to measure their preferences related to the development on the beach. This study found that tourists prefer to pay more fees to get better and more sustainable facilities. The economic value of the Pok Tunggal Beach is the amount of IDR 1,038,600 (USD 73.66). The main attributes in the destination, tourist's education, environmental awareness, and recreation costs are statistically significant in determining tourists' preferences. This study recommends Pok Tunggal beach quality improvement by considering the tourist preferences. This study also suggests a price for the entrance fees, not only to increase revenue but also to monitor and control the number of tourists who visit the beach.
**Keywords:** Sustainable Tourism; Willingness to Pay; Choice Modeling; Economic Value; Tourist
**JEL Classification**: O13, Q26, Q51

## Introduction

The role of tourism in encouraging economic development is still being debated. Some studies conclude that there are negative impacts of tourism such as a volatile demand and foreign capital (Sinclair, 1998); disturbances in the labor market (Nowak, Sahli, & Sgrò, 2004); Dutch disease effects (Nowak & Sahli, 1999); and land competition and speculation e.g. (Maupertuis & Giannoni, 2005). The development to support the tourism sector creates other problems for the nature and the environment if the surge in tourist visits and development strategies are not planned properly (Chang et al.,, 2018; Mallawaarachchi, Morrison, & Blamey, 2006; Rawi, 2012). Therefore, coordination is needed by involving the participation of local communities as a sustainable development strategy for the development of the tourism industry (Li et al., 2017; Mallawaarachchi et al., 2006; Vitasurya, 2016).

Tourism is an important economic sector in Indonesia. According to Wehrli, Schwarz, and Settler (2011) sustainable tourism remains to be important in the future. Sustainable tourism, according to Niedziolka (2012), is "all types of tourism operations, management, and production that conserve environmental, economic, and social integrity and ensure the preservation of natural and cultural resources." Tourism sector also has a positive impact on the national economy and has become a potential mainstay for the Indonesian economy. Natural and cultural wealth is an important component in tourism in Indonesia. Indonesia's nature has a combination of tropical climate, and there are 17,508 islands in it. This natural resource, if maximized, will help the regional economy. Indonesia as an archipelago country with a wide ocean has the potential for its development and utilization. Oceans and coasts are publicly-owned resources so that the oceans can be managed by the community with government permission. The area around the coast, if managed properly, will help the local economy. According to Suparmoko, Ratnaningsih, and Yusuf (2000) anyone can use the sea and the coast and do not have to make payments (non-exclusion principle) and the use of someone over the sea and coast does not reduce the volume available to others (non-rivalry in consumption). In addition, sustainable tourism development must be aligned with the importance of maintaining biodiversity and natural resources (Rawi, 2012) because sustainable natural and environmental conditions are assets that must be maintained for tourism sustainability (Vitasurya, 2016). Social demographic factors such as age, sex, education, and employment status influence the subjective valuation that tourism contributes to a sustainable environment (Barros, 2012).

In Indonesia, tourism management has begun to increase with the program by the government that focuses on developing the coastal areas (Patlis, 2005). Fpr example, there has been Yogyakarta Special Region Province Regulation Number 1 of 2012 concerning the main plan for tourism development in Yogyakarta Special Region Province, 2012-2025. With the support from the government, the increase in tourist visits to the coasts will increase. From the data collected by the Gunungkidul Culture and Tourism Office, it is revealed that the level of tourist visits every year continues to increase. Likewise, with the existing natural attractions in the Gunungkidul area, more specifically the Pok Tunggal beach as one of the attractions favored by tourists, which is considered as the third most favorite destination after Baron Beach and Indrayanti Beach. Pok Tunggal Beach is located 3 km east of Pulang Syawal beach, Gunungkidul. This beach has been equipped with several facilities such as toilets, prayer rooms, parking lots and food stalls. Such facilities make visiting easy and convenient for visitors, although these are still managed by the community. Pok Tunggal still has many shortcomings because there is no support from the government especially from the Tourism Office. For example, access to the beach is still a path, health station has not been built, Search and Resceu (SAR) team on duty is still small and only available on the weekends and on holidays, parking space is inadequate and there are no janitors employed by the Department of Tourism.

Commonly used valuation methods are approaches of a changes in productivity, travel cost method, hedonic pricing method, and contingent valuation method. Contingent choice modeling is the most recent unconventional economic valuation method developed to date. Contingent choice modeling is used to quantify tourist perceptions

about various alternative choices involving resources or the environment. In determining alternative choices, the strategy is very dependent on individual satisfaction and perceptions of the benefits and costs of resources, especially the coast because satisfaction is one indicator to assess natural resources. Choice modeling approach can also analyze the effect of increasing special demand on the adoption of sustainable tourism policies (Brau, 2008); and determine the value of environmental economic valuations and tourist preferences for sustainable products (Chang et al., 2018; Chen, & Chen, 2016; Do & Bennett, 2009; Mallawaarachchi et al., 2006; Peng & Oleson, 2017; Tait et al., 2011; Wehrli et al., 2011).

Conversely, if an individual being asked is entitled to these natural resources, then the relevant measurement is the desire to receive the minimum compensation for the loss or damage to the natural resources he has (Garrod & Willis, 1999). Contingent Valuation Method (CVM) is chosen because it can (1) estimate the willingness to Pay for changes that increase the quality of tourism activities; (2) assess trips with multiple tourist destinations; (3) assess the enjoyment when in the environment for both users and non-users of the natural resources; (4) value goods whose value is too low to assess with other methods (Prasetyo & Saptutyningsih, 2013) . (Shin, Kim, & Son (2017) use choice modeling and calculate tourists' willingness to Pay for travel attributes. Choice modeling is used to obtain willingness to Pay (WTP) for households, local communities, and tourists to increase the benefits from natural resources, the environment, and tourism industry in general (Kanyoka, Farolfi, & Morardet, 2008; Lee, 2012; Peng & Oleson, 2017). Choi, Ritchie, Papandrea, and Bennett (2010) in their research on economic valuation of cultural heritage sites using the choice modeling approach stated that organizing events and building facilities such as cafes and shops have a positive impact on economic valuations.

Tourist preferences for attractions and the nature need to be identified to improve the provision of services in tourism facilities (Brau, 2008; Chen & Chen, 2016; Choi et al., 2010) by applying the choice modeling method. Based on previous studies, tourist WTP is influenced by income factors (Amanda, 2009; Chambers, Chambers, & Whitehead, 1998; Prasetyo & Saptutyningsih, 2013; Salazar & Marques, 2005; Samdin et al., 2010; Varahrami, 2012; Yun et al., 2012). The cost of recreation influences tourists' WTP (Amanda, 2009); as well as the level of education (Prasetyo & Saptutyningsih, 2013; Samdin et al., 2010). According to Varahrami (2012) satisfaction has a positive effect on travelers' WTP. The studies focusing on tourists' preference toward sustainable tourism in Indonesia remains rare. To fill in this knowledge gap, this study examines tourists' preference between alternative scenarios for sustainable tourism and then determines the WTP for the improvement of the environment that aligns with sustainable tourism goals. We surveyed tourists in villages in Pok Tunggal Beach, that is a tourist destination in Yogyakarta, Indonesia, regularly visited by many tourists. The number of tourist visits becomes the basic principle to determine the status of a tourist attraction. The higher the level of tourist visits, the more relevant it is to be classified into a tourist attraction that is developed and developing. This becomes the basis of government-community cooperation to plan development so that the tourist destination continues to grow and to be visited by more tourists. In particular, roads and facilities must be improved to facilitate more visits. Using a choice modeling approach, we examined the impacts of

sociodemographic factors, facilities, environmental awareness, and recreational cost on the preference between alternative scenarios for sustainable tourism. This study contributes to the literature by identifying the tourists' preference for sustainable tourism and the economic value of Pok Tunggal Beach by determining the WTP for the improvement of the environmental qualities.

**Table 1** The Variable References

| Variables | Relation | References |
|---|---|---|
| Level of education | Positive | Prasetyo & Saptutyningsih, 2013; Samdin et al. 2010; Sylvia, 2016; Djijono, 2002 |
| Facilities | Negative | Chen & Chen, 2016; Brau, 2008; Choi et al., 2010. |
| Environmental awareness | Positive | Widiyanti, 2016; Sylvia, 2016; Prasmatiwi et al., 2011; |
| Recreational costs | Positive | Prasetyo & Saptutyningsih, 2013; Sylvia, 2009; Widiyanti, 2016; Djijono, 2002 |

Source: Data processed.

# Research Method

## Study site

The study was conducted at the Pok Tunggal Beach, which is located in Kemadang Village, Tanjungsari District, Gunungkidul Regency, Special Region of Yogyakarta. This location was chosen by considering its economic potential as a tourist attraction in Yogyakarta Province. The subjects in this study were tourists in the Pok Tunggal Beach tour which is located in Kemadang Village, Tanjungsari District, Gunungkidul Regency, Special Region of Yogyakarta.

## Sampling

The sampling technique in this study is accidental random sampling. Some advantages of random sampling are: easy sample selection procedures, only one type of sample selection unit, avoidable misclassification, simple and easy sample outline and sample design. According to Sekaran and Bougie (2009) the minimum sample size can be determined by multiplying the number of variables by 10. The variables in this study are 4, so the minimum sample is 40 respondents. The number of samples in this study is 200. Data collection technique is by using a questionnaire containing a number of questions related to the problem (Pok Tunggal Beach Tourist, Gunung Kidul), which was distributed to respondents with the aim of obtaining data that answers the research questions.

**Table 2** Research Questions

| Category | Variables |
|---|---|
| *Willingness to Pay* (WTP) | WTP is the maximum amount that someone is willing to pay to get a good quality of service (Fauzi, 2006) in units of Rupiah (IDR) |
| Visitor choice | Visitor choice is an alternative choice offered to visitors to improve the quality of the beach environment. These choices are formatted in discrete 1–0 where 0 is option A; 1 is option B |
| Recreational costs | Recreation costs are the total costs incurred by tourists related to tourist activities carried out at tourist sites, not including the cost of admission. Recreation costs include transportation costs, consumption costs, accommodation, documentation, and others. The cost of recreation is measured in Rupiah (IDR). |
| Condition | The condition here is people's perception of the condition or condition of Pok Tunggal beach compared to other tourist attractions in Kemadang Village, Tanjungsari District. 1 = good; 0 = not good |
| Level of education | The education referred to in this study is the length of formal education achieved by visitors. In this study, the length of education is measured from elementary school level and based on a normal measure of educational travel time. |
| Attribute | The attributes are the choice of repairing the facilities, which are in the Pok Tunggal beach location. For example: road access, garbage dump facilities, resting places, and health station as well as the availability of SAR team. 0 = disagree; 1 = agree. |

Source: Data processed.

**Analysis tools**

Choice Modeling or CM is a preference assessment method that starts with a conjoint analysis and is initially developed in the marketing and transportation sectors (Richter, & Keuchel, 2012). CM is also a technique based on statements from individuals to estimate the non-market economic value of a natural resource. In their application, respondents are given a series of choices consisting of two or more alternative choices. One alternative is a combination of several attributes that have values, or commonly called levels. CM has an important position because it directly assesses characteristics of an attribute and marginal change of the characters rather than just choosing the good or the needs of a product as a whole.

The advantages of CM method:
a. Provide several alternative options for consideration (strengths and weaknesses) for the respondent.
b. Each attribute is clearly spelled out and the alternatives offered are adjusted according to the attributes.

$X_{in}$ and $X_{jn}$     = variables that affect behavior to maximize satisfaction.
f               = mathematical function

The regression equation is as follows:

$$V_{in} \text{ or } U = \beta_1 X_{in1} + \beta_2 X_{in2} + ... + \beta_k X_{ink}$$

where $V_{in}$ or $U$ is value of respondent satisfaction when choosing alternative I (maximum decision); $V_{in}$ s/d $\beta_k X_{ink}$ means A group of independent variables that affect maximum satisfaction; $\beta_1$ to $\beta_k$ is the regression coefficient.

A utility can be interpreted as a special measure of individuals in determining the best alternative choices or choices maximized by individuals. A utility is a function of alternative attributes of a decision-maker characteristics, which is usually assumed in a linear form. The utility of utilizing natural resources such as the Pok Tunggal Beach for recreation areas for certain individuals is presented as a function of attributes, such as the required travel time, entrance fees, additional facilities, parking fees, and others. While the attributes that make decisions are income, number of family members, age and occupation.

Utilities are not measured directly so that some attributes affect individual utilities must be treated as random shapes. Therefore, they must be randomly modeled as well, meaning that the choice being modeled only gives probabilities to the chosen alternatives instead of just their own choice.

Each choice has a U utility for each individual n, so in making the model it is assumed that U can be expressed in 2 components, namely
a. $V_{in}$ that is measured as an attribute function
b. The random part $\varepsilon_{in}$ that reflects the specific features of each individual including errors made by modeling

$$U_{in} = V_{in} + \varepsilon_{in}$$

where $U_{in}$ is an alternative utility i for decision-makers n; $V_{in}$ is a deterministic function of alternative utilities i for individuals n; and $\varepsilon_{in}$ is random error.

In simple terms, the function of a method based on individual utility in question can be written as follows:

$$P\ (U_0 > U_1) = P\ (X_0 \beta - X_1 \beta > V_0 - V_1)$$

where $(U_0 > U_1)$ means someone will choose the option 0 if the utility is greater from choice 1; X is the vector of the attribute that affects the utility; V is a random variable from utility.

The above model predicts that a possible alternative has been chosen. Finally, the value of Willingness to Pay (WTP) obtained indirectly becomes (Putrantomo, 2010):

$$WTP = \left[ \frac{\sum_i exp\beta_1}{\sum_i exp\beta_1} + \cdots + \frac{\sum_i exp\beta_n}{\sum_i exp\beta_1} \right]$$

**Research Model**

Based on empirical studies, the regression model in this study is as follows:
Choice = f (cost vector, public perception vector, social vector demographics, attribute vectors)
Choice = f ($\beta_0$ + $\beta_1$Cost + $\beta_2$Cond + $\beta_3$Edu + $\beta_4$A attribute)

where Choice is visitor choice; $\beta_0$ is constant; $\beta_1$ … $\beta_6$ is the regression coefficient; Cost is recreation fee (in IDR); Cond is Pok Tunggal beach condition compared to other tourist attractions; Edu is the length of Education (in a year); Attributes are the improvements of the existing facilities at the location.

**Visitor Choice Opportunities**

To calculate the chances of visitors choosing the alternative options available, the following formula is used (Widodo, 2013):

$$P = \frac{e^L}{1 + e^L}$$

where P is chance of occurrence; $e^L$ is an exponential of L; L is ln [P/1-p] or logit index.

# Result and Discussion

This study uses primary data by conducting interviews and asking 200 respondents who were visitors to Pok Tunggal Beach to fil out questionnaire. This study began on July 6, 2017, and ended on August 20, 2017. Characteristics of respondents is presented in Table 3.

Regarding the education, visitors of Pok Tunggal Beach were mostly teenagers with senior high school/equivalent education with a percentage reaching 55.5 percent. Predominantly, the age range was between 20 and 25 with a percentage of 62.5 percent. Respondent occupations were mostly students with a percentage of 52 percent, followed by employees of a private company and entrepreneurs. The remaining was civil servants and housewife 1.5 percent. The income level of respondents was sufficiently varied in the range of IDR 500,000 to IDR 5,000,000. The dominant income level of respondents in this study was in the range of IDR 3,000,000 to IDR 5,000,000 with percentage reaching 71. The majority of respondents who came to Pok Tunggal beach were male with a percentage of 73 percent, and visitors mostly unmarried with a percentage of 80 percent. The majority of respondents came to Pok Tunggal beach only once or twice as can be seen from the percentage of the frequency of visits that was 80 percent. The cost of the visit incurred by respondents to the Pok Tunggal beach is quite cheap, ranging from IDR 10,000,000 to IDR 30,000.00 with a percentage of 47.5 percent.

**Tabel 3** Respondent Characteristics

| Characteristics | Classification | Total | Percentage |
|---|---|---|---|
| Level of education | Primary School Not graduated | - | - |
| | Primary School/equivalent | - | - |
| | Junior High School/equivalent | 12 | 6 |
| | Senior High School/equivalent | 111 | 55,5 |
| | Diploma3/S1 | 76 | 38 |
| Age | 14-19 year | 33 | 16,5 |
| | 20-25 year | 125 | 62,5 |
| | 26-31 year | 22 | 11 |
| | 32-37 year | 11 | 5,5 |
| | ≥ 38 year | 9 | 4,5 |
| Type of work | Student | 104 | 52 |
| | Civil servant | 23 | 11,5 |
| | Private employees | 38 | 19 |
| | Entrepreneur | 32 | 16 |
| | Housewife | 3 | 1,5 |
| Income level | IDR 500,000 – IDR 1,000,000 | 52 | 26 |
| | IDR 1,000,000 – IDR 3,000,000 | 103 | 51,5 |
| | IDR 3,000,000 – IDR 5,000,000 | 142 | 71 |
| | >IDR 5,000,000 | | |
| | | 3 | 1,5 |
| Gender | Male | 146 | 73 |
| | Female | 51 | 25,5 |
| Marital status | Married | 40 | 20 |
| | Single | 160 | 80 |
| Frequency of visits | 1-2 | 160 | 80 |
| | 3-4 | 31 | 15,5 |
| | 5-6 | 3 | 1,5 |
| | 7-8 | 1 | 0,5 |
| | >8 | 5 | 2,5 |
| The cost of a visit | IDR 10,000 - IDR 30,000 | 95 | 47,5 |
| | IDR 31,000 - IDR 50,000 | 73 | 36,5 |
| | IDR 51.000 - IDR 70,000 | 7 | 3,5 |
| | IDR 71,000 - IDR 100,000 | 25 | 12,5 |

Source: Data processed.

This research began on March 24, 2017 until June 1, 2017, at Pok Tunggal Beach, Gunungkidul. The data was obtained by conducting interviews and then distributing questionnaires that were filled out by 200. Because regression results are good, there is no reduction in the results provided by respondents so all of the data could be processed. This model is almost similar to the Contingent Valuation Method because it is based on the preferences of respondents to estimate the economic value in an ecosystem in the form of goods and services. The difference is that respondents are free to choose the options that are available. Clearly, respondents are not asked to provide a direct assessment of an ecosystem related to their preferred conditions. Choice Modeling is a method in which respondents are free to make choices based on personal observations in a scenario. For example, respondents are given a choice based on a scenario that has been made consisting of two or more alternative choices. One alternative is a combination of several attributes that have a value commonly referred to as a level. The WTP value of this model is determined indirectly based on the choices given by respondents.

In this study, respondents were given two choices to choose from in terms of preserving the beach and building facilities in the area around the Pok Tunggal. The scenario is an alternative choice to determine the beach entry fee. Each alternative option is given along with various attributes such as cost, improvement of facilities and infrastructure in the coastal area (see Table 4).

**Table 4** Alternative Scenarios for Visitor Options

| Attribute | Initial Conditions | Option A | Option B |
|---|---|---|---|
| Entry fee | IDR 9,500 | IDR 15,000 | IDR 25,000 |
| Parking fee | IDR 2,000 (motorcycle) IDR 5,000 (car) | IDR 2,000 (motorcycle) IDR 5,000 (car) | Free parking fees |
| Trash can | Insufficient number of trash cans that is only 5 small trash cans, so visitors sometimes litter | Addition of 2 large trash cans so that cleanliness of the beach area is maintained | Addition of 4 large trash cans so that cleanliness of the beach area is maintained |
| Road | The road is made of cement material so it breaks quickly and if it rains there are some pot holes that are hollow and muddy | Repair road access to Pok Tunggal beach area by patching the damaged road so when it rains it will not be hollow and muddy | Asphalting road access to Pok Tunggal beach area so it lasts longer and access is easier |
| Health Station | Health station has still not built | Building a health station so visitors have health problems, the response is fast | Adequate health station and complete medical equipment so visitors have health problems, handling is quick and responsive |
| Resting area | There is no gazebo and rest area | Building one gazebo to rest | Building three more gazebos to rest |
| Beach guard | There are two guards or officers to control the visitors | Adding two more guards or officers to control and keep visitors from going to prohibited areas on the beach | Adding three more guards or officers to control and keep visitors from going to prohibited areas on the beach |

Source: Data processed.

Out of 200 respondents, as many as 96 visitors or 48 percent chose alternative A and as many as 104 visitors 52 percent choose alternative B. This can be interpreted that visitors choose alternative B over alternative A. From this result it can be seen that visitors are willing to pay dearly for the convenience and improvement of the location of a single Pok Tunggal beach and it can be concluded that the level of visitor awareness to improve the quality of the Pok Tunggal is very good and visitors want an increase the quality of all aspects such as health station, roads and provision of beach guards. Those who choose the alternative A are mostly students who consider the fee affordable.

Opportunities for respondents in choosing alternatives provides regression analysis using binary logistic regression. In Choice Modeling, visitors are given two alternative choices that will be given a value between 0 and 1. This assumption is given to state the visitor's decision in choosing one alternative (1) and not choosing an alternative (0).

**Tabel 5** Dependent Variables

| Variables | Internal value |
|---|---|
| Alternative Model A | 0 |
| Alternative Model B | 1 |

Source: Data processed.

The information is obtained that the dependent variable has two categories, namely 0 for alternative models A and 1 for alternative model B (see Table 5). The value of WTP is obtained directly but is concluded indirectly based on the decision of the respondents, and then the WTP is analyzed using the binary logistic method.

**Tabel 6** Regression Result

| Variables | Coefficient | Exp (B) |
|---|---|---|
| Education | 0,821*** | 2,273 |
| | (0,273) | |
| Facilities | -0,096 | 0,908 |
| | (0.098) | |
| Environmental awareness | 0,012** | 1,012 |
| | (0,006) | |
| Recreational costs | 0,000* | 1,000 |
| | (0,000) | |
| Constant | -3,555* | 0,029 |
| | (1,856) | |
| Nagelkerke R Square | 0,112 | |

Dependent Variable Choice (Alternative Choice) 0: if choosing A; 1 if choosing B.
The sign ( ) indicates a Standard Error
* significant at α 10%; ** significant at α: 5%; *** significant at α 1%
Source: Data processed.

The level of education is positively corelated to alternative choices. Visitors with a higher education level have the tendency to choose alternative choice B compared to visitors with lower education levels. Thus, if the visitor's education level is higher then there will be an increase in the probability of visitors choosing B alternative and vice versa.

The facilities of the Pok Tunggal beach location are negatively related but not significant to the alternative choices, which can be interpreted that the facilities at the beach location are not a factor for visitors to choose alternative options A or B. Facilities are not a priority because Pok Tunggal beach's facilities as offered by the management has met the needs of visitors such as toilets, gazebos, and restaurants.

The environmental awareness of Pok Tunggal beach visitors has a positive value on alternative choices. Visitors who have good environmental awareness tend to choose

alternative B compared to those who feel less concerned with environmental issues. This means that if the environmental awareness of Pok Tunggal beach visitors is higher, then there will be an increase in the probability of visitors choosing alternative B and vice versa. The recreational costs are positive for alternative choices. Thus, visitors with greater recreation costs will choose alternative B compared to visitors with smaller recreation costs. The higher the recreational costs of the visitors, the greater the tendency to choose alternative B and vice versa.

Nagelkerke R Square value of 0.112, which means as much as 11.2% diversity can be explained by the model, while the rest (100% -11.2%) = 88.8% is explained by other factors (variables) outside the research model.

The value of tourists' WTP for alternative visitor choices is indirectly obtained by using the equation:

$$WTP = \left[ \frac{\sum_i \exp \beta_1}{\sum_i \exp \beta_1} + \ldots + \frac{\sum_i \exp \beta_n}{\sum_i \exp \beta_1} \right]$$

$$WTP = \frac{ExpEdu}{ExpCost} + \frac{ExpSarana}{ExpCost} + \frac{ExpEnv}{ExpCost} + \frac{ExpCost}{ExpCost} = 5,193$$

Based on the equation, the visitors' WTP value is obtained to improve the environmental quality of the Pok Tunggal beach, Gunungkidul that amounts to IDR 5,193 (USD 0.37) per person. Multiplied by 200 (visitors), the WTP results in the economic value of Pok Tunggal beach tourism, Gunungkidul is IDR1,038,600 (USD 73.66).

The research findings have shown that the level of education has a positive and significant influence on the choice made by visitors to improve the quality of the beach environment in Pok Tunggal Gunungkidul. This finding was supported by some studies (Amanda, 2009; Djijono, 2002; Prasetyo & Saptutyningsih, 2013; Samdin et al., 2010). If the education level is higher then there will be an increase in the probability choosing choice B. This is in accordance with the initial hypothesis stating that the level education has a significant positive effect on visitor choices to improve the quality of the environment around Pok Tunggal beach area. The results of this study are the same as the research conducted by Prasetyo and Saptutyningsih, (2013) with a case study of WTP in an integrated waste management effort in the District of West Semarang which argues that the level of education has a positive effect. This is because visitors want to feel an increase in environmental quality aspects. However, to increase the facilities, the cost is high. With high level of education, visitors have a higher level of awareness to maintain and improve the quality of the environment. The entrant fee might be considered expensive but visitors do not mind if the facilities meet the value for money.

The findings also show that facilities or location attributes in Pok Tunggal beach have a negative and not significant effect on the choice of visitors to improve the quality of the environment of the Pok Tunggal beach. This means the facility is not one of the factors that drive visitors to choose alternative A or B. This is not in line with the initial hypothesis.

The factors that affect visitors are whether or not visitors consider the facilities offered by the beach manager have met the needs. Another factor is that the beach area is too small so that the construction of facilities will be difficult because building facilities will make the beach line shorter and damage the beautiful scenery. The construction itself will block the entrance to the beach area. This research is in line with research conducted by Widiyanti (2016) case study of the Bangi market Mangrove forest stating that the location attributes had a negative but significant effect on the WTP for improving the quality of the mangrove forest environment.

Awareness of environmental issues shows a positive and significant effect on the choice of visitors. Higher level of environmental awareness will increase the probability of choosing alternative B. This is consistent with the initial hypothesis that environmental awareness has a positive effect on improving environmental quality. This is similar to the research conducted by Putrantomo (2010) with a case study in the Coral Reef, Karimunjawa National Park. The conditions of other places did not significantly influence the alternative choice of tourists to choose a snorkeling location.

Awareness of the environmental quality is also positive. Visitors realize the importance of protecting the environment such as by keeping the cleanliness of the beach.If there is a lot of rubbish scattered and trash cans are not available, visitors will feel disappointed and they might litter the beach so the sea will be polluted. This will then negatively impact on the flora and fauna around the coast.

Recreation costs also have a positive and significant effect on the choice made by visitors to improve the quality of Pok Tunggal environment. The higher the recreational costs, the higher the probability of choosing alternative B. This is in accordance with the initial hypothesis and in line with the results of the research conducted by Amanda (2009) with the Lake Situgede tourism case study. The recreational cost variable has a significantly positive effect on choices visitors made as an effort to preserve Lake Situgede.

Visitor Choice Opportunities

Opportunities for visitors to choose show the magnitude of opportunities owned by visitors. This visitor choice is used to find out which alternatives are the most chosen. The chances of visitors choosing an alternative are calculated by the following formula (Widodo, 2013):

$$P = \frac{e^L}{1 + e^L}$$

where P = chance of occurrence; $e^L$= Exponential of L; L= ln [P / (1-P)] or logit index.

The chances for visitors to choose alternative A to improve the quality of the Pok Tunggal beach environment:

$$P = \frac{e^L}{1 + e^L} = \frac{0,923077}{1 + 0,923077} = 0.48$$

It means that the chance for visitors who choose alternative A to improve the quality of the Pok Tunggal beach in Gunungkidul is 0.48. The chance for visitors to choose alternative B to improve the quality of the Pok Tunggal beach environment:

$$\acute{P} (0) = 1 - 0.480 = 0.520$$

It means that the opportunity for visitors who choose alternative B to improve the quality of the Pok Tunggal beach in Gunungkidul is 0.520

The calculation of visitors' choice concludes that the P-value for alternative choice A is 0.480 and the P-value for alternative option B is 0.520, indicating that visitors to Pok Tunggal beach tend to choose alternative choice B, with a higher entrance fee. Visitors do not mind paying if the facilities are more complete. It can be concluded that visitors' awareness is quite good. Hence, it would not be too much to ask them to help maintaining the environment and the facilities.

# Conclusion

By applying CM, this study can identify visitor options in order to improve the quality of the coastal environment for sustainable tourism. This study offeres some scenarios for sustainable tourism which in Indonesia remains rare. It also sets the WTP for environmental change that is in line with long-term tourism goals. Using the CM approach, WTP value of IDR 5,193 per person is obtained and is also payable in one visit. Therefore, the economic value of the Pok Tunggal beach, with 200 visitors is IDR 1,038,600. There were two choices should be chosen by visitors. Choice A with entry fee of IDR 15,000, parking fee, two large trash, repair road access, building a health station and gazebo, as well as add two more guards. While choice B with entry fee of of IDR 25,000, no parking fee, four large trash, asphalting road access, adequate health station and gazebo, as well as add three more guards. Environmental awareness has a positive and significant impact. The higher the level of awareness, the higher the probability to choose choice B. Visitor recreation costs have a positive and significant effect. The higher the level of cost, the higher the probability to choose choice B. Overall, visitors are more inclined to choose alternative B.

A recommendation for the management is that they should charge an admission ticket in accordance with the WTP in this study that is close to alternative B. Visitors are mostly students, so the level of environmental awareness is quite high. This should be coupled with a strict regulation to keep the environment clean. Meanwhile, facilities and infrastructure are considered quite sufficient and do not influence visitor choices, but facilities can always be improved, especially the roads and the procurement of SAR team and health team.

Awareness of the environment has a positive and significant effect. Maintaining and preserving the environment and the flora and fauna should be done sustainably. It is recommended for the management to install signage and information board that shows

visitors the danger of damaging the environment. The cost of recreation has a positive and significant effect too. The management should see this as an opportunity to improve the facilities. Visitors are willing to pay more as long as the facilities can make their visits convenient. However, visitor satisfaction should become the main focus of the management. To avoid complaint, the entrance fees to build facilities for visitors does not have to be as big as option B. For example, the management can take the middle point. Increasing tourist attractions should also be supported by the assistance of the Tourism Office in the form of funds for facilities and promotion online and on the print media. They can also support by procuring SAR team to monitor and guard visitors so that they feel safe to spend time at the beach.

The findings provide decision-makers with a method to help them prioritize sustainable coastal tourism. Although the CM technique is still in its infancy and requires a lot of improvement, its implementation appears to be promising. Its ability to model dynamic and simultaneous tradeoffs will have a wide range of applications in the ecological economics context, and will aid in addressing some perceived flaws.

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