



Contingent Valuation Study for Selected Beach Areas in San Francisco, Surigao Del Norte for its Environmental Conservation

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Abstract: *Beaches are one of the tourist attractions in many countries; it views as an ecosystem that would create benefits due to its scenic beauty. Diaz Beach and Banbanon Pebble Beach are commonly known tourist spots in the municipality of Anao-aon, hence, these two are the chosen study area that was conducted as it meets the standards of our research that aimed to evaluate the maintenance and conservational status. To some extent, implementation of Willingness to Pay and Willingness to Accept a branch of the Contingent Valuation Method serve as requisite that individuals need to indicate their preferences for environmental assets, or to alternate in a resourceful status. Beachgoers are targeted to determine their amount of WTP and WTA, such that their perceptions are a key to assessing the factors for beach usage. The researchers adopted a survey questionnaire that determined their willingness to pay (WTP) for the beach environmental maintenance, conservation, and willingness to accept (WTA) in reducing plastic wastes particularly cellophane and bottles, and the pre-determined factors affecting their preference in using the beach. The proposed entrance fee (20php) that served as biddings of promoting sustainable usage and development was rejected. On the other hand, in Willingness to Accept, the highest preferred amount for the price of cellophane is Php 4.00 while for the plastic bottle is Php 6.00. Thus, the outcome of WTA was inevitable to create potential environmental services and maintenance. The compensation of cellophane and plastic bottle is a good factor in implementing rules and regulations at its essential aspect of promoting sustainable usage and development for the present and future generations.*

Keywords: *Contingent Valuation, Environmental Conservation, Willingness to Pay, Willingness to Accept*



1. INTRODUCTION

The Contingent Valuation Method (CVM) is a popular survey approach for eliciting people's opinions' willingness to pay (WTP) for the possible purpose of designating an environmental good while willingness to accept (WTA) is a compensation of the consequence of the lack of this good [2]. The willingness to pay (WTP) and willingness to accept (WTA), calculate the cost of nonmarket products and are predominantly utilized by societal and environmental economists as a basis for Contingent Valuation. WTP abruptly includes asking consumers how much they are willing to pay to elude a cynical or to accept a constructive consequence; WTA bid for compensation and interrogate how much a negotiator would like to be recompensed to accept cynical consequences or to forego a constructive one. WTA technique is used to estimate monetary compensation for respondents who have suffered long-term environmental losses [8]. Many previous studies used WTA, some of the studies were related to landowner management preferences and involved sufficient monetary incentives. Researchers established minimal compensation levels to persuade private forest landowners to enhance their production of different ecological services as well as to quantify the cost of their provision by assessing the budget needed to carry out conservation initiatives that will help to provide these services.

Domestic water consumers' willingness to pay for better watershed services evaluated in their study on Layawan Watershed in Oroquieta City. It employed the contingent valuation method to assess the willingness to pay water users. More than 50% of the respondents voted positively on the referendum question which is whether they are willing to pay a certain amount for the conservation of the Layawan Watershed or not [10]. There are notable research gaps regarding estimating visitors' WTP for the conservation fund to ensure the long-term sustainable financing of protected areas.

The Diaz Beach at Barangay Diaz and Banbanon Pebble Beach at Barangay Banbanon, San Francisco, Surigao, del Norte were chosen study areas considering that these known tourist spots in the municipality. The beach goers' perceptions are a key for assessing the factors for beach usage. Willingness to Pay for maintaining beach quality to provide responsible beach-making management objectives and practices to achieve the vision of beach conservation. The Willingness to Accept is for beach degradation assessment that negatively affects the beach because of pollution caused by plastics.

2. METHODOLOGY

Study Area

The study areas are the Diaz and Banbanon Pebble Beach located at Barangay Diaz with latitude 9°46'19"N 125°24'45'E and Barangay Banbanon with latitude 9°46'09"N 125°24'22'E, San Francisco, Surigao del Norte, covering 1.36 kilometers of coastline (Figure 1). The study areas were located in San Francisco, a fifth class Municipality in the province Surigao del Norte under CARAGA Region.

Banbanon and Diaz beach are famous swimming spots because of the small and fine pebble stones. The cottages were made of bamboo and surrounded by coconut trees and tropical almonds. These beaches are accessible to the public because of the constructed public roads. However, each of the beaches have a unique characteristic. Banbanon beach known for its attractive rock formation just a step away from the shore where the waves bump and best for jumping off the cliff (Figure 2). While the Diaz beach (Figure 3), features the ‘barbeque house’ that offers good grilled foods during the night and tables placed on the seaside.

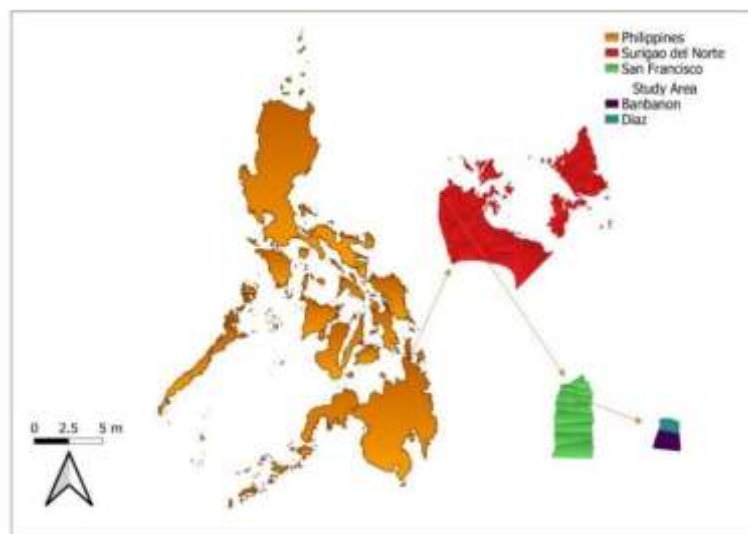


Figure 1. Map of the Philippines showing the study area



Figure 2. Photo of Banbanon pebble beach



Figure 3. Photo of Diaz beach

Data Gathering

The evaluation of WTP and WTA used a constructed and closed-ended questionnaire and was done through opportunistic sampling. Opportunistic sampling is a type of non-probability sampling wherein respondents are chosen based on naturally occurring groups. The researchers used this sampling method to study willingness to pay and willingness to accept where the participants were conveniently available considering the study site's large population.

The desired sample was 344 respondents considering in barangay Diaz has 196 participants and barangay Banbanon has 148 participants. The researchers adopted a survey-based questionnaire that determined their willingness to pay (WTP) for the beach environmental maintenance and conservation, and willingness to accept (WTA) in reducing plastic wastes, particularly cellophane and bottles. This is to prevent further degradation of the beach and the pre-determined factors affecting their preference in using the beach, this will determine the beachgoer's most and least preferred factors.

Data Analysis

This study was a quantitative research design and frequency percentage, median, mean, and Chisquare tests were used. The quantitative data analysis used a variety of statistical techniques and descriptive. To determine the exact amount of willingness to pay frequency percentage was used. In the willingness to accept the frequency percentage and median used, it is a particularly useful method of expressing the frequency of survey responses for their willingness to pay and willingness to accept the beach. On the other hand, the mean was used to determine the factors affecting the respondents' preferences. While the significant relationship in respondents' preferences was based on their socio-demographic profile used the Chi-square test.



3. RESULTS

Willingness to Pay

Presented in table 1 is the bid amount of the respondents. The respondents were asked about their willingness to pay in a form of bidding.

Table1. Exact amount in terms of Willingness To Pay (WTP)

| Bids | Frequency | Percentage |
|-------------|------------------|-------------------|
| 20 | 103 | 29.9 |
| 10 | 84 | 24.4 |
| 00 | 83 | 24.1 |
| 50 | 21 | 6.1 |
| 15 | 13 | 3.8 |
| 30 | 13 | 3.8 |
| 25 | 11 | 3.2 |
| 5 | 10 | 2.9 |
| 100 | 4 | 1.2 |
| 40 | 2 | 0.6 |

Among payment amount bidding, 29.9 percent of respondents bid for Php 20, which belongs to those who are willing to pay the proposed entrance fee. While 24.4 percent of respondents bid for Php 10 belongs to those who are not willing to pay the proposed entrance fee, the respondents state that the current entrance fee (Php 10) is enough to address environmental development and maintenance. The third one is zero (24.1%) this belongs to those respondents who are not willing to pay at all they stated that House Bill 4131 “This bill seeks to require property owners or operators of beach resorts, hotels and similar establishments adjacent to the beach to provide, ensure and protect the public’s right to access to from and across the beach area”. The lowest percentage is Php 40 (.6). According to United Nations Development Programme, the users pay entrance fees for access to natural sites, utilization of facilities, and specialized site-based leisure activities. Hence, the revenues from these fees can be used to support conservation efforts by ensuring that specified places are preserved and revenue-sharing agreements with communities. The bid amount negatively influenced WTP indicating that the higher the bid, the less likely tourists would be willing to pay [1].

Willingness to Accept

Illustrated in Table 2 is the compensation of cellophane and plastic bottles for reducing waste.



Table2. The exact amount in terms of Willingness To Accept (WTA)

| | Compensation | Percentage |
|----------------|---------------------|-------------------|
| Cellophane | 2 | 43.6 |
| | 4 | 25.6 |
| | 6 | 11.9 |
| | 8 | 18.9 |
| | 3 | 45.9 |
| Plastic bottle | 6 | 24.1 |
| | 9 | 10.5 |
| | 12 | 19.56 |

To determine the exact amount of beach goers’ willingness to accept (WTA) for the compensation of reducing waste, frequency percentage was used. The result shows that the target bidding that is applicable for the price of cellophane is 4 pesos with a percentage of 25.6 while the plastic bottle preferred 6 pesos with a total percentage of 24.1, these bases are refers to the median value to measure the central tendency.

Reference [14] shows that the outcome of WTA presents a higher amount of compensation which is necessarily important in order to accept the potential environmental services and maintenance. Thus, the results suggest that individuals’ willingness to accept change the uncovered information about the variety of compensation associated with the proposed environmental change.

Factors affecting beachgoer’s preference in using the beach

Table 3 presents the factors that affected the beachgoer’s preference for choosing the beach. These factors will determine why the beachgoers choose the Diaz and Banbanon beaches instead of other beaches.

Table3. Factors affected the respondent’s preference for using the beach

| Factors | Mean |
|---------------------------|-------------|
| (A) Ambiance | 3.1134 |
| (B) Pebble quality | 2.9419 |
| (C) Water quality | 2.7645 |
| (D) Parking space | 3.1483 |
| (E) Landscape and scenery | 3.7384 |

The most preferred factor of the respondents is; water quality (2.7645), and pebble quality (2.9419). Water quality and pebble quality are the most relevant aspects of beach management. Reference [11] shows that the absence of sewage and litter, the color and clarity of the water, and the built environment's quality are the three most important parameters to consider in selecting a beach. Reference [12] shows similar preferences were identified in Brazil, Mexico and USA, beachgoers from these locations enjoyed the pebble and agreed that seawater and



pebble beaches should be kept clean. The less preferred landscape and scenery (3.7384) is probably because the two beaches lack distinctive features. Determining the factors that affect the beach goer’s preference in using the beach gave the information needed for beach management, conservation, and its development. Providing complex information about beach user preferences to management authorities aids in the development of more effective policies and management strategies [13].

Significant Relationship between the respondent’s preferences and their socio-demographic profile

Table 4 shows the significant relationship between respondents’ preference based on their sociodemographic profile, with its significant value.

Table4. Significant relationship in respondent’s preference based on their socio-demographic profile

| Profile (IV) | Dependent (DV) | Asymp. Sig. (2 sided) | Description |
|----------------------------|----------------|-----------------------|-----------------|
| Home Address | Ambiance | .011 | Significant |
| | Sand Quality | .000 | Significant |
| | Water quality | .000 | Significant |
| | Parking Space | .000 | Significant |
| | Landscape | .005 | Significant |
| Gender | Ambiance | .205 | Not Significant |
| | Sand Quality | .006 | Significant |
| | Water quality | .534 | Not Significant |
| | Parking Space | .783 | Not Significant |
| | Landscape | .041 | Significant |
| Age | Ambiance | .017 | Significant |
| | Sand Quality | .017 | Significant |
| | Water quality | .035 | Significant |
| | Parking Space | .001 | Significant |
| | Landscape | .000 | Significant |
| <i>Table 4 continue...</i> | | | |
| Occupation | Ambiance | .005 | Significant |
| | Sand quality | .004 | Significant |
| | Water quality | .009 | Significant |
| | Parking Space | .000 | Significant |
| Income | Landscape | .000 | Significant |
| | Ambiance | .009 | Significant |
| | Sand Quality | .000 | Significant |
| | Water quality | .000 | Significant |
| | Parking Space | .028 | Significant |



| | | | |
|--|-----------|------|-------------|
| | Landscape | .013 | Significant |
|--|-----------|------|-------------|

In the table, the Chi-square test is used to determine the significant relationship in respondents' preferences based on their socio-demographic profile. Here is a significant relationship between two variables if their significant value is less than 0.05, not significant if it is more than 0.05. Based on the result above, it shows that the respondents' preferences such as ambiance, sand quality, water quality, parking space, landscape, and scenery have a significant relationship base on the home address, age, occupation, and income with a significant value of less than .005. In terms of gender, the respondents' preference for ambiance (.205), water quality (.534), parking space (.783), and scenery (.627) with a significant value of more than .005 have no significant relationship. Thus, perceptions vary depending on beach user profile, which can affect beach management strategies [6].

Local tourists' willingness to pay for the protection and preservation of Sagada's attractions was found to be strongly influenced by bid amount, household income, and age at 1%,5% levels of significance in the analysis [1]. For all demographic factors, only occupation was proved to have a significant influence on visiting beaches [5]. Moreover, various aspects can attract tourists to beach destinations such as safety, water quality, and cleanliness, but these aspects are influenced by various additional factors such as activities available on the beach and distance to the beach [7]. The beach use rates vary significantly by age, class, the distance between home and beach, and recreational activity preference [9].

4. CONCLUSIONS

Based on the foregoing findings, we conclude that the proposed entrance fee (Php 20) in Diaz and Banbanon Beach was rejected. Thus, they stated that the current entrance fee (Php 10) is enough to address environmental development and maintenance. The proposed beach entrance was failed to increase. However, the outcome of WTA can help to accept the potential environmental services and maintenance. This compensation will serve as a good factor in implementing an ordinance on reducing plastic pollution like (1) treating plastic as currency and (2) plastic trash for cash. The water quality was the most preferred because of its features which include clear and clean free from litter and debris. In the socio-demographic profile under gender, there were four factors that are not significant; ambiance, water quality, parking space, and others. Overall, the respondent's preference based on their socio-demographic profile was a statistically significant finding and the relationship between the two variables exists.

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