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Recreational Value of Mangrove Ecotourism: A Case Study in Jerowaru East Lombok, Indonesia



Isnan Purnama¹, Diswandi², Muhamad Bai'ul Hak³

^{1,2,3} Faculty of Economics and Business, University of Mataram & Lombok, Indonesia

ABSTRACT: Mangrove forest ecosystems confer various advantages to human populations, including but not limited to safeguarding against tsunamis and abrasion, sequestering carbon, serving as fish breeding grounds, and providing recreational opportunities. The provision of welfare and stimulation of economic growth for local population can be facilitated by the recreational or tourism value. Nevertheless, the significance of mangrove forests, encompassing their recreational value, is sometimes overlooked. This research examines the various elements that impact tourists' inclination to engage in the preservation of Mangrove Ecotourism, using Jerowaru Village in East Lombok as a case study. This study employed the Contingent Valuation Method (CVM) to determine the average Willingness to Pay (WTP) of tourists in Mangrove Ecotourism, which was determined to be IDR 10,416.67 (0.68 USD) per visit. The total amount is contingent upon factors such as environmental awareness, educational attainment, and income level.

KEYWORDS: Mangrove conservation, Contingent Valuation, Recreational value

I. INTRODUCTION

Indonesia is recognized as a nation that possesses a significant proportion of the global mangrove ecosystem, with an estimated coverage of approximately 20-25% (Ministry of Environment and Forestry, 2022). Indonesia possesses a total land area of around 3.36 million hectares. This land is distributed throughout many regions, with Papua accounting for 1,562,905 hectares, Sumatra covering 660,445 hectares, Kalimantan spanning 688,025 hectares, Maluku occupying 224.46 hectares, Java encompassing 56,500 hectares, and Bali-Nusa Tenggara comprising 39,974 hectares.

The advantages of mangrove forests are attributed to their distinct ecosystem (Hasan-Basri et al., 2020). The ecosystem provides a range of functions that offer benefits to human populations. These services include safeguarding against tsunamis and abrasion, sequestering carbon, providing habitats for fish breeding, and serving as recreational areas. Recreation or tourism holds significant significance in terms of fostering prosperity and stimulating economic progress for the local populace (Nurkhalifah et al., 2022; Shaputra et al., 2022). Nevertheless, the significance of mangrove forests, encompassing their recreational value, is frequently disregarded. Certain mangrove ecosystems have undergone conversion for other pulDRoses, primarily aimed at generating more commercially viable products, such as the establishment of shrimp ponds. Consequently, the depletion of mangrove ecosystems can lead to significant economic ramifications for neighboring people in the event of a natural calamity, such as a tsunami (Diswandi & Saptutyningsih, 2019).

According to Litiloly et al. (2020), the state of mangrove forests is currently experiencing a heightened level of criticality. In order to mitigate the adverse impacts of human activities leading to the depletion of mangroves, it is imperative to implement conservation strategies aimed at preventing losses such as tsunamis and abrasion. One potential approach to bolstering mangrove conservation efforts is examining the concept of individual willingness to pay (WTP) for the preservation of mangrove forests. Willingness to Pay (WTP) refers to the monetary value that consumers are willing to allocate towards the acquisition of a specific product or service (Djayasinga, 2019; Fajria, 2020; Hadhi Priambodo et al., 2014; Hidayah & Ayu Nuning Farida Afiatna, 2021; Pertiwi et al., 2022a; Riana et al., 2019). Moreover, the analysis conducted by Medida and Purnomo (2021) examines the economic worth of WTP in order to assess its environmental implications. Additionally, Maulana (2021) highlights the significance of establishing a conducive atmosphere that fosters tourism.

Several studies have demonstrated that individuals who visit destinations for tourism exhibit a willingness to financially contribute towards the preservation and maintenance of these sites (Qowi & Arianti, 2021; Yuliarti et al., 2022). Pulido (2016) recommends that tourist segments characterized by a higher degree of intelligence demonstrate a greater willingness to

allocate additional financial resources towards visiting places that prioritize sustainable tourism practices. In addition to domestic visitors, international tourists also demonstrate a willingness to support the financial aspects of the environmental services (PES) program, which aims to ensure the preservation of coral reefs and other marine biota populations (Diswandi et al., 2021). Income is a crucial determinant that exerts a substantial impact on tourists' propensity to pay, as evidenced by studies conducted by Fikri and Rahmini (2020), Lestiani et al. (2022), Mohamad and Lahay (2021), and Pertiwi et al. (2022).

Many researchers have conducted studies on visitors' willingness to pay (WTP) for conservation efforts, yielding varying outcomes. According to a study conducted by Medida (2021), it was found that the mean Willingness to Pay (WTP) value that tourists are willing to contribute is IDR 2,593.7. In addition to this, Kevin et al. (2021) have presented research findings indicating that the mean annual willingness to pay for tourists amounts to IDR 27,552,000,000. Moreover, the endorsement of ecotourism development is reinforced by the perception of both tourists and the local community. According to Mukhlisi (2018), this form of tourism has a projected annual economic value of IDR 1,423,914,894. In addition, Simarmata et al. (2022) have reported that the mean value of visitors' willingness to pay (WTP) at tourist destinations is IDR 9,450.00. Furthermore, the study highlights that tourists hold very positive attitudes regarding environmental conditions, benefits, and amenities, suggesting the need for further improvements to enhance tourist appeal.

Jerowaru Village, located in East Lombok, West Nusa Tenggara Province, Indonesia, is recognized as a location that harbors a significant mangrove forest. One potential strategy employed by local inhabitants involves transforming mangrove forests into a tourist attraction. The emerging form of tourism being cultivated is Mangrove Ecotourism, spearheaded by a cohort of youthful individuals affiliated with the Telong Elong Youth Association (IPT). The objective is to develop educational excursions targeting the general public, focusing on imparting knowledge about mangrove trees and elucidating their ecological mechanisms. This study aims to assess the financial capacity of tourists to support the conservation efforts of Mangrove Ecotourism, as well as to examine the various elements that contribute to tourists' willingness to engage in conservation activities specifically related to Mangrove Ecotourism in the designated area. This study seeks to gain understanding of the potential advantages and obstacles associated with the implementation of payment systems for funding and sustainable management of mangroves, through an examination of tourists' motives, perceptions, and financial evaluations.

II. METODOLOGY

A. Research Location

The location of this research is in Jerowaru Village, Jerowaru District, East Lombok Regency, Indonesia.

B. Research Method

The research method used is descriptive, with a focus on a quantitative approach (Sugiyono, 2011). The research location was administratively carried out in mangrove ecotourism which is part of the East Lombok Regency area. The selection of this research location was based on several considerations, apart from the benefits of mangrove forests which prevent abrasion as well as being a tourist area.

The research population is visitors from mangrove ecotourism. The number of samples/respondents used in this research was 90 people. Determining the sample in this research used an accidental sampling technique, where the sample used was determined based on respondents who happened to be present or available in a place according to the research context.

C. Data Analysis

In this research, the factors thought to influence the WTP value were analyzed using a multiple linear regression model. Multiple linear regression analysis was used to identify the relationship between the variables involved (Ghozali, 2016).

The equation function used to examine the factors that influence the WTP is as follow:

WTP = $\alpha 0 + \beta 1$ Age + $\beta 2$ Education + $\beta 3$ Income + $\beta 4$ Awareness +ui

Where, WTP is the Willingness to pay that refers to the maximum amount or value that a person is willing to spend or sacrifice in exchange for services, in this case Mangrove ecotourism environmental services. The measurement used is Indonesian currency (rupiah). Age refers to measuring the time since a person was born, indicating how long they have lived. Meanwhile, Education refers to the process of acquiring knowledge, skills, values and understanding through formal means. This variable is measured using the number of years of schooling. Income is the amount or economic value received by individuals, households or other entities from various sources during one month. The Awareness in this study refers to environmental awareness which is proxied by how important Mangrove ecotourism is according to the visitors.

III. RESULT AND DISCUSSION

The respondents characteristics is described in the following table :

Variabel	Responses	Frequency	Percent
WTP	<idr. 5.000<="" td=""><td>16</td><td>17.8</td></idr.>	16	17.8
	IDR. 5.000-10.000	43	47.8
	IDR. 10.000-15.000	13	14.4
	IDR.15.000-20.000	9	10.0
	IDR. 20.000-25.000	6	6.7
	>IDR. 25.000	3	3.3
Age	16-25	34	37.8
	26-35	21	23.3
	36-45	24	26.7
	46-55	8	8.9
	56-65	3	3.3
Education	6	14	15.6
	9	8	8.9
	12	44	48.9
	16	22	24.4
	18	2	2.2
Income	IDR. 0-2.000.000	72	80
	IDR. 2.100.000-5.000.000	14	15.6
	IDR. 5.100.000-7.500.000	2	2.2
	IDR. 10.100.000-15.000.000	2	2.2
Awareness	Netral	1	1.1
	important	35	38.9
	very important	54	60.0
	Total	90	100.0

From the table above it can be explained the following characteristics of the respondents;

Willingness to Pay

WTP describes the extent to which individuals in the sample are willing to pay for each visit to Mangrove Ecotourism. The majority of individuals are willing to pay between IDR 5,000 and IDR 10,000, as many as 43 people or accounting for 47.8% of the total sample. Then the second order is willing to pay less than IDR. 5,000 as many as 16 people or 17.8% of the total sample, while the willingness to pay IDR. 10,000 to 15,000 in third place as many as 13 people or 14.4%, then fourth, namely willingness to pay IDR 15,000 as many as 9 people or 10.0%, then willingness to pay IDR. 20,000 to 25,000 in fifth place with a total of 6 people or the equivalent of 6.7%, then those in last position are willing to pay more than IDR. 25,000 as many as 3 people or 3.3% of the sample.

Age

The majority of visitors from Mangrove ecotourism are dominated by tourists aged 16-25 years as many as 34 people or around 37.8%, in second place are those aged 36-45 years as many as 24 people or around 26.7%, in third place are those aged 26-35 years as many 21 people or around 23.3%, then in fourth place, namely 8 people aged 46-55 years or around 8.9%, while those aged 56-65 years at least were 3 people or around 3.3%.

Education

The education of visitors to Mangrove ecotourism is measured by the respondent's length of schooling. Respondents who dominated taking 12 years of education or the equivalent of high school 48.9%, then in second place who took 16 years of education or the equivalent of D3-S1 24.4%, then in third place were respondents who took 6 years of education or the equivalent of SD 15.6 The fourth % are those who have completed 9 years of education or the equivalent of SMP 8%, and the least are those who have completed 18 years of education or the equivalent of Masters 2.2%.

Income in this data sample is based on a monthly range. The highest income range for Mangrove ecotourism visitors is IDR 0 to IDR 2,000,000 or around 80% of the total sample, other income groups have lower percentages, with income between IDR 2,100,000 to IDR 5,000,000 for 14 people or around 15.6% of the total sample, while the higher income group is IDR. 5,100,000 to 7,500,000 and IDR. 10,100,000 to 15,000,000 have a decreasing percentage, each with 2 people or accounting for 2.2% of the total sample.

Awareness

The level of response of respondents to the existence of mangrove forests is that they consider mangrove forests very important as many as 54 people or 60%. Next, they consider mangrove forests important as many as 35 people or 38.9%. Then the last one considers them neutral as many as 1 person or 1.1% of the total sample.

variabel	coefficient	t statistic	P Value	
Age	-239.1004	-0.48	0.630	
Education	308.7768	1.75	0.083	
Awareness	2430.827	2.18	0.032	
Income	1439.064	1.75	0.084	
_cons	-5755.403	-1.19	0.236	
F-statistic			4.15	
R-squared			0.1196	

REGRESSION RESULT

From the result above, we can describe the following situation.

Age: the coefficient of this variable is negative, which means that the higher the age, the possibility that it will not affect the money spent on Mangrove Ecotourism conservation. The value of this variable is (0.630) greater than the significant threshold of 0.05. Therefore, the age variable can be considered insignificant to the dependent variable. This opinion is supported by Gumilar (2019) which states that the age variable has a negative coefficient and does not have a significant effect. Furthermore, Pratiwi (2019) believes that the age variable is not significant on WTP.

Education: the coefficient of this variable is positive, which means that the higher the level of education, the more money is likely to be spent on Mangrove Ecotourism conservation. The value of this variable is (0.083) smaller than the significant threshold of 0.10. Therefore, the Education variable can be considered significant in influencing the dependent variable. This opinion is supported by Diswandi et al., (2021) which states that the education variable has a significant effect on willingness to pay, while according to Medida and Purnomo (2021), education variable has an insignificant impact on the willingness to pay for conservation.

Level of awareness: This variable has a positive coefficient, meaning that more money will be spent on protecting mangrove ecotourism if people are more aware of how important mangrove forests are. The variable's value is 0.032, which is less than 0.05. This demonstrates how desire to pay can be significantly influenced by awareness level.

Income: This variable has a positive correlation, meaning that more money will be allocated to the conservation of mangrove ecotourism the higher one's income level. This variable has a value of 0.084, which is less than 0.10. This demonstrates that money can make a big difference. While studies by Noviati Sadikin et al. (2017) claimed that income has no significant effect, Gumilar (2019) and Ansong et al. (2023) support this opinion by stating that income has a substantial effect on willingness to pay.

The coefficient of determination is 0.1196, which is around 11.96% of the dependent variable explained by the independent variables included in the model. The P value for the F-statistic of 0.0040 is lower than the overall significance level of 0.05, indicating that the entire model has a significant influence on the dependent variable.

IV. CONCLUSION

This study found that the recreational value of mangrove forests, as measured by tourists' Willingness to Pay (WTP) in Mangrove Ecotourism, is estimated to be 10,416.67 (0.68 USD) on average per visit. Environmental awareness, Education and Income all have a significant impact on this figure. The significance of environmental awareness in influencing individuals' inclination to engage in environmental protection and conservation is a crucial consideration. Consequently, this study proposes that policymakers should prioritize the integration of environmental awareness into formal education systems as a means to cultivate public consciousness on this topic.

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