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Valuing Nature: Local Residents' Insights on the Aesthetic and Recreational Benefits of Patungan Beach in Maragondon Cavite, Philippines

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Abstract:
The Philippines, an archipelagic nation, is renowned for its diverse ecotourism destinations and rich biodiversity. Beach tourism and water-related activities play a vital role in the national economy, contributing significantly to employment and local livelihoods. However, the increasing influx of visitors has led to pressing challenges, including overcrowding, waste accumulation, and environmental degradation. This study evaluates the perceived value of Patungan Beach's aesthetic and recreational benefits in Maragondon, Cavite, using the Contingent Valuation Method (CVM). Findings from the logit model indicate that while socio-demographic factors do not directly influence willingness to pay (WTP) for site conservation, environmental awareness and attitudes toward water conservation play a crucial role. A substantial portion of respondents expressed a willingness to contribute to a trust fund and pay an annual environmental fee of PHP 50.00 for the site's preservation, though WTP declined as the bid amount increased. Notably, 58% of respondents derive direct economic benefits from tourism-related livelihoods, underscoring the site's economic significance. The study highlights the need for local government intervention through municipal ordinances that allocate additional funding for the conservation and maintenance of Patungan Beach. Green tourism initiatives can further enhance sustainable ecotourism, balancing environmental preservation with economic benefits. Based on these findings, a Community-Based Sustainable Ecotourism Framework is proposed, focusing on four key pillars: Community Engagement, Sustainable Livelihoods, Environmental Conservation, and Governance & Policy Support. This framework aims to strengthen conservation efforts while ensuring long-term economic opportunities for the local community, fostering a balanced and sustainable approach to ecotourism development.
Keywords: *Ecotourism, aesthetic and recreational services, environmental perceptions, willingness to pay (WTP)*

INTRODUCTION:

Cultural ecosystem services encompass the non-material benefits derived from nature, including recreation, aesthetic inspiration, cultural identity, a sense of place, and spiritual experiences. These services play a vital role in enhancing mental and physical well-being by providing opportunities for relaxation, fulfillment, and connection with natural landscapes and tourist attractions (FAO, 2019). Although these intangible benefits are challenging to quantify due to varying normative perspectives, political influences, and inherent cultural values, neglecting their significance may result in overexploitation, diminished aesthetic appeal, and environmental degradation. When policymakers receive estimates of the aesthetic, biodiversity, and recreational value of lakes, rivers, and other natural bodies of water, they can make more informed decisions regarding environmental policies. By weighing these benefits against the costs of government initiatives aimed at maintaining or improving water quality, policymakers can ensure a more efficient allocation of resources for environmental preservation. Assessing the value of recreational services and how it fluctuates with changes in aesthetic quality is particularly crucial, as most bodies of water are public goods under government stewardship. Yu et al. (2018) emphasized that willingness to pay (WTP) for marine conservation serves as a key foundation for designing market-based marine protection strategies and promoting sustainable marine environmental management. In the absence of local government funding, assessing the willingness to pay for recreational and aesthetic benefits can help identify potential sources of sustainable financing. Currently, no environmental management or conservation efforts are in place at Patungan Beach. To support such initiatives, implementing appropriate user fees, including contributions from residents, could be considered. Economic valuation serves as a crucial first step in assigning value to

Patungan Beach's natural resources, ensuring their sustainable use. This study provides essential economic insights that can guide local policymakers in Maragondon in developing sustainable management plans to preserve the quality of recreational attractions while aligning with the community's preferences for conservation. According to the International Ecotourism Society, ecotourism integrates conservation, community involvement, and sustainable travel. It adheres to key principles, including minimizing environmental and social impacts, fostering environmental and cultural awareness, providing meaningful experiences for both visitors and hosts, generating conservation benefits for local communities and private industries, and recognizing the rights and spiritual beliefs of Indigenous Peoples by working collaboratively to empower them. The valuation and protection of beaches in the Philippines are firmly grounded in various legal frameworks, reflecting the country's commitment to environmental sustainability and public welfare. At the core is the 1987 Philippine Constitution, which enshrines the right of every Filipino to a balanced and healthful ecology and mandates the State to safeguard natural resources, including coastal and marine environments. Complementing this constitutional provision are several national laws that directly address coastal and environmental management. Presidential Decree No. 1151 (Philippine Environmental Policy) and Presidential Decree No. 1586 (Establishing the Environmental Impact Statement System) require environmental assessments for projects that may affect beach ecosystems. The National Integrated Protected Areas System (NIPAS) Act or Republic Act No. 7586 enables the designation of coastal areas as protected zones to ensure conservation. Meanwhile, Republic Act No. 9003 (Ecological Solid Waste Management Act) and Republic Act No. 9275 (Clean Water Act) underscore the importance of maintaining water quality and managing waste in coastal areas. Republic Act No. 10654, which amends the Fisheries Code, also supports the conservation of marine habitats vital to both biodiversity and local livelihoods. Moreover, local government units, under the Local Government Code (RA 7160), play a crucial role in issuing ordinances and implementing programs specific to beach management and ecotourism development. The Philippines is also a signatory to international agreements such as the United Nations Sustainable Development Goals (particularly SDG 14 on Life Below Water) and the Convention on Biological Diversity, which further reinforce its obligations to protect marine and coastal ecosystems. These legal instruments collectively affirm the necessity of valuing and protecting beaches not only for their ecological and aesthetic importance but also for their socioeconomic contributions to coastal communities As the premier university in Cavite, Cavite State University has the opportunity to establish strong linkages with the local government of Maragondon and the Provincial Government of Cavite. Through its academic programs specializing in tourism and natural resource management, the university can contribute to enhancing and promoting ecotourism, environmental management, policy implementation, and sustainable conservation efforts. This study aims to develop a sustainable ecotourism framework by assessing the perceived value of Patungan Beach in terms of its recreational, aesthetic, and environmental significance. Specifically, it seeks to:

1. Assess residents' perceptions of the recreational benefits they derive from Patungan Beach.
2. Evaluate their perceptions of cultural ecosystem services, particularly the recreational and aesthetic value of the area.
3. Examine their views on environmental protection and conservation efforts related to Patungan Beach.

METHODS:

This study employed a descriptive research design, incorporating both quantitative and qualitative approaches. Additionally, it utilized the Contingent Valuation Method (CVM), a survey-based technique used to elicit preferences for a wide range of non-market environmental changes (Bateman, IJ., 2004).

Study Site

The study was conducted in two barangays facing Patungan Beach: Barangay Patungan in Maragondon, Cavite, and Sitio Quarry in Barangay Sapang I, Ternate, Cavite, Philippines. Barangay Patungan is located at approximately 14.2232°N latitude and 120.6562°E longitude on the island of Luzon, with an estimated elevation of 490.9 meters (1,610.5 feet) above mean sea level. Sitio Quarry in Sapang I is situated at approximately 14.2867°N latitude and 120.7102°E longitude, with an estimated elevation of 8.2 meters

(26.9 feet) above mean sea level. Figures A and B provide maps illustrating the locations of Barangay Patungan and Sitio Quarry, highlighting their geographical context in relation to Figure C Patungan Beach.

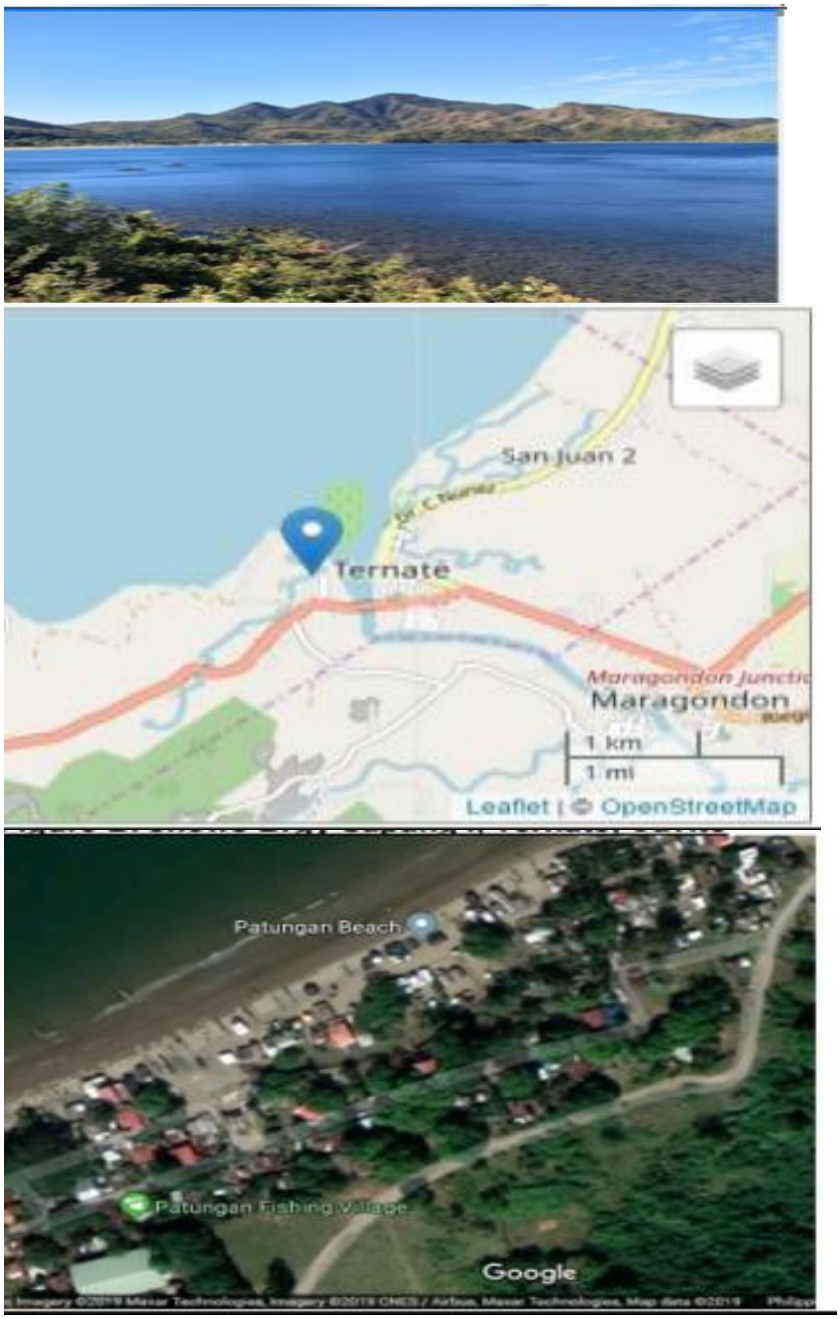

Figure 1(a). Brgy Patungan, Maragondon, Cavite

Figure 1 (b) . Brgy, Sapang 1 Ternate, Cavite

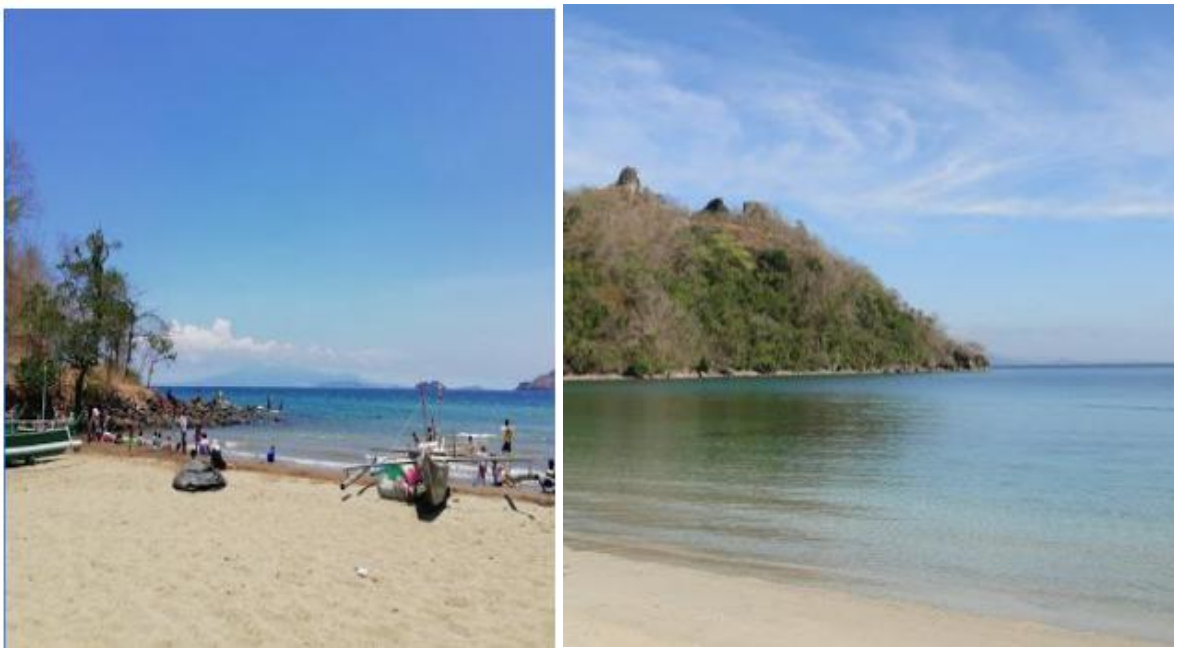

Figure 1 (c). Study Site Patungan Beach

Sampling Design

The secondary data containing the total number of households from the two Sitios were obtained from the Barangay Hall of Sapang 1, Municipality of Ternate, Cavite and Barangay Patungan, Maragondon, Cavite. From this figure, the sampling population was calculated using Cochran's sampling formula with a total of 210. The respondents were selected through simple random sampling technique. The end of the Kaybiang Tunnel served as the reference point for selecting the participants for this study as this is also the starting point of Sitio Quarry. Every third house was selected, and one (1) household member was asked to answer the survey instrument.

Survey instrument

The survey questionnaire used in this study composed of five (5) sections– 1) socio-economic profile of the respondent; 2) fishery- related practices/ activities; 3) tourism- related practices/ activities; 4) environmental conservation practices; elicitation of willingness to pay of respondents to two (2) scenarios. The questionnaires were pre-tested among 20 BS Fisheries students at Cavite State University Naic Campus and 20 BS Psychology students of Cavite State University-Bacoor Campus to examine its clarity and to post possible recommendation for its enhancement.

Data Collection

Data were collected from both primary and secondary sources. Primary data were obtained through key informant interviews and households' questionnaire survey. Secondary data were acquired from relevant journals, documents and community records from government offices. Interviews were conducted on 6 residents who had better knowledge of the research subjects. Questionnaires were conducted on 136 households which were selected by systematic sampling technique. Data Analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics such as frequencies, percentages and mean were used to summarize demographic and socioeconomic profiles. Regression Analysis using Logit model was used to describe factors influencing the respondent's willingness to pay.

RESULTS AND DISCUSSIONS:

Table 1 shows the demographic information of the 136 respondents. This table gives the background of the residents of the Patungan Beach in Maragondon Cavite.Of the 136 respondents, 92 (67.6%) were male, 44 (32.4%) were within the age range of 36 – 45 years old, and more than half (80 or 58.5%) were single. Most of the respondents had undergraduate elementary level, but less 12 (8.8%) did not have formal schooling. Majority of the respondents were notactive members of any organization (128 or 94.1%) and some are members of LGBT community (8 or 5.9%)

Table 1 Demographics Characteristics of the Respondents (N= 136)

Profile	Categories	Percentage (%)
Sex	Male	67.6
	Female	32.4
Age Group	15-25	26.5
	26-35	20.6
	36-45	32.4
	46-55	17.6
	56-65	2.9
Civil Status	Single	58.8
	Married	41.2
Educational Attainment	Not Enrolled	8.8
	Elementary (Not Graduated)	38.2
	Elementary (Graduated)	14.7
	High School (Not Graduated)	20.6
	High School (Graduated)	14.7
	Non- Formal Education	2.0
Organizational Membership	None	94.1
	LGBT	5.9

Table 2 presents the socio-economic information of the respondents. Most of the respondents' major source of income was from ecotourism activities (bangkero, tour guiding) with a frequency of 58 or 42.6% with an average income of below 5, 000 pesos (94 or 69.1%). Half of the respondents' alternative source of income was also from ecotourism with an income of below 5,000 pesos (88 or 64.7%). Most of the respondent's monthly income ranges from 5,001 to 10,000 with monthly expenses of 5001 to 10, 000 pesos (88 or 64.7). Generally, 98 of the respondents or 72.1% had 1 – 2 family members who also work for living. The table also shows that of the 136 respondents, 72 (52.9%) were having 4 – 7 family members. Most of these respondents owned their lot (88 or 64.7%), but majority of the respondents' home structure was not concrete (132 or 97.15). Most of the respondents resided in the barangay within 5 to 10 years (76 or 55.9%).

Table 2: Socio economic Information of the Respondents (N = 136)

Profile	Categories	Percentage (%)
Primary Source of Income / Type of Job	Business Owner	44
	Sari-Sari Store Owner	14.7
	Farmer	7.4
	Fisherman	27.9
	Tourism -Related	46.8
Alternative Source of Income	Business Owner	4.4
	Sari-Sari Store Owner	17.6
	Farmer	7.4
	Fishermen	2.9
	Tourism	60.3
Individual Income (Php per month)	5000 and below	27.9
	5001 to 10,000	27.9
	20,001 to 25, 000	2.9
Number of Family Members	1-3	7.4
	4-7	59.8
	8-11	31.6
	12+	1.5

Number of years living in the Area	5 years and below	5.9
	Over 5-10 years	55.9
	Over 10-15, years	16.2
	Over 15-20 years	11.8
	20-25 years	5.9
	Over 25 years	3.6
Monthly Income (Php)	5,000 and below	64.7
	5,001to 10, 000	16.2
	10,001 to 15, 000	9.6
	15,001 to 20,000	7.4
Income from Alternative Source	5,000 and below	32.4
	20,001 to 25,000	6.7
Type of Housing Ownership	Non- Owned	14.7
	Rented	16.2
	Owned	69.1
Type of Housing	Not Concrete	27.9
	Concrete	72.1
Number of Family Members Working	1-3	27.1
	4+	72.9
Monthly Expenses	5,000 and below	35.3
	5,001 to 10,000	64.7

Table 3 presents the participation of the respondents in environmental activities. Majority of the respondents (102 or 75%) have knowledge on marine resources management. The information on marine resources management is being disseminated by other government agencies (46 or 33.8%) such as Department Environment and Natural Resources (DENR). Respondents with no awareness of the government programs had no idea of these programs. Though most of the respondents are aware on marine resources management programs and other environmental activities, half of them did not participate in any related activities (70 or 51.5%) with no reason as well (78 or 57.4%). Most of the respondents belong to Samahan ng Morningside (42 or 30.9%) as their organization. A study by Liu et al. (2023) explored factors influencing community residents' pro-environmental behaviors in protected areas. The research identified that environmental education and community participation significantly affect pro-environmental behaviors. This underscores the importance of disseminating information on marine resources management to enhance community engagement The Velondriake Locally Managed Marine Area (LMMA) in southwest Madagascar serves as an example of successful community-led marine management. The communities within this LMMA have implemented periodic fishery closures, leading to substantial increases in octopus landings and catch per fisher per day. The establishment of the MIHARI Network facilitated knowledge sharing and best practices among fishing communities, highlighting the role of community organizations in promoting sustainable marine resource management.Despite awareness of environmental programs, some community members may not participate in related activities. Factors such as lack of perceived direct benefits, socio-demographic characteristics, and economic considerations can influence participation levels. For instance, a study investigating community participation in forest management found that economic benefits and community awareness were significant predictors of involvement. However, other factors like income-generating activities and education level did not significantly affect participation, suggesting that perceived personal benefits and awareness are more critical drivers.

Profile	Categories	Percentage (%)
Knowledge on Marine Resources Management	Yes	25.0

	No	75.0
Source of Information	Neighborhood	1.5
	Organization of Fishermen	33.8
	Barangay LGU	1.5
	Municipal Government	
	Other Government Agencies	
Reason for Unawareness	Not Interested	
	Lack of Ability to Understand	
	No Access to Information	
Frequency in Participating in Environmental Activities	Over 13 times	8.8
	4-8 times	4.4
	1-3 times	35.3
	Not even once	51.5
	Local Community	16.2
Source of Information	Organization of Fishermen	30.9
	Bantay Dagat	5.9
	Municipality	4.4
	Public Agency	41.2
Environmental Activities Participated	Coastal Clean-Up	8.8
	Underwater Clean -Up	30.9
	Planting	60.3
Reason for Participation	Obligation	5.9
	Self-Willingness	19.1
	Additional Information	75
	Not Interested	7.4
	Have No Capacity	5.9
	Not Aware	73.5
	Expensive	2.9
	Others	10.3

Table 3: Participation of the Respondents in Environmental Activities (N= 136)

Table 4 presents the work related to fishing activities. Most of the respondents, fishing was conducted in other barangay (56 or 41.2%) and used kawil (80 or 58.8%) to catch fish. The best months to go to fishing is from October to December (96 or 70.6%), while closed season for fishing is from January – March. Usually, fishermen spent more than 2 hours (78 or 57.4) looking for the best place for fishing and spent 2 to 3 hours of actual fishing (74 or 54.4%). Fishing is usually done once a day with a frequency of 102 or 75% or once every week (76 or 55.9%) with 10 – 20 kilos of fish every day. Most of the caught fishes were besugo, lapu-lapu and dilis (32 or 23.5%) with the use of lambat (90 or 66.2%). These were sold to buyer (102 or 75%) amounting to 100 – 500 pesos (128 or 94.15). Every fishing activity amounted to P200.00 (74 or 54.4%) and monthly expenses ranges 500 – 1000 (58 or 42.6). Most of the respondents' monthly income ranges 2000 – 2500 with a frequency of 44 (32.4%)

Table 4. Work Related to Fishing (N= 136)

Variables	Categories	Percentage (%)
Fishing Area	Near the barangay	35.3
	Other barangay	41.2
	Along Patungan Beach	5.9
	Other Municipality	7.4
	Other Area	10.3
Fishing Gears	Lambat	25.0
	Hook and Line	58.8

	Spearfishing	10.3
	Others	5.9
Months of Fish Abundance	April -June	29.4
	October -December	70.6
Months of Few Fish	January -March	75.0
	April-June	19.1
	July- September	5.9
Time Travel in Fishing	Below 30 minutes	25
	Half Hour	7.4
	1 ½ - 2 hours	10.3
	More than 2 hours	57.4
Time in Actual Fishing	Below 1 hour	4.4
	1-2 hours	35.3
	2-3 hours	54.4
	More than 5 hours	5.9
Frequency of Fishing per Day	Once	75.0
	Twice	20.6
	Thrice	1.5
	4 times	2.9
Frequency of Fishing per Week	Once	19.1
	Twice	2.9
	Thrice	16.2
	4 times	5.9
	7 times	55.9
Expense per Fishing (Pesos)	100	23.5
	200	54.4
	300	22.1
Total Monthly Expenses (Pesos)	500 below	30.9
	500-1000	42.6
	1000-1500	17.6
	2000-2500	2.9
Total Monthly Expenses (Pesos)	500 below	30.9
	500-1000	42.6
	1000-1500	17.6
	2000-2500	2.9
	2500 up	5.9
Monthly Income (Pesos)	500 below	8.8
	500-1000	8.8
	1000-1500	26.5
	2000-2500	14.7
	2500 up	32.4
Measurement of Fish Catch (kg)	10-20	67.6
	21-30	5.9
	31-40	7.4
	51-60	19.1
Type of Fish Commonly Caught	Talakitok, pusit, tambakol	-
	Salusoy, besugo, pusit	5.9
	Dalagang bukid, talakitok, galunggong	13.2
	Besugo, saluysoy, talakitok	14.7
	Batulay, pusit, purak	4.4
	Alumahan, kabayas, salusoy	17.6
	Bangus, tulingan, hasa-hasa	10.3

	Besugo, lapu-lapu, dilis	23.5
Fishing Gears Used	Lambat	66.2
	Kala wit	33.8
Measurement of Fish Catch (kg)	10-20	64.7
	21-30	25.0
	31-40	10.3
Manner of Selling the Fish	Direct to Consumer	25.0
	Not – Direct to Consumer	75.0
Amount of Fish Sold (kg)	1-5	10.3

Table 5 shows work in ecotourism activities. As to place where most of the tourists visited places in the area, other barangay garnered the highest frequency of 58 with 42.6%. Moreover, most of the tourists were also brought to other barangay (84 or 61.8%) as tourist destination. There were approximately 401 – 600 tourists (68 or 50%) visited the barangay. Generally, boating with 66 (48.5%) was the most water related ecotourism activity tourists engaged in; and catering or paluto service (52 or 38.2%) for non-water ecotourism activity for the visitors. Rental fees of the water related activities ranges from 1500 – 2000 (74 or 54.4%), while the services and facilities for non-water related activities ranges from 1501 – 2000 (70 or 51.5%). Most of the respondents' individual income ranges from 2500 and above with a frequency of 64 (47.1%). On the other hand, monthly expenses for ecotourism activities ranges from 2000 – 2500 (54 or 39.7%).

Table 5. Work in Ecotourism Activities N= 136)

Variables	**Categories**	**Percentage** (%)
Area for Swimming and Recreation	Near Barangay	30.9
	Other Barangay	42.6
	Other Town	17.6
	Others	8.8
Areas Explored by Tourists	Near Barangay	19.1
	Other Barangay	61.8
	Patungan Beach	1.5
	Other Towns	17.6
Type of Water-Related Ecotourism Activities	Diving	2.9
	Boating	48.5
Type of Non- Water Ecotourism Activities Offered to Tourists	Diving	2.9
	Boating	48.5
	Recreational Fishing	26.5
	Others	22.1
Number of Tourists per Month	100-200	8.8
	201-400	7.4
	104-600	50
	601-800	11.8
	801-1000	14.7
	1000 up	7.4
Rental Fees for Supplies and Facilities for Water Related Activities (Pesos)	1500-200	54.4
	2001-3500	45.6
Individual Monthly Income (Pesos)	500-1000	2.9
	1000-1500	2.9
	2000-2500	25
	2500- up	47.1

Table 6 shows the respondents' willingness to pay. Most of the respondents agreed that they have the responsibility of taking care and protecting the water resources with a frequency of 94 or 47%. Likewise,

respondents strongly agreed (60 or 44.1%) on preserving and maintaining these water resources and coastline areas. On the other hand, some of them did not agree with this due to lack of budget given to them (60 0r 44.1%). Majority of the respondents are willing and agreed to implement trust funding (60 or 44.15%) which shall be paid directly to fishermen's cooperative (78 or 57.4%) amounting to P50 / year (76 or 55.9%). On the other hand, some of them did not agree with trust funding as additional expenses due to lack of income (92 or 67.6).

Table 6. Willingness to Pay (N= 136)

Statement	Responses	Percentage (%)
Agreement on one's responsibility in taking care of nature's marine resources	Strongly Disagree	1.5
	Disagree	11.8
	Agree	17.6
Agreement on the protection and conservation of the beauty and pristine nature of the waters	Strongly Agree	69.1
	Strongly Disagree	17.6
	Disagree	8.8
	Agree	22.1
	Strongly Agree	44.1
Reasons for Disagreement	Perceive ineffective project	8.8
	Project is not needed by the community	22.1
	Distrust to the administrator of the project	25
	Having not enough money to support the project	44.1
Are you in favor of having a Trust Fund?	Strongly Disagree	1.5
	Disagree	26.5
	Agree	69.1
	Strongly Agree	2.9
Most effective way of collecting the Trust Fund	Separate collection by LGU	1.5
	Addition to tax	5.9
	Organize a committee for collection	32.4
	Direct payment to cooperative	57.4
	Others	2.9
Reasons for not favoring Trust Fund	Insufficient income	67.6
Reasons for Not Favoring the Trust Fund	Perceive responsibility of the Government	25
	Not trusting the management	7.4
Amount of Money Willing to Give to the Trust	Php 50/yr	55.9
	Php 100/yr	29.4
	Php 200 / yr	14.7

Econometric Model:

In this study, two econometric models were employed to investigate the willingness to pay (WTP) of residents. A logit model was used to investigate the factors that affected the likelihood of respondents paying. A logit model was used to examine the key factors that influenced the bid values. Therefore, the

paying and bidding decisions of stakeholders could be analyzed using this two-step process elicitation format. In Patungan beach, the results indicated that the satisfaction, and protection, and know variables had positive impacts, whereas group and sociodemographic profile of the respondents does not directly affect their willingness to pay. Thus, environmental awareness, protection and conservation, to include livelihood activities among the respondents significantly affected their likelihood of paying.

Table 7 shows the logistic regression to ascertain the effects of age, gender, civil status, educational attainment and organizational affiliation on the willingness of the participant to pay. The logistic regression model was not statistically significant, X2 = 5.18, p > .05. The model explained 40% (Nagelkerke R2) of the variance in the willingness to pay and correctly classified 91% cases. This model further implies that demographic profile does not direct affect the willingness to pay of the respondents.

Table 7 Logit Model for Willingness to Pay and Demographic Profile

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	36.294	0.220	0.405

In the second scenario, a logistic regression was performed (see table 8) to ascertain the effects on the agreement on protection and conservation of the waters, trust fund agreement and amount of money willing to give to trust fund and on the willingness of the participant to pay. The logistic regression model was statistically significant, X2 = 3.746, p < .05. The model explained 17% (Nagelkerke R2) of the variance in the willingness to pay and correctly classified 32% cases. Protection and water conservation were the utmost concern of the **respondents thru trust fund.** Though the respondents are willing to pay P50 pesos/year, increasing the amount of money was associated with a reduction in the likelihood of willingness to pay

Table 8: Logit Model for Willingness to Pay and Model Summary

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	40.114[a]	0.174	0.322

KEY INSIGHTS

Perception of Local Communities on the Effects of Tourism on Patungan Beach

Most residents recognize and appreciate the aesthetic and recreational value of Patungan Beach, particularly as it relates to their livelihoods. Their interactions with the surrounding environment highlight the deep connection between tourism, recreation, and economic opportunities. Many perceive ecotourism as beneficial, enhancing existing services in the area. Furthermore, they acknowledge the positive impact of environmental protection in sustaining job opportunities and fostering further economic development.Several studies have explored residents' perceptions of ecotourism and its impact on their livelihoods and environmental conservation, particularly in the Philippines. These studies provide insights into how communities value the aesthetic and recreational benefits of natural attractions and recognize the economic opportunities that ecotourism presents.Research by Oracion, Miller, and Davis (2005) examined community attitudes toward ecotourism in Sabang, Palawan, home to the Puerto Princesa Subterranean River National Park. The study found that residents acknowledged the economic benefits of ecotourism through increased job opportunities and improved services. However, environmental conservation was not seen as a primary advantage, as community members were more concerned with direct financial benefits. This finding closely aligns with the perception of residents in Patungan Beach, who value ecotourism for economic opportunities rather than its environmental impact. Similarly, a study focusing on an island community in the Philippines examined residents' perceptions prior to the onset of tourism development. The findings emphasized the importance of understanding local attitudes to inform tourism planning and development, ensuring that such initiatives align with community interests and environmental sustainability. In addition, Walter and Regmi (2017) investigated local perceptions in a small island community in the Philippines before tourism development fully took off. Findings emphasized that residents generally had positive attitudes toward potential tourism benefits, but concerns over environmental degradation and loss of local culture were present. This highlights the importance of involving local communities in planning tourism projects to align with their needs and ensure sustainable

practices. Cruz, Alino, and White (2004) analyzed the effects of coastal ecotourism initiatives on local livelihoods in various Philippine regions. The research found that ecotourism improves economic opportunities for fishing communities but also brings challenges related to resource depletion and carrying capacity. Many communities had limited awareness of environmental conservation practices, emphasizing the need for better education and training programs. These findings align with the Patungan Beach study, where residents benefit from ecotourism but may lack a strong commitment to These studies underscore the complex relationship between ecotourism, economic benefits, and environmental conservation. While communities often recognize and appreciate the economic advantages of ecotourism, there is a need for increased awareness and involvement in environmental protection efforts to ensure sustainable development.

Awareness and Involvement in Environmental Conservation

While residents demonstrate a moderate level of awareness regarding the importance of preserving natural resources, their active involvement in conservation efforts remains low. Across different respondent groups, there is no significant variation in environmental consciousness. They recognize the vital role of ecosystem services in supporting their livelihoods and economic well-being. However, limited efforts have been made by both the local community and government units to implement concrete conservation initiatives. Strengthening education and environmental awareness programs is crucial, ensuring the participation of not only residents but also visitors. Several studies have examined the relationship between environmental awareness and active participation in conservation efforts among local communities in the Philippines. These studies often reveal a moderate level of environmental awareness but highlight challenges in translating this awareness into active involvement.

For instance, a study conducted in Acmac, Iligan City, delved into community-led environmental protection initiatives. The research highlighted that while residents recognized the importance of environmental conservation, their active participation was hindered by various challenges, including limited resources and support from local authorities. The study emphasized the need for empowering local communities through education and capacity-building programs to enhance their involvement in environmental protection efforts.

Willingness to Pay for Conservation Efforts

Most respondents acknowledge their responsibility in protecting and maintaining water resources. A significant number strongly support initiatives aimed at preserving the beach and its marine ecosystem. The majority are willing to contribute to a trust fund dedicated to conservation efforts, proposing an annual contribution of ₱50 per year, to be managed by the local fishermen's cooperative. However, some residents expressed reservations about trust funding due to financial constraints, highlighting the need for more sustainable and inclusive funding mechanisms.Similarly, an investigation into seagrass conservation by Bundal et al. (2018) revealed that while local communities are aware of the importance of seagrass ecosystems and express a positive attitude toward their preservation, their financial contributions are relatively low. This trend is common in developing countries like the Philippines, where immediate economic needs often take precedence over environmental concerns. These studies underscore the necessity for sustainable and inclusive funding mechanisms that consider the economic realities of local communities. Collaborative approaches involving local cooperatives, government agencies, and non-governmental organizations are essential to develop effective conservation strategies that balance environmental goals with community welfare.In summary, while there is a recognized responsibility among residents to protect and maintain marine resources, financial constraints pose significant challenges. Addressing these challenges requires

CONCLUSIONS:

This study surveyed a total of 136 respondents, comprising 92 males and 44 females. The majority had attained only an elementary-level education and were not active members of any organizations. Most respondents relied on ecotourism-related activities (e.g., boat operators, tour guides) as their primary source of income, with 42.6% (58 individuals) engaged in such activities. The majority (69.1% or 94 respondents) earned below ₱5,000 per month, and for many, ecotourism also served as an alternative source of income (64.7% or 88 individuals), though earnings remained below ₱5,000. The most common income range was

between ₱5,001 and ₱10,000, with a similar monthly expenditure range (64.7% or 88 respondents). Additionally, 72.1% (98 individuals) had one to two family members contributing to the household income.The findings highlight that most respondents appreciate the beauty of Patungan Beach, recognizing it as a primary source of their livelihood. However, participation in conservation and preservation activities remains low. Despite this, many expressed willingness to contribute financially toward conservation efforts. Given these insights, it is evident that the local community requires support to sustain and protect the area. Their positive perception of the beach's aesthetic and economic value, alongside their willingness to contribute to conservation efforts, presents an opportunity for the implementation of sustainable conservation initiatives.

RECOMMENDATIONS:

To enhance the sustainability of Patungan Beach and support residents, the following actions are recommended: Based on the study findings, a Community-Based Sustainable Ecotourism Framework can be developed to enhance conservation efforts while ensuring economic benefits for the local community. The framework should focus on four key pillars: Community Engagement, Sustainable Livelihoods, Environmental Conservation, and Governance & Policy Support.

1. Community Engagement & Capacity Building
    - Ecotourism Training Programs: Conduct workshops on sustainable tourism practices, responsible guiding, and environmental awareness.
    - Organization & Participation: Establish a Community Ecotourism Association to involve locals in decision-making and conservation activities.
    - Education & Awareness: Implement basic literacy and environmental education programs to empower the community, especially those with limited formal education.
2. Sustainable Livelihoods & Economic Empowerment
    - Diversification of Income Sources: Develop alternative income opportunities such as handicrafts, eco-friendly souvenirs, and homestay programs to reduce dependence on traditional tourism activities.
    - Fair Wage & Revenue-Sharing Model: Implement an income-sharing system where a portion of tourism revenue goes directly to conservation projects and community welfare.
    - Financial Literacy & Business Skills Training: Teach locals how to manage earnings from ecotourism and invest in sustainable businesses.
3. Environmental Conservation & Protection
    - Conservation Fund Initiative: Establish a voluntary community conservation fund where visitors and locals contribute toward beach preservation efforts.
    - Eco-Friendly Tourism Policies: Enforce waste management regulations, eco-friendly infrastructure (e.g., biodegradable materials for cottages), and controlled visitor access.
    - Community-Based Conservation Activities: Organize beach clean-ups, mangrove reforestation, and marine protection projects with active community participation.
4. Governance & Policy Support
    - Collaborations with Local Government & NGOs: Secure funding, technical assistance, and policy support from the government, private sector, and environmental organizations.
    - Legal Protection & Zoning Regulations: Advocate for Patungan Beach to be designated as an ecotourism zone, ensuring sustainable development while protecting natural resources.
    - Monitoring & Evaluation: Establish a local ecotourism council to oversee the impact of tourism activities and ensure adherence to sustainability standards.

Implementation Strategy

1. Short-Term (1 year): Conduct training programs, establish conservation funds, and launch community organization efforts.
2. Medium-Term (2-3 years): Implement livelihood diversification strategies, enforce conservation policies, and strengthen partnerships with external organizations.
3. Long-Term (5+ years): Achieve full community participation, ensure long-term sustainability of ecotourism initiatives, and secure official protection status for Patungan Beach.

This framework leverages the community's economic dependence on ecotourism while addressing low participation in conservation efforts. By empowering locals with knowledge, financial stability, and active engagement in environmental protection, Patungan Beach can be sustainably developed as a premier ecotourism destination while preserving its natural beauty.

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ETHICAL CONSIDERATION:
This study adheres to ethical standards to ensure the protection and welfare of all participants involved. The following ethical considerations were observed:

1. Informed Consent – All respondents were provided with detailed information about the study's objectives, procedures, and potential implications. They voluntarily participated after signing an informed consent form, ensuring that they fully understood their rights and the nature of their involvement.
2. Confidentiality and Anonymity – Personal information of participants was kept strictly confidential. Data were anonymized, and no identifiable details were included in the findings to protect the privacy of respondents.
3. Voluntary Participation – Participation in the study was entirely voluntary, with respondents given the freedom to decline or withdraw at any stage without any consequences.
4. Non-Maleficence and Beneficence – The study ensured that no harm—whether physical, psychological, or emotional—was inflicted upon participants. Instead, it aimed to contribute positively by promoting awareness of environmental conservation and sustainable tourism.
5. Cultural Sensitivity and Respect – The study respected the cultural values, traditions, and beliefs of the local community. The research process was conducted in a manner that upheld the dignity and perspectives of all respondents.
6. Ethical Data Collection and Use – Data were collected responsibly and used solely for academic and policy-making purposes. Misrepresentation or manipulation of data was strictly avoided to maintain research integrity.
7. Compliance with Institutional and Legal Guidelines – The study followed ethical guidelines set by the university's research ethics board and relevant national policies on human research, ensuring compliance with standard research protocols.

Declaration Of Competing Interest
"The authors declare that there are no competing interests to any authors

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