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Research paper

Economic Valuation of Biodiversity and Ecotourism in Monte Maria: Integrating Conservation and Sustainable Tourism Practices

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Abstract

This study explores the integration of biodiversity conservation into sustainable tourism through an economic valuation of a coastal pilgrimage destination — Monte Maria International Pilgrimage Center. Combining the Contingent Valuation Method (CVM) and Travel Cost Method (TCM), the research assesses tourists' willingness to pay (WTP) for conservation efforts and estimates the economic value of the site's natural resources and recreational services.

Using a mixed-methods approach, the study surveyed 225 tourists and carried out stakeholder focus groups. Results reveal that 89.78% of respondents expressed willingness to pay an environmental fee, with a mean WTP of PHP 52.33 [US$0.94]. Economic valuation estimates indicate that Monte Maria and its surrounding resorts generate a combined annual tourism value of approximately PHP 63.75 million [US$1.148 million]. Despite its ecological richness — hosting 23 plant species and 2 fauna species, including several listed as endangered — the site faces biodiversity threats from tourism-driven land conversion and habitat loss.

Findings underscore the critical role of WTP metrics in designing conservation fee structures and support the adoption of sustainable tourism policies. The strong visitor support for environmental contributions presents a viable funding mechanism for biodiversity protection and site maintenance. The study further recommends targeted education campaigns and transparent fund allocation to enhance visitor buy-in and community participation.

By positioning Monte Maria as both a spiritual and ecological asset, this research contributes to global discourse on ecotourism in sacred landscapes. It offers actionable insights for policymakers and tourism managers in developing nature-based financing strategies that balance cultural heritage, economic development, and environmental sustainability — particularly in coastal and pilgrimage destinations across Southeast Asia and similar ecological regions.

Keywords: *Ecotourism; Economic Valuation; Willingness to Pay; Biodiversity Conservation; Contingent Valuation; Travel Cost Method.*

1. Introduction

The intersection of biodiversity conservation and cultural tourism has gained increasing attention in sustainability research, particularly in regions where natural landscapes and spiritual heritage coexist. Coastal pilgrimage destinations, often situated in ecologically sensitive areas, offer unique opportunities to integrate environmental stewardship with tourism development. This study centers on Monte Maria, a prominent coastal pilgrimage site renowned for its spiritual significance and scenic location near the Verde Island Passage — recognized as the "center of marine biodiversity" in the world. The Montemaria International Pilgrimage & Conference Center, known as Monte Maria, is a township and Roman Catholic pilgrimage site in Batangas City, Philippines. It is home to the Mother of All Asia – Tower of Peace, the tallest statue of the Virgin Mary in the world, and the only livable statue globally, with a gross floor area of 12,000 square meters. Conceived as a destination to attract devotees and pilgrims, it also serves as a tourism and retirement village. Situated atop the plateau's highest point, 148 meters above sea level.

Fig. 1: Map of Monte Maria.

Monte Maria's development aligns with the broader push for ecotourism in Batangas Province, Philippines. Under Administrative Order No. 2011-09, efforts to promote ecotourism have been launched to support holistic, community-based, and pro-poor tourism programs. According to The International Ecotourism Society, ecotourism involves responsible travel to natural areas that conserve the environment, sustain local communities, and affect education (TIES Overview, 2019). For a site like Monte Maria, this translates into developing sustainable tourism activities that harmonize with the surrounding environment while generating economic opportunities for residents.

Monte Maria exemplifies a multifunctional landscape where ecological integrity, cultural identity, and economic opportunity converge. The area hosts diverse plant and animal species, including several classified as vulnerable or endangered. However, expanding tourism infrastructure and increasing visitor influx have intensified anthropogenic pressures, threatening local biodiversity and natural assets (Steven & Castley, 2013). Despite these challenges, there is growing potential to align conservation efforts with tourism management through market-based instruments such as environmental user fees and ecotourism valuation.

This study aims to assess the economic value of natural resources in Monte Maria and evaluate visitors' willingness to pay (WTP) for conservation initiatives. Using a mixed-methods approach, the research integrates the Contingent Valuation Method (CVM) and Travel Cost Method (TCM) to quantify both perceived and actual economic values associated with the site. In doing so, the study provides empirical evidence for sustainable tourism financing, supports policy formulation, and offers a model for harmonizing ecological preservation with cultural tourism in similar coastal pilgrimage contexts across Southeast Asia and beyond.

2. Literature review

Ecotourism is intrinsically linked to biodiversity, as the presence of diverse and intact ecosystems is often the primary draw for tourists seeking nature-based experiences. As Catibog-Sinha (2010) emphasized, the long-term viability of ecotourism destinations depends on the careful assessment and management of natural resources, particularly biodiversity. Rivera et al. (2022) echoed this view, asserting that sustainable ecotourism must strike a balance between development and conservation by maintaining ecological integrity, enhancing scenic value, and providing ecosystem services. Ecotourism has emerged as a significant force within the tourism industry, experiencing substantial growth and capturing a notable share of the global travel market (Castellanos-Verdugo et al., 2016). Ecotourism, fundamentally rooted in nature, attracts tourists eager to immerse themselves in the beauty of wild plants, animals, and the traditional cultures of specific regions (Fakir et al., 2019). This form of tourism not only enhances tourists' awareness and appreciation of the environment but also actively contributes to its protection, aligning with the principles of responsible travel (Omonijo et al., 2018). Ecotourism prioritizes travel to destinations with flora, fauna, and cultural heritage as key attractions, fostering an understanding of human impact on the environment and promoting appreciation for natural habitats (Zeng et al., 2022).

In recent years, the role of economic valuation tools in ecotourism management has gained prominence, offering policymakers quantifiable insights into the value of environmental assets (Gössling et al., 2018). Economic valuation frameworks, particularly the Travel Cost Method (TCM) and Contingent Valuation Method (CVM), have been widely used to estimate the recreational and non-market value of natural resources (Hanley & Barbier, 2009). These approaches support the formulation of user-based conservation strategies, such as environmental fees or payment for ecosystem services, which can be applied to ecologically sensitive areas like Monte Maria. Ecotourism, by its very nature, seeks to harmonize recreational activities with the imperative of nature conservation, although it faces inherent challenges, as frequent recreational activities can negatively impact the ecological environment, including plant trampling, soil degradation, aquatic ecosystem disruption, and wildlife habitat loss (Dong et al., 2023).

Several studies in Southeast Asia have demonstrated the application of these valuation methods in tourism contexts. Carandang et al. (2013), for instance, successfully utilized TCM and CVM to estimate the economic value of mangrove forests in Bohol and Palawan. Similarly, Villanueva et al. (2021) and Perez et al. (2023) conducted biodiversity assessments that informed policy interventions and site-specific conservation plans, highlighting the importance of ecological inventories in guiding sustainable tourism development.

However, while such studies focus predominantly on ecologically significant but secular landscapes, Monte Maria introduces a hybrid context where religious pilgrimage and coastal biodiversity converge. Unlike the typical ecotourism destinations evaluated using TCM/CVM, Monte Maria's draw is both spiritual and ecological, complicating how tourists perceive value. Most prior applications of CVM, such as in Agusan Marsh (Apdohan et al., 2021) or Atulayan Bay (de la Vega et al., 2019), focus on sites with clear recreational or livelihood significance. These studies show that willingness to pay (WTP) is often tied to ecological awareness or income levels, but do not account for non-material or spiritual motivations that may equally influence tourist behavior.

This distinction is critical. Monte Maria is situated near the Verde Island Passage, a globally recognized marine biodiversity hotspot (Carpenter & Springer, 2005), but its identity as a pilgrimage site means that tourists may assign value not only based on biodiversity or scenic beauty, but also on cultural heritage, spiritual experience, and personal devotion. Standard CVM assumptions — that individuals behave as rational utility-maximizers in hypothetical markets — may require adaptation when applied to sacred ecotourism settings where motivations are multidimensional.

Moreover, sacred sites often invoke ethical or moral obligations among visitors, possibly enhancing their WTP for conservation, independent of direct recreational utility. This introduces complexity not explored in prior Southeast Asian studies such as those by Villanueva et al. (2021) and Perez et al. (2023), which focused on biodiversity inventories to inform conservation but did not assess cultural dimensions. Hence, while these studies are valuable for benchmarking, they fall short in addressing the layered meanings that visitors assign to spiritually significant ecotourism locations.

CVM, when properly calibrated, can capture these layered motivations. As Zhang & Li (2020) describe, CVM is a flexible tool capable of measuring WTP for non-market goods such as cultural preservation or spiritual ambiance — if context-specific survey design is employed. Global CVM studies (Alpizar et al., 2003; Lee & Han, 2002) have shown that tourists are more likely to pay conservation fees when they perceive high environmental or cultural value. This interplay is particularly salient for Monte Maria, where scenic landscapes and religious structures coexist, creating a hybrid value proposition.

WTP assessments, therefore, hold potential not just for generating conservation revenue, but for designing financially sustainable and culturally sensitive tourism models. By understanding how spiritual value intersects with ecological value, policymakers can better tailor conservation campaigns, fee structures, and educational efforts. As noted by Báez et al. (2015) and Musa et al. (2021), integrating WTP data into ecotourism policy enables more responsive, site-specific strategies.

In summary, while prior literature provides a strong foundation in applying CVM and TCM to ecotourism settings, few studies have addressed the sacred-ecotourism interface. This study aims to fill that gap by applying these tools to Monte Maria, a site where biodiversity, spirituality, and tourism intersect. In doing so, it not only contributes to conservation finance but also advances the methodological discourse on how to value complex, multidimensional ecotourism experiences.

A central element of these strategies is tourists' willingness to pay (WTP) for conservation. CVM-based studies globally have shown that visitors are often willing to pay entrance or conservation fees when they perceive high environmental or cultural value (Alpizar et al., 2003; Lee & Han, 2002). WTP studies in the Philippines echo this trend. Apdohan et al. (2021) found that tourists and residents visiting the Agusan Marsh Wildlife Sanctuary expressed high WTP for conservation fees. Likewise, de la Vega et al. (2019) reported that fisherfolk around Atulayan Bay Marine Protected Area were influenced by income levels and perceived ecological importance when expressing WTP. The contingent valuation method is a survey-based technique used to assess people's willingness to pay for non-market goods and services, like environmental conservation, by directly asking individuals in a hypothetical market scenario (Zhang & Li, 2020).

In tourism research, CVM is employed to gauge how much tourists would be willing to pay for improvements in environmental quality or access to recreational sites (Samdin et al., 2010). Economic valuation is vital for quantifying the economic benefits of natural resources and environmental services, enabling informed decision-making about resource use and conservation.

Moreover, WTP assessments play a vital role in designing financially sustainable tourism models. Appropriate pricing mechanisms can ensure a steady flow of funds for protected area management while also reinforcing conservation behavior among tourists. By assessing the factors that influence WTP, protected area managers can fine-tune entrance fees, design targeted conservation campaigns, and enhance visitor experiences, all while generating revenue for conservation efforts (Báez et al., 2015; Musa et al., 2021).

While these studies demonstrate the value of CVM and WTP in natural tourism contexts, there is a research gap in applying these tools to sacred coastal pilgrimage destinations—locations where ecological, cultural, and spiritual values intersect. This study seeks to fill that gap by estimating tourists' WTP and economic valuation for Monte Maria's natural resources, thus providing actionable insights for conservation finance and integrated ecotourism planning.

3. Methods

This study adopted a mixed-methods research design, integrating both qualitative and quantitative approaches to ensure a comprehensive understanding of the ecological, cultural, and economic dimensions of tourism in Monte Maria. The use of triangulated methods strengthened the validity of findings and provided nuanced insights into both stakeholder perspectives and visitor behavior (Creswell & Plano Clark, 2018).

The qualitative phase employed in-depth interviews, focus group discussions (FGDs), and participatory workshops to explore stakeholder insights regarding biodiversity, landscape features, and the site's ecological services. Participants included local ecologists, environmentalists, community leaders, tourism officers, and barangay officials. Data collection was guided by semi-structured interview protocols designed to elicit views on biodiversity conservation, land-use changes, and sustainable tourism planning.

Secondary data sources such as local biodiversity inventories, land-use maps, and existing conservation reports were also reviewed to support the primary qualitative findings.

A quantitative research design was employed to estimate the economic value of Monte Maria's ecotourism resources using the Contingent Valuation Method (CVM) and the Travel Cost Method (TCM). A structured, face-to-face survey was administered to 225 tourists visiting Monte Maria and nearby resorts over four weeks. The instrument was designed to capture visitor demographics, travel behavior, site preferences, and willingness to pay (WTP) for biodiversity conservation.

The CVM component elicited WTP through a hypothetical environmental fee scenario, following best practices in stated preference research (Hanley & Barbier, 2009; Carson, 2012). The TCM approach estimated the recreational value of the site based on visitor expenditures, travel time, and distance traveled.

Sampling was carried out using a non-probability convenience approach, owing to the absence of a centralized visitor registry and logistical constraints at the site. While convenience sampling may limit statistical generalizability, this approach is frequently employed in ecotourism valuation studies where probabilistic sampling is impractical (e.g., Apdohan et al., 2021). To mitigate selection bias and improve sample variability, data collection was carried out on both weekdays and weekends, and across different times of day. The final sample size ($n = 225$) is consistent with prior CVM and TCM studies in developing-country contexts and provides sufficient power for exploratory analysis. Descriptive statistics were used to summarize visitor profiles, including age, gender, income level, origin, and travel group size. Inferential analyses, including mean and median WTP estimates, were used to calculate aggregate economic values. While the study acknowledges inherent limitations associated with non-random sampling, the resulting estimates provide context-specific insights that can inform conservation fee structures and ecotourism planning. Future research is encouraged to employ stratified or probabilistic sampling frameworks to enhance external validity.

4. Results

4.1. Assess the natural resources of Monte Maria

A biodiversity inventory was carried out in Monte Maria and Barangay Pagkilatan to identify ecologically significant species and assess site-level conservation priorities.

Table 1: Documented Plant and Fauna Species Observed in Monte Maria and Barangay Pagkilatan

Flora		Fauna
Species Abundant in Quantity	Species in Low Quantity	Animal Species in Low quantity
Avocado (Persea americana)	Atis (Annona squamosa)	Alitaptap (Lampyridae)
Bamboo (Bambusa vulgaris)	Balimbing (Averrhoa carambola)	Bayawak (Varanidae)
Banana (Musa paradisiaca Linn.)	Bayabas (Psidium guajava L.)	Bubuyog (Apidae)
Calamansi (Citrofortunella macrocarpa)	Duhat (Syzygium cumini)	Kuwago (Strigidae)
Coconut (Cocos nucifera)	Cacao (Theobroma cacao)	Lawin (Accipitridae)
Kamias (Averrhoa bilimbi)	Kape (Coffea)	Maya (Lonchuria atricapilla)
Mahogany (Swietenia macrophylla)	Kasoy (Anacardium occidentale)	Paru-paro (Lepidoptera)
Manga (Mangifera indica)	Pineapple (Ananas comosus)	Pulangga (Hypsipetes philippinus)
Pako (Tracheophyta)	Tibig (Ficus nota)	Uwak (Corvidae)
Sampaloc (Tamarindus indica)		
Siniguelas (Spondias purpurea Blanco)		
Sinturis/Dalanghita (Citrus nobilis)		
Tiesa (Pouteria campechiana)		

Source: Own processing from the conducted research.

The survey revealed that plant diversity at the site is composed of a mix of native and exotic species. Of the 23 documented plant species, 22 were identified at the species level. Classification showed that 16 species (70%) were exotic or introduced, while only 7 were native to the Philippines. Notably, three plant species (Vitex parviflora, Pterocarpus indicus, and Cassia fistula) were listed under the IUCN Red List of Threatened Species, and four species were included in DAO 2017-11, the National Inventory of Threatened Philippine plants. However, no endemic species were recorded. This distribution suggests a shifted baseline, possibly due to ornamental planting and anthropogenic disturbance. The summary of taxonomic classification and conservation status is presented in Table 2.

Table 2: Taxonomic Classification and Conservation Status of Flora Species in Monte Maria

Common Name	Scientific Name	Family	Indigeneity	Endemism	IUCN Red List	DAO 2017-1
Mangga	Mangifera indica L.	Anacardiaceae	EX	NE	DD	-
Norkfolk Island pine	Araucaria heterophylla (Salisb.) Franco	Anacardiaceae	EX	NE	VU	-
Manila Palm	Adonidia merrillii (Becc.) Becc.	Arecaceae	IN	NE	VU	VU
Bitaog	Calophyllum inophyllum L.	Calophyllaceae	IN	NE	LC	-
Kamagong	Diospyros blancoi A.DC.	Ebenaceae	IN	NE	-	VU
Narra	Pterocarpus indicus Willd.	Fabaceae	IN	NE	EN	VU
Rain Tree	Samanea saman (Jacq.) Merr.	Fabaceae	EX	NE	LC	-
Golden Shower	Cassia fistula L.	Fabaceae	EX	NE	LC	-
Makahiya	Mimosa pudica L.	Fabaceae	EX	NE	LC	-
Centrosema	Centrosema molle Mart. Ex Benth.	Fabaceae	EX	NE	-	-
Fire Tree	Delonix regia (Bojer) Raf.	Fabaceae	EX	NE	LC	-
Aroma	Vachellia farnesiana (L.) Wight & Am.	Fabaceae	EX	NE	LC	-
Auri	Acacia auriculiformis A. Cunn. Ex Benth.	Fabaceae	EX	NE	LC	-
Antosan dilau	Senna spectabilis (DC.) H.S.Irwin & Barneby	Fabaceae	EX	NE	LC	-
Molave	Vitex parviflora A.Juss.	Lamiaceae	IN	NE	LC	EN
Gumamela	Hibiscus rosa-sinensis L.	Malvaceae	EX	NE	-	-
Hauili	Ficus septica Burm.f.	Moraceae	IN	NE	LC	-
Saging	Musa sp.	Musaceae	-	-	-	-
Duhat	Syzygium cumini (L.) Skeels	Myrtaceae	EX	NE	-	-
Star Apple	Chrysophyllum cainito L.	Sapotaceae	EX	NE	LC	-
Lantana	Lantana camara L.	Verbenaceae	EX	NE	-	-
Callachuci	Plumeria rubra L.	Apocynaceae	EX	NE	LC	-
Aratilis	Muntingia calabura L.	Muntingiaceae	EX	NE	LC	-

Note: EX – Exotic, IN – Indigenous, NE – Non-endemic, DD – Data Deficient, LC – Least Concern, VU – Vulnerable, EN – Endangered
Source: Own processing from the conducted research.

Table 3: Taxonomic Classification and Conservation Status of Fauna Species in Monte Maria

Common Name	Scientific Name	Family	Indigeneity	Endemism	IUCN Red List	DAO 2019-09
Wasp moth	Amata sp.	Erebidae	-	-	-	-
Maya	Passer montanus	Passeridae	EX	NE	LC	-

Note: EX – Exotic, NE – Non-endemic, LC – Least Concern
Source: Own processing from the conducted research.

Habitat observations indicated that much of the surveyed area has been altered by tourism infrastructure, landscaped gardens, and footpath construction. Native forest patches were highly fragmented and located in marginal zones near cliffs and steep slopes. Evidence of invasive species, cleared understory, and compacted soils was observed in areas with heavy tourist foot traffic. The dominance of exotic flora further points to a reduced regeneration capacity of native vegetation, affecting local habitat quality and connectivity.

The identification of two fauna species — Passer montanus, a migratory bird, and Amata sp., a fruit bat. Both species are ecologically significant and highly sensitive to habitat disturbance and human activity. Passer montanus, although common in disturbed areas, is a

migratory species that may rely on this coastal site for foraging. The observed absence of more diverse bird, amphibian, or reptile fauna — coupled with community reports of declining avian populations — suggests possible population declines linked to habitat degradation and increasing anthropogenic pressures. Fruit bats (Amata sp.) were observed during evening hours in wooded areas, but their presence was limited to less disturbed zones.

These findings emphasize the low faunal diversity and fragmented native vegetation, both of which underscore the need for immediate ecological management. Recommended interventions include native habitat restoration, biodiversity corridor establishment, and restriction of development in ecologically sensitive zones. Additionally, long-term biodiversity monitoring is warranted to assess species recovery trends and habitat health over time.

The conservation of remaining native flora and fauna is critical not only for sustaining biodiversity but also for maintaining ecosystem services that support Monte Maria's appeal as a nature-based pilgrimage site. Implementing low-impact tourism strategies, such as guided trails and conservation education programs, can help balance ecological integrity with sustainable visitor experience. Effective environmental stewardship in sacred ecotourism sites like Monte Maria enhances both biodiversity resilience and cultural heritage protection, making conservation an integral part of site planning.

4.2. Determine the current and potential tourism demand

Due to the beauty of the ocean and the establishment of Monte Maria, resorts were developed in Barangay Pagkilatan. Table 4 shows the local and foreign tourist visitation statistics for the resorts in 2023.

Table 4: Resorts in Barangay Pagkilatan Local and Foreign Tourist Arrival 2023

Resorts Visitors	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Local Visitors	3360	3565	3437	5597	4483	3369	5109	4013	2731	3688	4676	4317	48345
Foreign Visitors	14	3	118	2	8	7	0	0	4	7	7	1	171
Total	7349	8183	7662	12105	9775	7404	12422	9663	6589	8844	11086	10062	48516

Source: City Tourism of Batangas City.

The visitation patterns presented in Table 4 illustrate distinct seasonal trends in tourist arrivals to Monte Maria, likely shaped by religious observances, holidays, and climatic conditions. These fluctuations have practical implications for site management, particularly concerning infrastructure capacity, waste disposal systems, and biodiversity protection. Elevated visitor numbers during peak periods may intensify ecological pressures, while off-peak seasons offer opportunities for restoration activities and infrastructure maintenance. Understanding these trends is critical for designing responsive tourism strategies, including carrying capacity regulation, adaptive staffing, and targeted conservation education.

Additionally, visitation data served as a basis for estimating the site's economic contribution using the Travel Cost Method. The derived tourism value underscores Monte Maria's dual function as a spiritual and recreational destination, reinforcing its role in local economic development and supporting the case for sustainable tourism investment.

4.3. Estimate the economic value of Monte Maria's resources

A total of 225 tourists were surveyed in Barangay Pagkilatan. Respondents were categorized based on their main destination: 137 visitors to Monte Maria and 88 to nearby beach resorts. To estimate the recreational value of the site, the Travel Cost Method (TCM) was employed, which assesses the economic worth of a destination by analyzing the costs borne by visitors, including travel expenses, opportunity cost of time, and other associated expenditures.

The demographic profile showed that most Monte Maria visitors originated from Batangas, Cavite, and Laguna, with frequent visitation patterns ranging from one to three times per year. The majority traveled in private vehicles, with group sizes between six to ten people, and incurred travel expenses predominantly within the PHP 500–1,000 range. Similarly, resort visitors reported comparable travel costs and demographics, with swimming and relaxation cited as primary motivations. The detailed comparison between Monte Maria and resort visitors is summarized in Table 5.

Table 5: Demographic, Transportation, and Travel Cost Comparison of Monte Maria and Resort Visitors

	MONTEMARIA VISITORS n	RESORT VISITORS n
Nearby Provinces	45	31
Within Batangas Province	57	57
Employment		
• Full Time	71	38
• Self-Employed	21	16
• Students	22	34
Mode of Transportation		
• Private	131	87
• Public	3	1
• Rented	3	0
Travel Cost		
• Lower 500	49	1
• 500-1,000	52	9
• 1,001-2,000	20	36
• 2,001-3,000	4	12
• Higher than 3,00	12	30
Average Travel Time		
• Less than 1 hour	13	25
• 1-2 hours	48	11
• 2-3 hours	40	34
• 3-4 hours	21	12
• 4-5 hours	8	5
• 5-6 hours	7	1

Source: Own processing from the conducted research.

The increasing tourism activity at Monte Maria reflects its growing appeal as a dual-purpose destination — offering both spiritual fulfillment and leisure opportunities. Survey data from 137 Monte Maria visitors revealed that the majority originated from Batangas (41.6%), Cavite (13.1%), and Laguna (19.7%), with most having visited the site between one and three times in the past year. Respondents were primarily full-time employees (51.8%), followed by students and self-employed individuals. The prevalence of student visitors, particularly those praying for academic success, highlights the site's appeal across age and life stages, reinforcing its role as a pilgrimage destination.

Private vehicles were the dominant mode of transport, with most tourists traveling in groups of six to ten people. Average travel costs ranged from PHP 500 to PHP 1,000, and travel times generally fell between one and three hours — suggesting moderate accessibility and affordability for regional visitors. The maximum recorded one-way travel distance of 60 km further indicates the site's draw beyond its immediate vicinity.

In comparison, 88 respondents who visited nearby resorts cited recreation and relaxation — particularly swimming — as their primary motivations. Their profiles mirrored those of Monte Maria visitors in terms of demographics and travel behavior, underscoring Barangay Pagkilatan's potential as a multi-purpose tourism corridor.

From an economic perspective, visitor expenditures ranging from PHP 500 to PHP 3,000 contribute directly to the local economy, supporting microenterprises such as food vendors, transport providers, and local guides. These findings point to significant opportunities for targeted infrastructure development, transport enhancement, and tourism services — provided that environmental and cultural integrity are preserved. Integrating these insights into local tourism planning will be essential for balancing economic growth with sustainable resource management.

Table 6: Estimated Annual Economic Contribution of Monte Maria and Resort Visitors

	MONTEMARIA VISITORS	RESORT VISITOR
Average Travel Cost	750 per visitor	750 per visitor
Total Annual Visitors*	50, 000	20,000
Time Costs**	PHP 150.00	PHP 187.50

*Based on the survey data extrapolated for a year.
**Time costs are based on travel time, using the average hourly wage for full-time employees (PHP75/hour as a conservative estimate)
Source: Own processing from the conducted research.

Table 6 presents the estimated economic contribution of visitors to Monte Maria and nearby resorts, based on travel expenditures, annual visitor numbers, and time costs. Monte Maria receives approximately 50,000 visitors annually, with an average travel expenditure of PHP 750 [US$13.51] per visitor. The associated time cost, calculated using a conservative opportunity cost rate of PHP 75/hour [US$1.35], amounts to PHP 150 [US$2.70] per visitor. In comparison, nearby resorts attract an estimated 20,000 visitors annually, with a similar travel cost of PHP 750 [US$13.51] but a higher time cost of PHP 187.50 [US$3.38] per visitor due to longer average travel durations.

These estimates suggest that both Monte Maria and adjacent beach resorts contribute significantly to the local tourism economy. The aggregated visitor spending — encompassing transport, opportunity costs, and on-site expenditures — supports a range of economic activities, including local transport services, food vendors, and micro-enterprises. Understanding these expenditure patterns is critical for informing tourism policy, optimizing infrastructure investment, and designing targeted interventions to ensure long-term sustainability and equitable economic benefits for the community.

Table 7: Estimated Annual Economic Value of Tourism in Monte Maria and Brgy. Pagkilatan Resorts

	MONTEMARIA VISITORS	RESORT VISITOR
Economic Value (amounting to Php/year	PHP 45,000,000/year	PHP 18,750,000/year
Combined Economic Value of Montemaria and Resorts in Brgy. Pagkilatan	PHP 63,750,000/year	

Source: Own processing from the conducted research.

Table 7 presents the estimated economic value generated by visitors to Monte Maria and nearby resorts in Brgy. Pagkilatan. The total economic value is calculated based on the average travel cost per visitor and the estimated number of annual visitors.

Monte Maria generates an estimated PHP 45,000,000 [US$810,664.00] annually from tourism, with a significant number of visitors contributing to local businesses, transportation, and services. Meanwhile, resorts in Brgy. Pagkilatan contributes approximately PHP 18,750,000 [US$337,776.00] per year, driven by visitors who engage in recreational activities such as swimming and relaxation.

The combined economic value of Monte Maria and the resorts in Brgy. Pagkilatan amounts to PHP 63,750,000 [US$1,148,441.00] annually, highlighting the area's importance as a tourism and economic hub. These figures emphasize the need for continued investment in infrastructure, facilities, and sustainable tourism management to maximize the benefits for local communities.

Using the formula:

Economic Value = Number of Visitors × (Travel Cost + Time Cost)

Economic Value Based on Monte Maria Visitation Pattern

=50,000×(750+150)
=50,000×900
=PHP 45,000,000/year [US$810,664.00]

Economic Value Based on Brgy Pagkilatan Resorts' Visitation Pattern

=20,000×(750+187.5)=20,000×937.5
=PHP 18,750,000/year [US$337,776.00]

The combined economic value of Monte Maria and the resorts in Barangay Pagkilatan:

=PHP 45,000,000 + PHP 18,750,000

= PHP 63,750,000/year [US$1,148,441.00]

The Travel Cost Method estimation results highlight the significant economic value of Monte Maria and the resorts in Barangay Pagkilatan, with a combined annual value of PHP 63,750,000 [US$1,148,441.00]. This underscores the importance of these sites as major contributors to local and regional tourism economies. Below are some implications of these findings:

- Economic Contribution

With Monte Maria generating PHP 45 million [US$810,664.00] annually and Barangay Pagkilatan resorts adding PHP 18.75 million [US$337,776.00], these sites could serve as a foundation for targeted community development. Investments in infrastructure, local entrepreneurship, and capacity-building programs for residents could further enhance the area's attractiveness and economic benefits.

- Community Development Opportunities

With Monte Maria generating PHP 45 million [US$810,664.00] annually and Barangay Pagkilatan resorts adding PHP 18.75 million [US$337,776.00], these sites could serve as a foundation for targeted community development. Investments in infrastructure, local entrepreneurship, and capacity-building programs for residents could further enhance the area's attractiveness and economic benefits.

- Conservation and Sustainability

Given the high volume of visitors (50,000 for Monte Maria and 20,000 for Barangay Pagkilatan resorts annually), there is a potential strain on natural resources, biodiversity, and infrastructure. The results emphasize the need for sustainable tourism practices, such as limiting visitor numbers during peak periods, implementing conservation fees, or creating policies that regulate land development. Protecting threatened species and biodiversity in Monte Maria should also be prioritized to maintain ecological balance, ensuring that economic benefits do not come at the expense of environmental degradation.

- Policy and Planning Implications

The substantial economic value justifies developing and implementing comprehensive management plans for both sites. Policies focusing on biodiversity protection, waste management, and sustainable land use should be enacted to preserve the long-term viability of these destinations. Local Government Units (LGUs) could allocate a portion of tourism revenues to fund environmental committees, monitoring programs, and community engagement activities to protect these natural resources.

- Potential for Increased Revenue

The data demonstrates that most visitors come from nearby provinces and primarily use private vehicles. This suggests untapped markets from farther regions or international tourists that could be targeted through marketing campaigns or improved transport connectivity. Efforts to diversify activities beyond swimming and relaxing (e.g., ecotourism and cultural experiences) could attract a broader demographic, potentially increasing visitor numbers and revenue.

- Visitor Experience Enhancement

The results also imply a need to improve visitor experience through better facilities, guided tours, and educational programs about biodiversity conservation. Enhancing visitor satisfaction could lead to repeat visits and word-of-mouth promotion, sustaining and increasing economic value over time.

The economic value derived from Monte Maria and Barangay Pagkilatan's resorts demonstrates their vital role in the local tourism economy. However, to maximize the benefits and ensure long-term sustainability, strategic planning, environmental conservation, and community involvement must be at the forefront of tourism development in these areas.

- Assess the tourists' willingness to pay for the preservation and conservation of Monte Maria

Both visitors of Monte Maria and resorts were asked for their willingness to pay for an environmental fee.

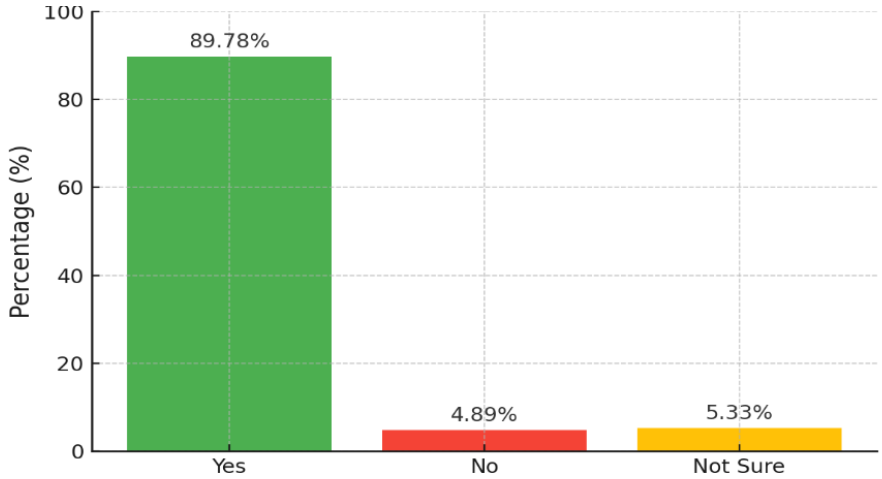

Fig. 2: Visitors' Willingness to Pay an Environmental Fee in Brgy. Pagkilatan.

Figure 2 presents the responses of 225 surveyed visitors regarding their willingness to pay (WTP) an environmental fee to support the maintenance and improvement of facilities and services in Pagkilatan. A substantial majority—202 respondents (89.78%)—expressed WTP, indicating strong support for conservation-linked financing and recognition of the site's ecological and cultural value. Only 11 respondents declined, and 12 remained uncertain, suggesting broad public acceptability for a user-based sustainability mechanism. These findings point to favorable conditions for introducing an environmental fee, provided that transparent fund management and visible reinvestment outcomes are ensured to maintain visitor trust and satisfaction.

Based on Table 8, among those willing to contribute, 63.86% (129 respondents) preferred a fee below PHP 50 [US$0.90], while 30.20% (61 respondents) were comfortable with fees between PHP 50 – 100 [US$0.90 –1.80]. Only 12 respondents indicated a willingness to pay more than PHP 100 [US$1.82], with 3 suggesting over PHP 200 [US$3.60]. This distribution indicates a clear preference for modest fee levels, likely reflecting the economic profile of domestic visitors. To ensure both affordability and revenue effectiveness, policy-makers may consider setting a baseline environmental fee between PHP 50 – 100 [US$0.90–1.80], aligned with the majority's comfort levels while generating sufficient funds to support conservation, site maintenance, and community initiatives.

Table 8: Amount of Visitors Willing to Pay as an Environmental Fee

Amount the Visitors are willing to pay as an environmental fee (in PHP)	
Response	Frequency
Lower than 50 but higher than 10	129
50-100	61
101-150	4
151-200	5
Higher than 200	3
Total	202

Source: Own processing from the conducted research.

The most frequently cited reason for unwillingness to pay an environmental fee was the belief that access to the barangay should remain free of charge, as reported by 11 respondents. A small number of participants also indicated budget constraints (1 respondent) or held the view that maintenance should be funded by the municipality (1 respondent). Additionally, four respondents expressed skepticism over existing facilities or questioned whether improvements would be realized, suggesting that resistance to the fee is rooted more in principle and institutional trust than in the actual quality of services.

These findings emphasize the importance of implementing strategic communication and awareness campaigns to explain the purpose and allocation of the environmental fee. Clearly articulating how collected funds will be used to benefit both visitors and the local community — such as in infrastructure upgrades, waste management, or biodiversity conservation — may help enhance acceptance and reduce resistance. Establishing transparency mechanisms may further strengthen public support and institutional trust in the initiative.

Table 9: Reasons for Not Being Willing to Pay the Environmental Fee

Possible reason for not paying: the willingness to pay	
Response	Frequency
You believe entry to the barangay should be free.	11
The current facilities are inadequate	4
I'm not sure the service will improve	6
The budget can't afford the fee.	1
I believe it must be covered by the municipality	1
Total	23

Source: Own processing from the conducted research.

Using the frequency data from Table 8:

Table 10: Total Contribution Based on the Amount Willing to Pay by the Visitors

Amount Range (PHP)	Midpoint (PHP)	Frequency	Total Contribution (PHP)
Lower than 50 but higher than 10	30	129	30×129=3,870
50-100	75	61	75×61=4,575
101-150	125	4	125×4=500
151-200	175	5	175×5=875
Higher than 200	250 (assumed)	3	250×3=
Total	-	202	10,570

Source: Own processing from the conducted research.

The mean WTP is calculated by dividing the total contribution by the total number of respondents willing to pay:

Mean WTP = Total Contribution/Total Frequency = 10,570/202 ≈ PHP 52.33 [US$0.94]

5. Discussion

This study provides a comprehensive valuation of the natural and cultural assets of Monte Maria and Barangay Pagkilatan, underscoring their dual significance as a sacred pilgrimage destination and an emerging ecotourism site. The findings reveal that while the area hosts 23 plant species and 2 fauna species — including vulnerable taxa like Vitex parviflora (Molave) and Pterocarpus indicus (Narra)—continued habitat loss and land-use changes due to tourism infrastructure development threaten local biodiversity. These observations are consistent with Rivera et al. (2022), who argue that unmanaged tourism growth often undermines ecological integrity in sensitive destinations.

Tourism demand in Barangay Pagkilatan has grown steadily, contributing over PHP 63.75 million [US$1.148 million] annually to the local economy. The Travel Cost Method estimated that visitors spend between PHP 500–1,000 [US$9.01 – 18.01] per trip, reflecting strong recreational value associated with both spiritual and leisure experiences. This aligns with global findings by Hanley and Barbier (2009) and Carandang et al. (2013), who noted that recreational ecosystem services offer tangible economic benefits when properly valued. However, the ecological costs — manifested in declining bird populations and shifts in plant composition — highlight the tension between growth and sustainability.

Crucially, 89.78% of surveyed visitors expressed willingness to pay an environmental fee, with a mean WTP of PHP 52.33 [US$0.94]. This is notably higher than values reported in similar Southeast Asian studies (e.g., Apdohan et al., 2021; Nuva et al., 2009), indicating a strong environmental ethic among visitors to sacred destinations. The WTP results provide empirical support for the implementation of market-based conservation instruments, such as user fees, which are a critical tool for funding site management and incentivizing sustainable behavior.

The significant economic value derived from Monte Maria suggests the potential for community-based benefit sharing. As suggested by Alisa and Ridho (2020), integrating local communities into ecotourism management — via employment, local product promotion, and participatory planning — can enhance both conservation outcomes and livelihood sustainability. Moreover, the perceived cultural and spiritual value of the site makes it well-positioned for experiential tourism models that combine nature-based learning, religious reflection, and ecological stewardship.

Despite positive indications, some visitors expressed reluctance to pay fees due to perceived inadequacies in infrastructure and skepticism about how funds would be used. This reflects a broader concern noted in the global literature (Lee & Han, 2002), where a lack of

transparency in fund allocation diminishes trust and reduces public support for conservation financing. To overcome this, a transparent environmental fee framework, with clear communication of where and how revenues will be allocated, is essential. Practical lessons may be drawn from case studies such as the Tubbataha Reefs Natural Park in the Philippines and the Kinabalu Park in Malaysia, where tiered user fees and revenue-sharing mechanisms have been successfully implemented to fund biodiversity monitoring and local community development.

Digital education tools, such as mobile apps, QR-coded trail guides, and interactive kiosks, may also be explored to enhance visitor awareness and increase compliance with conservation fees. These tools can deliver site-specific ecological information and demonstrate the tangible outcomes of visitor contributions.

From a policy perspective, the study underscores the urgency of institutionalizing a conservation financing strategy tailored to pilgrimage-ecotourism sites. This includes biodiversity monitoring, habitat restoration, infrastructure zoning, and visitor management protocols. Lessons from similar efforts in marine protected areas and forest reserves (Villanueva et al., 2021; de la Vega et al., 2019) show that such strategies must be adaptive, participatory, and grounded in site-specific data.

However, implementing such strategies—particularly fee systems and educational campaigns—may face resistance at both community and administrative levels. Challenges may include limited technical capacity among local government units (LGUs), fragmented jurisdiction over natural and religious assets, and the absence of a centralized management authority. In some cases, religious stakeholders or community leaders may view conservation fees as barriers to access, especially in spiritually significant sites.

To address these issues, institutional arrangements must include inter-agency collaboration between tourism, environmental, and religious authorities. Building local capacity through training, trust-building initiatives, and participatory planning mechanisms is essential. Pilot programs with voluntary contributions or donation-based models may serve as transitional instruments to introduce the concept of user fees while fostering stakeholder buy-in.

Based on the current findings, future research may examine how WTP varies across other sacred or religious tourism sites in the Philippines and Southeast Asia, particularly about cultural identity, socioeconomic background, and faith-based motivations. In addition, research could assess the effectiveness of various digital education strategies in promoting pro-environmental behavior among pilgrims and tourists.

Finally, this research contributes to global ecotourism discourse by addressing a notable gap: the economic valuation of sacred coastal landscapes. The intersection of faith-based travel, biodiversity, and market-based conservation remains underexplored in literature, yet is increasingly relevant in Asia-Pacific tourism contexts. Monte Maria serves as a model for reconciling spiritual heritage and environmental protection, and its findings may inform similar destinations across Southeast Asia and beyond.

Similar challenges have been documented in other pilgrimage ecotourism sites across Asia, such as Tirta Empul in Bali, Adam's Peak in Sri Lanka, and temple sites in the Western Ghats of India. These destinations, like Monte Maria, are situated in ecologically sensitive regions and attract large visitor flows, often without structured conservation financing systems in place. Previous studies have highlighted issues such as environmental degradation, visitor congestion, and the potential for user-funded models to support sustainability (Putra & Hitchcock, 2020; Gunatilake et al., 2013; Ninan & Kontoleon, 2008). These examples underscore not only the adaptability of Monte Maria's valuation-based approach, but also the need to test and refine such models through comparative, multi-site research.

6. Conclusion

This study highlights the critical intersection of ecological sustainability, cultural heritage, and economic development in Monte Maria — a coastal pilgrimage destination experiencing rapid tourism growth. By integrating biodiversity assessments with economic valuation tools, the research reveals the site's dual role as both a spiritual sanctuary and a valuable ecological asset.

The findings demonstrate that tourism generates substantial economic contributions, with an estimated annual value of PHP 63.75 million (US$1.148 million). This underscores the potential of sacred ecotourism sites to support local economies when managed responsibly. However, pressures from increasing visitor numbers and infrastructure development have begun to compromise the site's biodiversity, particularly among vulnerable and indigenous plant species. These ecological risks call for urgent, data-driven conservation strategies.

A key insight from the study is the strong visitor support for sustainability measures. Nearly 90% of respondents expressed willingness to pay for conservation, with a mean contribution of PHP 52.33 (US$0.94). This presents a viable opportunity to institutionalize conservation financing mechanisms — such as environmental user fees — to support biodiversity protection, infrastructure improvements, and local community initiatives. Nevertheless, transparent fund allocation, effective monitoring, and adequate facility development are essential to sustaining public trust and maximizing compliance.

This study also reveals how conservation financing in sacred ecotourism landscapes is not only economically feasible but also politically complex. The high willingness to pay reflects not just environmental concern, but also a perceived gap in institutional or governmental responsibility. As conservation burdens shift increasingly to individual visitors, questions of equity, accountability, and legitimacy arise. These tensions underscore the importance of embedding WTP-based strategies within participatory, community-based governance models — a direction that warrants further empirical investigation in sacred ecotourism contexts.

Moreover, the diversity of visitor backgrounds suggests that dialectal or regional variations may influence perceptions of value, responsibility, and conservation priorities. Future research should disaggregate WTP data along linguistic or cultural lines to uncover nuanced preferences and tailor conservation messaging more effectively.

The broader implication of this research lies in its contribution to the evolving discourse on ecotourism in sacred landscapes — an area often overlooked in conservation economics. Monte Maria may serve as a model for other culturally significant sites across Southeast Asia, demonstrating that spiritual tourism can coexist with biodiversity stewardship and inclusive development. Ensuring this balance will require collaborative governance, continuous ecological monitoring, and a shared commitment to protecting both cultural identity and natural capital.

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