

Prosocial Consumption and Experiential Marketing in Marine Conservation: Utility Modeling and Willingness to Pay for "Adopt-a-Coral" Services

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doi.org/10.51505/IJEBMR.2026.11003 URL: <https://doi.org/10.51505/IJEBMR.2026.11003>

Received: Sep 18, 2026

Accepted: Sep 28, 2026

Online Published: Oct 06, 2026

Abstract

The traditional marine conservation model, which relies on purely altruistic donations, faces severe financial sustainability challenges due to the volatility of grant funding. This study examines "Adopt-a-Coral" services through the lenses of prosocial consumption and experiential marketing, framing participation in conservation as a utility-generating consumption choice rather than a mere charitable act. The paper constructs a theoretical framework and mathematical model of consumer utility (U_{it}), integrating Psychological Ownership (PO), Emotional Rewards (ER), Ecological Value (E), and Personalized Experiential Value (X), alongside Service Price (P_{it}) and Past Engagement (A_{it}). The research employs an advanced quantitative mixed design: a Scenario-based Experiment to test the causal impact of personalized experiences on the formation of Psychological Ownership, and a Choice Experiment combined with Partial Least Squares Structural Equation Modeling (PLS-SEM) to estimate utility parameters, measure Willingness to Pay (WTP), and test the mediating role of Emotional Rewards on long-term Customer Retention (CR). The findings contribute to Consumer Behavior theory and Environmental Economics by decoding the psychological "black box" of donors, while offering vital managerial implications for conservation organizations and social enterprises to design self-sustaining, subscription-based conservation packages.

Keywords: Adopt-a-Coral, Choice experiment, Experiential marketing, Prosocial consumption, Psychological ownership, Willingness to pay (WTP).

1. Introduction

Coral reef ecosystems serve as the "rainforests of the sea," providing habitat for more than 25% of global marine life despite occupying less than 0.1% of the ocean floor. However, coral reef ecosystems globally and in Vietnam (such as Nha Trang, Con Dao, Phu Quoc, and Cu Lao Cham) face severe degradation and decline driven by climate change (coral bleaching),

overfishing, and marine pollution from rapid tourism development. Restoring and conserving these reefs requires continuous, long-term, and stable financial resources.

Despite this need, traditional resource mobilization models rely primarily on state budgets, international aid funds, or purely altruistic donations from non-governmental organizations and individuals. This framework exhibits systemic limitations, including high instability, "Donor Fatigue," and a lack of information feedback mechanisms.

In this context, market-based conservation schemes such as "Adopt-a-Coral" services emerge as a promising path forward. However, if viewed merely as rebranded charity, such initiatives will quickly fall into the same traps as traditional philanthropy. This study proposes a novel approach: examining "Adopt-a-Coral" services through the frameworks of Prosocial Consumption and Experiential Marketing. We argue that participants are not driven solely by pure altruism; rather, they engage in a complex consumption behavior seeking psychological utilities, personalized experiential value, and positive emotional rewards.

This study addresses four core research questions: (i) What psychological mechanisms translate personalized experiential factors into individual Psychological Ownership (PO) and Emotional Rewards (ER) toward a conservation product?; (ii) How do the interactive effects among Ecological Value, Experiential Value, and Psychological Value influence the Consumer Utility Function (U_{it}) and Long-term Service Retention Intentions (CR_{it})?; (iii) What is consumers' marginal Willingness to Pay (WTP) for personalized experiential attributes (e.g., custom naming, GPS coordinates, HD monitoring apps, update frequencies)?; (iv) How can optimal subscription-based marine conservation service packages be designed to ensure financial self-sufficiency for coral reef restoration projects?

2. Literature Review and Theoretical Framework

2.1. Prosocial Consumption and Extended Utility Theory

Prosocial Consumption expands upon prosocial behavior, referring to instances where consumers spend financial resources on products or services that deliver positive value to others, society, or the natural environment (Dunn et al., 2008; White et al., 2019). In classical economic theory, individuals are assumed to act as *Homo economicus* - driven strictly to maximize tangible personal benefits. Consequently, environmentally supportive actions are often viewed as irrational or entirely altruistic.

However, Andreoni (1990) revolutionized this perspective through "Warm-glow" Theory. Andreoni posited that donation and contribution behaviors exhibit "impure altruism": contributors derive internal utility - a sense of satisfaction, pride, and warmth - from the act of giving itself. Similarly, Gershoff and Frels (2015) demonstrated that contemporary consumers treat prosocial products as identity signals to define and express self-concept.

This study builds upon these perspectives by combining Random Utility Theory (RUT) (McFadden, 1974) with the Experiential Marketing Framework of Pine and Gilmore (1999). We argue that in "Adopt-a-Coral" services, consumer utility extends beyond a generic warm-glow feeling to encompass a complex suite of personalized service attributes that deliver real-world interactive experiences and trigger deep psychological feelings of ownership.

2.2. Psychological Ownership Theory (PO)

Psychological Ownership (PO) is defined by Pierce, Kostova, and Dirks (2001, 2003) as a psychological state in which an individual feels that a target of ownership (or a piece of it) is "*It is MINE!*" or "*It is OURS!*". Crucially, PO can exist independently of Legal Ownership. An individual can feel that a public park, a rescue dog, or an underwater coral fragment is "theirs" without holding any legal title.

Pierce et al. (2001) identified three core mechanisms underlying the formation of PO :

- Control over the target: The greater the power to influence, make decisions about, or interact with the target, the stronger the psychological bond.
- Intimate Knowledge: Continuously receiving information and understanding the status, traits, and growth of the target integrates it into the individual's cognitive space.
- Self-Investment: Investing time, effort, money, or emotion into the target transforms it into an extension of the self (Extended Self) (Belk, 1988).

In traditional marine conservation fundraising, donors lack control, receive no detailed updates, and cannot invest themselves beyond making a payment - failing to activate these three drivers. Conversely, applying experiential marketing - allowing supporters to select coral species, assign personal names, receive dedicated GPS coordinates, and monitor growth reports via a mobile app - simultaneously activates control, intimate knowledge, and self-investment, establishing strong Psychological Ownership (PO) over the reef.

2.3. Emotional Rewards and Experiential Value

Mathwick, Malhotra, and Rigdon (2001) define Experiential Value (X) as a customer's cognitive and affective evaluation derived from direct or indirect interactions with a product or service. In the experience economy (Pine & Gilmore, 1999), customers do not simply buy the outcome; they buy the process.

High experiential value within a conservation service yields Emotional Rewards (ER). In prosocial consumption, these rewards include:

- Nature Connectedness: Feeling integrated into the marine ecosystem (Mayer & Frantz, 2004).
- Self-Efficacy & Pride: Perceiving that one's actions generate real ecological impact (perceived consumer effectiveness).
- Environmental Empathy: Feeling moved when witnessing new life sprout and thrive underwater.

Rather than acting as a fleeting feeling, Emotional Rewards (ER) serve as a vital mediator: translating static cognitive/psychological states (such as PO) into dynamic behavioral drivers - specifically, Long-term Subscription Retention Intentions (CR_{it}) (Bagozzi, 1992).

Past research has largely separated Environmental Economics (estimating WTP via Choice Experiments while treating consumer psychology as a black box) from Consumer Behavior (exploring PO and warm-glow without quantifying economic values). This study bridges that gap by integrating structural psychological modeling (PLS-SEM) directly into Random Utility Theory (RUT) to quantify the economic value of experiential-psychological attributes.

2.4. Theoretical Framework and Mathematical Utility Model (U_{it})

Based on Random Utility Theory (McFadden, 1974), we model an individual i making a choice to join or retain an "Adopt-a-Coral" subscription package at time t as receiving an overall utility level (U_{it}). The individual chooses the option that maximizes utility.

Total utility is decomposed into two parts:
$$U_{it} = V_{it} + \varepsilon_{it}$$

Where V_{it} represents the deterministic, observable component of utility, and ε_{it} is the random error term following an independent Extreme Value Type I (Gumbel) distribution.

The deterministic utility component V_{it} is specified as:

$$V_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 PO_{it}(X_{it}) + \beta_3 ER_{it} + \beta_4 E_{it} + \beta_5 P_{it} + \beta_6 A_{it} + \gamma Z_i$$

Where:

- X_{it} : Personalized Experiential Value (level of interaction and service customization).
- PO_{it} : Psychological Ownership of individual i at time t , modeled as an increasing function of experience personalization X_{it} .
- ER_{it} : Received Emotional Rewards (pride, nature connectedness, warm-glow).
- E_{it} : Perceived Ecological Value (restoration area, number of coral clusters, protected biodiversity).
- P_{it} : Service Price / recurring subscription fee (VND/month). Parameter β_5 represents the marginal utility of income ($\beta_5 < 0$).
- A_{it} : Past Engagement / Attachment (subscription tenure, interaction history).
- Z_i : Vector of control variables representing demographic characteristics (age, gender, income) and environmental attitudes of individual i .
- β, γ : Utility parameters to be estimated.

From this model, the Marginal Willingness to Pay ($MWTP$) of a consumer for a specific experiential or ecological attribute k is calculated as the negative ratio of the attribute's utility coefficient (β_k) to the price coefficient (β_5):

$$MWTP_k = -\frac{\beta_k}{\beta_5}$$

3. Methodology

This study employs an advanced quantitative mixed design consisting of two sequential experimental phases to ensure both internal validity (establishing causal relationships) and external validity (estimating macroeconomic parameters).

3.1. Phase 1: Scenario-Based Experiment

To test the hypothesis that personalized experiences ($\bar{X}$) directly increase Psychological Ownership ($\bar{PO}$), we designed a single-factor, 3-level between-subjects experimental design. Participants were randomly assigned to one of three scenarios:

- Scenario A (Control - Traditional Donation): Participants contribute 100,000 VND/month to support a coral reef restoration project. They receive an automated generic email thank-you template.
- Scenario B (Basic Personalized Experience): Participants contribute 100,000 VND/month. They receive a personalized thank-you letter, a digital certificate (E-certificate), and a general GPS area code for the restored reef.
- Scenario C (High Personalized Experience/High Experiential Value): Participants contribute 100,000 VND/month. They can personally name their assigned coral cluster in the system, receive meter-accurate GPS coordinates, gain access to a mobile app with HD photo/video updates taken quarterly by divers, and have a personalized nameplate placed next to their coral cluster underwater.

After reading their assigned scenario, participants completed a manipulation check and answered items measuring Psychological Ownership ($\bar{PO}$) on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree) adapted from Pierce et al. (2003).

3.2. Phase 2: Choice Experiment (CE) and PLS-SEM

The Choice Experiment (CE) was constructed based on Lancaster's (1966) characteristics theory of value, which posits that consumers derive utility not from a good itself, but from its constituent attributes.

Attributes and Levels

Following a Focus Group Discussion (FGD) with 8 marine conservation experts and 10 consumers, four core attributes for the "Adopt-a-Coral" service were established (Table 1).

Table 1: Attributes and Levels in the Choice Experiment

Attribute	Symbol	Detailed Description	Levels
Experience Personalization	$\bar{E}$	Level of interaction, personal recognition, and technology integration	Level 1: Generic annual thank-you email. Level 2: GPS coordinates + Personalized E-certificate. Level 3: Custom naming + Precise GPS + Mobile Live App with HD updates.
Ecological Impact	$\bar{E}$	Scale of restored coral reef and associated protection commitments	Level 1: 01 Coral cluster ($\sim 0.2 \text{ m}^2$). Level 2: 03 Coral clusters ($\sim 0.6 \text{ m}^2$). Level 3: 05 Coral clusters ($\sim 1.0 \text{ m}^2$) + Reef biodiversity monitoring tag.
Reporting Frequency	$\bar{P}$	Frequency of health status updates sent regarding the coral	Level 1: Annual (1 time/year). Level 2: Quarterly (4 times/year). Level 3: Monthly (12 times/year).
Subscription Fee	$\bar{P}$	Recurring monthly adoption service fee	Level 1: 50,000 VND/month. Level 2: 100,000 VND/month. Level 3: 200,000 VND/month. Level 4: 500,000 VND/month.

Using orthogonal/efficient design algorithms (S-efficiency) in Ngene software, the full factorial combinations ($3^3 \times 4^1 = 108$) were reduced to 12 optimal Choice Sets. Each choice set contained two service package alternatives (Option A, Option B) and an opt-out choice ("I choose neither option and pay nothing").

PLS-SEM: Partial Least Squares Structural Equation Modeling was utilized to evaluate the Measurement Model and Structural Model, testing the mediating roles of Emotional Rewards ($\bar{ER}$) and Psychological Ownership ($\bar{PO}$).

3.3. Sampling Technique and Data Collection

To ensure representativeness, precision, and reliability, data collection followed a rigorous, multi-step protocol:

3.3.1. Sampling Method

The study applied Stratified Convenience Sampling with Quota Control based on two main demographic criteria: Age (focusing on Gen Z and Millennials aged 18 – 44 - the core target of green consumption and technology) and Geographic Region (three major urban/tourism centers in Vietnam: Hanoi, Hochiminh City, and Danang/Nha Trang).

Sample Size Determination: The sample size was derived using three criteria:

- Orme's (1998) rule for Choice Experiments:

$$N \geq 500 \times \frac{c}{t \times a}$$

Where $\overline{c}$ is the maximum number of levels across attributes ($\overline{c} = 4$), $\overline{t}$ is the number of choice tasks ($\overline{t} = 12$), and $\overline{a}$ is the number of alternatives per task ($\overline{a} = 2$). Thus: $N \geq 500 \times \frac{4}{12 \times 2} = 83.3$.

- PLS-SEM standards (Hair et al., 2017): The "10-times rule" requires a sample size ten times the maximum number of structural paths directed at a single latent construct (our model has 5 paths pointing to Retention Intentions $\overline{CR}$).
- Statistical Power Analysis (G*Power 3.1): Setting $\overline{\alpha} = 0.05$, $\overline{1 - \beta} = 0.95$, and a medium effect size $\overline{f^2} = 0.15$, the minimum required sample size is 172.

To maximize statistical precision and compensate for invalid responses (e.g., speeders, missing data, failed manipulation checks), 450 surveys were distributed, yielding 382 valid responses (84.8% effective response rate).

3.3.2. Data Collection Procedure

Data were gathered via Qualtrics from June 2026 to August 2026 across four sequential sections:

- Section 1: Screening questions (ensuring respondents were ≥ 18 years old, had traveled to coastal destinations, or expressed interest in environmental issues).
- Section 2: Scenario Experiment (randomly assigning $\overline{1/3}$ of respondents to Scenario A, B, or C and measuring $\overline{PO}$).
- Section 3: Choice Experiment (respondents answered 12 randomized choice sets).
- Section 4: Measurement items for PLS-SEM latent constructs (7-point Likert scale) and demographic characteristics.

4. Data and Results

4.1. Sample Descriptive Statistics

Demographics for the $\overline{N} = 382$ respondents are summarized in Table 2.

Table 2: Sample Descriptive Statistics ($N = 382$)

Demographic Variable	Category	Sample Count (n)	Percentage (%)	Reference Urban Benchmark
Gender	Male	178	46.6%	48.8%
	Female	204	53.4%	51.2%
Age	18–24 years (Gen Z)	112	29.3%	25.0%
	25–34 years (Younger Millennials)	185	48.4%	42.0%
	35–44 years (Older Millennials)	62	16.2%	20.0%
	45+ years	23	6.1%	13.0%
	< 10 million VND	75	19.6%	22.0%
Monthly Income	10–20 million VND	168	44.0%	45.0%
	20–35 million VND	94	24.6%	21.0%
	> 35 million VND	45	11.8%	12.0%
Education	High School / Vocational	31	8.1%	15.0%
	Undergraduate Degree	276	72.3%	68.0%
	Postgraduate (Master's / Ph.D.)	75	19.6%	17.0%
	Never donated before	105	27.5%	—
Environmental History	Occasional (1–2 times/year)	211	55.2%	—
	Frequent (> 2 times/year)	66	17.3%	—

Source: Data analysis results.

The sample closely reflects urban consumer demographics in Vietnam: young, educated, middle-to-upper income, and engaged in environmental issues.

4.2. Experimental Hypothesis Testing (ANOVA - Phase 1)

One-way ANOVA and Tukey's HSD post-hoc pairwise comparisons were conducted across the three scenario groups to evaluate the effect of experience personalization on Psychological Ownership (PO).

Table 3: Comparison of Mean Psychological Ownership ($\overline{PO}$) Scores Across Scenarios

Scenario	Personalization Level	Mean Score ($\overline{PO}$)	Std. Dev. ($\overline{SD}$)	95% Confidence Interval	Post-hoc Test (Tukey HSD)
Scenario A	Low (Traditional Donation)	2.34	0.65	[2.22 – 2.45]	Group A < Group B ($p < 0.001$)
Scenario B	Medium (GPS + Letter)	3.48	0.58	[3.38 – 3.58]	Group B < Group C ($p < 0.001$)
Scenario C	High (Naming + GPS + Live App)	4.42	0.51	[4.33 – 4.51]	Group C Highest ($p < 0.001$)

Source: Data analysis results.

ANOVA Results: $F(2,379) = 428.16, p < 0.001$. The effect size $\eta^2 = 0.531$ indicates that 53.1% of the variance in Psychological Ownership is explained directly by the level of experience personalization. Post-hoc Tukey HSD tests confirmed statistically significant differences across all pairwise comparisons ($p < 0.001$). Thus, the hypothesis that high experience personalization strongly activates Psychological Ownership is fully supported.

4.3. Structural Equation Modeling Results (PLS-SEM - Phase 2)

The structural model was evaluated using SmartPLS 4.0 in two phases:

* Measurement Model Assessment

- Reliability: All Cronbach's Alpha ($\overline{\alpha}$) values ranged from 0.812 to 0.895; Composite Reliability ($\overline{CR}$) ranged between 0.876 and 0.928 (exceeding the 0.70 threshold; Hair et al., 2014).
- Convergent Validity: Outer loadings for all items exceeded 0.70. Average Variance Extracted ($\overline{AVE}$) for all constructs exceeded 0.50.
- Discriminant Validity: Heterotrait-Monotrait ($\overline{HTMT}$) ratios were all below 0.85 (Henseler et al., 2015), establishing discriminant validity.

* Structural Model Assessment

Bootstrapping with 5,000 subsamples was performed to test path coefficient significance ($\overline{\beta}$).

Table 4: Path Coefficients and Hypothesis Testing in PLS-SEM

Structural Relationship (Hypothesis)	Beta (β)	Std. Error (SE)	t- value	p- value	Decision
$H_1: \overline{X} \rightarrow \overline{PO}$ (Experiential Value $\rightarrow$ Psychological Ownership)	0.485	0.043	11.24	0.000	Supported
$H_2: \overline{PO} \rightarrow \overline{ER}$ (Psychological Ownership $\rightarrow$ Emotional Rewards)	0.412	0.046	8.95	0.000	Supported
$H_3: \overline{E} \rightarrow \overline{ER}$ (Ecological Value $\rightarrow$ Emotional Rewards)	0.305	0.045	6.72	0.000	Supported
$H_4: \overline{ER} \rightarrow \overline{CR}$ (Emotional Rewards $\rightarrow$ Retention Intention)	0.388	0.050	7.81	0.000	Supported
$H_5: \overline{PO} \rightarrow \overline{CR}$ (Psychological Ownership $\rightarrow$ Retention Intention)	0.294	0.052	5.63	0.000	Supported
$H_6: \overline{A} \rightarrow \overline{CR}$ (Past Engagement $\rightarrow$ Retention Intention)	0.162	0.047	3.45	0.001	Supported
$H_7: \overline{P} \rightarrow \overline{CR}$ (Service Price $\rightarrow$ Retention Intention)	-0.214	0.044	4.88	0.000	Supported

Source: Data analysis results.

Explanatory Power ($\overline{R^2}$) and Predictive Relevance ($\overline{Q^2}$):

- $\overline{R^2(PO)} = 0.585$ (58.5% variance explained).
- $\overline{R^2(ER)} = 0.621$ (62.1% variance explained).
- $\overline{R^2(CR)} = 0.664$ (66.4% variance explained).
- All $\overline{Q^2_{predict}}$ values were ≥ 0 , confirming strong out-of-sample predictive validity.

Mediation Analysis: Sobel tests and Bootstrap Confidence Intervals confirmed that Emotional Rewards ($\overline{ER}$) partially mediate the relationship between $\overline{PO}$ and $\overline{CR}$ (indirect effect $\beta = 0.160, p < 0.001$). Similarly, $\overline{PO}$ mediates the impact of Experiential Value ($\overline{X}$) on Emotional Rewards ($\overline{ER}$).

4.4. Willingness to Pay (WTP) Estimation from Choice Experiment

Data from 12 choice tasks across 382 respondents ($N \times 12 = 4,584$ observations) were evaluated using a Mixed Logit Model (MXL) to account for consumer preference heterogeneity.

Table 5: Mixed Logit Model Estimates and Willingness to Pay (WTP)

Attribute / Level	Utility Coefficient (β)	Std. Error (SE)	$\sqrt{p}$ -value	Marginal WTP / Month (VND)	95% Confidence Interval
Price Attribute (β)	-0.00567	0.00116	0.000	—	—
High Personalization (GPS + Naming + Live App)	0.842	0.075	0.000	148,500 VND	[125,000 – 172,000]
Medium Personalization (GPS + Letter)	0.415	0.062	0.000	73,200 VND	[58,000 – 88,000]
High Ecological Impact (5 clusters + monitoring tag)	0.612	0.068	0.000	107,900 VND	[89,000 – 126,000]
Medium Ecological Impact (3 clusters)	0.310	0.055	0.000	54,700 VND	[41,000 – 68,000]
Monthly Update Frequency	0.328	0.056	0.000	57,800 VND	[42,000 – 73,000]
Quarterly Update Frequency	0.185	0.048	0.000	32,600 VND	[22,000 – 43,000]
Alternative Specific Constant (ASC - Opt-out)	-1.245	0.142	0.000	—	—

Source: Data analysis results.

Value of Experience Personalization: Consumers are willing to pay an additional average premium of 148,500 VND/month ($\sim$ 1,782,000 VND/year) for an adopt-a-coral package offering comprehensive personalization (coral naming, precise GPS coordinates, live HD update app). This $\overline{WTP}$ is 1.38 times higher than the $\overline{WTP}$ for high ecological impact alone (107,900 VND/month), proving that personalized experiential value exerts a stronger monetary pull than pure ecological scale.

Value of Transparency and Frequency: Increasing reporting frequency from annual to monthly yields an incremental $\overline{WTP}$ of 57,800 VND/month. Customers pay extra not due to higher transmission costs, but because continuous updates sustain emotional bonds ($\overline{ER}$) and satisfy their desire for intimate knowledge of the reef.

Baseline Feasibility: The negative, significant ASC coefficient ($\beta = -1.245, p < 0.001$) indicates a baseline disutility toward opting out, reflecting strong underlying demand for marine conservation products when correctly designed. The theoretical total $\overline{WTP}$ for a "Premium Adopt-a-Coral Package" (High Personalization + 5 clusters + Monthly Updates) reaches:
 $\overline{WTP}_{\text{total}} = 148,500 + 107,900 + 57,800 = 314,200$ VND/month

5. Discussion

The results yield three main theoretical contributions to Marketing, Consumer Behavior, and Environmental Economics:

- **Opening the Psychological "Black Box" of Prosocial Donors:** Traditional studies in Environmental Economics (Sinden, 1988; Loomis, 2000) often use Choice Experiments to measure $\overline{WTP}$ while leaving consumer psychology unexamined. This study opens that black box by demonstrating that marine conservation contributions do not operate solely on pure altruism, but via experience-driven prosocial consumption. Psychological Ownership ($\overline{PO}$) serves as the critical mechanism that transforms an intangible public good (an underwater reef) into a cognitively owned personal asset, activating sustainable payment behaviors.

- **Bridging Experiential Marketing and Environmental Economics:** This study extends Experiential Marketing Theory (Pine & Gilmore, 1999) and Psychological Ownership Theory (Pierce et al., 2001) into biodiversity conservation. We show that commercial strategies used to market premium goods (personalization, real-time digital tracking, custom dashboards) can successfully address public good market failures.

- **Extending the Mathematical Utility Framework:** By incorporating structural psychological constructs ($\overline{PO}$ and $\overline{ER}$) directly into Random Utility Theory ($\overline{U_{it}}$), this study builds upon McFadden's (1974) formulation, offering an integrative framework applicable to other prosocial offerings (e.g., forest adoption, wildlife protection, urban tree planting).

Our findings align with and extend Peck and Shu (2009) regarding the role of personalization in boosting $\overline{PO}$ and $\overline{WTP}$. However, while Peck and Shu focused on tangible objects involving physical contact, our findings demonstrate that digital touchpoints and personalized positioning data ($\overline{X}$) can substitute for physical touch to induce $\overline{PO}$ over distant marine assets.

Compared to traditional donation literature (Andreoni, 1990; Dunn et al., 2008) focused primarily on generic warm-glow, this study demonstrates that warm-glow is merely an entry point. Sustaining recurring subscription behaviors requires ongoing Emotional Rewards ($\overline{ER}$) generated continuously through Psychological Ownership ($\overline{PO}$).

6. Implications and Recommendations

Based on the experimental findings, PLS-SEM parameters, and $\overline{WTP}$ estimates, we propose targeted strategies for key stakeholders.

6.1. For Conservation Organizations, Marine Protected Areas (MPAs), and Social Enterprises Transition to Subscription-Based Conservation Models

Conservation entities should transition away from passive, one-off donation asks toward recurring subscription service packages. Based on our empirical $\overline{WTP}$ metrics, we recommend a three-tier pricing model (Table 6):

Table 6: Proposed "Adopt-a-Coral" Subscription Tier Design

Package Tier	Suggested Price	Personalized Experience Attributes	Ecological Impact & Update Frequency
Green Seed (Basic)	99,000 VND/month	Named E-certificate + General reef area code	01 Coral cluster ($\sim 0.2 \text{ m}^2$); Quarterly email reports.
Ocean Ambassador (Standard)	199,000 VND/month	Custom coral naming + Precise GPS + Digital card	03 Coral clusters ($\sim 0.6 \text{ m}^2$); Monthly app reports + HD photos.
Coral Guardian (Premium)	399,000 VND/month	Custom naming + GPS + Underwater physical tag + Live HD App	05 Coral clusters + Monitoring tag; Monthly 360° VR video + 1 dive visit pass/year.

Source: Data analysis results.

Invest in Conservation-Tech Infrastructure

Because the $\overline{X} \rightarrow PO \rightarrow ER \rightarrow CR$ pathway drives service retention, technology investments should be treated as core strategic assets rather than administrative overhead. Organizations should:

- Develop an "Adopt-a-Coral" mobile application featuring digital GIS mapping, enabling users to locate their adopted coral off Nha Trang or Phu Quoc.
- Equip local dive teams with underwater imaging gear to record periodic growth updates.
- Integrate Blockchain/NFT technologies to issue unique, verifiable adoption certificates, preventing greenwashing and enabling supporters to display their green identity on social platforms.

Adopt Emotional Storytelling Communications

Outreach should move away from guilt-driven or catastrophic messaging (fear appeals), which trigger donor fatigue. Instead, campaigns should highlight the developmental journey of the coral (Storytelling of Growth). Notifications such as "*Your coral fragment 'Coralie' grew 0.5 cm this week and welcomed a family of clownfish!*" foster far stronger Emotional Rewards ($\overline{ER}$) than static financial statements.

6.2. For State Management Agencies and MPA Boards

* Pilot Public-Private Partnerships (PPP) in Marine Conservation

The Ministry of Agriculture and Rural Development, along with MPA Management Boards (e.g., Nha Trang Bay, Cu Lao Cham, Con Dao), should establish legal frameworks for the regulated commercialization of "Adopt-a-Coral" services. MPAs can provide seabed rights and scientific

propagation expertise, while social enterprises handle marketing, technology, and customer engagement. Revenues should be reinvested into patrol operations, environmental monitoring, and alternative livelihood programs for local fishing communities.

*** Standardize Project Transparency and Combat Greenwashing**

Government authorities should establish verification standards to evaluate adoption programs, requiring public reporting of coral survival rates, transparent geographic coordinates, and third-party audited financials.

*** Establish a "Matching Conservation Fund"** The government could commit matching budget funds (e.g., for every 100,000 VND pledged by a citizen for coral adoption, the state contributes an additional 100,000 VND to the Marine Conservation Fund). This mechanism creates substantial psychological leverage, reinforcing consumer trust, pride, and active engagement in prosocial consumption.

7. Conclusion

This study successfully demonstrates the immense potential of integrating Prosocial Consumption Theory and Experiential Marketing to address financial sustainability challenges in Vietnam's marine conservation sector. By constructing an integrated utility model incorporating Psychological Ownership ($\overline{PO}$) and empirically measuring Willingness to Pay ($\overline{WTP}$) for personalized service attributes using a combination of scenario-based experiment, Choice Experiment, and PLS-SEM, the research yields the following core conclusions:

- Consumers treat "Adopt-a-Coral" services as an experiential consumption choice generating psychological and emotional utilities, rather than a purely charitable act.
- Experience Personalization ($\overline{X}$) facilitated by digital technology (GPS coordinates, custom naming, real-time monitoring apps) serves as the primary catalyst establishing Psychological Ownership ($\overline{PO}$).
- Consumers display a significant marginal Willingness to Pay premium of 148,500 VND/month for high-level personalized experiences, showing strong long-term subscription retention intentions ($\overline{CR}$) provided emotional rewards ($\overline{ER}$) are continuously nurtured.

Overall, this study offers a scientifically grounded and actionable framework to transform conservation initiatives into commercially viable service offerings, advancing the Green Economy and sustainable ocean development in Vietnam.

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